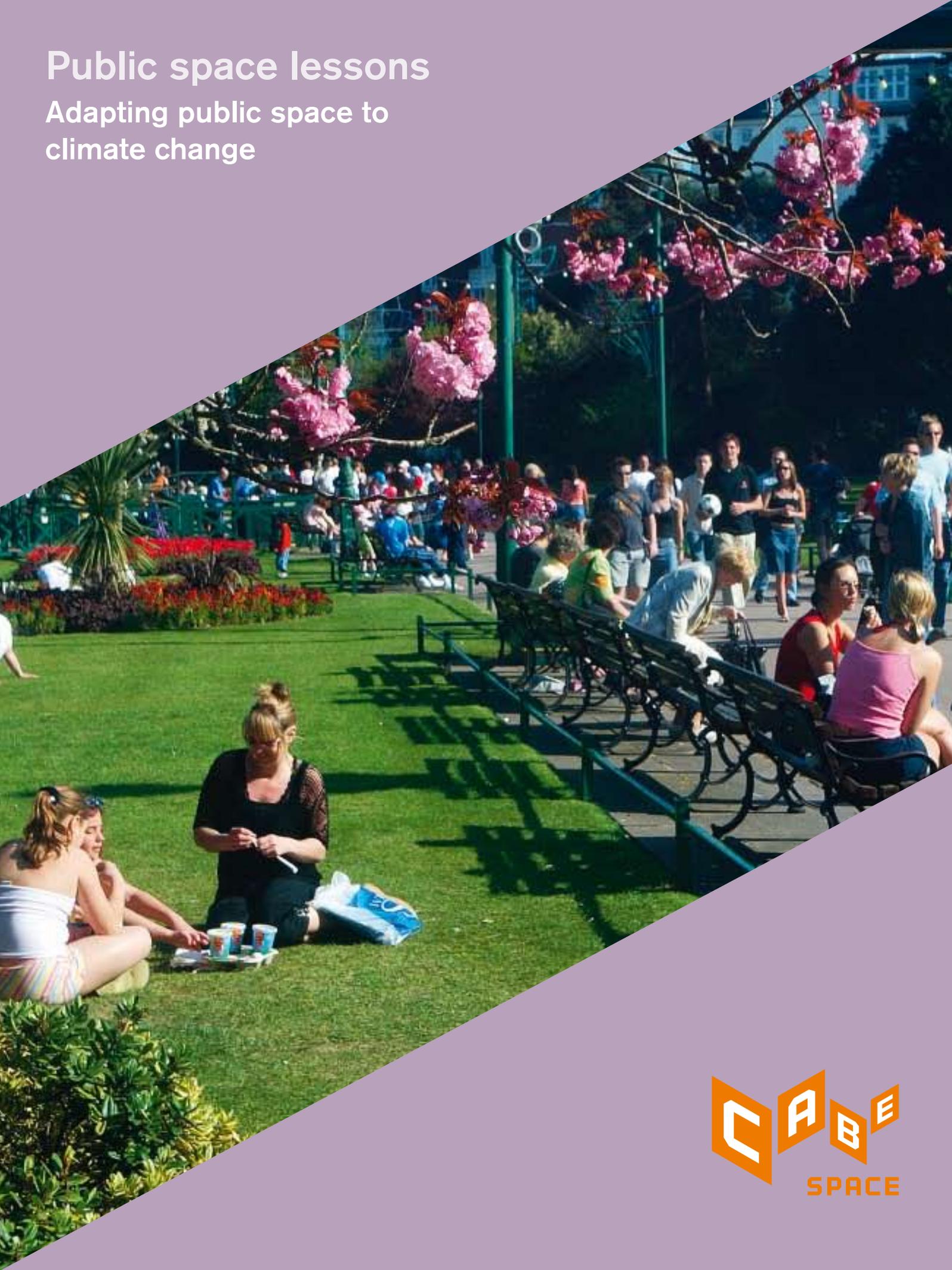


# Public space lessons

Adapting public space to  
climate change



**Climate change is the most serious threat we face. Its consequences will remain unpredictable, and initial impacts on the UK are likely to be less grave than in other parts of the world, but planning now for adaptation is essential.**

### About this briefing

This CABA Space briefing sets out lessons learned both in the UK and around the world from using public spaces to help adapt to the climate crisis. CABA Space will be publishing detailed case studies later in 2008, as part of ongoing work on sustainable cities. You can find out more, and sign up for updates, at [www.cabe.org.uk/publicspaceadaptation](http://www.cabe.org.uk/publicspaceadaptation).

