

SUSTAINABILITY APPRAISAL OF SUSTAINABLE LOW-CARBON BUILDINGS SUPPLEMENTARY PLANNING DOCUMENT

1. THE PURPOSE OF THE SUSTAINABILITY APPRAISAL

Sustainable Development is defined in the West Midlands Regional Sustainable Development Framework as being about achieving a better quality of life for everybody, now and in the future. A sustainable society is one that treats the environment responsibly, sensitively and carefully; meets social needs in a way that is equitable and enables people to take part in and influence decisions that affect them; and where economic success benefits all and is a means of maximising wellbeing rather than an end in itself.

Sustainability Appraisal of Development Plan Documents and Supplementary Planning Documents is a requirement of the Planning and Compulsory Purchase Act of 2004. Sustainability Appraisals are a means of ensuring that policies balance the different dimensions of sustainable development. Each policy and proposal is assessed in turn against the objectives that make up sustainable development. This helps to identify weaknesses in the plans which might otherwise be overlooked. The policies can then be changed, or mitigation measures introduced to make them as sustainable as possible.

This Sustainability Appraisal is designed to evaluate the policies of the Energy SPD; Sustainable low-carbon buildings. It was first published with the draft SPD and was available alongside it for public consultation and comment from 5th July to 16th August 2007.

This Appraisal sets out baseline data and then analyses in detail the sustainability implications of the SPD's aims and operational objectives. It is then used to evaluate a set of policy options within the SPD. The Appraisal can be demonstrated to have had a significant impact on the design of the draft and final SPD. However, the Appraisal does not fully follow all the stages of preparation of a Sustainability Appraisal as set out in ODPM guidance¹. This is because it was considered appropriate to use the current work undertaken for the Stratford-on-Avon District Sustainability Appraisal Scoping Report (March 2007) to establish context and general baseline evidence, and to establish the scope of the Sustainability Framework criteria against which the SPD is tested. Instead of duplicating this work, information on scoping and baseline information can be found in the Scoping Report. In addition the parent policies for the SPD have undergone sustainability appraisal during the preparation of the adopted Local Plan, and the outcome of this analysis is summarised in Section 4 below.

¹ ODPM Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents, November 2005

2. THE PURPOSE OF THE SUSTAINABLE LOW-CARBON BUILDINGS SPD

The SPD will provide information on how policies DEV.7 and DEV.8 of the adopted Stratford-on-Avon District Local Plan will be implemented. These policies aim to promote sustainable drainage and water conservation and to minimise the amount of energy resources that will be consumed in the occupation and use of new buildings. The policies are closely tied to the Local Plan's overall objectives, particularly to facilitate energy conservation and sustain water resources.

Since the writing of the Local Plan, the role that planning should play in addressing climate change has been further emphasised and defined in national government guidance. Planning is required to play a significant role in securing progress against the UK's emissions targets, delivering the Government's ambition of zero carbon development and creating an environment for innovation and investment in renewable and low carbon technologies².

The objectives of this SPD are therefore to:

- Reduce this district's contribution to climate change through reducing overall carbon emissions from the district.
- Increase local use of renewable and low-carbon technologies, resulting in increased local demand and familiarity with the technologies.
- Improve the resilience of new development to the predicted climate change now accepted as inevitable.
- Increase awareness and understanding of the many national and local requirements and initiatives relating to sustainable new construction.

The key operational aims of the SPD designed to achieve the above objectives are:

- Ensure consideration of energy efficient design and layout at pre-application or early stage of all planning applications, and achieve good practice in all approved schemes;
- Ensure consideration of sustainable drainage systems and water conservation measures at pre-application or early stage of all planning applications, and achieve good practice in all approved schemes;
- Ensure at pre-application or an early stage of all planning applications that applicants are aware of the increasing Building Regulations standards for energy efficiency and have considered how to meet or exceed them; and
- Ensure that 10 % of the energy requirements for all development over a set threshold size will be generated through on-site renewable energy.
- Encourage sustainable good practice including climate resilient design, low-energy materials, adaptable design and the Code for Sustainable Homes.

² PPS: Planning and Climate Change, supplement to PPS1, Consultation version (Communities and local government, Dec 06), p.12-13

These objectives and operational aims have been assessed to see how well they deliver against a comprehensive framework of sustainability objectives. Tables 3 and 4 show the outcome of this assessment.

3. BASELINE INFORMATION AND TRENDS TO JUSTIFY THIS SPD

There is compelling scientific consensus that climate change is happening, and that man-made emissions are its main cause.

The UK Climate Change Impacts Programme (UKCIP) has made a set of predictions about the likely impacts of climate change using computer modelling based on scientific climate research³. The UKCIP02 model predicts that, if we continue to discharge large amounts of greenhouse gases, by 2050 in the West Midlands:

- Annual mean temperatures could rise by up to 2.5°C, with summer temperatures increasing by more and winter temperatures by less.
- The number of very hot summer days is expected to increase.
- Warwickshire and the south east of the region are expected to warm up more than Shropshire and the north of the region
- Winter rainfall could increase by up to 20%
- Summer rainfall could decrease by up to 30%
- Soil moisture could fall by up to 35%
- There will be a higher risk of extreme weather events such as storms, floods and droughts.

Baseline data

These figures are taken from 'Warwickshire Energy Statistics' June 2005, and use data from 2003⁴.

Carbon emissions:

In Warwickshire:

- Carbon dioxide emissions are 4,600 kt per annum. To achieve Kyoto targets, this needs to reduce to 4,200 by 2010, 3,600 by 2020 and to 1,900 by 2050.
- Domestic energy consumption accounts for just under a third (30.5%) of final energy consumption in Warwickshire (total 18,027 GWh).

³ UKCIP www.ukcip.org.uk

⁴ Warwickshire Energy Statistics; report for Warwickshire County Council; baseline data for Climate Change strategy. June 2005

- Industry and commerce accounts for a further 28 percent and transport accounts for the largest part with over 41 percent.

