Creating a Blue-Green Vision for Newcastle

Start-up meeting

Friday February 14th 2014
11.00-15.00

bluegreencities.ac.uk

Workshop agenda

11.00   Introduction to the Blue-Green Cities Research Project, Emily Lawson

11.15   Mapping and managing flood risk in Newcastle with CityCAT, Chris Kilsby, Vassilis Glenis, Vedrana Kutija

11.30   Comparative UK/Australia study of retrofit SuDS in the CBD for improved flood mitigation, Jessica Lamond

11.45   Q&A session 1

12.00   Local perspectives on Blue-Green Cities, Kit England (Newcastle City Council)

12.15   Partnership approach to sustainable drainage area planning, Martin Kennedy (NWL)

12.30   Q&A session 2

12.45   Lunch and networking

Workshop agenda

13.30 Briefing on the Learning and Action Alliance (LAA) and discussion of membership options, Jessica Lamond

13.50 Presentation on a stakeholder map for Newcastle, Glyn Everett (UWE)

14.00 Workshop exercise; validating the stakeholder map and discussing how different stakeholder groups perceive, utilise and value Blue-Green infrastructure

15.00 Closing remarks and end of meeting

> ➤ Invitation to an evening reception (Monday 17th March, Caledonian Hotel, Newcastle) with BGC team and US collaborators

Delivering and Evaluating Multiple Flood Risk Benefits in Blue-Green Cities
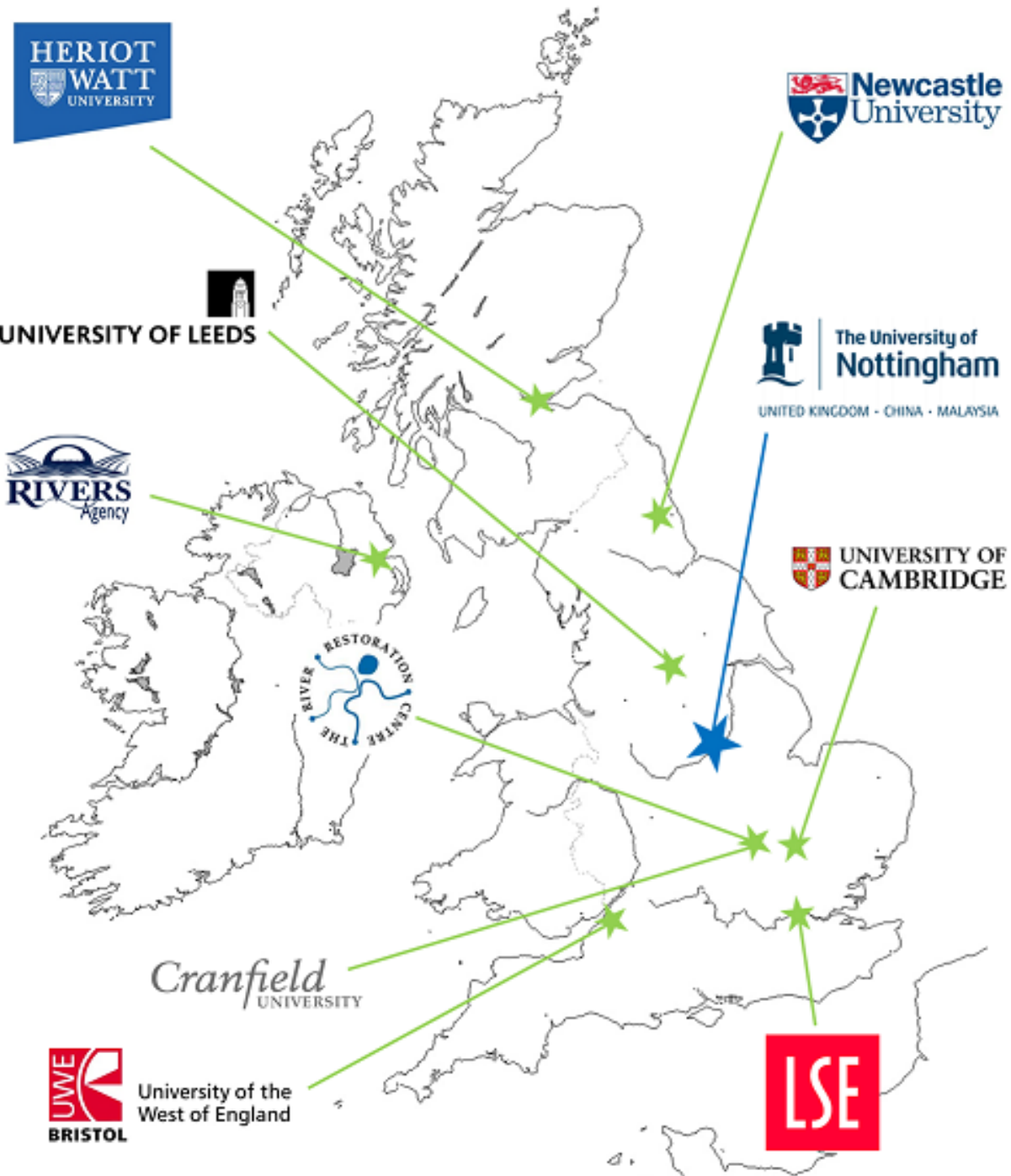
J4M8,
Edinburgh