### Adaptation projects

- 12th Avenue Green Street, Portland, USA
- Augustenborg, Malmö, Sweden
- Bristol Business Park, Bristol
- CitySpace Plan, Chicago, USA
- Chiswick Park, Hounslow, London
- Cleveleys Coast Protection, Lancs
- Milton Keynes flood plain forest
- Olympic Park, Sydney, Australia
- River Irwell flood control scheme, Lancashire, and Salford strategic flood risk assessment
- River Quaggy, Lewisham, London

The future will bring warmer and wetter winters, hotter and drier summers, rising sea levels, more flooding and other extreme weather. Because of the delayed effects from greenhouse gas emissions, we are locked into significant climate change, regardless of any emission reductions that we may secure now.

Adaptation to climate change means making towns and cities more resilient. Well-designed, flexible public spaces are their best chance to adapt to these threats. Spaces that are softer, greener, more organic and natural will store water and are critical to modifying urban temperatures. Green spaces with a

generous planting of trees link to form a network offering cooler, cleaner air.

Adaptation demands that we start really understanding how our towns and cities work naturally. How water courses through a town, for instance, and so how to manage it.

Urban green spaces form a natural infrastructure that is as critical to support urban life as streets, railways, drainage and sewers — and just like these, it is an infrastructure that needs investment. At the same time, this will create much more beautiful, healthier places.

### The challenges ahead

**Pressure on land from high density**  
Our planning policy framework encourages higher urban densities. This makes urban areas more efficient, for instance in their use of resources and the provision of public services. But it does increase pressure on green space. In particular, small-scale local spaces, which will make life in a warming city tolerable, are being permanently lost to development.

Good urban design should provide solutions for the management of water, temperatures and biodiversity. This could mean planning authorities need to set a development framework that prioritises the provision of strategic good-quality open space for social and environmental reasons, rather than releasing it to development for economic return.

#### Water management

Water will present different challenges in different parts of the country in different seasons. In the



Extreme weather events will bring more unpredictability to our daily lives

south east, with its high population density and lower rainfall, harvesting and storage is key to ensuring the irrigation of green spaces during hot spells. Greenery that has turned brown ceases to provide environmental benefits like air cooling (evapotranspiration). In other areas, or at other times of the year, flooding will be a major challenge, so effective drainage is needed, perhaps with a network of temporary pools and lakes, and an understanding of water flows across the local landscape and the role of green spaces on those flows. But all across the UK, rainwater has to be harvested to avoid wasting energy and generating emissions on cleaning water for irrigation.

#### Loss of trees

Trees have an important role to play in climate change adaptation. Yet their loss to insurance claims remains a significant problem (in May 2007 the London Assembly reported a 'chainsaw massacre' of up to 40 per cent of street trees). An ongoing programme of new street tree planting is of course important to keep overall numbers up. But new trees also need to be of the right size and stock — large deciduous trees have particular value in cooling the air, shading buildings in summer (helping with mitigation, cutting the need for ventilation and cooling) and capturing carbon.

### Guidance for towns and cities

Effective policymaking is essential for a robust and flexible approach to climate change. Every local authority is required to assess the need and opportunities for open space in line with planning policy guidance note 17 (PPG17), and to set local standards. This process can also include an assessment of needs for adapting

to climate change, leading to a more holistic approach to green space planning, design and management.

A green space strategy or green infrastructure plan based on this assessment can help protect the spaces that are critical to counteracting the so-called urban heat island effect. It can also proactively identify the amount of green cover needed, make the case for improving green provision during regeneration, and reinforce the need for sustainable water supplies.

When it comes to flood risk, planning policy statement 25 (PPS25) requires all local planning authorities to produce a strategic flood risk assessment (SFRA). This takes a longer-term view over the impacts of climate change. In the SFRA set by Salford, for example, findings have been translated into a set of planning requirements to guide new development. For the North West region, scenarios indicate that winters will become wetter by as much as 20 per cent by the 2050s, and so its SFRA added a climate change allowance of 20 per cent to peak river flows.

### Understanding what you have

There is no one-size-fits-all solution when it comes to adapting to climate change. Decisions must take account of local circumstances and be based on good baseline information. Otherwise you could spend more money on trees, for instance, but fail to secure the intended benefits if they are in the wrong place or the wrong variety.

