A Toolkit for Delivering Water Management Climate Change Adaptation Through the Planning System

Prepared for the Environment Agency & SEERA

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INTRODUCTION

1. Unusual weather patterns over recent years serve to illustrate the major challenges facing the South East of England in adapting to Climate Change. By the end of this century the extreme heat of summer 2003 may well be experienced every two or three years. Water shortages and flood events, already a significant problem for the region, are likely to become more common.

2. This Toolkit has been prepared on behalf of the Environment Agency and South East of England Regional Assembly to ensure that climate change adapted development is delivered through the planning system.

3. The toolkit is aimed primarily at planning professionals and also at developers and is designed to assist in the integration of water management climate change adaptation issues into all stages of the planning and development process.

4. The toolkit is specifically focussed on the water related issues of climate change (primarily flood risk and water resource shortages), which could have very significant implications for the region if not managed carefully.

TOOLKIT CONTENT

5. The toolkit is split into 'context' and 'guidance' sections. The former provide an overview of climate change in the south east, potential impacts on the built environment and spatial development and mechanisms for delivering climate change adapted development. The 'guidance' sections make up the bulk of the Toolkit, focussing on three key areas of climate change adaptation for 'water-related' impacts, and how these measures can be delivered through the planning system:

   - Adapting to minimise the risk of flooding on new development.
   - Adapting to respond to water resources and water supply issues.
   - Adapting to respond to water related impacts on built structures (such as increased weathering of facades).

6. The Toolkit is accompanied by seven technical appendices which provide further detail on a range of issues, and ten case studies which illustrate the adaptation principles presented in the Toolkit.

CLIMATE CHANGE IN THE SOUTH EAST

7. In summary it is expected that the South East will experience:

   - Hotter drier summers; milder wetter winters.
   - A significant decrease in soil moisture content.

- More frequent extreme high temperatures.
- More frequent extreme winter precipitation.
- Possible increased storminess and wind speeds in winter.
- Net sea level rise and increase in sea storm surge height.

8. These changes will lead to a range of 'water-related' climate change impacts, which will affect spatial development and the built environment. For example, drier summers will lead to increased occurrence of droughts, thus reducing water availability, whilst wetter winters could lead to drainage systems being unable to cope, fluvial flooding, and increased weathering of building facades.

Key message 1: The South East is facing a range of climate changes due to global warming, which will lead to a range of impacts, including increased flood risk and pressures on water resources. It is essential that society takes steps to plan for and adapt to these impacts.

FACTORS INFLUENCING APPROPRIATE ADAPTATION RESPONSES

9. In order to identify appropriate adaptation responses to address these climate change impacts (both at the strategic level i.e. local authority area and for specific development sites) a range of factors must be considered, including:

- The climate change vulnerability of the local authority area/specific development site.
- How the suitability of different adaptation responses will vary with:
    - Location
    - Size of development
    - Type of development
    - The design life of the development
    - Type of developer
    - Use of development
- Potential synergies in responding to other climate change related impacts.
- Potential inconsistencies between adaptation and/or mitigation options.
- Where there are opportunities for 'no regrets' measures.

Key message 2: Identifying appropriate adaptation responses will require careful assessment of the risks facing a given area from climate change, and the specific circumstances of individual development sites.

PRINCIPLES TO EFFECTIVE INTEGRATION OF WATER MANAGEMENT CLIMATE CHANGE ADAPTATION

10. The following principles should be followed to ensure effective adaptation to water-related impacts of climate change:

- **Consider climate change adaptation from the start of the process and be aware of the other stages at which it must be considered:** By incorporating climate change considerations from the start of the process can ensure that it becomes an integral part of developments rather than an 'add-on'. This is better in terms of the effectiveness of the adaptation response and helps minimise the impact on planners and developers

- **Flexibility of design is crucial:** There is a need to ensure that developments are able to adapt to as broad a range of likely future climate scenarios as possible. Planners and developers need to be aware both of synergies (ie where action in one area can support wider adaptation) and also potential conflicts (ie where action in one are might act against a coherent adaptation response in terms of other issues)

- **Integrate climate change adaptation and mitigation measures wherever possible:** While the focus of this toolkit is the water management adaptation response, planners and developers should consider how water issues can be integrated with other elements of the adaptation response and also how developments can help mitigate against future climate change by reduce emissions of Greenhouse Gases (GHGs)

- **Partnership working adds value:** planners and developers can work with a range of bodies including the Environment Agency, the Government Offices and the Three Regions Climate Change Partnership, all of which will be able to advise and support the integration of climate change adaptation into the development process

- **Existing tools and regulation can help support the adaptation response:** This Toolkit sets out the wide range of mechanisms that can assist planners and developers in addressing climate change adaptation, ranging from SEA to Building Regulations and Planning Consents.

- **Supporting innovation can often lead to wider benefits:** Contained within this Toolkit are a range of examples of successful integration of water management climate change adaptation measures into a range of existing developments, many in the Wouth East. These Case Studies demonstrate the wider benefits (e.g in terms of lifetime cost savings) that have been delivered by effective integration of adaptation measures

- **Consider the need for ongoing maintenance and appropriate end use:** To be successful many adaptation measures must be appropriately maintained and used by occupiers of developments. For example, SUDS systems must be desilted and monitored; buildings with ground floor uses designed to withstand floods must not be converted to other uses.

CLIMATE CHANGE CONSIDERATIONS IN NATIONAL AND REGIONAL PLANNING POLICY

11. National planning policy sets out a number of requirements for spatial plans to address climate change adaptation and indicates that climate change is a material planning consideration.

12. The South East Plan Consultation Draft (January 2005) is underpinned by several climate change principles. The guiding principle for adaptation is to reduce risks from climate change by:

- Guiding any new development to locations that best offer protection from the likely impacts – including flooding and drought, sea level rise, storminess, soil subsidence and heave and implications for supply and demand of essential services.

- Ensuring that the design and layout of new developments (including buildings, open spaces and infrastructure) will be resilient or adaptable to the likely impacts during the development's lifetime.

Key message 3: The planning system sets out clear requirements for spatial plans to address climate change adaptation, and the South East England Regional Assembly is taking a proactive approach to 'climate proofing' policies within the South East Plan. The South East Plan outlines the role of Local Development Documents in implementing many of the measures in the plan.

THE ROLE OF PLANNING POLICY AND LEGAL TOOLS AT THE LOCAL LEVEL

13. The following planning and legal tools can be used to implement climate change adaptation measures:

- **Development Plan Document (DPD) policies** form the basis for development control decision making and are essential to ensure that the correct climate change adaptation measures are implemented where practicable.

- **Supplementary Planning Documents (SPD)** can perform a useful role in enabling LPAs to provide additional current guidance and advice to developers.

- **Local planning authority (LPA) involvement in the design process** helps to ensure that decisions made at the earliest design stages consider the need for adaptation measures

- **Planning conditions and obligations** are legal delivery mechanisms to deliver the requirements which are articulated in policy and guidance and through discussions with developers

- Where it is inappropriate for LPAs to impose conditions or negotiate planning obligations, but where the LPA considers that the developer should be made aware of certain matters, it is possible for the LPA to attach a short statement known as an **informative** to any consent.

Key message 4: Climate change adaptation measures need not represent a 'new' area of policy for LPAs. Many local plan policies already set requirements which can contribute to climate change adaptation e.g. policies to protect floodplains, and supplementary planning guidance setting out requirements for sustainable construction. Therefore existing policies and guidance can be reviewed to incorporate climate change 'headroom'.

LIMITATIONS TO PLANNING CONTROL

14. Climate change adaptation measures are largely deliverable through the planning system i.e. can be the subject matter of valid planning conditions or planning obligations.