Renewable energy production:

- Renewables capacity in the county is 17.4MW per annum and is virtually all landfill gas.
- The output is equivalent to 3% of the county's electrical demand.
- In the long term it is likely that the amount of landfill gas available and hence the electricity which can be generated from it will decline.

Targets:

Targets set at national level are interpreted for the region in the West Midlands Regional Energy Strategy. These, in turn, are reflected in the Warwickshire Climate Change Strategy.

Carbon emissions:

The Warwickshire Climate Change Strategy aims "To reduce greenhouse gas emissions in Warwickshire to at least the level set out by Government policy, 15%-18% reduction by 2010 and a 60% reduction by 2050 (against 1990 levels)."

Renewable energy:

The target for the UK is for 10% of all electricity generated to come from renewable sources by 2010. However, the West Midlands Energy Strategy contains a lower and differently phrased target – for 5% of the electricity consumed in the region to come from renewable sources by 2010. The target was reduced due to the relative lack of scope for large-scale renewable projects in the region.

Conclusions from baseline information:

It is demonstrated that there is a clear established need for the Stratford District to contribute to reducing carbon emissions and increasing renewable energy in the district. The targets will not be achieved without taking action to change the current situation. Additional new development will increase the carbon emissions of the district, and even replacement buildings will in the short term consume resources through the demolition and construction process. It is therefore essential to minimise the impact of new development in these terms.

The positive scope for new development comes from the opportunity to promote best practice and innovative low carbon and renewable technologies. This should increase knowledge and stimulate the market for products which will encourage innovation and growth in low-carbon industries. Incorporating new practices and technologies into new buildings is also normally easier and more cost efficient than retro-fitting existing buildings, making this an effective area to target through policy.

Improving the energy efficiency and use of renewables on new development will not be sufficient on its own. For example, this SPD will have little impact on the 41% of emissions which currently come from transport. Future planning policies should seek to address other aspects of emission reduction and climate change mitigation.

4. COMMENTARY OF THE SUSTAINABILITY EFFECTS OF PARENT POLICIES DEV.7 AND DEV.8 OF THE ADOPTED STRATFORD-ON-AVON DISTRICT LOCAL PLAN 2006.

Policies DEV.7 (requiring sustainable drainage and encouraging water conservation) and DEV.8 (expecting new development to minimise use of energy resources through measures including orientation and renewable energy features) were tested in a Sustainability Appraisal when the Local Plan was being prepared.

Table 1 below summarises the effects of the policies when measured against the objectives of the Local Plan and the Plan’s overall goal of achieving sustainable development.

TABLE 1: Summary of Sustainability Appraisal results for parent policies

Policy	Effect of policy on objectives of Local Plan	Effect of policy on elements of sustainable development
DEV.7 (Sustainable drainage and water conservation)	Policy DEV.7 assists in delivering the following Plan objectives – protecting landscape character, fostering biodiversity, and sustaining water resources. It does not have any identified negative impacts.	The policy will have positive impacts on water quality and resources and occurrence of flooding, maintaining and enhancing biodiversity, enhancing the quality of landscape and quality of open space and increasing local satisfactions with levels of amenity
DEV.8 (minimising energy resources used in occupation of new development)	Policy DEV.8 assists in delivering the following Plan objectives – securing high quality design and facilitating energy conservation. It does not have any identified negative impacts.	The policy has a positive impact on improving air quality, reducing rate of consumption of non-renewable fuels and energy in general, and contributing to the character and quality of design in the area.

5. AN ASSESSMENT OF THE CONTRIBUTION THAT THE OBJECTIVES OF THE SPD MAKE TOWARDS ACHIEVING THE GOAL OF SUSTAINABLE DEVELOPMENT.

An SA framework has been developed as part of the preparation of the Core Strategy of the Local Development Framework to assess the sustainability of documents including Supplementary Planning Documents⁵. The purpose of the SA Framework is to provide a consistent basis for describing, analysing and comparing the effects of the various planning documents, and to provide a statement of the overall objectives of sustainable development which policies should all be working towards achieving.

This framework has been used to assess the contribution that the development of the Sustainable Low-carbon Buildings SPD will make towards achieving sustainable development in the district. The Sustainability Framework and the objectives that it seeks to achieve are set out below.

TABLE 2: Sustainability Framework

THEME	OBJECTIVES
Developing thriving sustainable communities	
Participation	Provide opportunities for communities to participate in and contribute to the decisions that affect their neighbourhoods and quality of life.
Crime	Reduce crime, fear of crime and antisocial behaviour.
Health	Improve health and reduce health inequalities by encouraging and enabling healthy lifestyles as well as protecting health and providing health services
Poverty	Tackle poverty and disadvantage, taking into account the particular difficulties of those facing multiple disadvantage.
Access	Promote and improve access to services and opportunity, including education and lifelong learning, leisure, employment, health; ensure access is equitable, regardless of location, income, lifestyle or background.
Culture and recreation	Improve opportunities to participate in the cultural and recreation activities that the District can offer.
Housing	Provide decent and affordable housing for all, of the right quantity, type, tenure and affordability for local needs, in clean, safe and pleasant local environments.
Population	Balance the needs of local people and visitors, and establish the District as both a self-sufficient District for residents and a high quality place for visitors.
Enhance and protect the environment	

⁵ Stratford-on-Avon District Sustainability Appraisal for Development Plan Document; Scoping report. March 2007.