Hebden Bridge

Wortley Beck,
Leeds

The Dings,
Bristol

HERIOT WATT UNIVERSITY

UNIVERSITY OF LEEDS

RIVERS Agency

THE RIVER RESTORATION CENTRE

Cranfield UNIVERSITY

UWE BRISTOL
University of the West of England

Newcastle University

The University of Nottingham
UNITED KINGDOM · CHINA · MALAYSIA

UNIVERSITY OF CAMBRIDGE

LSE

Case Study City:
Newcastle

blue green CITIES

International Collaborations

Portland, Oregon
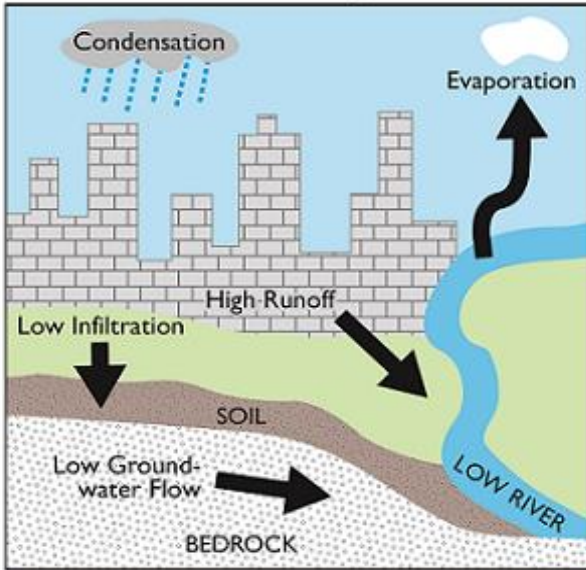Blue-Green Cities are working with:

Ningbo, China
Blue-Green Cities are working with Ningbo academics
James Griffiths, David Higgitt, Faith Chan and Odette Paramor

Water Cycle
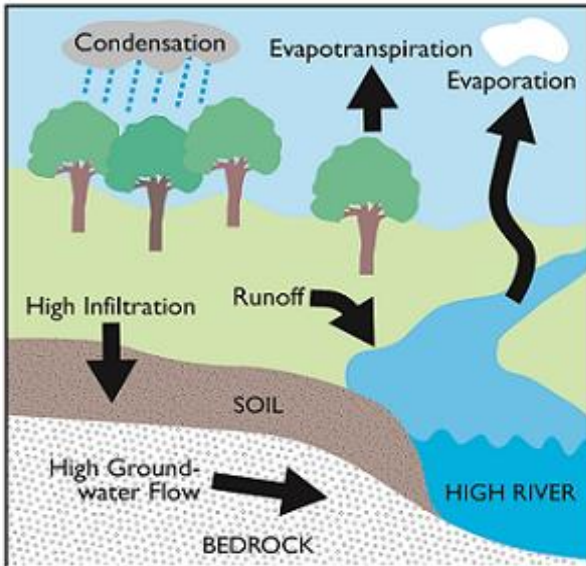
Streetscape

Urban

Natural

BLUE-

GREEN

Hydrologic and environmental attributes in Grey and Blue-Green Cities

Blue-Green Research Aim

Develop and rigorously evaluate strategies for managing flood risk that deliver multiple benefits as part of urban planning and renewal

Blue-Green Research Approach

Model Existing Flood Risk Management

Model Citizens' Behaviours

Evaluate Multiple Flood Risk Benefits

Stakeholder and Community Communications

Options for Hard/Soft Measures

Demonstration Case Study

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# WP1. Communications

AIMS   Facilitate co-production of knowledge.