15. However, there are two key exceptions:

- Works or measures intended to affect **pre-existing buildings**, and not requiring planning permission.

- Measures which affect only the **interior of a building** cannot always readily be the subject of the valid planning condition or obligation. Matters such as raising the circuitry levels or the installation of fixtures or equipment designed to minimise water use are normally best addressed through advice and encouragement or by other control mechanisms e.g. Building Regulations. However, if a measure is required to enable the development to go ahead this may be controlled by conditions.

OTHER MECHANISMS FOR DELIVERING CLIMATE CHANGE ADAPTATION

16. In addition to the planning system, a number of other mechanisms exist which contribute to delivering climate change adaptation. Building Regulations in particular have considerable scope to deliver climate change adapted buildings, and their role is likely to increase. In future there may also be an increasing role for fiscal incentives.

Key message 5: Where non planning controls (e.g. Building Regulations) address a particular issue, it is generally accepted that planning control should not be used. However, it is possible to set requirements which go further than Building Regulations provided it is possible to justify why such measures are needed (for example, if development in the South East would not be possible without certain measures in place to reduce water demand, due to the implications of water shortages on people and the environment).

STRATEGIC LEVEL PLANNING FOR CLIMATE CHANGE ADAPTATION

17. Strategic planning for water resources should address the following issues:

- Ideally development should be located in water resource zones with sufficient capacity. Otherwise, growth will need to be phased in such a way that it is timed

to occur as new water supply schemes come on stream. This is particularly important for major developments.

- Where a need to plan for new water resources has been identified this should be reflected in the development plan at regional and local levels.

18. Strategic planning to minimise the risk of flooding should:

- Adopt a risk-based approach to development in, or affecting, flood risk areas by carrying out a sequential test.
- Identify areas of flood risk and designate flood washlands/storage areas. Such decisions should factor in possible future requirements for flood storage as climate change leads to increased flood intensities.
- Identify where there may be pressures on sewerage systems, which may be exacerbated during heavy rainfall. Some areas in the South East are very constrained, for example Aylesbury. Water companies are mapping where there are pressures on sewerage systems.

DELIVERING ADAPTATION RESPONSES AT THE DEVELOPMENT SCALE

19. The 'Menu' below summarises the key adaptation measures which may be incorporated into developments to respond to water-related climate change impacts, and how these may be delivered through the planning system or by other means.

Menu of adaptation options to respond to water-related climate change impacts

The suitability of the following measures should be considered in new development:	**Planning mechanisms**						**Other means (Building Regs/EA Consents)**
	Planning policy	SPD	Involvement in design process	Planning conditions	Planning obligations	Informatives	
Responding to pressures on water resources							
Water reduction							
Water efficient fixtures and equipment within developments	✓*	✓		✓	✓	✓	✓
Water meters to encourage demand management							✓
Water efficiency in gardens/communal greenspace through choice of species as part of landscaping schemes	✓	✓	✓	✓		✓	
Water reuse							
Rainwater use systems	✓	✓	✓	✓	✓	✓	
Water recycling							

The suitability of the following measures should be considered in new development:	**Planning mechanisms**						**Other means (Building Regs/EA Consents)**
	Planning policy	SPD	Involvement in design process	Planning conditions	Planning obligations	Informatives	
Greywater use systems	✓	✓	✓	✓	✓	✓	
Addressing flood risk							
Development zoning	✓	✓	✓	✓	✓		
Provision of safe access			✓	✓		✓	✓*
Land raising and raising floor levels	✓	✓	✓	✓	✓		
Flood warning	✓			✓		✓	
Flood proofing							
Walls (internal and external) and floors			✓	✓	✓	✓	✓*
Fixtures and fittings e.g. raising circuitry			✓			✓	✓*
Temporary barriers (require developers to				✓			
Flood proofing gardens		✓				✓	
Design of channel and hydraulic structures			✓	✓			
Developer contributions to strategic flood risk management	✓				✓		
Compensatory flood storage	✓	✓	✓	✓	✓		
Management of development runoff (SUDS type measures)							
ilter strips, soakaways, swales, filter drains, infiltration basins, detention basins, retention ponds, permeable and porous paving surfaces, infiltration trenches	✓	✓	✓	✓	✓		
Minimisation of directly connected areas		✓	✓				
Reed beds and wetlands	✓	✓	✓	✓	✓		
Green roofs	✓	✓	✓	✓	✓		
Use of flood defences and pumping to drain the low-lying area behind defences	✓	✓		✓			
Responses to increase built structure resilience to other water related climate change impacts							
Subsidence							
*Inder pinning buildings (*Existing buildings can be underpinned at a cost of approximately £80-90,000 per building depending on access, depth of soil and severity)							✓*

The suitability of the following measures should be considered in new development:	**Planning mechanisms**						
	Planning policy	SPD	Involvement in design process	Planning conditions	Planning obligations	Informatives	**Other means (Building Regs/EA Consents)**
Building new buildings with deep foundations (Building near trees on clay soils will require foundations for new buildings to be between 0.7m and 3.5m deep depending on the ground properties and the proximity, size and species of adjacent trees. At the upper end of this range building deep foundations will require the use of pile-and-ground-beam foundations)		✓	✓	✓			✓
Measures to respond to increased rain and damp							
Rendering brickwork - This affords some protection to the building structure and reduces weathering of the brick surface.		✓				✓	✓
Damp courses - Chemical damp-proof courses should be installed to minimise the amount of dampness that rises above the damp-proof course, potentially reducing damage to the property and the amount of repair work required.							✓

✓ primary delivery mechanism(s); ✓ secondary delivery mechanism(s)
Primary mechanisms should be considered in the first instance.
Secondary mechanisms may be used to back up the requirement for adaptation measures in new development, or used if primary mechanisms are not appropriate in a given situation.
* Building Regulations
**It would be very difficult for the planning system to require the underpinning of buildings in pre-existing developments. An objection in principle to the imposition of adaptation measures retrospectively would apply. This can be achieved through Building Regulations.

1. SOUTH EAST WATER MANAGEMENT CLIMATE CHANGE ADAPTATION PLANNING TOOLKIT

- This section provides information for all Toolkit users.
- It describes why a Toolkit for managing water resources in light of climate change is needed.
- It outlines who the Toolkit is designed for (primarily planning professional sand developers).
- It explains the status and focus of the Toolkit.
- It explains how to use the Toolkit.

INTRODUCTION

1.1. Unusual weather patterns over recent years have served to illustrate the major challenges facing the South East of England in adapting to climate change. By the end of this century the extreme heat of summer 2003 may well be experienced every two or three years. Water shortages and flood events, already a significant problem for the region, are likely to become more common.

1.2. We all need to consider how we adapt to climate change. However, the role of planners and developers in adapting to climate change is particularly important given the fact that many homes, offices and much infrastructure planned now is likely to be in use for the rest of this century. The importance of addressing climate change through planning and construction is made even more significant by the large scale of development planned for the South East over the coming decades.

1.3. Water resource issues are a particular challenge for the South East. Increasing levels of new development, along with the effects of climate change, will, if not carefully managed, lead to development being at increasing risk from water shortages and flooding. These issues form the focus of the Toolkit.

STATUS OF THE TOOLKIT

1.4. The Toolkit has been prepared on behalf of the Environment Agency and South East England Regional Assembly (SEERA), with funding from the European Spatial Planning Adaptation to Climate Events (ESPACE) project. SEERA are committed to 'climate proofing' the South East Plan as far as possible, provided that policies are within the scope of a Regional Spatial Strategy (RSS) and are implementable through Local Development Frameworks. The Toolkit is therefore a technical document which underpins the South East Plan, and a guidance document on delivering climate change adapted development through planning at the local level. It is hoped that planners will take on board the guidance when developing Development Plan Documents and Supplementary Planning Documents, therefore creating a structure in which

developers can be required to undertake many of the adaptation measures described within the Toolkit.

