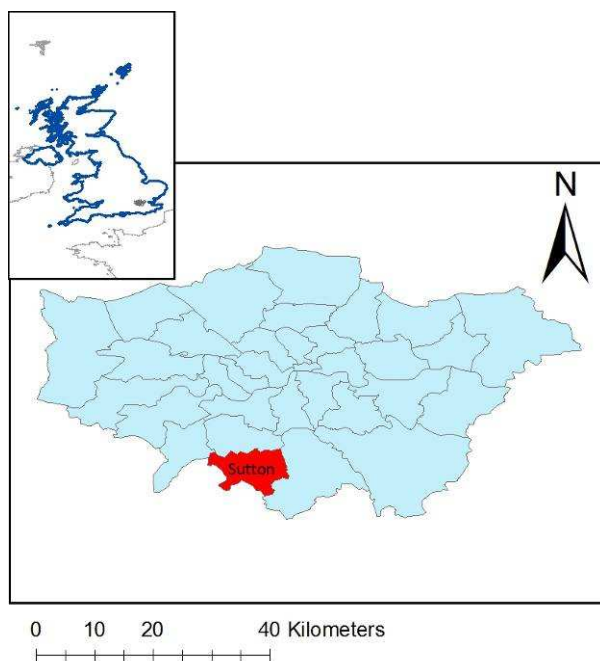


# London Borough of Sutton: Adaptation to flooding via local planning policies

<b>Climate change impacts addressed</b>	River flooding Urban flooding
<b>Spatial scale</b>	Town or city
<b>Response type</b>	Policy
<b>Core drivers</b>	Response to current climate Adaptation to future climate Quality of life and attractiveness of place Development need despite climate impacts Higher-level policy framework
<b>Good practice</b>	Prioritising adaptation Internal collaboration External collaboration Outsourcing research Sound evidence base

## Summary

The London Borough of Sutton, a local planning authority located in the South East of England, has prepared a range of innovative spatial planning policies that seek to ensure future development within Sutton is fully adapted to the impacts of climate change. Whilst impacts such as temperature rise and occurrence of heat waves are also covered by these policies, this case study focuses on how spatial planning policies have been developed to address the risk of all forms of flooding to and from new developments, and to promote the role of sustainable urban drainage systems in managing surface water runoff. Flooding has already caused significant damage in parts of the Borough, and climate change is projected to further increase the frequency and intensity of flood events. The case of Sutton offers valuable lessons on the development of planning policies targeting adaptation to flooding. These include the use of a robust evidence base to develop policy, and the engagement of local stakeholders and residents in the planning process.



**Figure 1. Location of Sutton in the UK and in Greater London**

## Case study location

London Borough of Sutton is a local authority with planning powers in the Greater London Area, South East of England. Sutton covers 44 km<sup>2</sup> and has a resident population of more than 187,000. The Borough forms an important part of the Wandle Valley, the key regeneration corridor within South London. Although the Borough is mostly suburban in nature, certain locations, including Sutton Town Centre and Hackbridge, are identified as areas of 'sustainable regeneration and growth' in Sutton's Core Planning Strategy (their key spatial planning document). Such areas will be the focus for significant redevelopment over the next 10-15 years, particularly for residential and commercial uses. Sutton Town Centre is expected to accommodate around 40% of the Borough's planned housing growth over this period with the Hackbridge sustainable suburb accommodating a further 20%.

The Borough is affected by a number of different sources of flood risk, including fluvial (river) flooding, surface water flooding, sewer flooding and groundwater flooding. Within the context of projections for changes in the UK's climate, the extent of these risks is expected to increase. Approximately 5% of the land area in Sutton is at medium risk of river flooding (between 1% and 0.1% annual probability) and a further 5% lies within either high risk areas (over 1% annual probability) or on functional floodplain. Consequently, 5% of properties within the Borough are at risk of fluvial (river) flooding. The catchment area of the main watercourse, the River Wandle, is highly urbanised. Up to 80% of its floodplain has been already developed, in many locations right up to the edge of river channels. As a result, the Wandle catchment rapidly responds to precipitation, with the risk of surface water, sewer and fluvial flooding occurring within minutes of heavy rainfall events <sup>(1)</sup>.