        Increase internal communication between academics.
        Enhance external communications with academics,
        practitioners and stakeholder communities.

Strategies

- Project website (www.bluegreencities.ac.uk), intranet and forum
- Social media
- Wikipedia entry
- Regular meetings, workshops and co-location working
- External; Learning and Action Alliance (WP5)

WP1. Uncertainty

- Fidelity
- Sensitivity
- Verification
- **Uncertainty**
- Quantification
- Validity
- Relevance
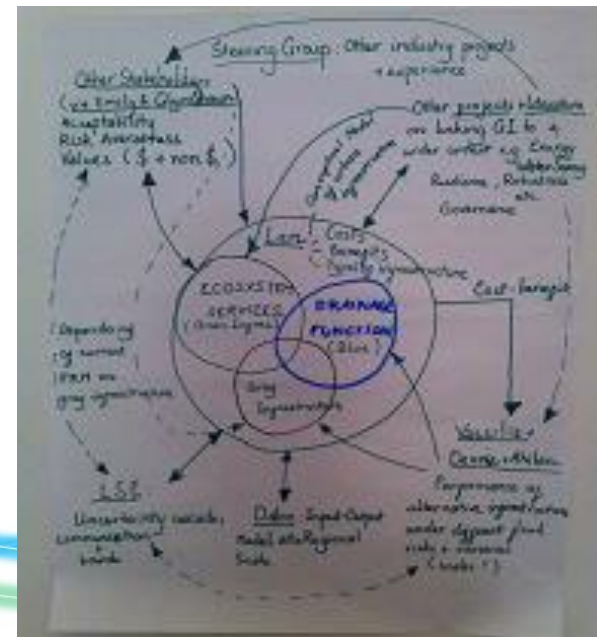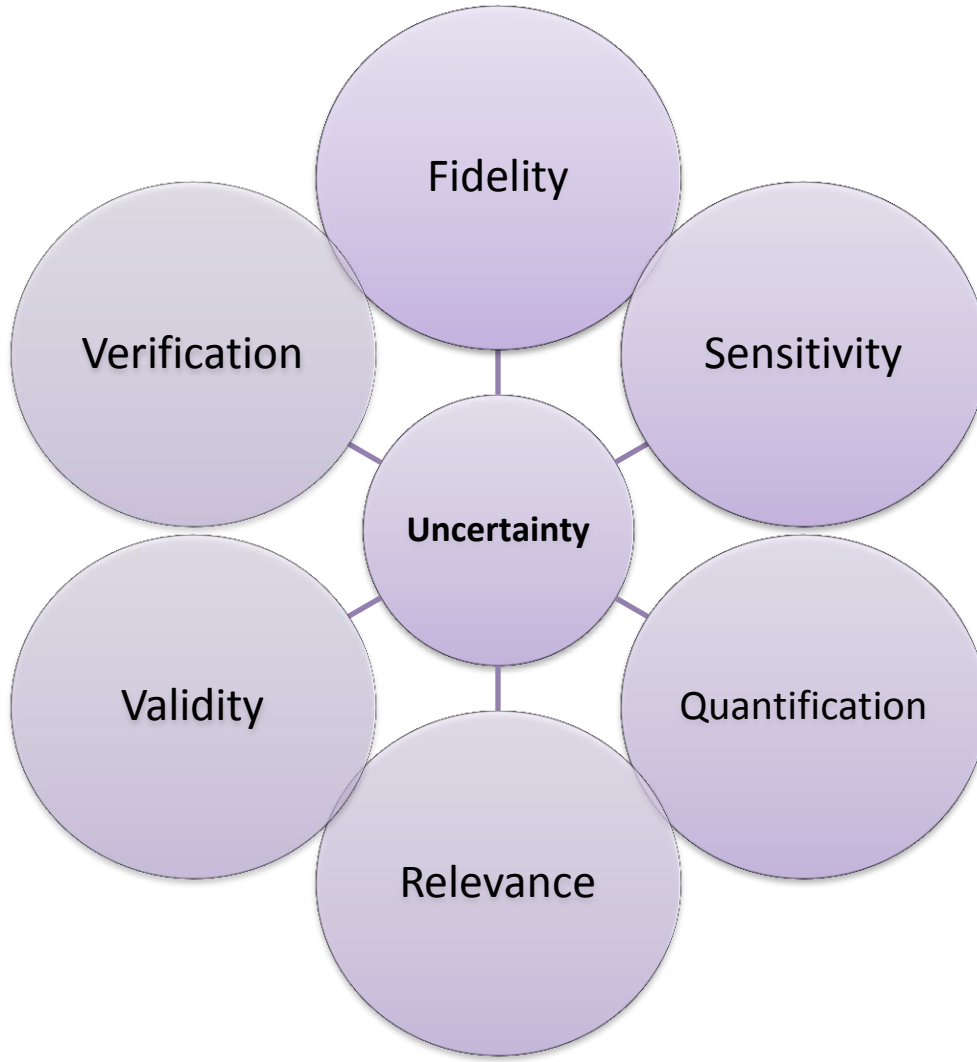
WP2a. Flood Inundation – 4 tasks