WHO SHOULD USE THE TOOLKIT?

1.5. This toolkit is aimed at planning professionals and developers and is designed to assist in the integration of water management climate change adaptation issues into all stages of the planning and development process. The toolkit:

- Provides local authority planners with the guidance and information they need to reduce the vulnerability of new developments to the potential water-related impacts of climate change.
- Helps ensure that the policies included within the South East Plan which relate to climate change adaptation are delivered through Local Development Frameworks and Development Control decisions.
- Provides planning professionals with guidance on what planning can and cannot deliver in terms of climate change adaptation. Where planning cannot address a climate change adaptation issue fully, this Toolkit also sets out the role of other delivery mechanisms.
- Helps developers to understand the likely adaptation options that the South East Plan (SEP) and Local Development Frameworks (LDFs) will require them to build into new development.

1.6. Through use of this toolkit it is hoped to ensure that new development in the South East will meet lifetime-long high standards of comfort, usability, efficiency, safety and environmental protection and help contribute to an effective overall response to climatic change.

STAGES OF THE PLANNING PROCESS THIS TOOLKIT IS APPLICABLE TO

1.7. It is intended that this toolkit will provide general support in helping developers and planners consider climate change. It is however particularly aimed at ensuring water management climate change adaptation is considered at the following crucial stages of the Development Plan Document (DPD) process:

- Evidence Gathering.
- Preparation of issues and alternative options in consideration.
- Preparation and submission of DPD and SPD.
- Adoption of DPD and SPD.
- Monitoring and review.
- Enforcement of DPD and SPD through development control decisions.

'WATER RELATED' FOCUS OF THE TOOLKIT

1.8. One of the most significant impacts of climate change will be on water – either too much (flood risk) or too little (water resource shortages) – which provides the focus for this Toolkit. However, there will be other impacts from climate change, which must also be addressed (see **Box 1.1**), and sources of information for addressing such impacts are sign-posted in this document.

1.9. In summary, this Toolkit covers climate change adaptation responses to address:

- Flood risk.
- Water resources and water supply issues.
- Water quality issues (to the extent to which adaptation options to address flood risk and water resource issues have dual benefits for water quality e.g. certain types of Sustainable Drainage Systems (SUDS)).
- Water related impacts on built structures (such as increased weathering of facades).

Box 1.1: Other climate change impacts not covered by this Toolkit

This Toolkit focuses on 'water related' impacts of climate change and how to adapt development to withstand these. However, there is a range of other impacts, primarily resulting from hotter summer temperatures, which should also be considered in the location, layout and design of developments. Potential changes in windspeeds must also be considered. All those involved in the development process should also consider the following:

- The effects of hotter temperatures and urban heat island effects
- The maximum heats that developments should be able to comfortably withstand towards the end of the design life of the building
- How site layout can minimise solar gain and maximise natural ventilation
- The need for outdoor space for recreation during warmer summer months
- Ensuring buildings have, or are capable of having installed, cooling and ventilation systems that will deliver comfortable temperatures for the expected climate throughout the design life of the development
- There is currently uncertainty in relation potential changes in windspeeds, however, buildings should be strong enough or able to be strengthened if wind speeds increase in the future.

For further information on the full range of climate change impacts and potential adaptation measures please refer to Adapting to Climate Change: A Checklist for Development: Guidance on designing developments in a changing climate. Issued by the Three Regions Climate Change Group comprising representatives form the East of England Sustainable Development Roundtable, London Climate Change Partnership and South East Climate Change Partnership.

http://www.climatesoutheast.org.uk/downloads/Adapting%20to%20Climate%20Change.pdf

1.10. It is also vital that developments seek to mitigate against the impacts of climate change (for example through increased energy efficiency), to minimise the future impacts of climate change. **Box 1.2** provides an overview of climate change mitigation and adaptation and explains these terms.

Box 1.2: Climate change mitigation and adaptation

The UK Climate Impact Programme (UKCIP) defines mitigation as '*Action taken to reduce the impact of human activity on the climate system, primarily through reducing net greenhouse gas emissions*'. Whilst mitigation measures will play a vital role in a long-term strategy to reduce our contributions to climate change, these are not the focus of this Toolkit. However, the Toolkit does flag up the need to consider whether there may be potential inconsistencies between what climate change adaptation and climate change mitigation requires.

This Toolkit primarily seeks to provide guidance on adaptation measures to enable new development in the South East to be well adapted to the potential water-related impacts of climate change. UKCIP defines climate change adaptation as '*The process or outcome of a process that leads to a reduction in harm or risk of harm, or realisation of benefits, associated with climate variability and climate change*'.

ADAPTATION AT THE DEVELOPMENT PROJECT SCALE

1.11. Decision-making to minimise the risk of water-related climate change impacts takes place at a range of scales, from the **strategic level** (e.g. through strategic flood risk assessment; provision of new strategic water infrastructure, etc.) to the **site level** (through flood risk assessments by developers; identification and promotion of water efficiency measures, etc). This toolkit focuses primarily on the following 'site level' aspects of spatial development and the built environment:

- Residential properties.
- Employment space (including offices, community facilities including leisure, commercial and industrial developments, retail, etc).
- 'Masterplanning/neighbourhood' scale i.e. open spaces etc. within areas of development.
- Management and maintenance of developments.

1.12. However, it also provides discussion on the types of strategic level decisions that should be made in relation to planning for water resources and flood risk.

HOW TO USE THIS TOOLKIT

1.13. The Toolkit is divided into 8 sections, with 8 appendices which provide further background information. Sections 2 to 5 provide contextual information on climate change and mechanisms for delivering climate change adaptation:

Context sections

Section	Accompanying appendix
Section 2: Climate change in the South East	**Appendix 1:** Climate change context **Appendix 2:** Background information: 'water-related' climate change impacts on spatial development and the built environment

Section 3: Identifying appropriate adaptation responses	**Appendix 3:** Determining climate change vulnerability at the development project scale: risk and uncertainty
Section 4: The role of the planning system	-
Section 5: Other mechanisms for delivering climate change adaptation	-

1.14. Sections 6 to 8 make up the key 'guidance' sections of the Toolkit, focussing on three key areas of climate change adaptation (for 'water-related' impacts) and how these measures can be delivered either through the planning system or by other means:

Guidance sections

Section	Accompanying appendix	
Section 6: Water management adaptation options: responding to pressures on water resources	**Appendix 4a:** Menu of adaptation options to respond to pressures on water resources **Appendix 4b:** Applicability of measures to respond to water resource pressures for different development types	**Appendix 6:** Further sources of information **Appendix 7:** Good practice case studies
Section 7: Water management adaptation options: responses to address flood risk	**Appendix 5a:** Menu of adaptation options to respond to flood risk **Appendix 5b:** Applicability of measures to respond to flood risk for different development types	
Section 8: Water management adaptation options: increasing built structure resilience to other water related climate change impacts	-	

1.15. Each of the guidance sections (6-8) are structured as follows:

- Introduction.
- Overview of strategic decision making.
- Site specific responses.
- Menu of adaptation options and delivery mechanisms.
- Getting the right policies in plans.

- Supplementary planning documents.
- Use of planning conditions and obligations (where relevant).
- Coverage of other relevant planning mechanisms e.g. involvement in the design process, use of informatives, etc.
- Other mechanisms for achieving climate change 'adapted' development.

