
Making B£ST better – improving usability & spatial presentation

Summary

CIRIA's Benefits Estimation Tool (B£ST) and guidance has been used to value the benefits of blue-green infrastructure (with a focus on Sustainable Drainage Systems (SuDS) and Natural Flood Management (NFM)) for several years. Feedback on B£ST has been very positive, with benchmarking suggesting it is the most robust tool freely available to assess the benefits of SuDS. However, it is now beneficial to update B£ST to account for spatial variation in benefits with an integrated GIS user interface, which involves migrating B£ST to an online application to improve usability and the user experience.

Background

Using the [Benefits Estimation Tool \(B£ST\)](#) enables those working to improve local flood risk management and deliver place making to financially quantify the benefits from blue-green infrastructure (BGI). B£ST is used by the Environment Agency, sewerage undertakers, local government and those delivering strategic SuDS. It has also been evaluated by many Universities and used overseas with very positive feedback on its robustness. Our aspiration is that B£ST will support all stakeholders in the delivery of blue-green infrastructure, particularly in retrofit situations at all scales to mainstream BGI delivery and deliver multiple benefits.

During the last two years with support from our funders we have updated B£ST with additional evidence to improve its robustness, usability and coverage of additional benefit categories. It covers 19 benefit categories that are relevant to a number of stakeholders who deliver and manage surface water, Sustainable Drainage Systems (SuDS) and Natural Flood Management (NFM). It also now reports the quantification of benefits in terms of Ecosystem Services and Capitals accounting (which covers five capitals including Natural and Social) to align with water industry processes and Defra's 25 Year Environment Plan. Following this update, we now wish to build on this to improve its functionality and usability through the integration of a Geographical Information System (GIS) used by relevant stakeholders to assist with decision making. This is the third phase of the project.

CIRIA has received funding from the Environment Agency, Highways England, Anglian Water, Northumbrian Water, Severn Trent Water, South West Water, Thames Water, United Utilities, Welsh Water, Wessex Water and Yorkshire Water. We are in the final stages of confirming funding from Innovate UK for a grant. However, additional funds are sought to provide leverage and make the funding model viable.

Justification

Nature based approaches that include SuDS and NFM can deliver multiple benefits and it is essential that the benefits are understood, communicated to stakeholders and included in investment/funding decisions. B£ST has supported BGI delivery by helping users assess whether SuDS and NFM interventions provide value for money, either in themselves or when compared with more traditional drainage approaches.

Reflecting the current economic climate and the need for value, improvements in economic appraisal of infrastructure interventions are continuously required. With advances in software and platforms for the online graphical presentation and assessment of information we will explore opportunities to improve the presentation and ease of use (ie user interface) of B£ST.

The migration of the existing MS Excel tool and associated guidance to an online application will improve the graphical user interface (GUI) and enable the assessment, and presentation of the spatial variation of benefits. This will assist in obtaining relevant data (reducing resource and time inputs) for valuation and aligning BGI interventions with potential impacts, benefits and a broad base of beneficiaries over longer term periods and different spatial scales, whether these be development, neighbourhood, catchment or district (covering urban and rural areas).

These enhancements to improve B£ST provide an opportunity to mainstream the delivery of BGI, contribute to catchment and flood risk management where collaboration and partnership funding remain integral to obtain environmental outcomes.

Updating B£ST provides the opportunity to improve an established and well-regarded tool for all stakeholders interested in delivering BGI to manage flood risk. These changes have the potential to support catchment management, local flood risk strategies, SuDS delivery, Drainage and Wastewater Management Plans, Storm Overflow Assessment Framework (SOAF) and drive the delivery of high-quality flood risk management schemes.

Outcomes and benefits

A diverse group of stakeholders will benefit from an updated B£ST. The key target audience and beneficiaries are likely to be those managing or living with local flooding and water quality challenges, and those delivering redevelopment or regeneration projects with BGI (i.e. regulators, local authorities, sewerage undertakers, clients and increasingly community and third sector organisations).