- Representing Blue-Green infrastructure in a model of urban inundation

- Modelling morphology and transport of sediment and debris through Blue-Green infrastructure

- Incorporating agents into an urban inundation model (Agent-Based Modelling, ABM)

- Developing probability maps of urban inundation to manage down risks and support resilient responses

WP2a. Flood Inundation – CityCAT
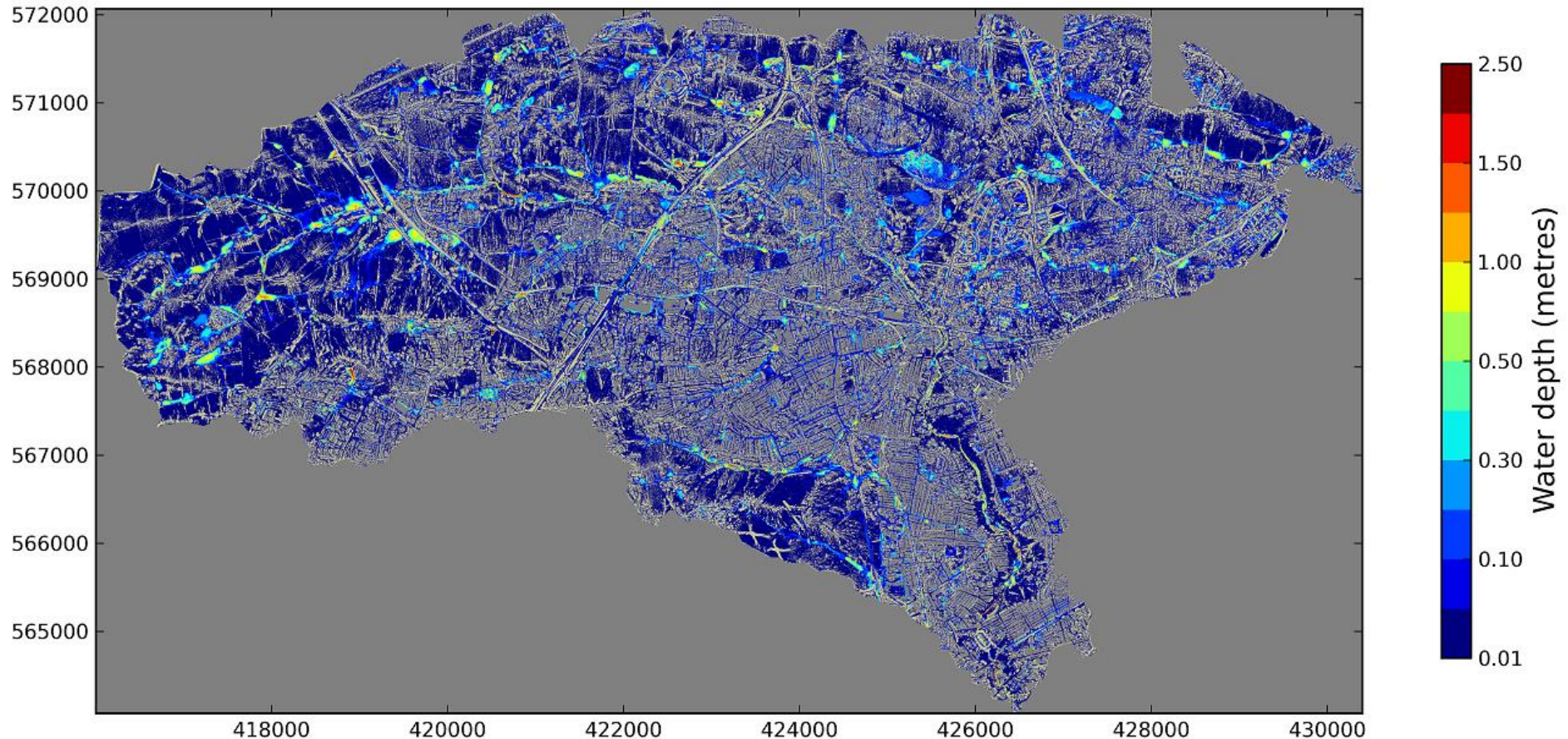
Water depth map of **Ouseburn catchment** (area = 120km² , cell size = 2m, cells = 30million). Storm event = 60 minutes, 100-year return period