Case studies

1.16. The Toolkit is also accompanied by 10 case studies listed below (in **Appendix 7**).

Case study	Region	Responding to pressures on water resources	Management of development runoff	Flood proofing
Residential				
Henry Box, Oxfordshire	SE		✓	✓
Greenfields Sustainable Construction, Maidenhead	SE	✓	✓	
Millennium Green, Nottinghamshire	EM	✓		
Commercial/Industrial				
Wessex Water Operations Centre, Bath	SW	✓	✓	
Howbery Park, Wallingford	SE	✓	✓	
Roads/Transport				
M40 Hopwood Motorway Service Area, Bromsgrove	SE		✓	
Policy measures				
Willingdon Levels Flood Storage Compensation Scheme, Eastbourne	SE		✓	
Woking Climate Neutral Strategy, Woking Borough, Surrey	SE	✓	✓	
Large scale water storage in the Netherlands	Int		✓	
Water Test, Netherlands	Int		✓	

SE – South East
EM – East Midlands
SW – South West
Int – International

2. CLIMATE CHANGE IN THE SOUTH EAST

"there is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities[1]"

- This section provides contextual information and should be read by all those who would like to understand better how the climate is likely to change in the South East as a result of global warming, and the impacts likely to result from these changes.
- The section also explains the likely 'water related' impacts resulting from climate change which society must take steps to plan for and adapt to and sets the context for the remainder of the Toolkit.
- This section should be read in conjunction with Appendix 1: Climate change context and Appendix 2: Background information: 'water-related' climate change impacts on spatial development and the built environment.

CLIMATE CHANGES IN THE SOUTH EAST

2.1. Global temperature has risen by about 0.6°C since the beginning of the twentieth century, with about 0.4°C of this warming occurring since the 1970s. Recent weather records illustrate this trend: for example, 1998 was the single warmest year in the 142-year global instrumental record and 2004 was the fourth warmest.

2.2. It is expected that climate in the UK will change in a number of ways as greenhouse gas emissions are emitted into the atmosphere. In summary it is expected that the South East will experience:

- Hotter drier summers; milder wetter winters
- A significant decrease in soil moisture content
- More frequent extreme high temperatures
- More frequent extreme winter precipitation
- Possible increased storminess and wind speeds in winter
- Net sea level rise and increase in sea storm surge height.

2.3. **Appendix 1** provides more detailed background evidence and maps explaining how and why these changes will occur.

[1] IPCC, 2001: Climate Change 2001: Synthesis Report. A contribution of Working Groups I, II, and III to the Third Assessment Report of the Intergovernmental Panel on Climate Change

'WATER RELATED' CLIMATE CHANGE IMPACTS

2.4. The climate changes predicted to occur in the South East will lead to a range of 'water-related' climate change impacts, which will affect spatial development and the built environment. **Appendix 2** provides further background information on the types of climate change impacts which the South East may experience (for example, water shortages and flood risk).

Table 2.1: Key water related impacts resulting from climate change

Hotter summers
• Increased demand for water use for recreational and cooling purposes during warmer periods. • Increased summer temperatures will increase evaporation from soils and water bodies leading to decreased water availability.
Drier summers
• More frequent occurrence of drought periods and the extension of the duration of droughts will extend the period when soil moisture deficits are greater than zero, reducing the opportunity for ground water recharge and ultimately reducing water availability. • Potential loss of baseflow during summer months leading to reduced dilution of effluent from sewage treatment works causing decline in water quality. This is of particular concern in those parts of the South East characterised by streams fed by groundwater baseflow derived from the chalk, and where groundwater abstractions are already having an impact on flow regimes. • Greater evaporation results in shrinkage of clay sub-soils and more subsidence of foundations. • Seasonal changes in patterns of wetting and drying may increase ground subsidence and ground heave.
Wetter winters – effects on built structures
• Increased dampness of walls leading to problems such as mould. • Increased rainfall leading to increased groundwater pressure may cause structures to float or crack and then flood. • Increased flooding resulting in damage to building contents, possible contamination from sewage ("foul flooding"), and structural collapse. Some buildings could become uninsurable if they are in particularly flood-prone areas. • Increased risk of landslips from increased winter rainfall levels.
Wetter winters – wider effects
• Increased winter rainfall volumes are likely to result in longer periods of saturated soil and a reduction in ground water surface storage and therefore an increase in flooding. • The number of winter days with high rainfall events is likely to increase, and are likely to occur when the soil is already saturated. This will result in a high percentage of rainfall running off directly into streams and rivers, potentially leading to an increase in flooding.
Increased winter storminess – effects on built structures
• Intense rainfall events could lead to drainage systems (including roof drainage, sewer systems, carriageway drainage etc) being unable to cope. • Increased weathering of building facades. • Increased penetration of rain into building walls and interiors.
Increased winter storminess – wider effects

- An increase in the frequency of local intense storms may overload drainage systems in urban areas causing local flooding.
- Increased intense storms may increase the number of combined sewer discharges into rivers causing water quality problems.

Sea level rise & storm surges

- Increased risk of sea overtopping current defences or encroaching on undefended land leading to flooding.
- Saltwater intrusion to vulnerable aquifers leading to decrease in water quality.

For further information see:

Appendix 1: Climate change context

Appendix 2: 'water-related' climate change impacts on spatial development and the built environment: Background information

Appendix 6: Further sources of information (climate change in the South East)

3. IDENTIFYING APPROPRIATE ADAPTATION RESPONSES

"responding to climate change inevitably means dealing with uncertainty[2]"

- This section should be read by those who would like to better understand how to identify appropriate adaptation responses for addressing climate change, including planning professionals wishing to understand risks across a local authority area, to development control officers and developers wishing to understand risks facing a specific development.
- It explains and sign-posts decision making processes which can be used to identify suitable adaptation responses, taking into account risk and uncertainty.
- This section should be read in conjunction with Appendix 3: Determining climate change vulnerability at the development project scale: risk and uncertainty (these are signposted again in sections 6 and 7).
- In addition Appendices 4B and 5B provide advice on the applicability of measures to respond to pressures on water availability and flood risk for different development types.
- Planning professionals and developers using this section should gain an understanding of how to identify appropriate adaptation responses based on a range of criteria.

IDENTIFYING APPROPRIATE ADAPTATION RESPONSES

3.1. When considering suitable adaptation responses for responding to a range of water-related climate change impacts (either in broad terms when preparing Local Development Document policies, or more specifically in relation to individual development proposals) thought should be given to:

- **The climate change vulnerability** of the local authority area/specific development site.

  Appendix 3 provides guidance on assessing the climate change vulnerability of the local authority area/specific development site.

- How the **suitability of different adaptation responses** will vary with:
  - **Location** – what adaptation measures are necessary or appropriate?
  - **Size of development** - what opportunities are there for requiring developers to deliver certain features in new developments? Are measures technically feasible? e.g. some SUDS measures will be less suitable in smaller

[2] The Planning Response to Climate Change: Advice on Better Practice. (ODPM 2004)

developments or higher density developments than others. Some measures may be more suited to larger developments where central facilities e.g. for rainwater harvesting can be incorporated into the scheme design.

- **Type of development** – is the adaptation response suitable for residential, commercial, office, retail or industrial development?
- **The design life of the development –** how long will the development be operational for? While developments may have a design life of between 50-70 years (or even less in intensely used areas with extremely high land values), developments may well be used and lived in for much longer. For example, 19% of the South East's housing stock was built pre-1919[3, 4].
- **Type of developer** – it may be the case that some developments are more open to incorporating adaptation measures than others, for example, Local Authority funded/PFI funded developments.
- **Use of development** – what level of risk can a development withstand? For example, industrial warehouses may well be able to withstand a higher level of flood risk than a residential development.

> **Appendices 4b and 5b** provide advice on the applicability of measures to respond to pressures on water availability and flood risk, respectively, for different development types. For example, whether measures are appropriate for houses and/or multi-residential buildings and/or commercial buildings. For measures such as SUDS, where space may be an issue, advice is provided on which measures are most likely to be suitable for high density development in urban areas. This guidance is signposted again in sections 6 & 7.