Environmental assets	Value, enhance and protect the District's environmental assets, including the natural and built environment and environmental heritage.
Biodiversity	Value, enhance and protect biodiversity.
Land use	Encourage development that optimises the use of previously developed land and buildings and creates high quality built environments incorporating green space, design and encouraging biodiversity.
Urban development	Encourage urban development that improves the quality of the urban environment as a whole in order to stem the unsustainable decentralisation of people, jobs, and other activities away from urban areas.
Stewardship	Encourage local stewardship of local environments
Pollution	Minimise, reduce air, water and soil pollution level and improve the quality of these features.
Flooding	Avoid, reduce and manage flood risk.
Climate change	Minimise and reduce the District's contribution to the causes of climate change while implementing a managed response to its unavoidable impacts.
Ensure prudent and efficient use of natural resources	
Energy	Reduce overall energy use through increasing energy efficiency, and increase the proportion of energy generated from renewable sources.
Conservation	Conserve use of natural resources such as water and minerals.
Standards	Promote and ensure high standards of sustainable resource-efficient design, construction and maintenance of buildings.
Planning	Ensure the location of development makes efficient use of existing physical infrastructure and help reduce need to travel, especially by private car, allocate land for developments in sustainable locations, and enhance the character of the district.
Transport	Encourage modal shift away from private car use and reduce the production of pollutants and congestion from transport while creating good accessibility for all people in the District.
Waste	Encourage and enable waste minimisation, reuse, recycling and recovery to divert resources away from the waste stream.
Local sourcing	Encourage local sourcing of goods and materials, and rural economic growth.
Developing a flourishing, diverse and stable economy	
Growth	Achieve sustainable economic growth and prosperity for the benefit of all the District's inhabitants.
Employment	Create high quality employment opportunities suited to the changing needs of the local workforce, whilst recognising the value and contribution of unpaid work.
Investment	Promote investment in future prosperity
Skills	Encourage ongoing investment and engagement in learning and skills development.
Innovation	Encourage a culture of enterprise and innovation.

Technology	Promote and support the development of new technologies especially those with high value and low impact.
Responsibility	Encourage corporate social and environmental responsibility, with local organisations and agencies leading by example.
Tourism	Enhance the visitor experience and ensure Stratford in particular and the District as a whole establishes itself as a World Class place for tourists.

This framework is used to analyse first the aims and then the operational objectives of the SPD.

TABLE 3: Analysis of objectives

SA framework theme	Reduce carbon emissions/ increase energy efficiency	Increase renewable/ low carbon technologies	Climate resilience	Awareness of sustainable construction initiatives	Comments
Participation	0	0	0	0	No significant negative or positive links identified.
Crime	0	0	0	0	No significant negative or positive links identified.
Health	+	0	+	0	Pollution and extreme weather events could both threaten health. Building climate resilient homes will make residents less susceptible to health conditions resulting from inadequate housing.
Poverty	++	++	++	+	The effects of climate change are likely to have a disproportionate impact on disadvantaged people who are less able to adapt their lifestyle and housing to accommodate harsher weather conditions. Energy efficient housing and installed renewables should reduce number of people in fuel poverty.
Access	0	0	0	0	No significant negative or positive links identified.
Culture and recreation	0	0	0	0	No significant negative or positive links identified.
Housing	++	-	++	++	The objectives seek to create better quality buildings which will be naturally comfortable and suitable to live in. There may be concern that the required improvements to quality and inclusion of new technologies will further increase the price of housing in the district and threaten development of affordable homes.

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SA framework theme	Reduce carbon emissions/ increase energy efficiency	Increase renewable/ low carbon technologies	Climate resilience	Awareness of sustainable construction initiatives	Comments
Population	0	0	0	0	No significant negative or positive links identified.
Environmental assets	++	-	+	+	Climate change presents a significant threat to the natural environment through gradual change, and to the built environment and heritage through events such as flooding and storms. Some renewable energy technologies may damage the character of historic buildings or areas, or integrity of archaeological remains.
Biodiversity	++	0	++	+	Climate change presents a significant threat to biodiversity, as habitats and wildlife cannot always adapt to sudden changes to established weather patterns. Flood risk prevention in the form of sustainable urban drainage has the scope to provide valuable wetland habitats.
Land use	+	+	++	+	Requiring higher standards for new development will lead to more careful, locally suited design process and better quality builds. SUDs can incorporate amenity space but may be difficult to include on contained previously developed sites.
Urban development	0	0	+	0	Objectives are unlikely to impact on decisions to build within or outside urban centres. Climate resilient design should decrease flooding and other impacts on neighbouring uses.
Stewardship	0	++	0	++	It has been demonstrated that occupants of buildings with on-site renewable energy become more aware of the impact of their energy habits. Improved awareness of sustainable construction initiatives should lead to more informed decisions by those buying or procuring buildings about their impact on their local and wider environment.
Pollution	++	0	++	++	Reducing energy needs from fossil fuels will improve air quality in particular. Sustainable drainage measures will significantly improve water quality.
Flooding	++	0	++	+	Climate change is predicted to lead to increased storms and sudden heavy rain. Climate resilient design will minimise potential for local flooding, especially through

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SA framework theme	Reduce carbon emissions/ increase energy efficiency	Increase renewable/ low carbon technologies	Climate resilience	Awareness of sustainable construction initiatives	Comments
					SUDs.
Climate change	++	++	++	++	Promotion of renewable and low carbon technologies in new build should stimulate the market for these products in general leading to a further reduction in carbon emissions.
Energy	++	++	++	++	Climate resilient buildings will further increase energy efficiency as occupants are less likely to resort to mechanical means such as air conditioning to stay comfortable in extreme weather conditions.
Conservation	+	+	++	+	Objectives will decrease consumption of resources.
Standards	++	+	++	++	Requiring higher standards for new development will lead to more careful, locally suited design process and better quality buildings.
Planning	+	+	+	+	The objectives should allow new development to place less demands on existing infrastructure providing energy, fuels and water.
Transport	0	0	0	0	No significant negative or positive links identified.
Waste	0	0	0	+	The scope chosen for this SPD does not cover waste. Awareness of initiatives such as the Code for Sustainable Homes may encourage inclusion of recycling facilities within homes. Consideration could be given to the inclusion of requirements for construction waste management control within this SPD.
Local sourcing	+	+	0	0	It is hoped that the local market could benefit from an increased demand for low carbon products and renewable technologies. Stratford District could supply biofuels to local developments.
Growth	++	0	0	0	Climate change will have serious economic implications, especially if unmitigated.
Employment	0	++	0	0	Low carbon technical industries can offer high quality employment opportunities, and the scope for innovation and research could suit small specialist firms.
Investment	+	+	+	+	Climate change will have serious economic implications,

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SA framework theme	Reduce carbon emissions/ increase energy efficiency	Increase renewable/ low carbon technologies	Climate resilience	Awareness of sustainable construction initiatives	Comments
					especially if unmitigated. Adapting buildings and products as soon as possible to reflect environmental considerations should reduce the climate change and its impact.
Skills	0	+	0	+	Requiring new measures may contribute slightly to local awareness of emerging good practice and technology, allowing local business people to gather skills that will become more and more in demand.
Innovation	0	++	0	0	Stimulating a market for low carbon and renewable technologies should encourage innovation, provided that the policies are sufficiently flexible to allow new and less tested products.
Technology	0	++	0	+	Low carbon and renewable products have high value and low impact.
Responsibility	++	++	++	++	Any high profile schemes in the district must be built to at least these standards, and the Council and its partners should seek to demonstrate best practice in the areas covered.
Tourism	+	0	+	0	Climate change and the inability of visited locations to cope with extreme weather would detract from a visitor experience.