In Greater Manchester, a risk-based methodology has been used as part of its research project into adaptation strategies for climate change. The project team drew up urban characterisation maps showing different land uses, then conducted

**'Urban green spaces form a natural infrastructure that is as critical to support urban life as streets, railways, drainage and sewers — and just like these, it is an infrastructure that needs investment'**

an assessment of hazard, exposure and vulnerability. Such assessments can be used to identify areas of risk so that adaptation strategies can reduce exposure (through flood prevention, for example) or vulnerability (by increasing the resilience of buildings) to such risks. Developing this kind of an understanding is vital if long-term spatial strategies are to remain effective. Geographical information systems can be used to overlay mappings of risks to various sectors, such as infrastructure and locations, including public spaces. This is particularly useful for planners in shaping the pattern of new urban growth and knowing what to do for existing urban areas.

The CitySpace planning initiative adopted in Chicago, USA, is interesting because it was based on a detailed analysis of virtually the whole city. The initiative aims to bring all communities up to a standard of two acres of open space per 1,000 residents by 2010. Although climate change was not the driver here, it is an excellent example of a green space strategy based on sound evidence. The project stakeholders identified the greatest opportunities for creating new open spaces and then made key policy recommendations in the CitySpace framework plan. As a result, Chicago has added 40 hectares to its park



Young parents overlook the wildlife on Lewisham's River Quaggy

system, created 60 hectares of new open space in land surrounding schools, leased 4 hectares to create greenways along inland waterways and provided permanent protection for 40 community gardens.

Funding has come from a variety of sources, a significant one being similar to the UK's section 106 agreements in that it requires developers to pay a fee or contribute a proportionate share of open space and recreational facilities elsewhere within the same community.

### Monitoring the difference your changes make

Given the fledgling nature of so many approaches — we are all learning as we go along — it is vital to measure progress so that we can learn from what we do and assess whether adaptation is working.

In preparation for the River Quaggy flood alleviation scheme in Lewisham, south London (pictured above), the stakeholders used baseline surveys to monitor the impact on riverine flora, trees, bats, fish, birds and mammals.

These surveys enabled working methods on site to identify the key environmental features and retain them where possible.

It was a similar story for the Sydney Olympic Park, Australia. In recognition of the ecological significance of the site, the Olympic Co-ordination Authority put in place monitoring and research programmes for birds, salt marsh, benthic invertebrates, mosquitoes and the protected green and golden bell frog. The OCA's successor will ensure that management practices encouraging the biodiversity of the site remain a priority for future site managers.

In the case of the award-winning Cleveleys sea defence system on the Fylde coast near Blackpool, the works were based on UK climate impacts programme (UKCIP) scenarios. Lancaster University is working with the local authority using cameras to monitor the impacts of the scheme on the beach and tide conditions. The data will inform the design of future sea defence works.

**'Given the fledgling nature of so many approaches — we are all learning as we go along — it is vital to measure progress so that we assess whether adaptation is working'**

### Creating wider benefits

Adapting for climate change often brings with it surprising extra economic, social and other environmental benefits.

The River Irwell flood control scheme, part of the Salford strategic flood risk assessment, is used as public open space when it is not an active flood storage basin. The site is home to improved playing fields and the new Salford sports village, a state-of-the-art sporting and training facility. The flood storage basin fills via a simple overtopping side weir, which overtops in a one-in-15-year flood event.

The Quaggy River flood alleviation scheme has resulted in better biodiversity, linking the river with its flood plains. It has created more of a 'natural' riverbed with meanders and areas of deep and shallow water. Where hard defences were necessary, the project team designed in bird nesting and planting boxes, which support and conserve wall communities, including humid fern habitats and Mediterranean species. The scheme also offers a more

## Case study 1 Greening the city — sustainable business parkland

### Chiswick Park, London

Award-winning business park Chiswick Park incorporates a large area of high-quality open space, a sustainable urban drainage system (SUDS) and green spaces that help regulate outdoor temperatures. Buildings are arranged around a central linear water feature, bordered by planting and timber boardwalks, while canopied walkways and trees guide people from the main entrance to the water feature that

includes a 1.8m-high waterfall. The scheme is important because it favours people rather than vehicles, routing all of the latter around its periphery. Adaptations include biodiversity corridors, buildings with external shading and fabric blinds, and sustainable design forming a large part of the estate management charter. This includes no pesticides, composting on site and work with the community. The outdoor spaces will prove ever more valuable in a changing climate and the scheme is seen as a benchmark for other business park developments. Rob Shaw of Faber Maunsell — who helped compile this briefing — says that having an enlightened client was clearly important. The desire by

a private company to create a 'decent, publicly accessible space' that responds to the London Plan yields multiple benefits. 'They have created an attractive space which will very likely have knock-on impacts in terms of rent and sales. But, at the same time, they are creating a public amenity that people will want to talk about as their space. It also shows a long-term perspective. It will be more comfortable for users as the climate changes over the next 30, 40, 50 years. A lot of competing business parks that don't have the green space, large trees and water are going to really struggle because they will be unpleasant places to be in without significant air conditioning.'

interesting amenity for local people and schools.