WP2b. Sediment, morphology, habitats

AIM: assess sediment transport and debris dynamics within Blue-Green urban drainage networks and develop improved approaches to accounting for the risks and benefits associated with Blue-Green infrastructure.
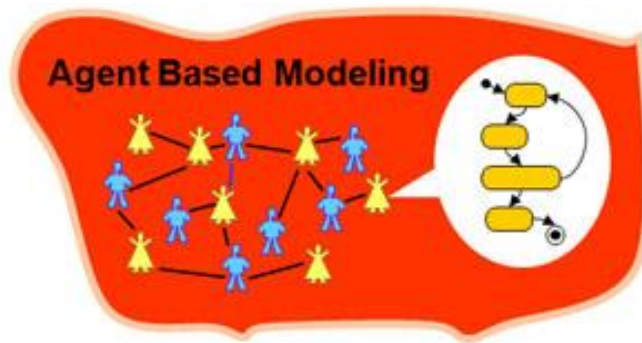

PIT technology

WP2c. Behavioural responses and ABM

AIM; To provide evidence-based rules about the behaviour of individuals and institutions to feed into the ABM
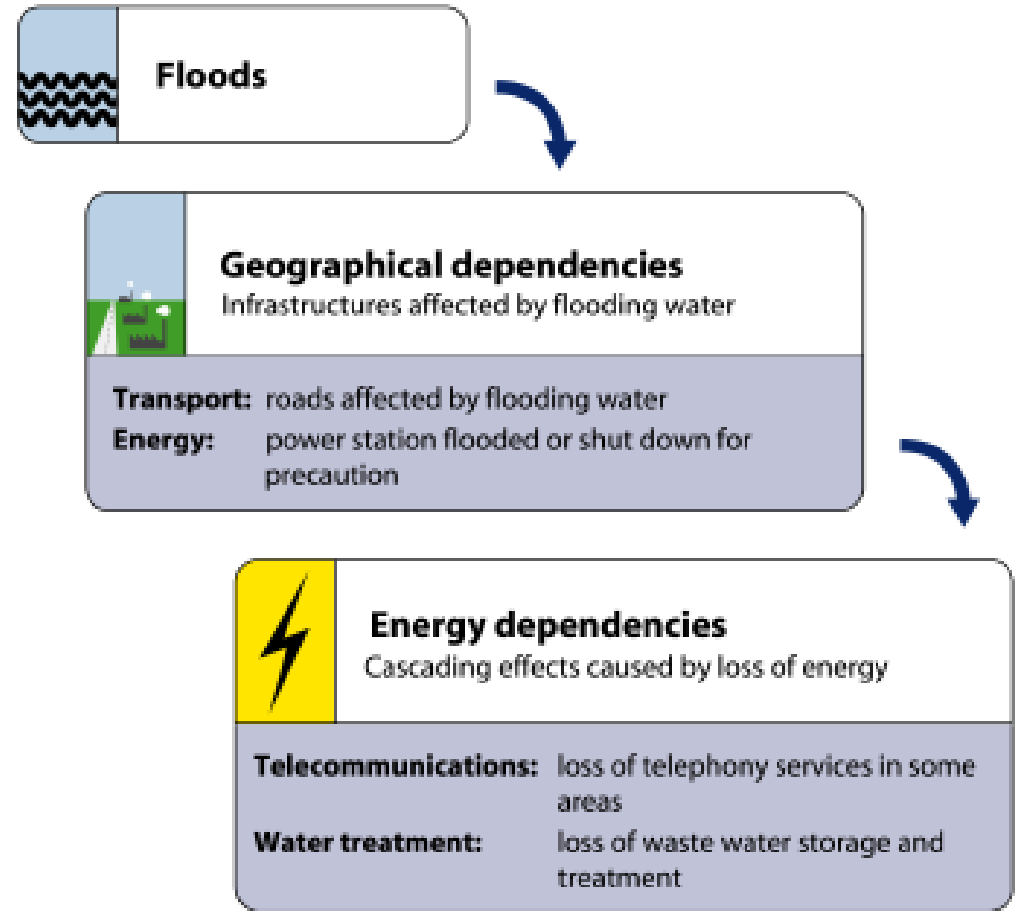
ABM – what would be the impact of installing water butts in all domestic properties?