- **Potential synergies** in responding to other climate change related impacts. For example, thinking about how use of open space to minimise flood risk could also have multiple benefits in terms of providing space for outdoor recreation during warmer temperatures or providing spaces with value for biodiversity.
- **Potential inconsistencies** between adaptation and/or mitigation options. For example, could an adaptation response such as well ventilated buildings to respond to warmer temperatures contradict climate change mitigation aims of increasing energy efficiency through the use of better insulation? There may also be wider inconsistencies or conflicts in policy that LDFs must address, such as between encouraging brownfield development, whilst directing development away from floodplains.
- **Where there are opportunities for 'no regrets' measures** – for example, the South East is already experiencing water supply shortages. Therefore building measures to save water into new development will be beneficial regardless of the extent of climate change.

[3] Adapting to Climate Change: A Checklist for Development: Guidance on designing developments in a changing climate

[4] http://www.odpm.gov.uk/stellent/groups/odpm_housing/documents/page/odpm_house_604023.xls

For further information see:

Appendix 3: Determining climate change vulnerability at the development project scale: Risk and uncertainty

Appendix 4b: Applicability of measures to respond to pressure on water resources for different development types

Appendix 5b: Applicability of measures to respond to flood risk for different development types

Appendix 6: Further sources of information (identifying appropriate adaptation options)

4. THE ROLE OF THE PLANNING SYSTEM

……Development plans should address the causes and potential impacts of climate change……[5]

- This section provides contextual information on the role of the planning system in requiring and delivering climate change adaptation (specifically in relation to 'water related' impacts).
- It is particularly relevant for local authority planners to inform both forward planning and development control decisions. It will also be relevant to developers and other stakeholders (e.g. statutory consultees) involved in the planning process to understand what might be required of developers.
- The section provides the national and regional policy context in the South East in terms of climate change adaptation policy.
- It also provides commentary on how the planning system at the local level can be used to deliver climate change adaptation, through providing an overview of legal issues and the role of policy and legal tools.
- It makes the important point that climate change adaptation measures are an extension of what many local plans are already requiring (e.g. policies to protect floodplains) and supplementary planning guidance through requirements for sustainable construction.

CLIMATE CHANGE CONSIDERATIONS IN NATIONAL PLANNING POLICY AND GUIDANCE

4.1. The land use planning system has a significant role to play in the UK programme to tackle climate change:

'Some of the most immediate adaptation priorities fall to organisations responsible for planning and developing major infrastructure, such as river and coastal flood defences, transport networks, new buildings and reservoirs. Action in these sectors must be a priority because they work to long planning horizons and the infrastructure is designed to last for 30 to 50 years or more. Decisions taken over the next few years will determine how robust the UK's infrastructure is when faced with the expected changes to the climate, particularly extreme weather events."[6]

4.2. National planning policy[7] sets out a number of requirements for spatial plans to address climate change adaptation and indicates that climate change is a material planning consideration. PPS1 requires that development plans should contribute to global sustainability by addressing the causes and the potential impacts of climate change. Development plans should take into account climate change impacts in the

[5] Planning Policy Statement (PPS) 1: Delivering Sustainable Development, para. 13 (iii).
[6] *Climate Change: The UK Programme* (DETR 2000)
[7] As set out in Planning Policy Guidance Notes (PPGs) and Planning Policy Statements (PPSs). N.b. under the reforms of the planning system, PPGs are gradually being reviewed and replaced by PPSs.

location and design of development. Development plan policies should take account of the need to protect water resources from pollution, avoid new development in areas at risk of flooding and sea-level rise, and minimise the use of natural resources, including water. The PPS also indicates that RPBs and LPAs should promote the sustainable use of water resources and the use of SUDS to manage runoff (para. 21-22). This requirement is backed up by PPS 11 Regional Spatial Strategies and PPS 12 Local Development Frameworks.

4.3. Topic based planning policy statements provide more specific guidance (these are summarised in **Box 4.1 below**).

Box 4.1 Consideration of water related climate change impacts in Planning Policy Guidance notes/Planning Policy Statements

Flood risk

PPG 25 Development and Flood Risk is the key policy addressing climate change related flooding and land use planning; advocating the use of a sequential approach to allocating development. It highlights the importance of taking a precautionary, risk-based approach to flood issues, recognising the inherent uncertainties. PPG3 Housing reinforces this approach requiring that "In deciding which sites to allocate for housing.... local planning authorities should assess their potential and suitability for development against … the physical and environmental constraints on development of land, including …. flood risk, taking into account that such risk may increase as a result of climate change."

Coastal management

Whilst not addressing climate change directly PPG20 aims to guide the planning system in reconciling development requirements with the need to protect, conserve and, where appropriate, improve the landscape, environmental quality, wildlife habitats and recreational opportunities of the coast. The PPG advocates a risk based approach to development. It states that "due to the nature of coastal geology and landforms, there are risks, particularly from flooding; erosion by the sea; and land slips and falls of rock. The policy in these areas should be to avoid putting further development at risk".

Planning for water resources

PPS12 Local Development Frameworks specifically requires that local development documents include policy on a number of climate change related issues, including the need, where possible, to avoid major new development in areas where water resources are limited. Annex 3 para 17 of PPG23 Planning and Pollution Control states that: "the supply of water and sewage disposal are capable of being material considerations in planning applications and appeals and should also be taken into account in drawing up development plans."

Addressing subsidence

PPG14 Development on Unstable Land advises that local planning authorities should "identify areas where consideration may be needed of the potential impact of subsidence on development", and minimise its impacts and control development in susceptible areas. It is likely that with climate change induced changes in patterns of wetting and drying, subsidence and landslips are likely to become a greater consideration in the UK planning process. However this PPG does not itself make reference to climate change.

Government Guidance on Planning for Climate Change

4.4. The ODPM's recently published Planning Response to Climate Change[8] provides guidance for Regional Planning Bodies and local planning authorities on planning for climate change adaptation.

4.5. Planning issues that will be impacted by climate change, and for which specific guidance is provided, include: infrastructure, flooding, coasts, water resources, biodiversity, land and landscape, economic development and tourism, transport, waste and resources, energy systems and the built environment.

4.6. The guidance also outlines a range of tools and mechanisms available for planning to contribute to climate change adaptation – many of which are addressed in this Toolkit.

Strategic Environmental Assessment (SEA)

4.7. Over coming years Strategic Environmental Assessment (SEA) and the related process of Sustainability Appraisal (SA) will become increasingly important in assessing the climate change and wider sustainability impacts of RSSs and LDFs. The SEA Directive has been transposed into UK law, while under the Planning and Compulsory Purchases Act 2004, Sustainability Appraisal (which includes the requirements of SEA but also considers economic and social factors) has been made mandatory for RSSs, Development Plan Documents and Supplementary Planning Documents.

4.8. Draft Guidance on the Sustainability Appraisal of RSSs and LDFs has now been issued by ODPM. In addition, specific guidance on SEA and climate change has been produced to guide the appraisal of plans and strategies[9]. Both SEA and SA require Climate Change to be considered in appraising plans. In addition the draft SA Guidance proposes consideration of water management issues and the Guidance on SEA and Climate Change provides detailed advice on how to incorporate a broad range of climate change adaptation issues within the SEA process. **Box 4.2** sets out guidance on the types of criteria that appraisals should consider in relation to climate change.

Box 4.2: Climate change considerations in SA/SEA

SEA Directive and UK Guidance

- The SEA Directive requires authorities to assess the likely significant effects on '*the environment, including on issues such as…..climatic factors'*
- ODPM Guidance on sustainability appraisal suggests that *'climatic factors'* should include means to *'reduce vulnerability to the effects of climate change e.g flooding, disruption to travel by extreme weather, etc.'*

[8] The Planning Response to Climate Change – Advice on Better Practice ODPM, September 2004.

