What is a Blue-Green City?

Water Cycle — Streetscape

Urban / Natural
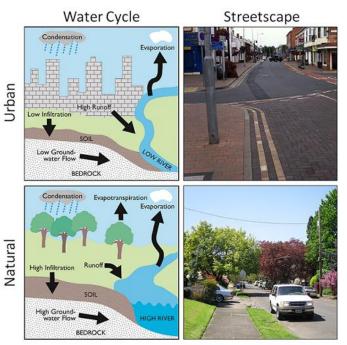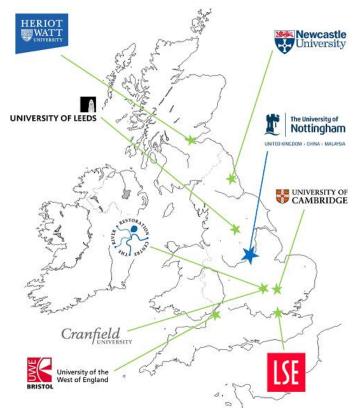
BLUE- GREEN

A Blue-Green City aims to recreate a naturally oriented water cycle while contributing to the amenity of the city by bringing water management and green infrastructure together.

This is achieved by combining and protecting the hydrological and ecological values of the urban landscape while providing resilient and adaptive measures to deal with flood events.

Blue-Green Cities generate a multitude of environmental, ecological, socio-cultural and economic benefits, and place value on the connection and interaction between blue and green assets within urban environments.

Project Team & Partners

The BGC Research Project Team comprises academics from 8 UK institutions.

HERIOT WATT UNIVERSITY

UNIVERSITY OF LEEDS

Newcastle University

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

UNIVERSITY OF CAMBRIDGE

THE RIVER RESTORATION CENTRE

Cranfield UNIVERSITY

UWE BRISTOL University of the West of England

LSE

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Environment Agency, Northern Ireland Rivers Agency, Bureau of Environmental Services, City of Portland, and CIRIA.

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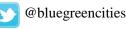Office: 0115 8468137

blue green CITIES

Delivering and Evaluating Multiple Flood Risk Benefits in Blue-Green Cities (BGC)

The BGC Research Projects aims to develop new strategies for managing urban flood risk as part of wider, integrated urban planning intended to achieve environmental enhancement and urban renewal in which multiple benefits of BGC are rigorously evaluated and understood.

BGC will put competent authorities, businesses and communities at the centre of the research to ensure co-production and exchange of knowledge.

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UK & US Research

Projects have begun at several study sites in the UK and US to meet the research goals.

Sediment and debris monitoring, J4M8, Edinburgh.

Participatory modelling in Hebden Bridge, West Yorkshire.

Modelling flood inundation from streams (Wortley Beck, Leeds, *image left*) and in urban areas (Newcastle city centre, *image right*).
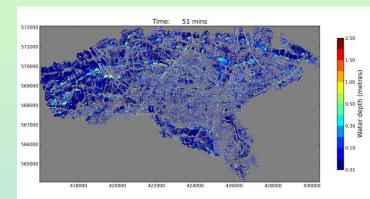

Perceptions of retrofit SuDS, The Dings, Bristol.

Investigating whether Portland, Oregon, is a Blue-Green City and the "Clean Water for All" initiative (UK+US, 2014).

Key Project Deliverables

- an urban flood model to simulate the movement of water and sediment through Blue-Green features;

- impact assessment of Blue-Green design on water quality, habitat & biodiversity;

- insight into how behavioural changes of individuals and institutions impact on flooding and vice versa;

Water depth map of the Ouseburn catchment, Newcastle (Newcastle University, 2013).

- methodology to evaluate interactions between urban flood risk management components and wider urban systems;

- evaluation of where, when and to whom a range of benefits may accrue under non-flood and flood conditions;

- robust method of uncertainty evaluation;

- formation of a Learning and Action Alliance for Newcastle stakeholders.

Newcastle as Demo City

The deliverables from BGC Research will be demonstrated in Newcastle in the final year of the project (2015).

Newcastle has historically experienced major flooding and the city centre is vulnerable to surface water floods as ~92% is impermeable.

BGC will model flood inundation from a range of simulated events and investigate whether the provision of Blue-Green infrastructure can reduce conveyance and depth of flood waters.

- BGC will robustly evaluate the multiple functionalities of Blue-Green infrastructure and identify and quantify the relative significant benefits.

- Recommendations to design guidance to enhance the most significant non-flood benefits will then be made.