Social Practice Theory approach; investigating how practices, behaviours and preferences may change over time
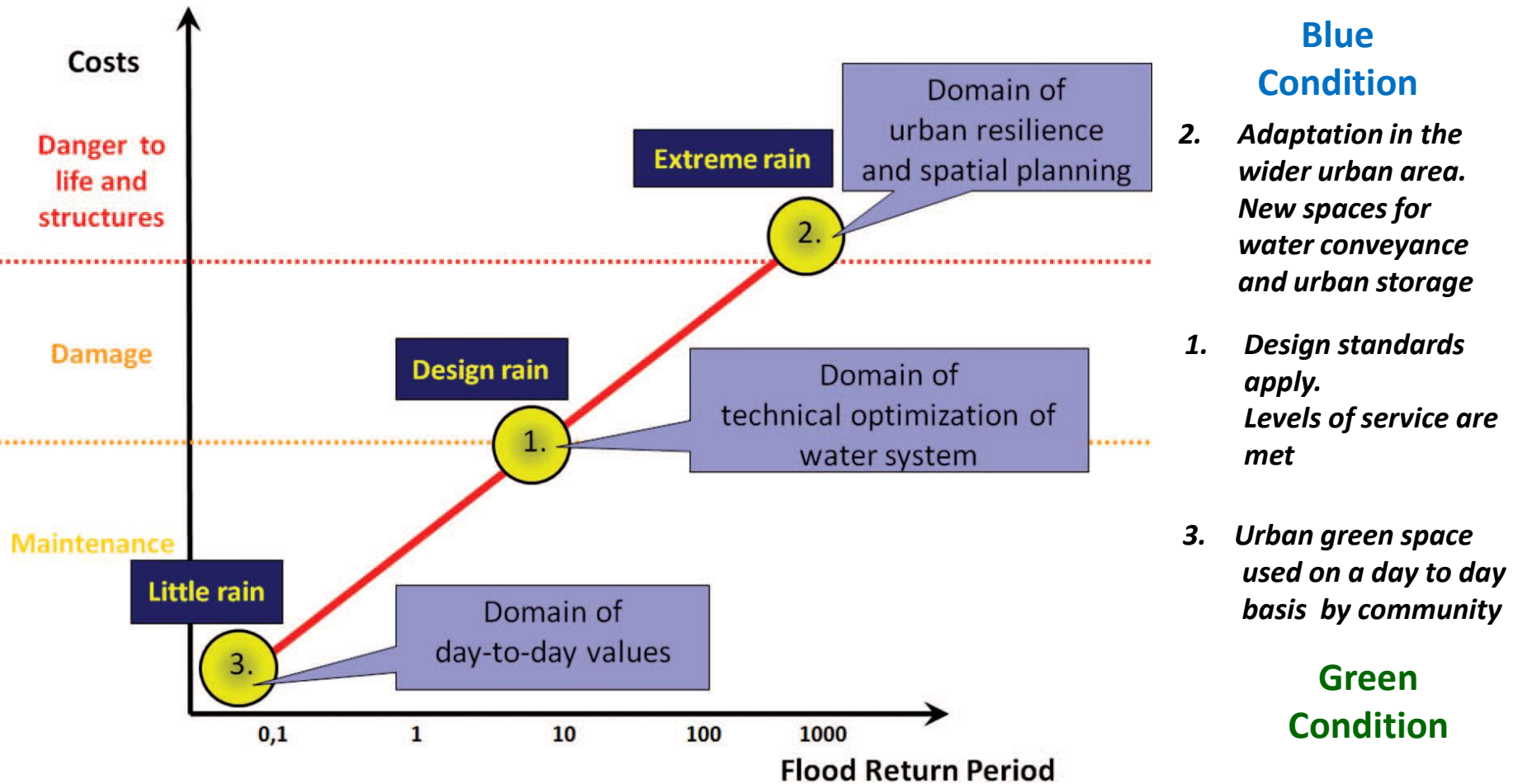
WP3. FRM components and interfaces

- Develop tools and methodologies to represent urban FRM and Blue-Green networks within a single urban environment

- Examining interdependencies with wider urban infrastructure

- Development of a "flood footprint" accounting tool

Source Adelard Document 2009.