[9] Strategic Environmental Assessment and Climate Change: Guidance for Practitioners. Countryside Council for Wales, Environment Agency, English Nature, UKCIP, Levett-Therivel, CAG Consultants, Environmental Change Institute. May 2004.

Strategic Environmental Assessment and Climate Change: Guidance for Practitioners

This guidance suggests that possible objectives for an SEA should include:

- Ensuring that drainage systems can cope with changing rainfall patterns/intensity
- Taking a precautionary and risk-based approach to developing in the floodplain
- Ensuring adequate future water supply and demand management
- Designing buildings and urban areas to cope with new climatic extremes
- Providing robust transport infrastructure (in terms of ability to cope with flood/storm events etc

Sustainability Appraisal of Regional Spatial Strategies and Local Development Frameworks (Consultation Paper)

The draft guidance suggests that questions that can help decide what baseline information to collect and test the plan against include:

- What areas are at risk of coastal or fluvial flooding?
- What is the quality of water in rivers and other water bodies – are there significant areas where improvements are required?
- Are there parts of the region that are experiencing, *or likely to* experience, shortages in water supply taking into account effects on the environment?
- What areas are at risk of subsidence, taking into account climate change?

Box 4.3: Future developments in policy

The Environment, Food and Rural Affairs Committee reported to the House of Commons on Climate Change, Water Security and Flooding in its Report of Session published in September 2004. The Government responded to the Report in November 2004 with the following comments of relevance to future policy with regard to planning for climate change:

- The Government recognises the need for action on a national, regional and international basis to tackle climate change. Climate change has been identified as one of the key priorities for the UK's presidencies of both the G8 and EU in 2005.
- The Government continues to support climate change research. The Government is currently funding a research project to assess the impact of climate change on the management of water resource zones, and existing water infrastructure. The project will provide an improved understanding of the potential impacts and adaptation strategies related to climate change and water resources and develop practical guidance on how to manage water resources in a changing climate.
- The importance of improving household water efficiency is recognised in the face of increasing pressure on resources from factors such as new housing development. In recent years there have been a number of improvements in the water efficiency of some domestic products.
- The Government considers it essential that new development is designed and built to make the best use of existing water resources.
- The Government welcomes the Foresight *Future Flooding* report, which considers the likely

changes to flood risk over the next century. An Action Plan which explains how Government will take forward the findings of the report was published in April 2004.

- In parallel with the *Making space for water* consultation, the Government is currently reviewing what, if any, changes might be appropriate to Planning Policy Guidance Note 25 (PPG25, *Development and Flood Risk*) in light of future flood risk.
- Sewer flooding and more general flooding are closely connected. The Government has been working with water companies and the regulators in order to approach all sources of flooding in a more holistic manner. The *Making Space for Water* consultation looks at all sources of flooding and in particular how drainage planning and management can be integrated in built-up areas.
- The Government and the Environment Agency will continue to work with the insurance industry on developing and refining understanding of flood risks, including updating the new Flood Map as new information becomes available.

Research into climate change and spatial planning in the Government's Growth Areas is also underway as part of the Defra Climate Change Impacts and Adaptation Research Programme.

CLIMATE CHANGE CONSIDERATIONS IN SOUTH EAST PLAN (REGIONAL SPATIAL STRATEGY) POLICIES

4.9. The South East Plan Consultation Draft (January 2005), which will be submitted to Government in Summer 2005, includes policies relating to climate change. The Plan highlights the need for an implementation programme of climate change mitigation and adaptation to be delivered through polices in relation to natural resource use, sustainable construction, water management, transport and waste. These policies may be subject to change and are therefore not reproduced in this Toolkit. The key guiding principle for adaptation underpinning the South East Plan and the subsidiary principles supporting this are shown in **Box 4.4**.

Box 4.4: Climate change principles underpinning the South East Plan

The guiding principle for adaptation is to reduce risks from climate change by:

a. guiding any new development to locations that best offer protection from the likely impacts – including flooding and drought, sea level rise, storminess, soil subsidence and heave and implications for supply and demand of essential services [e.g. preference to locations that have sustainable existing water supply rather than those that require long distance supply]

b. ensuring that the design and layout of new developments (including buildings, open spaces and infrastructure) will be resilient or adaptable to the likely impacts during the development's lifetime [e.g. designing in flood protection and water-saving features; orientation to take advantage of solar gain for PVs etc];

c. promoting changes to existing development that will enhance its resilience or adaptability to the likely impacts during its lifetime [e.g. improving site drainage; connecting to neighbourhood SuDS; introducing grey water recycling etc].

Within these guiding principles, there are a number of ***subsidiary principles*** that will be important in helping planners and other decision takers to take proper account of the causes of climate change and the risks and opportunities from its impacts. Policies and plans should:

a. Protect existing land uses from the impacts of sea level rise and flooding only when it can be

justified in social, economic and environmental terms, taking account of both costs and benefits;

b. Avoid new development in locations that could constrain or reduce the effectiveness of future options for adaptation [e.g. development now that is not likely to prevent effective flood management in the future];

c. Enable new development in areas at risk only where the development is itself resilient or adaptable to the likely impacts of climate change, can enhance other local adaptation to these and does not displace the effects elsewhere [e.g. raising floor levels in flood risk areas];

d. Adopt technical solutions to impacts (for example, flooding and water supply issues) only where necessary and having considered other adaptive options beforehand, including alternative locations in areas at less risk;

e. Locate new development so that it can be supplied with water and other resources in a sustainable manner under changing and variable climatic conditions. Sustainable supply should also include the requirements for water and other resources within the natural environment;

f. Design new development and changes to existing development that are resilient to climate change impacts (e.g. subsidence);

g. Where new or existing development may arise from responses to climate change, protect existing terrestrial, freshwater and marine habitats from adverse impacts;

h. Seek to compensate for any loss of habitat as a result of climate change or new development by creation of similar habitats in areas that will be suitable under changing climatic conditions;

i. Minimise the negative health impacts associated with climate change [e.g. through provision of shading];

j. Recognise the relationships between different natural and human activities, including the implications of climate changes responses (adaptation and mitigation) in one area for the ability of other areas to develop their own responses.

4.10. As the 'development plan' comprises the regional spatial strategy as well as local development documents, the strategic approach taken at the regional level should inform the policies which are included in the core strategy of LDFs as well as in generic development control policies, and in some cases, area specific allocations in Local Development Documents (LDDs).

LIMITATIONS TO PLANNING CONTROL

4.11. Climate change adaptation measures are largely deliverable through the planning system i.e. can be the subject matter of valid planning conditions or planning obligations.

4.12. Two key exceptions can be categorised as follows:

- Works or measures intended to affect **pre-existing buildings**, and not requiring planning permission.

- Measures which affect only the **interior of a building** cannot always readily be the subject of the valid planning condition or obligation. Matters such as raising circuitry levels to increase flood resilience or the installation of fixtures or equipment designed to minimise water use are normally best addressed through advice and encouragement, e.g. through guidance or informatives or are by other

control mecahisms e.g. Building Regulations (see Section 5). However, if a measure is required to enable the development to go ahead this may be controlled by conditions. For example, where water conservation measures are essential for the feasibility of the development, given the water supply issues in an area/region.

Box 4.5: Can the planning system set requirements beyond Building Regulations?