Between January 1998 and December 2008 there have been 35 events of heavy rain and flooding which have caused significant damage in Sutton <sup>(2)</sup>, the two most significant events being 15 September 2000 (58mm) and 20 July 2007 (over 40mm). During the latter event the rainfall volume exceeded the design capacity of water drainage systems and watercourses at multiple locations and caused damage to at least 52 council properties as well as widespread damage and disruption for householders and transport systems.

The frequency and severity of heavy rainfall events within London is expected to increase further under the changing climate. Under the medium emissions scenario from the UK Climate Impacts Programme, by the 2080s the number of days with rainfall greater than 25 mm is likely to increase by 100%-250% in winter and by up to 100% in summer. The risk of exceeding of the urban drainage system and surface water flooding is therefore likely to increase into the future unless further adaptation measures are taken to manage and reduce this form of flooding

## Development of the initiative

### *Key aims*

The aim of the initiative has been to ensure that the Council's policies on climate change adaptation and flood risk included in spatial planning documents guiding future development within the Borough avoid, reduce and manage flood risks while promoting the multi-functional benefits of green and blue infrastructure. High housing targets set by the national government mean that Sutton cannot avoid new development in flood risk areas. In addition, new UK Government legislation introduced since the severe national flooding events of 2007 requires local authorities such as Sutton to play a clear leadership role in local flood risk management by promoting partnership working with key stakeholders <sup>(3), (4)</sup>.

### *Themes driving the initiative*

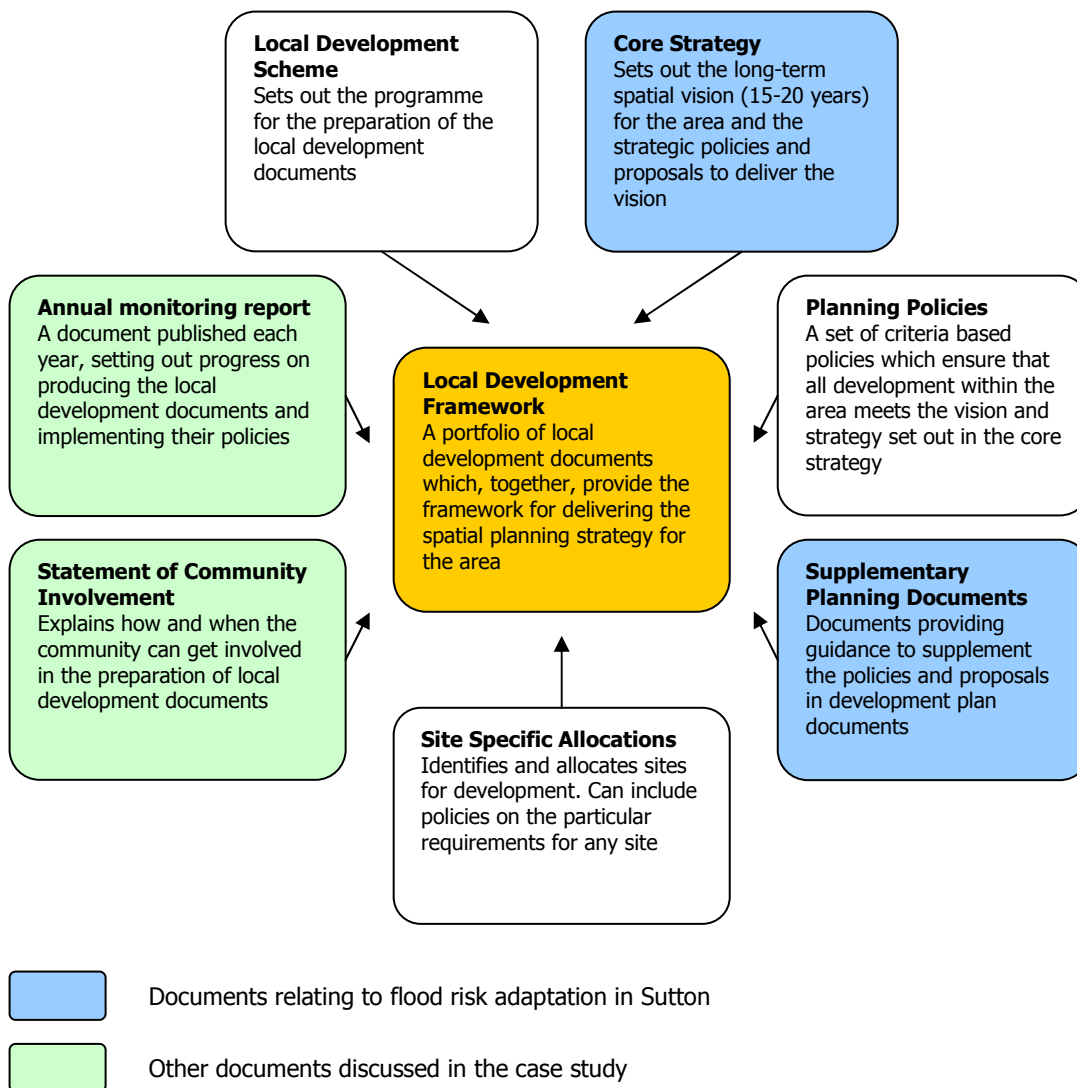
- **Statutory national policies.** The inclusion of climate change adaptation policies in Sutton's spatial plans has partly been driven by national level Planning Policy Statements (PPS). The Supplement to PPS1: Planning and Climate Change <sup>(5)</sup> requires that new development is secure, minimises the vulnerability and provides resilience to climate change. PPS25: Development and Flood Risk <sup>(6)</sup> seeks to ensure that where new development cannot take place anywhere else than in flood risk areas, it must be made safe, without increasing the flood risk elsewhere. Sustainable Urban Drainage (SUDS) measures are promoted in order to ensure that surface water runoff rates do not increase following redevelopment, including an allowance for climate change.
- **Regional strategies.** The Mayor's London Plan <sup>(7)</sup> sets out a range of policies addressing flood risk management and climate change adaptation, which form part of the development