TABLE 4: Analysis of operational aims

SA framework theme	Energy efficient design and layout	Sustainable drainage and water conservation	Early awareness of Building Regulations	10% of energy as on-site renewables	Encourage sustainable good practice	Comments
Participation	0	0	0	0	0	SPD will not set out ways that the community can further influence development schemes, although public will have opportunity to comment on renewable

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SA framework theme	Energy efficient design and layout	Sustainable drainage and water conservation	Early awareness of Building Regulations	10% of energy as on-site renewables	Encourage sustainable good practice	Comments
						energy and SUDs aspects of scheme through normal application procedures.
Crime	0	0	0	0	0	No significant positive or negative links identified.
Health	0	0	0	0	0	No significant positive or negative links identified.
Poverty	++	0	0	+		Energy efficient design and provision of on-site energy generation will significantly reduce fuel bills, reducing hardship and the number of people in fuel poverty. Sustainable good practice in climate resilient design will reduce future hardship.
Access	0	0	0	0	+	Encouraging good practice in terms of adaptable design hopes to achieve improved access for new development
Culture and recreation	0	+	0	0	0	Provision of SUDs areas can also benefit recreation.
Housing	++	++	++	-	+	The operational aims will result in better quality buildings which will be naturally comfortable and suitable to live in. There may be concern that the required improvements to quality and inclusion of new technologies will further increase the price of housing in the district and threaten development of affordable homes.
Population	0	0	0	0	0	No significant negative or positive links identified.
Environmental assets	-	-	0	-	0	Some renewable energy technologies and some good practice construction measures may damage the character of historic buildings or areas. There is some concern that sustainable urban drainage measures may damage the architectural integrity of some listed buildings.
Biodiversity	+	++	+	+	+	Any measures to limit climate change will benefit biodiversity. SUDs can be designed to provide valuable habitats for wildlife.

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SA framework theme	Energy efficient design and layout	Sustainable drainage and water conservation	Early awareness of Building Regulations	10% of energy as on-site renewables	Encourage sustainable good practice	Comments
Land use	+	++	+	0	+	Requiring and encouraging higher standards for new development will lead to more careful, locally suited design process and better quality builds. SUDs can incorporate amenity space but may be difficult to include on contained previously developed sites.
Urban development	+	+	0	0	+	Objectives are unlikely to impact on decisions to build within or outside urban centres. Climate resilient design should decrease flooding and other impacts on neighbouring uses.
Stewardship	0	0	0	++	+	It has been demonstrated that occupants of buildings with on-site renewable energy become more aware of the impact of their energy habits. Encouraging developers to build to the Code for Sustainable Homes will allow occupiers to know more about the performance of their home.
Pollution	+	++	0	+	+	Reducing energy needs from fossil fuels will improve air quality in particular. Sustainable drainage measures will significantly improve water quality.
Flooding	0	++	+	0	+	Climate change is predicted to lead to increased storms and sudden heavy rain. Climate resilient design will minimise potential for local flooding, especially through SUDs. Early consideration of Building regulations will mean it is considered possible to implement SUD measures on more development schemes.
Climate change	++	++	++	++	++	All the operational aims will lead to a reduction in carbon emissions and management of the unavoidable impacts. The treatment and supply of water uses significant amounts of energy, meaning water conservation also contributes to reducing emissions.
Energy	++	+	++	++	++	The aims will lead to greater use of energy efficient measures. Improved awareness of opportunities for

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SA framework theme	Energy efficient design and layout	Sustainable drainage and water conservation	Early awareness of Building Regulations	10% of energy as on-site renewables	Encourage sustainable good practice	Comments
						sustainable construction may lead to buildings built to higher standards than required by this SPD.
Conservation	+	++	0	+	++	The operational aims will reduce consumption of resources. It was considered that the SPD would have more impact if further operational aims were included dealing with site waste and recycled construction materials – the final SPD encourages consideration of these factors.
Standards	++	++	++	+	++	Requiring higher standards for new development will lead to more careful, locally suited design process and better quality buildings. The SPD could give more consideration of future maintenance of on-site renewables.
Planning	+	+	0	+	+	The operational aims will result in development putting less demand on supply infrastructure.
Transport	0	0	0	0	0	No significant positive or negative links identified.
Waste	0	0	0	0	+	The scope chosen for this SPD does not cover waste. Awareness of initiatives such as the Code for Sustainable Homes may encourage inclusion of recycling facilities within homes. The final SPD notes that national government is finalising plans to require site waste management plans in 2008.
Local sourcing	+	0	0	+	+	It is hoped that the local market could benefit from an increased demand for low carbon products and renewable technologies. Stratford District could supply biofuels to local developments. The SPD encourages local sourcing by including a question on low-energy materials in the Applicant's checklist.
Growth	+	+	0	+	+	Climate change will have serious economic implications, especially if unmitigated.
Employment	0	0	0	++	+	Low carbon technical industries can offer high quality employment opportunities, and the scope for