Where non planning controls (e.g. the Building Regulations) address a particular issue, it is generally accepted that planning control should not be used. However, it is possible to set requirements which go further than Building Regulations provided it is possible to justify why such measures are needed (for example, if development in South East would not be possible without certain measures in place to reduce water demand, due to the implications of water shortages on people and the environment). In general the range of conditions being enforced is increasing, and the planning system should be looking for innovative ways to address climate change adaptation. It is also worth noting that the Government's Sustainable Buildings Task Group suggested that Regional Planning Guidance (rather than Building Regulations) may be the most appropriate way to strengthen future adaptation responses in the South East. Nevertheless, whilst there are robust arguments for exceeding Building Regulations, it is important to be aware planning applicants may argue against requirements for adaptation options, however desirable, through the planning system.

POLICY AND LEGAL TOOLS

4.13. This section sets out the key planning and legal tools which can be used to implement climate change adaption measures. Further guidance on how these tools apply to different types of adaptation measures is addressed in Sections 6-8 of the Toolkit:

- Development Plan Document (DPD) policies.
- Supplementary Planning Documents (SPD).
- Local planning authority (LPA) involvement in the design process.
- Planning conditions.
- Planning obligations.
- Informatives.

Development Plan Document (DPD) Policies

4.14. Preparing the new Local Development Frameworks provides an opportunity to review current development plan policies and strengthen them in relation to climate change, which is confirmed as a material consideration in PPS1, PPS11 and PPS12. DPD policies, as the basis for development control decision making, are essential to ensure that the correct climate change adaptation measures are implemented where practicable. They also provide the necessary basis for supplementary planning documents (SPD) which can provide more detailed guidance on adaptation.

4.15. Most development plans already include policies which seek to mitigate against climate change by reducing the need to travel to access employment and services, and where travel is necessary encouraging the use of more sustainable transport, so

helping to reduce the emissions of greenhouse gases. Many also include policies to protect floodplains from development and to protect the quality of water resources. There is now a need to extend these policies to take into account the effects of climate change relating to water management in order to require adaptation measures in new development.

4.16. As well as Core Strategies and Generic Development Control Policies, LPAs may choose to prepare an Area Action Plan where significant change or conservation is proposed for a particular area, for example, a major regeneration programme for a riverside site. Area Action Plans will include more detailed area-specific policies which relate directly to the developments proposed, or the conservation of the area. Again, these should take into account the need for climate change adaptation measures. Examples of policies addressing climate change adaptation are included in Sections 6-8.

Supplementary Planning Documents (SPD)

Topic based SPD

4.17. Despite the uncertainties associated with climate change, practice in response to climate change is developing rapidly, and SPD can perform a useful role in enabling LPAs to provide additional current guidance and advice to developers. SPD must be linked to a policy in the development plan. This may be in the 'saved plan' or a new RSS or DPD. When a saved plan includes an appropriate policy, bringing forward SPD is a way of providing detailed policy guidance on adapting to climate change in advance of the adoption of the new DPD.

4.18. In line with guidance set out in the ODPM Planning Response to Climate Change, a climate-sensitive development checklist could be incorporated into SPD on sustainable development or sustainable design and construction. This encourages applicants to consider climate change adaptation as part of existing sustainable construction requirements. Existing SPG on sustainable construction should be updated where necessary to include climate change adaptation measures before it is taken forward for adoption as SPD.

4.19. **Box 4.6** provides a policy example to which SPD on sustainable design and construction could be attached.

Box 4.6: Suggested policy – Sustainable design and construction

Reasoned justification: Sustainable development can only be achieved if it is incorporated in all stages of development from design to construction and use. More detailed guidance is included within the supplementary planning document, Sustainable design and construction.

Policy (extract only):

All new development is expected to incorporate sustainable construction techniques, including:

- measures to protect buildings from the effects of climate change (including increased rainfall, increased wetting and drying of clay soils resulting in increased subsidence risk, protection from the effects of frequent flooding and storminess)……

- measures to conserve and re-use water (e.g. rainwater collection and grey water systems)

4.20. Examples of SPG on sustainable construction and design which have been prepared by LPAs in England are listed in **Box 4.7**.. Examples of the type of content which should be included in SPD are presented in Sections 6-8.

Box 4.7: Examples of sustainable construction and design SPG

London Borough of Brent

Supplementary Design and Planning Guidance 19. Sustainable Design, Construction and Pollution Control. Adopted 2003 (Brent Council, 2004)

Bristol City Council

Bristol City Council Sustainable Development Guide for Construction (Adopted 2002)

Cambridge City Council

Supplementary Planning Guidance - Sustainable Development Guidelines. Adopted 2003

London Borough of Camden

Camden Green Buildings Guide

Leicester City Council

Supplementary Planning Guidance. Energy Efficiency and Renewable Energy in New Developments. City Wide Guidance. Leicester City Council (August 2002).

London Borough of Merton

Merton Unitary Development Plan. Supplementary Planning Guidance Note. Sustainable Development (October 2001).

Peterborough City Council

Peterborough Residential Design Guide. Supplementary Planning Guidance adopted by Peterborough City Council in March 2002.

South Hams District council

Supplementary Planning Guidance. Guidance and Requirements for Sustainable Development of Large Sites. South Hams District Council (June 2001).

Supplementary Planning Guidance. Guidance and Requirements for Sustainable Development of Small Sites. South Hams District Council (June 2001).

Surrey County Council

Surrey Design. A Strategic Guide for Quality Built Environment. Surrey Local Government Association (2002) (adopted as Supplementary Planning Guidance)

Westminster City Council

Supplementary Planning Guidance on Sustainable Buildings. Westminster City Council (2003)

Area Based SPD

4.21. Where an area of land has been allocated for development in a Development Plan Document, but further detail is required on how to implement this proposal, the LPA may decide to prepare a Development Brief for a particular area or site. This would include details of any specific measures required to adapt to climate change reflecting the characteristics of the area or site, informed by consultation with the Environment Agency, utilities and other stakeholders. For example, there may be a requirement for the buildings to be sited in a certain part of the site due to flood risk, with activities which are less adversely affected by flooding directed to other areas, there may be a known water shortage issue to address, or the need for compensatory flood water storage. The Development Brief may also include advice on how to implement design policies within the DPDs, such as what type of SUDS would be appropriate on the site, and how these will influence the layout of the development, where there is a need for greywater recycling and what landscaping will be appropriate, including details of drought resistant species.

Good Practice Guidance

4.22. Where an LPA does not have an appropriate development plan policy on which to base SPD, a good practice guide can be used to raise awareness and promote the need to incorporate climate change adaptation measures into new development. This may be adopted for development control purposes. Once the policy framework is in place with a relevant policies adopted in RSS and DPD the guidance may be adopted as SPD (after following the necessary procedures as set out in PPS12).

Box 4.8: Good Practice Guidance

Woking Borough Council has adopted 'Climate Neutral Development – A good practice guide', endorsed by the UK Climate Impacts Programme and the South East England Climate Change Partnership. The five-point approach includes guidance on both mitigation (energy, location and transport, site layout and building design) and adaptation to climate change. Adaptation advice focuses on water conservation /recycling and sustainable drainage, and addresses maintenance and costs implications. The guidance includes a useful summary of good practice and an applicants checklist which applicants are asked to fill in and submit with their planning application. **See Appendix 7 Case Studies** for more detail.

LPA and consultee involvement in the design process

4.23. Pre-application discussions between the applicant and LPA are encouraged. They help to ensure that decisions made at the earliest design stages consider the need for

adaptation measures, along with other key requirements. Applicants are also encouraged to consult with statutory bodies including the Environment Agency as well as with Water Companies, before submitting their scheme. Informal discussions should be used to inform the scheme design and any conditions to be attached to the permission (or reasons for refusal and support at appeal). The redesign of the scheme to incorporate an adaptation measure or set of works is as important as the potential imposition of planning conditions or the completion of a planning obligation. It is preferable that the introduction of adaptation works – if not proposed by the developer at the outset – is raised as an issue as soon as possible by the LPA so the development may be amended to include those works. These measures should then be required through a condition (as discussed below).