plan for the London Borough of Sutton. Application of SUDS in order to minimise run-off from development sites to municipal drainage systems or watercourses and protecting and enhancing green infrastructure are promoted. Greater London Draft Climate Change Adaptation Strategy <sup>(8)</sup> advocates “urban greening” for climate change adaptation.

- **Borough strategies and initiatives**
  - **“One Planet Living”** Sutton was the first UK council to adopt “One Planet Living” <sup>(9)</sup>, which is a global initiative developed by BioRegional and the World Wildlife Fund (WWF) to promote more sustainable council services, lifestyles and workplaces. The initiative has raised awareness of climate change among residents and enjoys widespread support from the local community. As part of the Vision for Sutton of a ‘One Planet Living’ Borough by 2025, the Council is piloting the regeneration of Hackbridge as the UK’s first sustainable suburb. This is reflected in Sutton’s adopted Core Planning Strategy. One particular goal of “One Planet Living” is to turn Hackbridge into the UK’s greenest place to live.
  - **LiFE project** - Long-term Initiatives for Flood-risk Environments <sup>(10)</sup>, led by Building Research Establishment and funded by the Department for Environment, Food and Rural Affairs within the “Making Space for Water” programme <sup>(3)</sup>. This project sought to demonstrate how towns and homes can be better prepared for a more unpredictable short term future, whilst reducing long term environmental impact. Hackbridge was chosen as one of three UK pilot studies to consider how to integrate natural flood mitigation with ecological development proposals while incorporating best practice in spatial planning. The outcome the LiFE study, the 'masterplan' for Hackbridge, identifies a range of flood risk and other climate change adaptation measures, including green and blue space approaches.
  - The London Borough of Sutton has adopted **National Indicator 188** (NI188) “Planning to Adapt to Climate Change.” NI188 forms part of the Local Area Agreement (LAA) which outlines the Borough’s key priorities. In line with NI188 requirements, the Council has recently undertaken a comprehensive audit of Council strategies, policy documents and business plans to provide a broad overview of how weather and climate issues are currently integrated into council plans and strategies.
  - **GRaBS project** – Green and Blue Space Adaptation for Urban Areas and Eco Towns <sup>(11)</sup>. Participation of Sutton in the GRaBS project ensured a firm focus on green and blue spaces in adaptation to climate change. The aim of the project for Sutton is to develop the Climate Change Adaptation Plan for the area of Hackbridge.
- **Floods in 2007.** The severe flooding events of July 2007 affected many parts of the country, including the London Borough of Sutton, and raised awareness of the need to protect against or adapt to flooding. Sutton was one of the worst affected London Boroughs with 44mm of rain recorded on the morning of 20 July 2007. The London Borough of Sutton established a cross-departmental Flood Group in response to these events.