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SA framework theme	Energy efficient design and layout	Sustainable drainage and water conservation	Early awareness of Building Regulations	10% of energy as on-site renewables	Encourage sustainable good practice	Comments
						innovation and research could suit small specialist firms.
Investment	++	++	0	+	+	Climate change will have serious economic implications, especially if unmitigated. Adapting buildings and products as soon as possible to reflect environmental considerations should reduce the effects of climate change and also minimise the disruptions and difficulties caused by predicted changes.
Skills	+	+	+	++	+	Requiring new measures may contribute to local awareness of emerging good practice and technology, allowing local business people to gather skills that will become more and more in demand. Local impact would be increased if developments use local suppliers and developers.
Innovation	+	++	++	++	+	Requiring higher standards and increasing awareness of the opportunities should stimulate innovation in local firms, provided that the policies do not limit new ideas by being too prescriptive.
Technology	+	+	0	++	+	Low carbon technologies are high value and low impact. Local impact would be increased if developers used local businesses to supply.
Responsibility	+	+	+	+	+	Any high profile schemes in the district must be built to at least these standards, and the Council and its partners should seek to demonstrate best practice in the areas covered.
Tourism	0	0	0	0	0	No significant positive or negative links identified, other than the adverse impacts of climate change on visitors and residents alike.

6. FINDINGS FROM ANALYSIS OF OBJECTIVES AND OPERATIONAL AIMS IN TABLES 3 AND 4

The analysis demonstrates the wide ranging and significant benefits that the objectives and operational aims of the Sustainable Low-carbon Buildings SPD could achieve for sustainable development. The purpose of the SPD is primarily to contribute towards addressing climate change and the need to reduce carbon emissions in the Stratford-on-Avon District. Reducing the emissions from this district will, as part of a national and global efforts, lead to a reduction in the impacts of climate change and this will have benefits for almost all aspects of future quality of life.

The analysis also highlighted other areas of significant benefits for the District. The occupants of new buildings will benefit most directly by the provision of buildings which are cheap to run and better adapted to the likely impacts of climate change. Design standards in general will be increased by the requirements to consider site specific solutions to achieve the new standards required. The stimulation of the market for low carbon and renewable technology should have economic benefits, particularly if developments use local suppliers and agencies.

Some areas of possible conflict were identified, and also areas where the SPD could contribute towards additional aspects of sustainability. Where possible these were used to improve the draft and final SPD, as set out in Table 5 below.

TABLE 5: Suggested modifications of SPD

Conflict or opportunity identified through analysis	Modification of SPD
Opportunity to reduce hardship caused by climate changes to disadvantaged persons through building climate resilient homes.	Adopted policy basis does not mention this so at first seemed difficult to enforce in SPD. A section was added to SPD encouraging developers to consider future likely climate condition, and it was realised that many of the measures included in the SPD initially for other reasons will also help create climate resilient buildings.
Possible conflict between higher standards of construction and provision of affordable homes. It should be noted that many energy efficient practices should not add to cost of construction provided that they are incorporated into the scheme at an early design stage. They may also lead to reduction in conventional costs, for example smaller boilers installed, no need for air conditioning units, and less drainage infrastructure where sustainable drainage is used.	The SPD could be modified to make sure these points are made to address people's concerns.
Possible conflict between inclusion of renewable energy and provision of affordable homes. It should be noted that providing renewable energy will in the long-term lead to more affordable homes in terms of running costs and their inclusion is therefore	Care should be taken to ensure that the proportion of renewables required does not prevent the viability of affordable housing. However the SPD should not be modified as the inclusion of on-site renewable will be in the long-term beneficial for reducing running

<p>particularly beneficial for affordable housing.</p>	<p>costs and so fuel poverty. Affordable housing in this district is slightly more likely to be in isolated rural areas away from mains gas, where renewables will be most cost-effective.</p>
<p>Renewable energy installations and energy efficiency measures could damage the character and appearance of some historic or sensitive areas. However there is a wide range of possible options which should allow sensitive solutions to be found. The principles of energy efficient and passive solar design are well demonstrated in traditional vernacular architecture.</p>	<p>This informed the approach of the SPD in avoiding being overly – prescriptive on the measures required. This should allow flexibility to find a sensitive solution. It is not considered necessary to state that the policies of the SPD will need to be balanced against other policies within the Local Plan. The SPD has been modified to highlight that traditional vernacular architecture often demonstrates energy efficient good practice.</p>
<p>Comments on the draft SPD expressed concern that some Sustainable Urban Drainage measures could damage the architectural integrity of some listed buildings and that Ground Source Heat Pumps may not be suitable in areas with archaeological sensitivity.</p>	<p>This informed the approach of the SPD in avoiding being overly – prescriptive on the measures required. This should allow flexibility to find a sensitive solution. Advice has been added to the SPD recommending that in sensitive locations the impact of SUDs and Ground Source Heat Pumps are assessed and where necessary mitigated.</p>
<p>A requirement to incorporate SUDs into all development could reduce the re-use of previously developed land and urban sites which is an aim of sustainable development. This is because many SUDs measures take up a significant amount of space and so would be difficult to incorporate on sites with space constraints.</p>	<p>The SPD was modified to explain that in some cases it may not be possible to include a full set of SUDs measures within a development site, but in this case greater emphasis should be placed on water conservation measures.</p>
<p>Opportunity identified for the SPD to have more impact on the minimisation of waste if a requirement for a construction waste management plan is included.</p>	<p>The SPD could cover a huge range of topics increasing the sustainability of new development but it is necessary to limit the size and focus of the document. This was suggested for discussion in the draft SPD. The final SPD notes that a requirement for waste management plans is likely to be introduced by national government in 2008.</p>
<p>Opportunity identified for the SPD to have more impact on the conservation of resources and encouragement of local sourcing if requirements for use of recycled and local materials in construction is included.</p>	<p>The SPD could cover a huge range of topics increasing the sustainability of new development but it is necessary to limit the size and focus of the document. However this issue is an aspect of Policy DEV,8 and there is therefore a clear logic in including it within the SPD. This was suggested for discussion in the draft SPD. The final SPD encourages consideration of this aspect by including a question within the Applicants’ checklist.</p>