Floods

Geographical dependencies
Infrastructures affected by flooding water

Transport: roads affected by flooding water
Energy: power station flooded or shut down for precaution

Energy dependencies
Cascading effects caused by loss of energy

Telecommunications: loss of telephony services in some areas
Water treatment: loss of waste water storage and treatment

Figure 2: Cascading effects during the 2007 UK floods

Three point approach for urban FRM

Blue Condition

2. *Adaptation in the wider urban area. New spaces for water conveyance and urban storage*

1. *Design standards apply. Levels of service are met*

3. *Urban green space used on a day to day basis by community*

Green Condition

Fratini et al.,(2012) Three Points Approach (3PA) for urban flood risk management.

WP4. Evaluation and synthesis of benefits

Aim; Develop procedures for the robust evaluation of the multiple functionalities of Blue-Green infrastructure components within FRM strategies
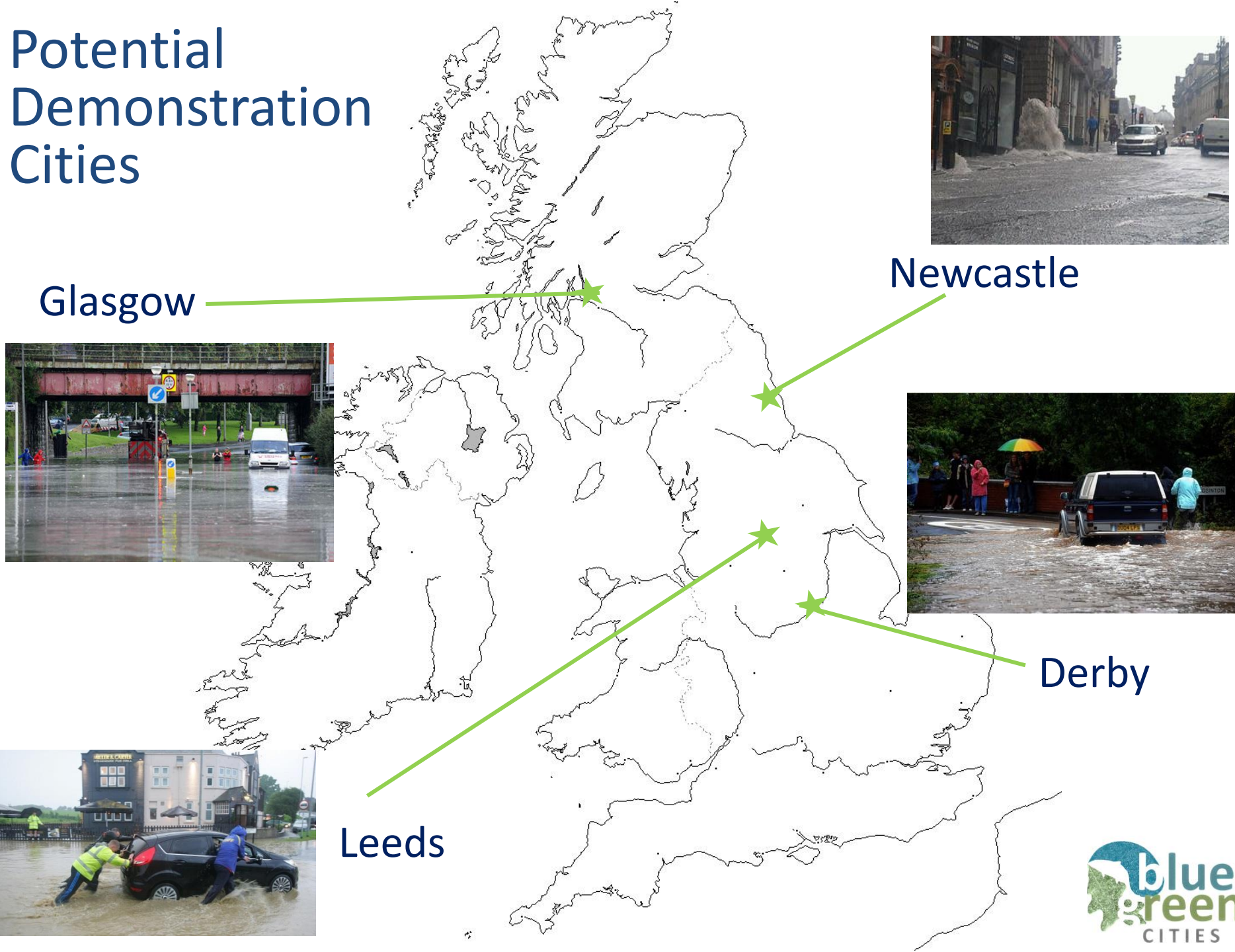