### *Details of the initiative*

In England and Wales spatial planning is delivered by local authorities. Each local authority produces a **Local Development Framework** (LDF), which is a suite of documents setting out the spatial strategy and policies for the development and other use of land in the local authority’s area (Figure 1). In Sutton, policies on adaptation to climate change using green and blue spaces have been included in several LDF documents. Collectively these policies provide a framework and context for significantly strengthening the role of spatial planning policy in adapting Sutton to climate change impacts.



**Figure 2. Documents forming Sutton’s Local Development Framework**

The overarching **Sustainable Communities Strategy**, which covers the period 2008-2020, is the “plan of plans” developed by local authorities in collaboration with their stakeholders (see stakeholder engagement section). Sutton’s Sustainable Communities Strategy <sup>(12)</sup> recognises that:

*“Climate change is one of the most significant long-term issues facing the borough.”*

Consequently, adaptation to climate change influences the shape of other documents in the LDF:

- **The Core Planning Strategy** (adopted December 2009) is the most significant development planning document prepared by the Council and sets out a long-term vision for Sutton. Specific objectives reference climate change adaptation issues. Strategic Objective 6 is

*“to achieve the highest standards of sustainable design and construction in all new developments by addressing climate change impacts and minimising flood risks (...).”*

Strategic Objective 7 is

*“to ensure that new development is not exposed to unacceptable risks of flooding and avoids, manages and reduces the potential risks of flooding elsewhere, taking into account climate change.”*

Core Policy BP7 on Flood Risk and Climate Change Adaptation reads that:

*"the Council will seek to avoid, manage and reduce all sources of potential flood risk to and from new development by (...) promoting the most effective adaptation to the impacts of climate change as part of new development, including SUDS (...)"*

- Supplementary Planning Documents supporting the Core Planning Strategy that include policies on adaptation to floods via green and blue infrastructure are:
  - **Site Development Policies: Proposed Submission Document** (approved December 2009; Figure 3). This document identifies a range of sites to meet the development needs in the Borough and puts forward policies for controlling and managing new development. These include policies guiding sustainable design and construction that aim to reduce flood risk and enhance climate change adaptation measures, and policies specifically targeted at reducing flood risk to and from new developments (via SUDS and green and blue infrastructure). In addition Policy DM8 on Climate Change Adaptation emphasises that:

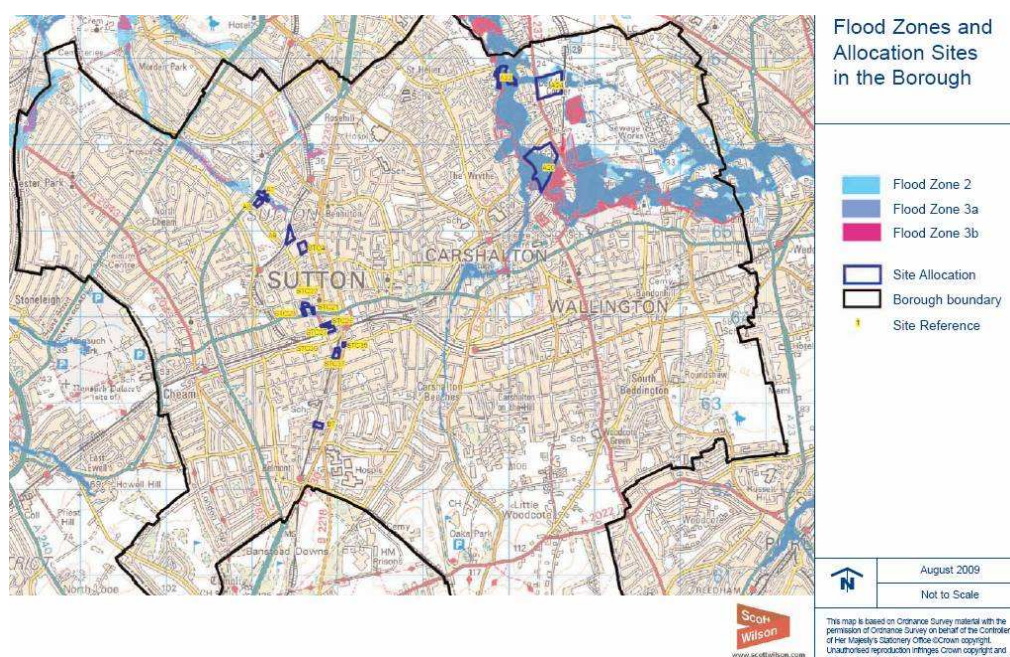
*"The Council will promote effective adaptation to the impacts of climate change within the Borough by ensuring that the location, layout and design of all developments: (...) maximise the role of blue and green infrastructure for flood storage and mitigation."*