Analysis identified that improved awareness of national initiatives and standards may encourage developers to build to higher standards than just an awareness of Building Regulations would achieve.	This factor influenced the decision to include information on the Code for Sustainable Homes and Energy Performance Certificates and their benefits within the SPD, even though this is not linked to a policy or requirement.
Consideration of sustainability objective relating to standards of design and maintenance identified an omission in the SPD regarding future maintenance of renewable on-site installation.	The sample conditions for provision of renewable energy could be adapted to ensure long-term maintenance.
Analysis against the sustainability objectives relating to stimulation of skills and innovation identified that the operational aims will most benefit the economy if development are built using local suppliers and agencies. It is considered that this is more likely for smaller scale developments.	This informed the decision to set a low threshold for requiring a proportion of on-site renewable energy production, and the decision to require good energy efficient design for all developments regardless of size.
Higher profile schemes, and particularly schemes built by the Council and its partners, should be encouraged to exceed the requirements and demonstrate best practice to maximise benefit of the SPD on corporate responsibility and showing leadership.	This statement is considered to be beyond the scope of a SPD so has not been included within the document.

7. ANALYSIS OF OPTIONS FOR SIZE OF SCHEME REQUIRED TO INCLUDE RENEWABLE ENERGY AGAINST SUSTAINABILITY FRAMEWORK

The SPD will states that "The Council will expect all development (either new build, conversion or refurbishment) with a floorspace of x², or y or more residential units, to incorporate renewable energy production equipment to reduce the overall predicted carbon dioxide emissions by at least 10%. (requirement in PPS1, and DEV.8)".

Latest government guidance suggests that a requirement for a percentage of energy use to come from on-site renewable energy should be imposed on "substantial new development"⁶. "Substantial new development is normally defined as "proposed new development with buildings, individually or in aggregate, with a total useful floor area over 1000m² or similar⁷. It is considered that there are benefits in setting a lower threshold because of the unique characteristics of the Stratford-on-Avon District, particularly that a comparatively high proportion of the District's new development comes from small-scale schemes.

⁶ PPS1 draft p.21 para 35 and associated footnote

⁷ PPS1 draft Annex E p.38

We have therefore considered different options for the threshold of development size above which renewable energy will be required:

Option 1: a floorspace of 100m² or 1 or more residential units.

Option 2: a floorspace of 300m² or 3 or more residential units.

Option 3: a floorspace of 1000m² or 10 or more residential units.

Table 6: Analysis of Options for size of scheme required to include renewable energy against Sustainability Framework

SA framework theme	Option 1				Option 2				Option 3			
	ST	MT	LT	Comments	ST	MT	LT	Comments	ST	MT	LT	Comments
Participation	/	/	/	No link	/	/	/	No link	/	/	/	No link
Crime	/	/	/	No link	/	/	/	No link	/	/	/	No link
Health	/	/	/	No link	/	/	/	No link	/	/	/	No link
Poverty	-	++	++	In short term may increase cost of local need housing schemes as these are often small in scale. In long term will be of significant benefit in lowering fuel costs for occupants.	-	++	++	In short term may increase cost of local need housing schemes as these are often small in scale. In long term will be of significant benefit in lowering fuel costs for occupants.	0	+	+	Less small scale local need schemes will have to incorporate renewable energy with this policy. This may lower building costs in the short term but will not decrease number in fuel poverty as significantly as options 1 and 2.
Access	/	/	/	No link	/	/	/	No link	/	/	/	No link
Culture and recreation	/	/	/	No link	/	/	/	No link	/	/	/	No link
Housing	++	++	++	All new houses will have decreased fuel bills and improved security of energy supply. Slight increased costs unlikely to make house building in the district unviable.	++	++	++	Around two-thirds of new houses will have lower fuel bills and improved security of energy supply. Slight increases in costs unlikely to make house building in the district unviable.	+	+	+	Around half of the new houses will have lower fuel bills and improved security of energy supply. Economies of scale mean increases in costs will not be significant.
Population	/	/	/	No link	/	/	/	No link	/	/	/	No link
Environmental assets	0	0	-	Over time this option could have a minor negative effect on the appearance of the built environment as renewables are installed across the district including small infill sites	0	0	-	Over time this option could have a minor negative effect on the appearance of the built environment as renewables are installed across the district	0	0	0	Although this option could have a minor negative impact on the appearance of the built environment it is likely to be limited as the

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SA framework theme	Option 1				Option 2				Option 3			
	ST	MT	LT	Comments	ST	MT	LT	Comments	ST	MT	LT	Comments
				and replacement dwellings in the countryside.				including small infill sites.				option only applies to larger developments.
Biodiversity	0	+	++	Over time this option should have a significant positive effect on biodiversity and habitats as it results in greater levels of renewable energy generation and a reduction in energy production from fossil fuels that cause pollution and climate change.	0	+	++	This option should have a similar positive effect to option 1, although its impact will be reduced by around a third as not all development are required to have on-site energy production.	0	+	+	Overall this option should have a positive effect on biodiversity and habitats, although its impact is likely to be less than options 1 and 2, as 2006 figures suggest the option will result in only half of dwellings having on-site renewables.0
Land use	-	0	0	Option 1 and 2 may affect previously developed land in the form of small infill sites more than Option 3 and it could be difficult to incorporate all forms of renewable energy onto tight urban sites. Policy must therefore be flexible to allow range of technical solutions.	-	0	0	Option 1 and 2 may affect previously developed land in the form of small infill sites more than Option 3 and it could be difficult to incorporate all forms of renewable energy onto tight urban sites. Policy must therefore be flexible to allow range of technical solutions.	0	0	0	This option should have a neutral impact on the use of previously developed land and creation of high quality spaces.
Urban development	0	0	0	The options are not envisaged to have a significant impact on the level of urban development.	0	0	0	The options are not envisaged to have a significant impact on the level of urban development.	0	0	0	The options are not envisaged to have a significant impact on the level of urban development.
Stewardship	++	++	++	It has been demonstrated that occupants of buildings with on-site renewable energy become more aware of the impact of their energy habits. This option would maximise the impact of this added benefit in all new buildings.	++	++	++	This option would provide benefits similar to Option 1 but in smaller proportion of new development.	+	+	+	This option would provide similar benefits but in a significantly reduced proportion of new development.
Pollution	0	++	++	Over time this option should help to achieve a significant improvement in air quality if it results in greater levels of renewable energy and a reduction in energy production from fossil fuels that can cause air pollution.	0	+	++	This option should have a similar significant positive effect as Option 1, although to a lesser extent as not all development will be required to have on-site energy production.	0	+	+	This option should have a similar positive effect, although to a significantly lesser extent as significantly fewer developments will be required to have on-site energy production.