Augustenborg, a district in the Swedish city of Malmö, has succeeded in an impressively holistic approach to regeneration. Importantly, the local community was involved right from the start of the project in 1998. The scheme includes an open storm water system, green roofs, renewable energy and transport initiatives. And, by improving building façades and creating a more pleasant environment with communal gardens, play areas and other green spaces, the turnover of tenancies has decreased dramatically — as have its unemployment rates.

### Working with the community

People obviously want to live in nice places, so they have a stake in making those places better. But governance structures need to be set up to allow communities to be effectively involved in decision-making.

It is interesting to reflect on the experience of both Quaggy River and Milton Keynes flood plain forest. In neither places were original plans developed in consultation with local people, and this resulted in opposition. In the case of Quaggy, the original channel scheme was rejected and the scheme redesigned with the local residents before the project won support. It included work to people's private gardens, so the contractor employed a full-time community liaison officer to communicate with residents before and during construction. In the case of the Milton Keynes flood plain forest, the project team ran into significant opposition until the team was able to persuade local people that the consultation process was about genuine engagement.

The Cleveleys project near Blackpool is known as the 'people's promenade' because the council regarded public involvement in the design and planning process as fundamental to the scheme's success. Community

forums, local interest groups and the wider community were all engaged, and were involved in the competition held to settle on the scheme's masterplan in 2004.

### Design matters

Climate change presents planners and developers with complicated choices, but their response will affect how well a town or city can adapt. Good design solutions should mean that interventions enhance the environment and sense of place, rather than feeling like clumsy inserts in our public spaces. There is an interesting analogy with counter-terrorism design: public buildings can either be protected by big concrete blocks or slim steel-reinforced bollards. Both do the job.

The Green Streets project in Portland, Oregon, USA, is a model that has been copied in 600 locations across America. The aim was to redesign existing streetscape and landscape planters to accommodate

storm water, and the result has been attractive enough for other authorities to incorporate Portland's storm water manual and design details into their own codes.

What the commercial managers for Chiswick Business Park (see case study 1 on page 5) wanted from the beginning was to make working at the park enjoyable. This has been achieved through its environmental features: the park sells itself on the social spaces, amenities and accessibility. It has been carefully designed to include retention lakes as part of its sustainable urban drainage system (SUDS), and biodiversity corridors for indigenous species around the boundary of the site help the development integrate with its surroundings. The offices are bordered by landscape and timber boardwalks, canopied walkways and trees. It even has a multi-purpose amphitheatre event space. The site is an important part of the green infrastructure of a relatively dense part of London, and works as a

public amenity space that is able to cope better with climate change.

### Sustaining change in the long term

Higher temperatures will put more pressure on open space, as it becomes more central to making life tolerable in a town or city. Small-scale local spaces are particularly valuable and will need to accommodate a range of uses. Just as global warming means changes to the way we use public space, so how we manage it will have to change too.

The issue of maintenance becomes more complex, for instance. In the Bristol Business Park, a SUDS scheme that uses permeable paving to take roof run-off to a collection pond could have run into problems had the critical issue of weeding not been addressed early on.

Where public spaces are looked after by the private sector because they are part of a private estate, for example at Chiswick Park, there is no

doubt that this can create high-quality and well-maintained environments. There are potential downsides, however. These public/private spaces can feel less accessible to all and are often tightly monitored and controlled for perceived anti-social behaviour, which may deter some people from using them.

### Early days

Researching the case studies on which this briefing is based has confirmed how new the adaptation of open green space still feels. The examples here offer some important lessons, but there are relatively few to draw from. Planning and policy frameworks will start to drive this in a more co-ordinated fashion, and regular review of all practice will be critical as experience and awareness of the issues grow.

Adaptation investment should include mitigation of climate change where possible as well. That way, the future could be less harsh than some predictions suggest.