The document notes that wherever practical developers should give consideration to various types of SUDS involving green roofs or walls; wetlands, swales and infiltration strips mimicking natural drainage patterns; basins and ponds to hold excess water after rain and allow controlled discharge; and retention of mature trees and soft landscaping in front gardens and other means of reducing the amount of impermeable surfaces.

- **Sustainable Design and Construction Interim Planning Guidance (IPG).** Guideline SDC8 on 'Climate Change Adaptation' states that:
 

*"the Council will require all development proposals to take account of the expected changes in local climatic conditions throughout the lifetime of the development, through the incorporation of adaptation measures or sufficient flexibility of design to allow for future adaptation, including measures to: (...)"*

  - *reduce flood risk by applying principles of SUDS;*
  - *protect and enhance green infrastructure."*



**Figure 3. Flood zones in Sutton and allocated development sites (1)**

- **Sutton Town Centre Area Action Plan** (at public consultation stage) identifies suitable sites for development and redevelopment in the town centre. This notes that all town centre development should demonstrate that flood risks are safely managed, which can be achieved through measures such as green roofs and soft landscaping.
- **Hackbridge master plan** states that it is important to slow rainwater runoff by increasing porous surfaces (on roofs and at ground level), collecting rainwater for re-use or controlled release to the sewers, and increasing vegetation. Green roofs and green spaces can also be used as means to improve biodiversity or as a community amenity.

## Implementation of the initiative

The LDF process is driven by local authorities, and in Sutton the LDF is delivered by the Strategic Planning team. The LDF process began in 2005 and is ongoing, with adoption of all policies planned for 2011. The process is closely regulated by national policies (in particular PPS 12: Local Spatial Planning) and legislation. These policies emphasise the importance of stakeholder engagement in LDF preparation.

The “silo” character of local authorities, where there can be little cross-departmental information exchange, is a problem when tackling a complex problem such as climate change adaptation. In Sutton this was solved by the establishment of a multi-departmental **Flood Group** following the floods in 2007. The group included representatives from the departments of planning, environment, emergency planning, highways and external parties (see stakeholder engagement section below). This group created a platform for data sharing between different departments of the local authority and helped to ensure that climate change adaptation was one of the significant issues driving the development of LDF.

### *Building the evidence base*

Local Development Frameworks, according to national policy on spatial planning, must be evidence-based. Some data on climate change and related risks is available from the UK Climate Impacts Programme to assist local authorities when preparing their planning strategies. However, in Sutton’s case, a large amount of additional information was collected especially for the purpose of preparing the LDF. This included a **Local Climate Impact Profile** <sup>(2)</sup> exercise which investigated the frequency and severity of weather-related events, including floods, between 1998 and 2008. Also, in order to comply with PPS 25, Sutton undertook a **Strategic Flood Risk Assessment**, which provided a better understanding of climate change and flood risk. The Council has recently commissioned consultants (Scott Wilson) to undertake a Borough-wide surface water management study to provide a detailed assessment of surface water, sewer and groundwater flood risk in the Borough.