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SA framework theme	Option 1				Option 2				Option 3			
	ST	MT	LT	Comments	ST	MT	LT	Comments	ST	MT	LT	Comments
Flooding	0	+	++	Over time this option should contribute to reducing the level of climate change, including the predicted increases in flooding.	0	+	++	This option will have a similar positive effect as Option 1 but to a lesser extent.	0	+	+	This option should have a similar positive effect, although to a significantly lesser extent.
Climate change	0	+	++	Over time this option should contribute to minimising the district's contribution to the causes of climate change.	0	+	++	This option will have a similar positive effect as Option 1 but to a lesser extent.	0	+	+	This option should have a similar positive effect, although to a significantly lesser extent.
Energy	++	++	++	This option will ensure almost all new development generates some renewable energy. It should also stimulate interest and awareness across the district.	+	++	++	This option would ensure that around two thirds of new housing and a good proportion of other development generates some renewable energy.	+	+	+	This option would ensure that around half of new development in the district includes some renewable energy. Limiting renewables to larger sites may have a lesser impact on local awareness of renewable energy.
Conservation	0	+	++	Over time this option should contribute to reducing use of fossil fuels.	0	+	++	This option will have a similar positive effect as Option 1 but to a lesser extent.	0	+	+	This option should have a similar positive effect, although to a significantly lesser extent.
Standards	-	++	++	Initially this option may cause difficulties in design for private individuals building a single dwelling or very small development but lacking specialist knowledge of renewable energy installation. Over time these skills will become more easily sourced and in the long term this option should lead to improved local familiarity with high standard sustainable methods.	++	++	++	This option is unlikely to cause difficulties in standards as even small-scale developers should be acquiring the skills to produce low carbon development. In the long term installing renewables will lead to high quality standards.	+	+	+	This option will improve the standards of larger developments through the inclusion of renewables. However it will have no beneficial impact on a significant proportion of development in the district.
Planning	++	++	++	This option should reduce the demand on existing energy infrastructure caused by almost all new developments.	+	++	++	This option should have similar beneficial effects to Option 1 but to a lesser extent.	+	+	+	This option will reduce the impact of large scale developments on existing energy infrastructure. However these are the schemes most likely to be able to contribute towards improving infrastructure.

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SA framework theme	Option 1				Option 2				Option 3			
	ST	MT	LT	Comments	ST	MT	LT	Comments	ST	MT	LT	Comments
Transport	/	/	/	No link	/	/	/	No link	/	/	/	No link
Waste	/	/	/	No link	/	/	/	No link	/	/	/	No link
Local sourcing	++	++	++	This option will require renewable energy to be installed on small-scale schemes which are the most likely to use local businesses.	+	+	+	This option will require renewable energy to be installed on medium scale schemes which may use some local businesses.	0	0	0	This option will require renewable energy to be installed only on large scale schemes. It is less likely that those designing and building such scheme will be based locally, and so are less likely to source from local businesses.
Growth	0	+	+	Over time this option may have a positive impact in terms of economic growth in the local renewables sector.	0	+	+	This option should have similar positive impact to Option 1, although to a lesser extent as schemes are less likely to use local businesses and less renewables will be installed.	0	0	+	This option is less likely to stimulate growth in the local renewables sector as developers are less likely to source locally.
Employment	0	+	+	Over time this option may have a positive impact in terms of job provision in the local renewables sector.	0	+	+	This option should have similar positive impact to Option 1, although to a lesser extent as schemes are less likely to use local businesses and less renewables will be installed.	0	0	0	This option is less likely to create growth in the local renewables sector as developers are less likely to source locally.
Investment	0	+	+	Future running cost savings will be made in most new developments.	0	+	+	Future running cost savings will be made in many new developments.	0	0	+	Future running cost savings will be made in around half of new development.
Skills	+	++	++	This option could have a positive effect on the development of skills associated with renewable energy in the district, as local builders and tradespeople will quickly become familiar with the technologies.	+	+	+	This option should have a similar positive impact to Option 1, although to a lesser extent as schemes are less likely to use local businesses and not all developments will include renewable energy.	0	0	+	This option should gradually result in increased skills development associated with renewable energy.
Innovation	+	+	+	All the options should encourage innovation in renewable energy sector as developers find solutions best fitted to their sites. The policy must not be too prescriptive to avoid stifling innovation.	+	+	+	As for Option 1.	+	+	+	As for Option 1.

SA framework theme	Option 1				Option 2				Option 3			
	ST	MT	LT	Comments	ST	MT	LT	Comments	ST	MT	LT	Comments
Technology	+	++	++	Over time this option may have a positive impact in terms of economic growth in the local renewables sector, which is a desirable high value, low impact technology field.	+	+	++	This option should have similar positive impact to Option 1, although to a lesser extent as schemes are less likely to use local businesses and less renewables will be installed.	+	+	+	This option is less likely to create growth in the local renewables sector as developers are less likely to source locally.
Responsibility	+	+	+	All options may slightly improve the sustainable image of the district in the short term.	+	+	0	In the long term, recent development which does not include increasingly common renewable technology may be seen as dated.	+	0	0	In the medium term, a district where around half of recent development does not include increasingly common renewable technology may be seen as slow to adapt.
Tourism	/	/	/	No link	/	/	/	No link	/	/	/	No link

8. FINDINGS FROM ANALYSIS OF OPTIONS FOR SIZE OF SCHEME REQUIRED TO INCLUDE RENEWABLE ENERGY AGAINST SUSTAINABILITY FRAMEWORK.