The expected outcomes and benefits of this project are to:

- **Help enable BGI delivery** – The provision of an evidence base and a consistent approach to assess and present benefits to a wide variety of stakeholders and beneficiaries should drive the delivery of BGI.
- **Improve the resource and time efficiency of BGI benefit assessment** – This project will significantly reduce the time taken for data collection, analysis and presentation, particularly for complex situations.
- **Improve and raise awareness of evidence** – Further develop a compelling evidence base on the benefits and business case for BGI, particularly retrofit projects.
- **Support collaboration and partnership working**– Enhance a valuation framework that facilitates partnerships and partnership funded BGI schemes. This will support the development of business cases and applications for a variety of funding routes, including partnership funding, catchment restoration fund, WaSC investment (AMPs).
- **Mainstream the use of B£ST** – This project will maintain and enhance the credibility of B£ST as the leading tool to assess the benefits of BGI.
- **Underpin policy delivery** – Position B£ST as a key tool to underpin government and regulator policy initiatives that includes
 - Defra’s 25 year Environment Plan
 - Natural capital accounting (on assets and liabilities)
 - Resilience and climate change adaptation
 - Partnership Funding – particularly for surface water and NFM projects
 - Water industry business planning cycles
 - Drainage and Wastewater Management Plans
 - Storm overflow assessment framework for high spilling combined sewer overflows
 - The Catchment Based Approach
 - National and local flood risk management strategies in the UK
 - Initiatives to promote the delivery of NFM
 - National initiatives to manage water quality
 - Green infrastructure delivery

Aims and objectives

The long term vision for B£ST is for it to become the trusted application of choice for BGI planning for a range of stakeholders (regulators, sewerage undertakers, local authorities, third sector organisations etc). The aim for the B£ST online application is to integrate B£ST into an online geographic information system (GIS) framework to improve functionality and user experience. The specific objectives of this phase of the project are to:

1. Engage with the wide range of organisations with an interest in understanding the benefits associated with BGI to determine their needs and desired outcomes.
2. Provide a conversion of the existing Excel B&EST tool into an online application.
3. Provide additional functionality to enhance the user experience making it easier to undertake a manual assessment by reducing the amount of data and time required.
4. Provide simple but informative spatial information utilising available data sets with functionality to undertake simple measurement.
5. Provide more insight for CIRIA of the application's usage to help develop a business case for approaches to recover any necessary licensing and updating of B&EST online.
6. Reduce the amount of user input expected compared with the current version
7. Improve the overall user interface of B&EST to improve its appeal and usage amongst a broader base of stakeholders.
8. Disseminate the tool and guidance to encourage the delivery of SuDS and NFM by having dissemination and practical workshops. CIRIA's existing projects and links with other initiatives and organisations will be fully utilised.

The outputs of this project will include guidance and a tool (the exact platform will depend on user requirements and the business model adopted) and where possible will be available via [susdrain](#). A suite of case studies will also be developed to demonstrate approaches, outcomes and lessons learned.

Methodology

There are three key stages of this process building from a Proof of Concept, through to the full migration of the evidence and benefits already within B&EST. The process will be underpinned by project management, liaison with GIS service providers and reporting to the Project Steering Group and funders. A number of tasks are envisaged and dependent on available funds. These tasks include:

1. **Proof of concept** – this will provide Project Steering Group members and funders a working platform to test and comment on. Initially this will involve understanding requirements and potential user journeys to influence the initial design. Development will utilise an agile approach to produce the prototype application with development in two to three week “design sprints” where some existing benefits from MS Excel version of B&EST will be migrated. A core testing group will assess the application and provide feedback that will inform the next development sprint. An “inspect and adapt” approach will ensure that with each sprint, functionality and robustness is improved.
2. **Business case development** – market research and analysis to determine a business model to cover maintenance, licensing and updating of evidence and the B&EST application.
3. **Migration of all information** – Using the “design sprint” approach all the benefit and sub-benefit categories will be migrated to the online application. An updated literature review will also be undertaken to ensure that the latest methods and evidence of benefits are included in B&EST ensuring it remains one of the most robust approaches to underpin investment decisions on BGI.

Project information

Funds have been obtained from most of the English and Welsh sewerage undertakers (£100k). Additional funds are being secured from Innovate UK (£274k). However, additional funds (£50 – 75k) are required to leverage the IUK funding and assist project viability, particularly following the proof of concept stage. Our aim is to start the project in June 2020 and the full project will be completed by summer 2021, with a full working version forecast to be available for the spring of 2021.

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