To support decision-making, planners in Sutton have also drawn on existing good practice examples, such as the handbook produced by the UK Town and Country Planning Association “**Climate change adaptation by design**” <sup>(13)</sup>. Engagement in research projects also helped the authority to learn about possible adaptation approaches.

### *Monitoring and evaluation*

- An **annual monitoring report** is produced each year to measure progress against defined indicators, such as the number of planning permissions granted contrary to Environment Agency (statutory body providing advice to local authorities on flood risk) advice on either

flood defence or water quality grounds, and completed residential developments located within medium and high flood risk zones and on functional flood plains.

- **Sustainability Appraisal** is a compulsory process that highlights the potentially significant environmental, economic and social impacts of spatial plan implementation. In Sutton the Sustainability Appraisal was carried out at very early stages of LDF development, and helped to identify gaps in policies. As a result of the process a number of indicators were established to report the progress of the LDF against sustainability objectives. One of the indicators concerns whether developments are adapted to future climate change scenarios.
- **Code for Sustainable Homes – Level 3** <sup>(14)</sup>. The Code for Sustainable Homes requires that rainwater storing facilities or sustainable drainage is used in new developments to ensure that the peak run-off rates and annual volumes of run-off are no greater than the previous conditions for the development site. Adherence to this code will be monitored.
- **National Indicators (NI)** are used by the Government to assess the performance of local authorities. Each local authority, alongside 16 statutory indicators, selects up to 35 from the list of 198 NIs against which their performance is measured. Sutton has included NI 188 - adaptation to climate change - and NI 189 - flood risk management – in their list.

## Stakeholder engagement

### *Collaboration with key stakeholders*

Whilst Sutton Borough Council has been leading the work on preparing the LDF, a number of different stakeholder groups have contributed to its development to help ensure the vision for Sutton's development is a shared one meeting the needs of a wide range of relevant stakeholders.

- The Local Strategic Partnership (**Sutton Partnership**) developed the Sustainable Communities Strategy guiding the LDF. Sutton Partnership brings together public sector organisations (the council, the police and the primary care trust), private organisations (e.g. local businesses) and voluntary and community organisations.
- **The Flood Group** facilitated the inclusion of policies related to flooding in the LDF. Alongside representatives of different departments from within the local authority, the Flood Group includes water and sewerage providers (Thames Water and Sutton and East Surrey Water) and the Environment Agency (national agency responsible for flood protection).
- Key stakeholders participating in sustainability workshops run within the **Sustainability Appraisal** process. This enabled key stakeholders to input into the assessment of different aspects of the LDF, and helped the local authority to develop closer links with these groups.
- Neighbouring Greater London Authorities. The Strategic Flood Risk Assessment, compulsory for all local authorities, was carried out jointly for four **London Boroughs: Sutton, Croydon, Merton and Wandsworth**, which are all located within the Wandle catchment area. This initiative has supported cross-boundary working between different local authorities on flood risk issues, helping encourage a joined-up approach to flood risk management across the catchment.

### *Engaging the public*

Public participation in the planning process is regulated by the compulsory borough-wide **Statement of Community Involvement** (adopted by Sutton in July 2006) that details how the Council will involve the community in planning matters. The residents of Sutton have been

involved in extensive consultations over recent years on all LDF documents (see Box 1). Four distinct stages are included in consultation of development planning documents. These are:

- Issues and options, which involves early consultation on issues that the Core Strategy needed to address and the range of available options to address these issues.
- Preferred options, which involves further public and stakeholder consultation on the Core Strategy following the issues and options consultation.
- Submission, which involves consultation on the final version of the Core Strategy after consideration of comments made at Preferred Options stage.
- Examination, which considers if the development plan document (DPD) is sound. An inspector is appointed by the Secretary of State to conduct the Examination. The Inspector produces a report with recommendations that are binding upon the Council. This stage can be carried out in public, in the form of a round table discussion and hearings on specific issues.

#### **Box 1. Public consultation of Sutton's Core Strategy**

Notices about the consultation process were put in local newspapers. Leaflets with information about the consultation were then sent to key stakeholders, residents' groups, local businesses and other parties who had previously expressed a view or were known to be interested in planning matters in the Borough. Copies of the document and a questionnaire key Core Strategy issues were made available for public inspection in local libraries and on the Council's website.