Planning conditions and obligations

4.24. Inclusion of requirements for climate change adaptation in DPD policies or SPD is necessary to provide a firm foundation for the imposition planning requirements through the development control process. However, policy is not in itself legally binding – therefore two legal delivery mechanisms are very important tools:

- Planning conditions.
- Planning obligations.

Planning conditions

4.25. Planning conditions are used to ensure the development is carried out in accordance with agreed details and timescales and to overcome reasons for refusing planning permission. For example, proving details of a drainage scheme, SUDS feature, controlling the use of parts of the site etc. Further examples are provided in Sections 6-8.

4.26. If the developer agrees to incorporate measures into the scheme design there may be no need for specific conditions to be imposed requiring each measure to be put into place. If the developer fails to include them he is in breach of the general requirement to carry out the development strictly in accordance with the approved plans and drawings. However, the importance of certain adaptation measures may mean that even if the developer appears willing to incorporate them into the scheme, a specific condition should be imposed in order that there should be a discrete, precise tool for the enforcement of that condition should the developer fail to provide the agreed measures on site.

Planning obligations

4.27. Planning obligations are used when a condition cannot be applied, e.g. to transfer land or a sum of money, and most deal with the use or development of land. They are the subject of an agreement between the applicant and LPA.

4.28. The ODPM Planning Response to Climate Change notes that planning obligations/agreements may be necessary for dealing with a range of climate change issues. Those of relevance to addressing water-related climate change impacts include obligations/agreements to achieve the following:

- Significantly reduce or remove the risk of flooding on and off site.
- Provide a financial contribution to the LPA or Environment Agency flood alleviation or management schemes or Internal Drainage Boards.
- Secure the long-term management of areas of a site so that they can provide flood protection/storage and/or mitigation in the long term.
- Secure land restructuring agreements so that land with development rights in areas at risk because of climate change can be exchanged for development rights at alternative sites.
- Where a development has been specifically laid out and designed on climate change principles, secure the long-term maintenance of those features of the development that, if lost, would risk the undermining of the design principles of the development as a whole.

4.29. Where and how planning conditions and obligations can and should be used in order to secure climate change adaptation measures within new development is addressed further in Sections 6-8 of the Toolkit.

Informatives

4.30. Where it is inappropriate for LPAs to impose conditions or negotiate planning obligations/agreements, but where the LPA considers that the developer should be made aware of certain matters, it is possible for the LPA to attach a short statement known as an informative to any consent. The Environment Agency also regularly suggests informatives are attached to planning permissions.

Box 4.9: Informatives

Examples of informatives include:

- Suggested use of water conservation measures in new developments if not addressed as part of the scheme details (e.g. for a small housing scheme.).
- Suggested use of warning notices or raised circuitry in relation to flood risk.
- Signposting to information e.g. on SUDS.
- Information on the site relating to e.g. water features, and the impact this may have on foundations.
- Reminders that Environment Agency consent is required for certain actions.

STAGES OF THE PLANNING PROCESS TO ADDRESS WATER MANAGEMENT CLIMATE CHANGE ADAPTATION

Local Development Framework preparation process

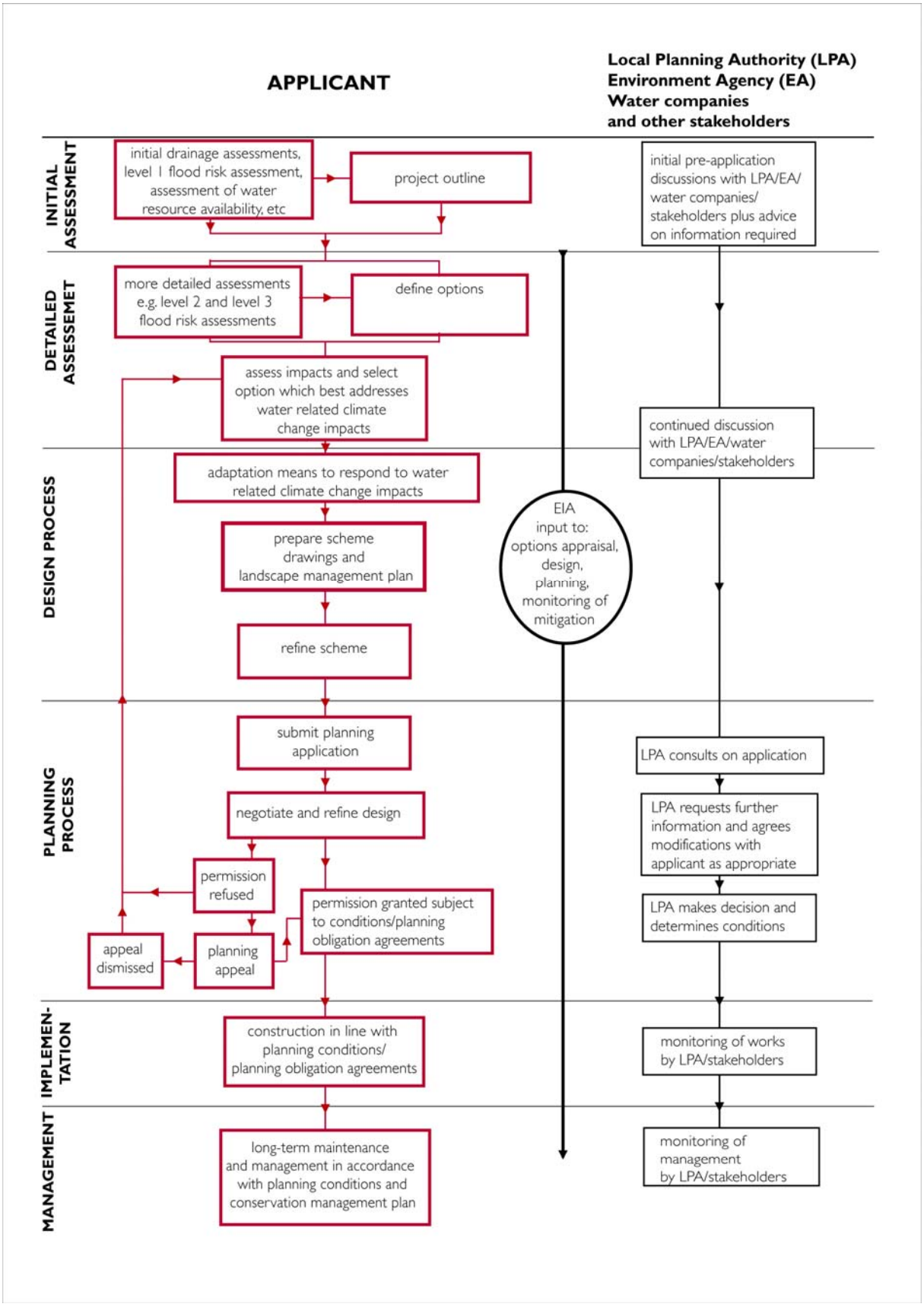
4.31. Water management climate change adaptation should be considered at the following crucial stages of the Local Development Framework (LDF) preparation process:

- Evidence gathering.
- Preparation of issues and alternative options in consideration.
- Preparation and submission of DPD and SPD.
- Sustainability appraisal (incorporating SEA) throughout the above stages.
- Adoption of DPD and SPD.
- Monitoring and review.
- Enforcement of DPD and SPD through development control decisions.

Water management climate change adaptation in the development control process

4.32. **Figure 4.1** illustrates how consideration of water-related climate change issues can be built into the planning process.

Figure 4.1: The planning process for building in water management climate change adaptation measures into new development



For further information see:

Appendix 6: Further sources of information (the role of the planning system, writing policies for LDFs)