As well as mitigating climate change, green space plays a vital role in making summers more comfortable

**‘Good design solutions should mean that interventions enhance the environment and sense of place, rather than feeling like clumsy inserts in our public spaces’**

## Case study 2 Reversing abandonment

### CitySpace, Chicago

Chicago's CitySpace programme aimed to expand the amount of parkland in the city by converting abandoned and underutilised land into community gardens, parks and other forms of public open space. The goal was to lift all communities up to the Chicago Park District's standard of two acres of open space per 1,000 residents. The scheme identified three main areas — surrounding schools, inland waterways and vacant plots. Detailed analysis of the whole city identified levels of

public and private open space and where there was a deficit. The CitySpace partnership worked with over 100 agencies and groups to convert asphalt school playgrounds into grass playing fields; create footpaths and turn vacant, untaxed private plots into community gardens. Funding came from a requirement on developers of residential properties to pay a fee or contribute a proportionate share of open space and recreational facilities elsewhere in the same community. 'It came from a desperate need for regeneration,' says Rob Shaw. 'There was flight from the area, leading to large amounts of vacant lots which were becoming degraded spaces. The

idea was: let's do something about it; let's capitalise on development value from other development in perhaps the way that Section 106 and planning gain works in this country. Let's use that to create spaces that are accessible to the public and perhaps provide multiple benefits. It's a great way of improving the economic value as well as the social and environmental value of a locality, because it starts to look better, it feels better; confidence rises. And although we didn't really explore this, there is a very strong likelihood that that's going to bring businesses and people back into the area. You start to get a self-fulfilling process.'

## Checklist

### Research

- Understand and quantify the existing and future climate pressures on your networks of spaces and surrounding neighbourhoods through UKCIP scenarios data (see [www.ukcip.org.uk/scenarios](http://www.ukcip.org.uk/scenarios)).

- Gather baseline information to generate robust solutions that consider both the risks and opportunities and allow for flexibility.

### Resources

- Work in multidisciplinary teams across council departments and with partners to make sure the right skills and knowledge are brought to the project.

- Ensure your project has a champion to secure long-term continuity, focus and delivery.

- Use the planning system to release funding and achieve progress on the ground.

- Consider forming a management trust to safeguard funding.

- Make sure management and maintenance is specified and can be both funded and delivered.

### Engagement

- Engage the local community in the design process to get buy-in to new ways of using public space.

- Ensure the space meets users' needs, considering potential increased use in the face of climate change.

### Design

- Maximise the space you have and make the most of vacant or redundant space that could contribute more to climate change adaptation.

- Design integrated solutions for adaptation, for example SUDS, which can combine their drainage function with other uses such as recreation and space for development.

## Further information

ASCCUE (adaptation strategies for climate change in the urban environment).

*Planning policy statement: planning and climate change — supplement to planning policy statement 1 (PPS1)*. See [www.communities.gov.uk](http://www.communities.gov.uk)

*Planning policy guidance 17: planning for open space, sport and recreation*. See [www.communities.gov.uk](http://www.communities.gov.uk)

*Planning policy statement 25: development and flood risk*. See [www.communities.gov.uk](http://www.communities.gov.uk)

TCPA (2007) *Climate change adaptation by design: a guide for sustainable communities*.

UK climate impacts programme. See [www.ukcip.org.uk](http://www.ukcip.org.uk)

Climate change is a clear and present reality that means warmer and wetter winters, hotter and drier summers, rising sea levels and more extreme weather. Even with efforts to cut carbon emissions, change is inevitable — so adapting our towns and cities has to be an urgent priority. Thoughtfully designed public spaces offer urban areas their best opportunities to adapt, offering water storage, cooling and carbon absorption. This briefing from CABA Space sets out the lessons learned in the UK and around the world from using public spaces to adapt.

1 Kemble Street  
London WC2B 4AN  
T 020 7070 6700  
F 020 7070 6777  
E [enquiries@cabe.org.uk](mailto:enquiries@cabe.org.uk)  
[www.cabe.org.uk](http://www.cabe.org.uk)

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As a public body, CABA encourages policymakers to create places that work for people. We help local planners apply national design policy and advise developers and architects, persuading them to put people's needs first. We show public sector clients how to commission projects that meet the needs of their users. And we seek to inspire the public to demand more from their buildings and spaces. Advising, influencing and inspiring, we work to create well-designed, welcoming places.

CABA Space is a specialist unit within CABA that aims to bring excellence to the design, management and maintenance of parks and public space in our towns and cities.

Written by David Taylor for CABA Space, based on a paper by Rob Shaw, Faber Maunsell.

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