This was followed by four area-based community workshops and presentations to local community groups. These included established groups with an interest in sustainability initiatives and nature conservation, in particular focusing around the River Wandle. Finally, efforts were made to engage hard-to-reach communities, such as ethnic minorities, by using community champions as intermediaries.

#### *Political buy-in*

Elected local Councillors have played a pivotal role in the strategic planning process and provided political support for climate change adaptation initiatives. All policy documents are reviewed by selected Councillors, who make a recommendation to the Council leaders who are responsible for the final approval of the policies.

## **Sources of funding**

The development of spatial planning frameworks for the local authority was funded by the London Borough of Sutton. The key elements requiring funding were the reports on flood risk and the local climate impacts profile, which were prepared for Sutton by external consultancy companies.

## **Can it have an impact?**

#### *Scope of adaptation*

The importance of national and regional policies that acted as key drivers for the inclusion of climate adaptation in local planning cannot be underestimated. There is a danger that the policies at the local level will only provide 'lip service' to national and regional requirements. However, the strong commitment of the London Borough of Sutton to make policies work and to strengthen the capacity of the area to adapt to future impacts of climate change has proved to be crucial in avoiding this danger. This is shown, for example, by inclusion of NI 188 and 189 as indicators that Sutton will use to assess its performance for central government reporting purposes.

The LDF policies in Sutton present a coherent approach to adaptation to floods. The importance of the climate change problem is highlighted in the Sustainable Communities Strategy, and the Core Strategy formulates the general course of action to tackle adaptation issues. Supplementary Planning Documents then stipulate what adaptation measures should be used by developers.

The inclusion of adaptation approaches to flooding within Sutton's planning policies has the potential to considerably affect the form and function of new development sites. Furthermore, emphasis on these measures in the Hackbridge masterplan and the Sutton Town Centre area action plan has the potential to add an adaptation dimension to areas undergoing redevelopment. However, existing buildings and sites are not controlled by spatial planning policy, which limits the impacts of these policies to new development and areas being redeveloped.

### *Additional benefits*

The inclusion of green and blue spaces in local development can help Sutton adapt to rising temperatures and the urban heat island effect, and the Borough's adaptation policies also cover these impacts (although the focus of this case study is on flooding). In addition, green and blue spaces provide recreational amenities, improve local residents' quality of life and enhance biodiversity, and hence their use in new developments is likely to result in additional benefits.

Involvement of key stakeholders in formulation of the policies within the LDF raised the profile of adaptation using green and blue infrastructure. Establishment of the interdepartmental Flood Group increased awareness of spatial planning's role in adaptation to climate change. Moreover, involving stakeholders from outside the Borough Council in the Flood group has also helped to increase adaptive capacity within the area through awareness raising of relevant issues. Therefore, both the implementation of adaptation measures and future work on adaptation to climate change are likely to benefit from experiences gained in preparing the LDF.

Participation in the creation of the LDF has helped to ensure that the public is well informed, and that implementation of initiatives involving green and blue infrastructure will be met with less resistance. Further, the general empowerment of local residents brings a variety of social benefits.

## **Key messages**

- Early engagement with stakeholders via the Local Strategic Partnership was crucial to securing the Sustainable Communities Strategy in a form acceptable to a range of groups.
- Assessments undertaken at an early stage of the preparation of the Local Development Framework (through the Sustainability Appraisal process) allowed identification of gaps in, and subsequent modification of, Sutton's planning policies.
- Setting up an inter-departmental working group improved data sharing and made work on complex policies (in this case relating to flooding) easier.
- The engagement of research institutions' and consultancies' expertise was helpful for establishing an evidence base and making informed decisions.
- Engaging in research and pilot projects provided Sutton with access to good ideas and support relating to adaptation issues.
- Sutton benefited from the use of good practice examples and guidance, such as the "Adaptation by Design" guidance on climate change adaptation produced by the UK Town and Country Planning Association.
- Requirement for introduction of adaptation measures in existing development would be valuable given the slow turnover of building stock in urban areas, but this is beyond the scope of the spatial planning system and needs to be achieved through other mechanisms.

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