

Delivering green infrastructure in the existing urban environment



In this briefing Louise Clarke, CIRIA, discusses the importance of delivering green infrastructure in our existing urban environment, its benefits and different approaches and methods for its implementation

Introduction

A network of green elements can help create a backbone of sustainable and high quality urban environments (CABE space, 2010). Greening the existing environment can range from designing a new green space to planting a street tree or adding a flower bed. All these measures help make our towns and cities greener and add to the local green infrastructure.

Half of the world's population lived in cities in 2007 (Zitkovic, 2008), and in the UK census in 2001 nearly 80 per cent of the population lived in urban areas (Pointer, 2005). This demonstrates that a large percentage of the population live in existing urban areas and with 45 per cent of parkland in England being lost since the beginning of the 20th century (Natural England, 2008) enhancing green infrastructure in these areas is vital. Green infrastructure has social, economic and environmental benefits. It helps reduce the urban heat island effect, creates pleasant environments for the local community and encourages investment. The benefits and opportunities of green infrastructure are discussed in this briefing.

Why improve green space and green infrastructure in the existing urban environment?

Green infrastructure is an important aspect of our environment. People value good quality green and public spaces and are more likely to use them if they are of high quality (CABE, 2010). Green infrastructure can also help to increase the sense of place as it encourages social interaction in the urban environment which, can help reduce crime by providing natural surveillance in public spaces. Also, these spaces can have recreational benefits offering the opportunity for people to pursue

cycling and other outdoor activities general well-being is encouraged and quality of life is improved. They are especially beneficial for people with depression, obesity or heart disease (Kuppuswamy, 2009).

The effects of climate change on our weather patterns will cause more extreme conditions, and an increase in the number of natural environments and process can help adapt and mitigate these effects. Green infrastructure including trees, sustainable drainage systems (SuDS), green roofs and parkland can help cities adapt to climate change by reducing the urban heat island effect, reducing and managing surface water runoff and provide shading for habitats and wildlife in warmer conditions. Mitigation methods include providing more sustainable transport corridors, increasing carbon storage and sequestration and reducing food miles.



The local economy can also benefit from well-designed spaces as the increased environmental quality of areas and create a more attractive environment that encourages businesses to occupy the area. House prices can also increase if they are surrounded by a pleasant environment or overlook green space - up to 18 per cent can be added to the price of the house that overlook natural views (Natural England, 2010).

Green space has been incorporated into new developments and the benefits of green space have been championed through several publications and government initiatives including:

- **Green spaces, better places** is the Final report published by the Governments urban task force which provides recommendations on improving the provision, design, management and maintenance of urban parks and green spaces
- **Living places – cleaner, safer, greener** was published in 2002 and set out proposals to improve the quality of the urban environment over the next five years
- **Green Flag awards scheme** was launched in 1996 to recognise and reward the best green spaces in the country. It is a critical element of the Government’s aim to improve the standards of parks and green spaces.

The main focus of these initiatives has been to promote green space, gardens and trees in new developments. However, much of the built environment already exists and is unlikely to change. So there is a need to consider how to incorporate green infrastructure into existing spaces using innovative methods.

Approaches to greening the existing urban environment

Different methods of greening the existing urban environment include:

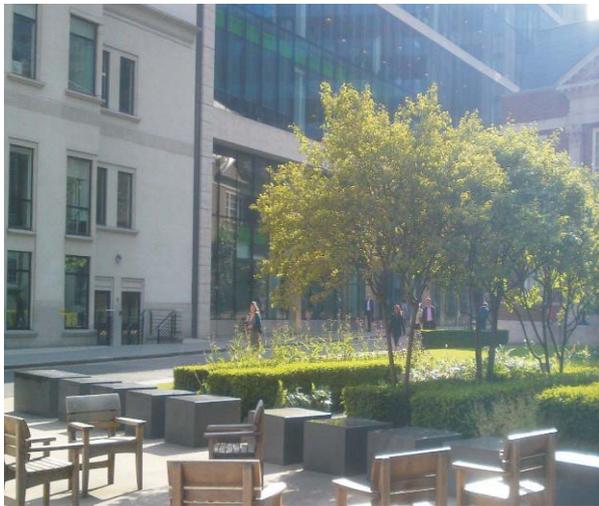
- **Street trees** are an important aspect of the urban environment as they are usually the only significant vegetation growing in a street. They help create more pleasant and attractive places and

can provide links between open spaces and parks. Properties are often promoted as being within “tree lined streets”, which can help increase property values and provide other benefits such as absorbing traffic noise and helping improve air quality while also reducing ambient air temperatures.

- **Green roofs and green walls** can be incorporated into sites where there are few opportunities for other green infrastructure measures. They can provide important ecosystems that help link green networks through cities. They also help to reduce the urban heat island effect, reduce surface water runoff and increase biodiversity.
- **SuDS** manage water closer to its source by using more natural processes. As these processes mimic the natural environment many of them incorporate vegetation in their design including swales, filter strips, bioretention and detention basins. This vegetation is multifunctional as it not only helps to manage water more sustainably, but also increases the green infrastructure and biodiversity of the area. The incorporation of SuDS into the urban environment is often through new build developments, but overlooked in current urban locations due to the difficulty of retrofitting. However, given that the majority of our urban areas are already developed, retrofitting needs to be performed to have an effect on urban locations.
- **Restoration of exciting water courses** that have been heavily modified by man, can create a slower and more natural response to heavy rainfall while also restoring the waterway to its natural channel. This enhances the biodiversity of the area through increasing the vegetation of the watercourse and increasing the number of wetlands, ponds and wildlife corridors.
- **Improving an existing park or grass land:** if a park or open space is neglected or under used it can be associated with crime or the fear of crime. Redesigning or improving a local park can help enhance and revitalise the green space and could

be used as a catalyst for increasing green infrastructure in the area.

- **Creating links to already existing green space** can help develop a network that links the spaces and provides corridors through the urban environment. This is important to help enable species migration and prevent segregation between urban areas. This can link several greening methods including the greening of selected streets.
- **Providing allotments for the local community** can help increase green spaces in towns and cities. They can encourage the local people to use and enjoy their environment and produce local grown produce.



Current projects and initiatives encouraging the inclusion of green infrastructure in the urban environment

Green streets project is led by the Red Rose Forest, an organisation working to transform the Greater Manchester area into a greener, healthier place to live, work and invest (Red Rose Forest, 2010). The project works at the heart of the community to promote the value of greening as a means of tackling a range of social, health and economic issues. The projects are tailor made to each of the communities and range from planting street trees, to creating communal green alleyways and living green walls.

The London Mayor's Street Trees scheme this is part of the Mayor's aim to make London a greener

city by providing funding for 10 000 new street trees (Mayor of London, 2009). Forty priority areas have been selected as areas that would benefit from the social, economic and environmental improvements that the trees can provide (Mayor of London, 2009).



Summary

The social, environmental and economic benefits for the inclusion of green infrastructure in the urban environment are evident. However, there now needs to be a focus on examining how to deliver these benefits in-line with other important infrastructure projects. For example, it cost £1.28bn to widen the 63 miles of the M25. For the same amount of money 3.2 million street trees could be planted, which would save three million tons of carbon (CABE, 2010). The inclusion of green infrastructure in the existing environment should become a recognised tool that helps towns and cities mitigate and adapt to climate change while offering further benefits to the local community.



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