- Evaluate the **relative significance of benefits** in context specific locations

- Establish preference ratings

- Review current design procedures and make **recommendations to the design guidance** to enhance the most significant non-flood benefits
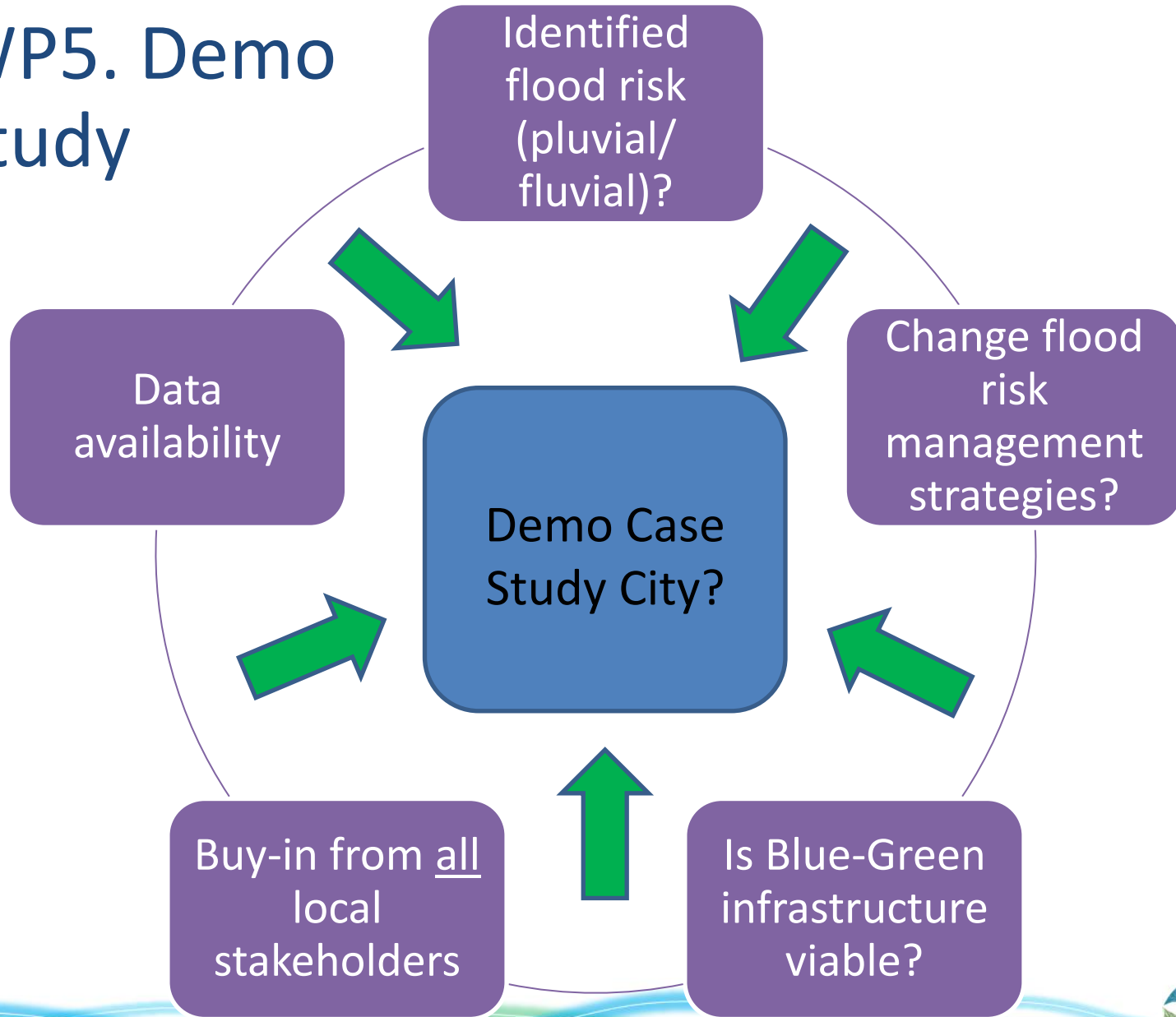
Potential Demonstration Cities

Glasgow

Newcastle

Derby

Leeds

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Acknowledgement

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- **Engineering and Physical Sciences Research Council**
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- **National Science Foundation**

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