Option 1

The analysis identifies that Option 1 (requiring renewable energy on all schemes over 100m² or 1 or more dwelling) gives significantly greater benefits on a wide range of sustainability criteria. Most obviously it will result in the greatest amount of renewable energy installed in the District and therefore the greatest contribution to reducing the District's carbon emissions. The choice of threshold will effect the type of schemes included as well as simply the amount of development, and Option 1 is likely to impact on schemes for replacement dwellings and infill sites spread across the entire district. This will result in its positive impact on an increased range of sustainability criteria, for example generating demand for renewable technology and skills from local businesses which could in turn lead to a local growth in a desirable high value economic sector. Local residents' awareness of renewable energy and energy efficiency should be significantly increased as developments they use across the district start to incorporate renewable energy as standard.

The analysis of Option 1 also identified a few possible negative impacts on sustainable development. Option 1 is most likely to cover small-scale local need housing schemes and in the short-term renewable energy may increase the cost of these affordable schemes. However in the long term it will reduce the running costs of these homes making them more affordable. Option 1 may result in private individuals and very small developers struggling to deal with a new field of expertise, and they may see the requirement placing an undue burden on small applications. Requiring renewable technology on constrained or sensitive infill sites may be difficult and discourage such development unless policy is sufficiently flexible to allow developers to find innovative solutions.

Option 2

Option 2 gives very similar benefits and concerns for sustainable development, but the benefits are significantly reduced due to the lower proportion of development which will be included. For housing this proportion has been roughly estimated to be two thirds of the number of dwellings permitted each year been included in a requirement on development of 300m² or 3 or more dwellings.

Option 3

The comparative analysis of Option 3 demonstrates that there are no major threats to any aspect of the sustainability framework caused by this policy option. Applying a requirement for renewable energy only to schemes of 1000m² or 10 or more dwellings means that these larger developers should have access to the expertise necessary to incorporate the technology successfully, and the larger sites will have the capacity to incorporate well-designed renewable schemes.

The benefits to the environment in terms of reducing carbon emissions and climate change are significantly reduced due to the lower proportion of development which will be included. For housing this proportion has been roughly estimate to be half of the number of dwellings permitted each year been included in a requirement on development of 1000m² or 10 or more dwellings. Option 3 gives significantly fewer benefits in terms of stimulating the local economy as developers are less likely to be based locally.

Preferred Option

Option 1 will produce significantly greater benefits in sustainability terms, provided that the few negative impacts are mitigated. Table 7 below sets out how the SPD should be designed to mitigate any possible negative impacts.

TABLE 7: Suggested modifications of Option 1

Possible negative impacts of Preferred Option 1	Suggested adaptation of policy
Increased costs for affordable housing	Construction may cost slightly more but in long term will increase affordability due to reduced fuel costs. No exception of policy for affordable housing.
Impact of renewables on appearance on historic or sensitive landscapes.	Policy requirement must not be too prescriptive to allow developers to choose a renewable technology which does not detract from the character of the locality.
Difficulties accommodating renewables on constrained infill sites	Policy requirement must not be too prescriptive to allow developers to find a renewable technology solution suitable for the site.
Difficult and overly complicated for private individuals developing a small scale site.	This concern should be limited by developing a simplified methodology and requirements for the renewable element of small-scale planning applications. Installation of renewable technology, as with other elements such as conventional heating systems, will still

	require specialist skills.
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9. SUPPORTING INFORMATION

Impact on amount of development required to include renewable energy

In 2006, Stratford District Council received 320 planning applications proposing to create new dwellings. 237 applications were for schemes between one and two dwellings (estimated contribution of 356 dwellings). 29 applications were for schemes between three and four dwellings (estimated contribution of 101 dwellings). 25 applications were for schemes between five and nine dwellings (estimated contribution of 175 dwellings). 29 applications were for schemes with 10 or more dwellings (estimated contribution of 435 dwellings).

These figures are considered reasonably representative of likely figures for the next year or more, as they reflect the continuing restrictions on new housing in the district. They show that the majority of applications are for very small scale schemes of 1 or 2 dwellings (74%). Many of these are thought to be single replacement dwellings, which is a category of application not affected by the restrictions on new housing. Only 9% of schemes are for 10 or more dwellings.

Obviously the schemes with 10 more dwellings will produce proportionally more houses than the smaller schemes. Very few schemes for a significant number of dwellings are anticipated to come forward in the next 2 years, and these larger sites are normally identified or allocated in advance.

It therefore seems reasonable to suggest that only about 50% of the dwellings permitted each year would be required to incorporate on-site renewables if a threshold of 10 or more dwellings was set.

Impact on housing and commercial provision in the district

Requiring renewable energy on new developments will add to construction costs.

Work in the context of the London Renewables Toolkit and in support of South West Regional Spatial Strategy demonstrates that, across the full range of types of development, 10% on-site renewable energy supply can be readily achieved at less than 5% of build costs.

Renewables can add quality and value to development, and reduce running costs making them a good investment. A requirement across the district should push down land values thereby avoiding increasing the overall cost of the final building. Developers and landowners will be aware that standards and requirements for sustainable aspects of construction are likely to increase over time. Given the high-cost housing market, and the low requirement for housing numbers in the emerging Regional Spatial Strategy, it is very unlikely that any of the policy options would jeopardise the required supply of new housing in the district.

10. CONCLUSION

It is considered that the introduction of the Sustainable Low-carbon Buildings SPD would contribute to achieving sustainable development in the District. A few possible conflicts between the objectives and operational aims of the SPD and aspects of the Sustainability Framework were identified. These have now been taken into account in the draft SPD by ensuring the policies and principles set out in the SPD are not overly prescriptive and by including additional explanation and qualifications on some topics. Wherever possible identified opportunities to improve the impact of the SPD on sustainable development were also incorporated into the document. The Sustainability Appraisal has also helped to select the threshold of development size above which a proportion of renewable energy will be required by the SPD. The analysis identified that Option 1 for a threshold of 100m² or 1 dwelling gave the most significant benefits, and highlighted some concerns that will be carefully addressed by the policy.