

Natural Streets in Bristol

– steps towards flood risk management and climate change adaptation in a more resilient city

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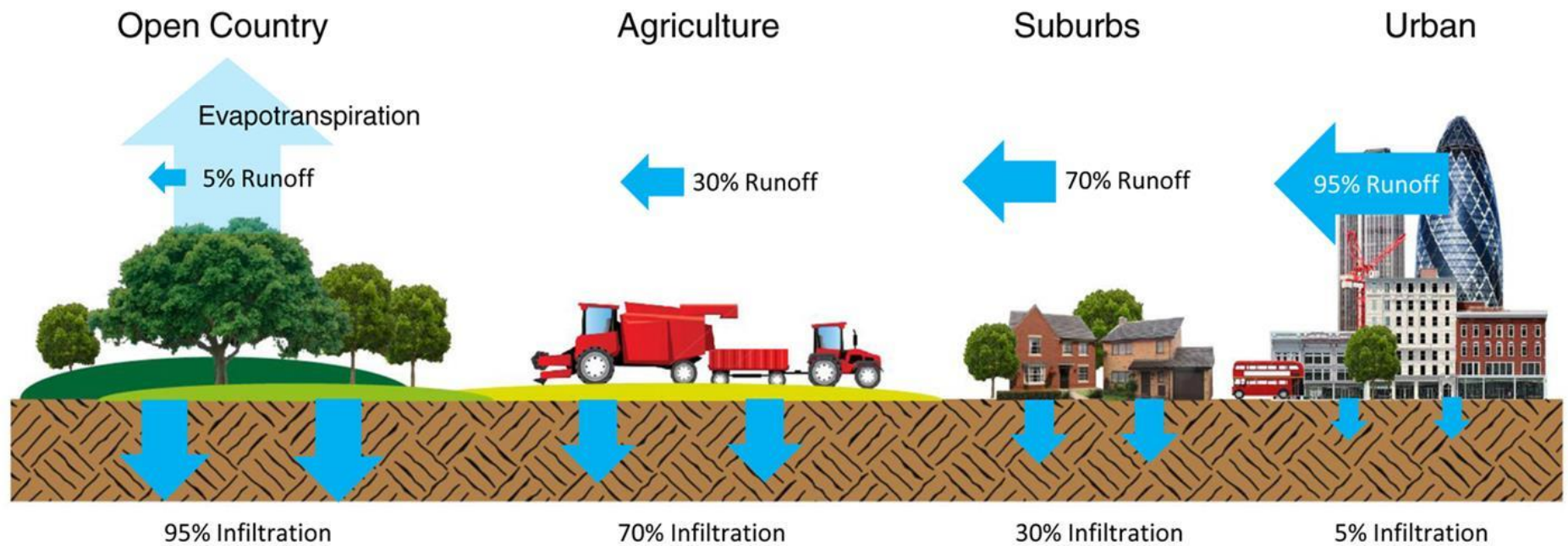
Adaptation in an Urban Environment

- How can we adapt the cityscape to mitigate the impacts of Climate Change?
- Experiences in Bristol of retro-fitting SUDs in Neighbourhood areas
- How will our streets and open spaces change as new features are introduced?
- Practical considerations for their adoption and maintenance

Adapting the city

- Introduction to SuDS
- Multiple Benefits
- Earlier projects
- SuDS Myth Busting
- Embleton Road SuDS Scheme
- Next steps

Introduction to SuDS



Multiple Benefits

SuDS also provide many other benefits other than flood risk management....



Traffic Calming



Biodiversity & Ecology



Water Quality Management

Earlier projects

CREATE Centre

- Permeable Car Park
- Developed in the 90s
- Interpretation panel



Interpretation

SUSTAINABLE DRAINAGE SYSTEMS

THE PROBLEM

rainwater runoff carries pollutants which end up in rivers

when there is insufficient drainage, flooding can occur

THE CREATE CENTRE CAR PARK

The red section of the car park you can see in front of you is one example of a sustainable drainage system called Permeable paving.

Rain and surface water filters through holes in the paving

Water enters a gravel bed where it is cleaned. It is then piped into the River Avon

WHAT ARE THE BENEFITS?

more recreational spaces

less flooding

wetland habitats created

less pollution

THE SOLUTION

SUSTAINABLE DRAINAGE SYSTEMS take water away from the surface, store it and clean it

Clean water filters into soil or returns to rivers

HOW DOES IT WORK?

SOME EXAMPLES

PERMEABLE PAVING

water drains through paved surface

gravel filter and filter water

water soaks into soil

SWALE

water flows into channel and is cleaned by vegetation

TREATMENT TRENCH

run-off

gravel

water filters into soil / piped to river

WETLAND

inlet

shallow edge trap with silt trap

reeds naturally clean water

outlet

SUPPORTED BY

Formpave
Quality concrete paving products

Tarmac¹⁰

Burdens
Quality paving products

FOR FURTHER INFORMATION CONTACT THE CREATE CENTRE RECEPTION ON (0117) 9250505

Living roofs in the city



Managing runoff



University living wall



The DINGS

The Dings Home Zone - Permeable Paving



Harbourside

- Harbourside – Canon’s Marsh redevelopment
- Swale through the site



Outside Bristol

Wessex Water
- Operations
Centre Pond



Multiple Benefits



Improve Air Quality



Enable Development

Plus many more!

Strategic City Transport

Flood Risk & Asset Management

Education



Slide 14

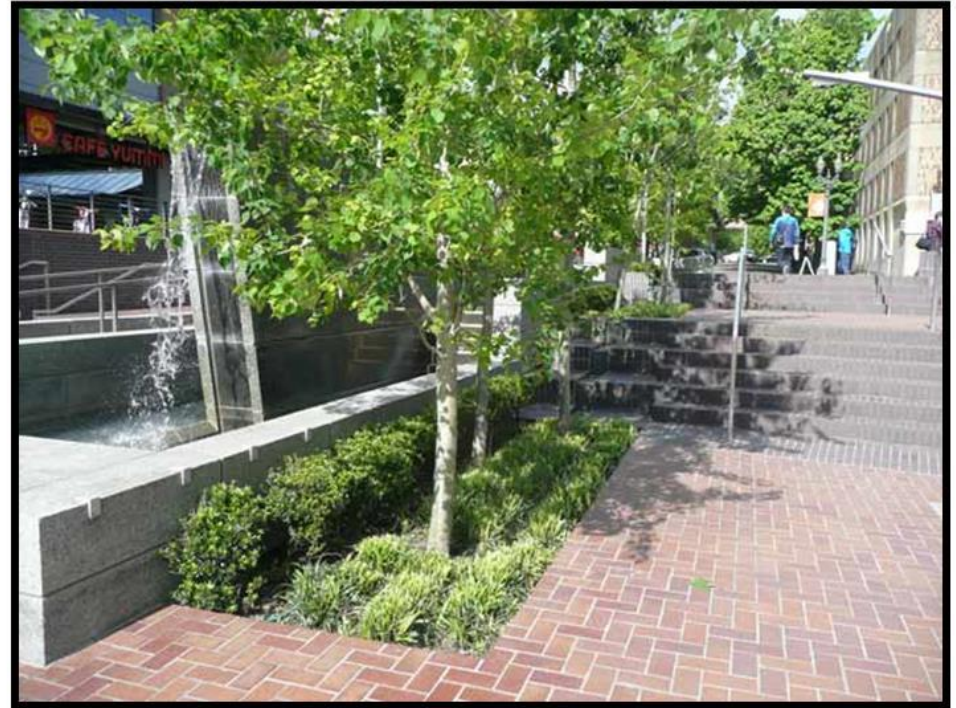


No more of this!

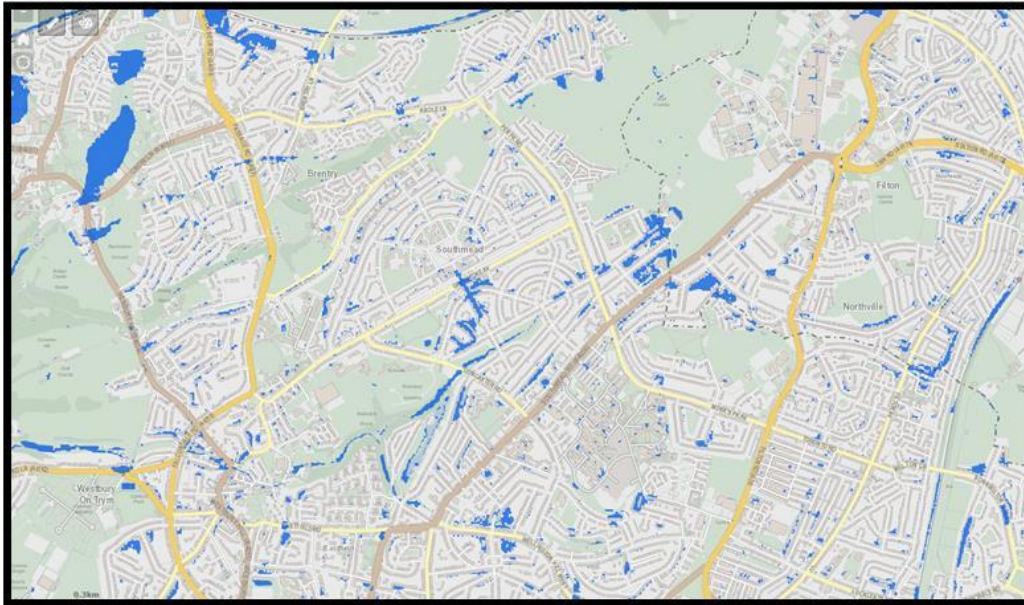


SuDS Myth Busting

- SuDS cannot be used in contaminated areas
- SuDS have to be Tree Pits
- SuDS are difficult to maintain



Embleton Road SuDS Scheme



Surface Water Management Plan



Engaging with the community

Embleton Road SuDS Scheme



Example local highways scheme from Nottingham



Before



After

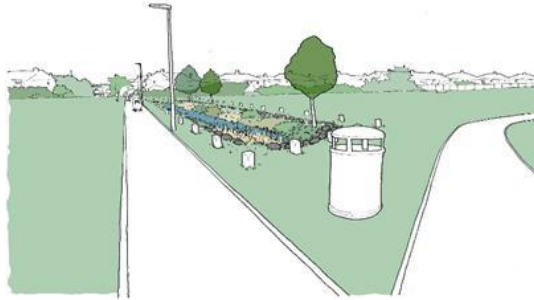
What next?

- A role for members
- Information on Traffic Choices website?
- Include SuDS onto other planned works e.g. road build outs: nature feature; traffic calming; why not make them a drainage feature as well!
- Produce SuDS Fact Sheet booklet / how to guide
- Future bid to Horizon 2020

Knowle Park Visualisations



The Recreation Grounds as existing



A retrofit opportunity for a bio-retention swale

OPPORTUNITY AREA 10.8



Greenleaze residential road as existing



A retrofit opportunity for a series of roadside raingardens



The Square (western part) as existing



A retrofit opportunity for a swale with check dams

OPPORTUNITY AREA 10.6

Strategic City Transport

Flood Risk & Asset Management

17 2011



Useful links:

- **BCC SuDS case studies -**
<https://www.bristol.gov.uk/planning-and-building-regulations/flood-risk-drainage-and-development>
- **CIRIA ‘Susdrain’ website -**
<http://www.susdrain.org/>

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