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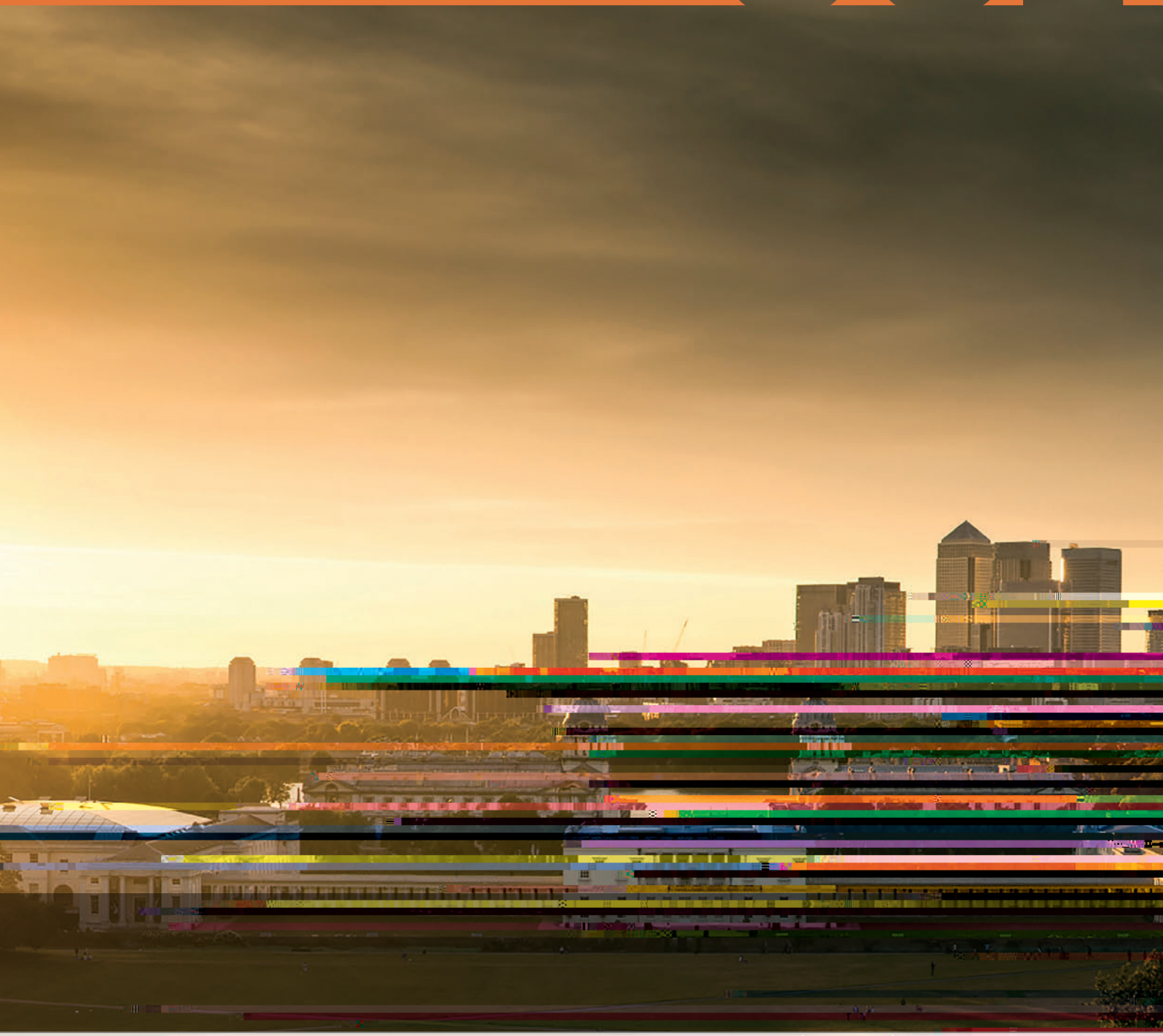

In large cities, changes in land use due to urban development can increase flood risks and water pollution. Sustainable Drainage Systems (SuDS) using green infrastructure-based approaches to drainage can bring solutions to these urban water problems. Traditional, engineered 'grey infrastructure' solutions such as pipes and drains can also be complemented by green infrastructure approaches (Box 2). Green infrastructure approaches can bring additional benefits for biodiversity, air quality and health and wellbeing of local residents.

Box 1: What is Green Infrastructure?

Green infrastructure is a strategic, planned network of natural, semi-natural and artificial plant and water components designed and managed to deliver a wide range of 'ecosystem services' (benefits to environment and people) and quality of life benefits. In an urban setting, green infrastructure may include parks, woodlands, wetlands, rivers, private gardens, street trees, allotments, playing fields, green roofs and sustainable drainage systems.

Benefits and issues: Green infrastructure and water

What don't we know yet?

Costs and benefits across sites: Separate 'cost-benefit' analysis is needed for each project as this can vary significantly depending on the desired outcomes and the characteristics of the site where SuDS are installed. Factors such as existing contamination, soil conditions, groundwater level can affect the capital cost.

Opportunity costs: 'Opportunity costs' are the economic opportunities missed as the result of choosing alternative courses of action. Conflicts of this type can emerge when green infrastructure approaches are used in areas which are in demand for development or as productive agricultural land. These costs are difficult to estimate because 1) green infrastructure projects are often well integrated into other plans or projects and hard to separate out; and 2) the benefits of green infrastructure may be harder to measure and more variable than the costs.

Measuring performance: A review of several US studies showed large differences in the performance of different green infrastructure components in SuDS for reducing runoff and improving water quality. This review recommended a conservative approach in the estimation of benefits.

Summary

Existing evidence and guidance on the use of SuDS for water management in urban areas highlights a range of challenges and opportunities. Many SuDS provide both water management and water treatment, though there are still issues in measuring direct impacts on either. There is a limited but increasing understanding of the economic and non-economic benefits of green infrastructure in urban water management.

Find out more

This factsheet accompanies a full report. For more details and key references please refer to: