

## Flood and Coastal Erosion Risk Management Research Programme

# Valuing the benefits of blue-green infrastructure

## Project Summary FRS18071/S

The Environment Agency has worked in partnership with CIRIA and others to update B£ST (Benefits Estimation Tool –valuing the benefits of blue-green infrastructure). The updated tool and accompanying updated guidance were published in February 2019. The tool, guidance and case studies are available on the susdrain website (<https://www.susdrain.org/resources/best.html>).

B£ST provides a structured approach to help identify and quantify the financial, social and environmental benefits of sustainable drainage systems (SuDS) and natural flood management (NFM) measures – collectively known as blue-green infrastructure.

The updated tool is based on the latest evidence and can be used to support the cost–benefit assessments needed to secure investment in new blue-green infrastructure. It will help risk management authorities, planners, landscape architects and drainage engineers to understand and measure the benefits of blue-green infrastructure in urban, semi-urban and rural settings. They can also compare blue-green infrastructure to more traditional approaches such as flood walls and piped drainage.

B£ST also measures and financially quantifies the multiple benefits of SuDS and NFM approaches beyond reducing flood risk. This can help to identify potential interested partners to collaborate with to provide new schemes and open up funding opportunities.

This summary describes the work completed with support and funding from the joint Environment Agency/Defra research programme.

### Background

B£ST was first released in 2015. It has been used across the UK and internationally to help implement SuDS in many locations.

SuDS mimic nature in urban environments by holding back rainwater where it falls or letting it soak into the ground, instead of letting it run off hard surfaces like pavements and car parks straight into sewers. SuDS reduce the impact of new and existing developments on surface water flooding. They can also provide other benefits to people and wildlife.

### What the project involved

The Environment Agency helped to:

- update B£ST so that it can be used to value the benefits of NFM measures and SuDS
- improve the evidence behind the tool
- make B£ST easier to use

The updated tool now includes 18 benefit categories (15 monetised and 3 non-monetised). It can quantify the benefits (in pounds) from improving:

- air quality
- amenity
- asset performance
- biodiversity and ecology
- building developments
- education
- health
- recreation
- water quality

And it can quantify the benefits from reducing:

- building temperature
- carbon
- flooding
- noise
- water quantity
- traffic

The quantified figures are based on updated evidence (to 2018) and monetary values (up to 2017).

The design of the tool has also been updated. It begins with a simple assessment and questions about benefits that could be delivered by the scheme. Each relevant benefit can then be quantified and monetised in detail.

Results are presented in graphs, charts and figures. Monetised benefits are described for business cases and funding applications (ecosystems services and triple bottom line). The benefits of different approaches or scheme options can also be compared. Future phases of the project will incorporate natural capital accounting into the results, and a geographical information system to show where benefits are located on a map.

## How B&EST will be used

The updated tool will help to:

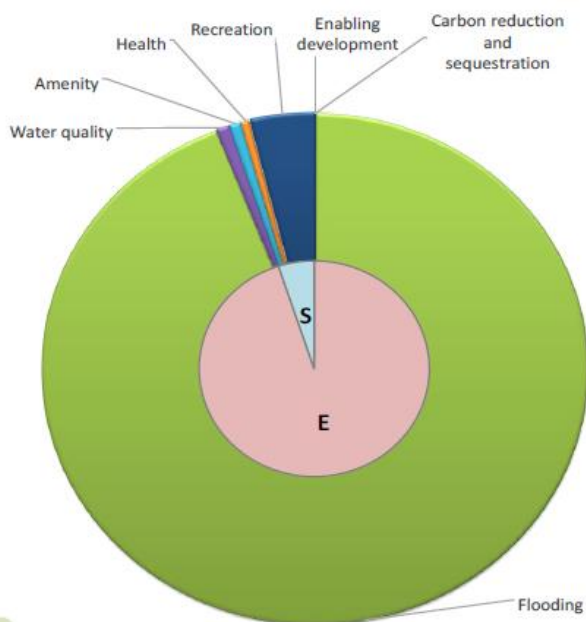
- calculate the benefits of blue-green infrastructure to compare against costs
- engage and encourage others to put SuDS and NFM in place
- provide the evidence needed to help encourage the funding of SuDS and NFM projects in partnership

The tool can support people who design blue-green infrastructure schemes, as well as risk management authorities that may be asked to fund or approve SuDS/NFM and want to know the benefits over conventional approaches.

The tool and guidance has been designed for multi-discipline use. Users may include:

- drainage engineers
- SuDS/NFM designers
- flood risk managers
- master planners
- planners
- landscape architects
- ecologists
- engineers
- economists
- communities (with support from practitioners)

An earlier version of the tool was used by Glasgow City Council to look at the benefits of delivering SuDS in Glasgow and to support the Glasgow City Centre Surface Water Management Plan (see chart below).



Distribution of SuDS benefits in Glasgow determined using B&EST

Source: BeST Case Study – Glasgow

[https://www.susdrain.org/files/resources/BeST/best\\_case\\_study\\_glasgow\\_swmp.pdf](https://www.susdrain.org/files/resources/BeST/best_case_study_glasgow_swmp.pdf)

Other more recent examples will be made available on the susdrain website.

## What this means for the Environment Agency

SuDS and NFM are 2 types of important measures used by the Environment Agency to manage the risks associated with flooding, climate change and urbanisation.

The B&EST tool will support Environment Agency teams and partners in developing cost-benefit assessments and funding applications for SuDS and NFM schemes.

The tool is already being used to quantify the environmental and social benefits to support SuDS and NFM partnership projects in a number of locations including:

- Cotehele (in Cornwall)
- Guildford
- St Austell
- Waltham Forest
- Welwyn Garden City

B&EST will support risk management authorities and others deliver the key principles in the government's 25-Year Environment Plan, actions in Defra's Surface Water Management Action Plan, and the National Planning Policy Framework (2018). These documents recognise the environmental benefits blue-green infrastructure can provide while reducing flooding.

This summary relates to information from project FRS18071 B&EST: Benefits estimation tool – valuing the benefits of blue-green infrastructure.

**Project manager:** Hayley Bowman, Flooding and Communities

**Theme manager:** Owen Tarrant, Asset Management

**Research collaborators:** CIRIA, Anglian Water, Dwr Cymru Welsh Water, Highways England, Northumbrian Water, Severn Trent Water, South West Water, Southern Water, Thames Water, United Utilities, Wessex Water, Yorkshire Water

**Research contractors:** Stantec, Eco Futures

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Website: <http://evidence.environment-agency.gov.uk/FCERM/en/Default/FCRM.aspx>

Email: [ferm.evidence@environment-agency.gov.uk](mailto:ferm.evidence@environment-agency.gov.uk)

Enquiries: [enquiries@environment-agency.gov.uk](mailto:enquiries@environment-agency.gov.uk)

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