Sustainable Drainage Systems

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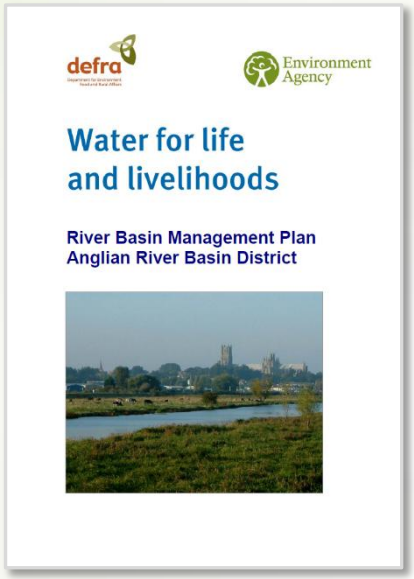
Sustainable Drainage Engineer

What are SuDs?

Why control runoff?
EU Water framework directive

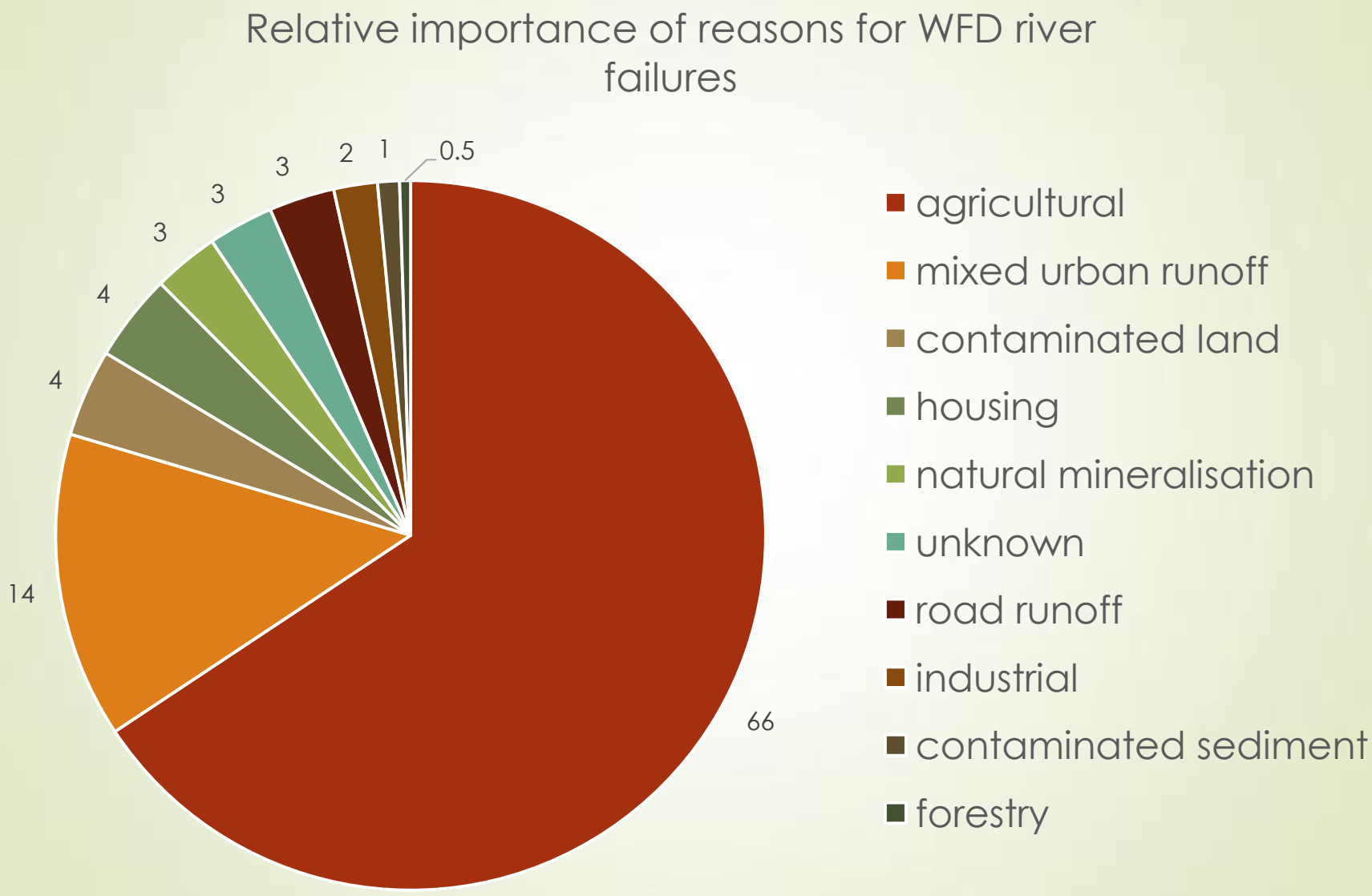


Assessment:
- Biological
- Hydromorphological
- Physical-chemical
- Chemical

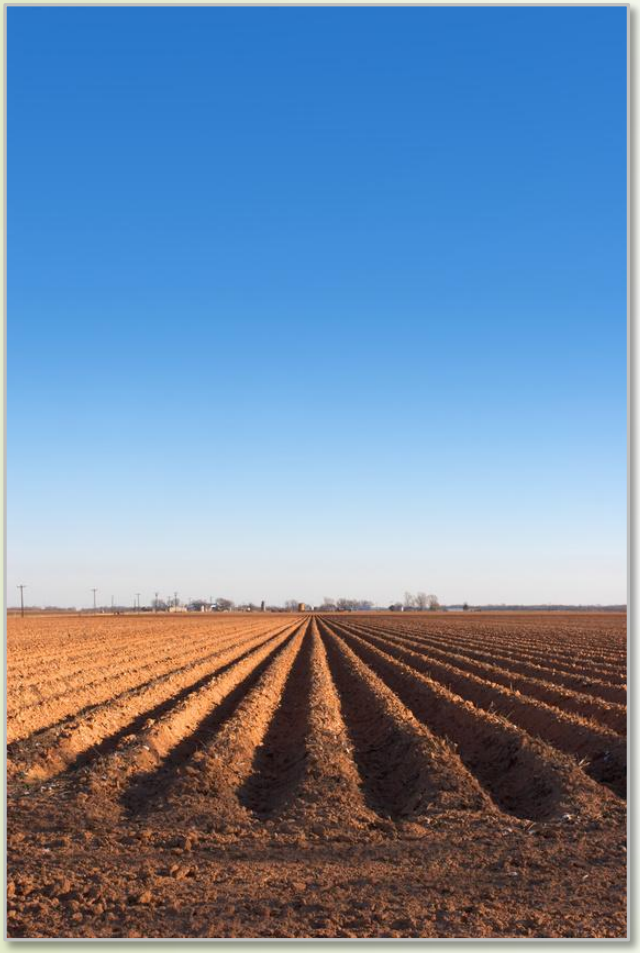
All water-bodies to achieve **'Good'** status by 2015?

Nationally only 27% of water bodies are **'Good'** status

Why control runoff?

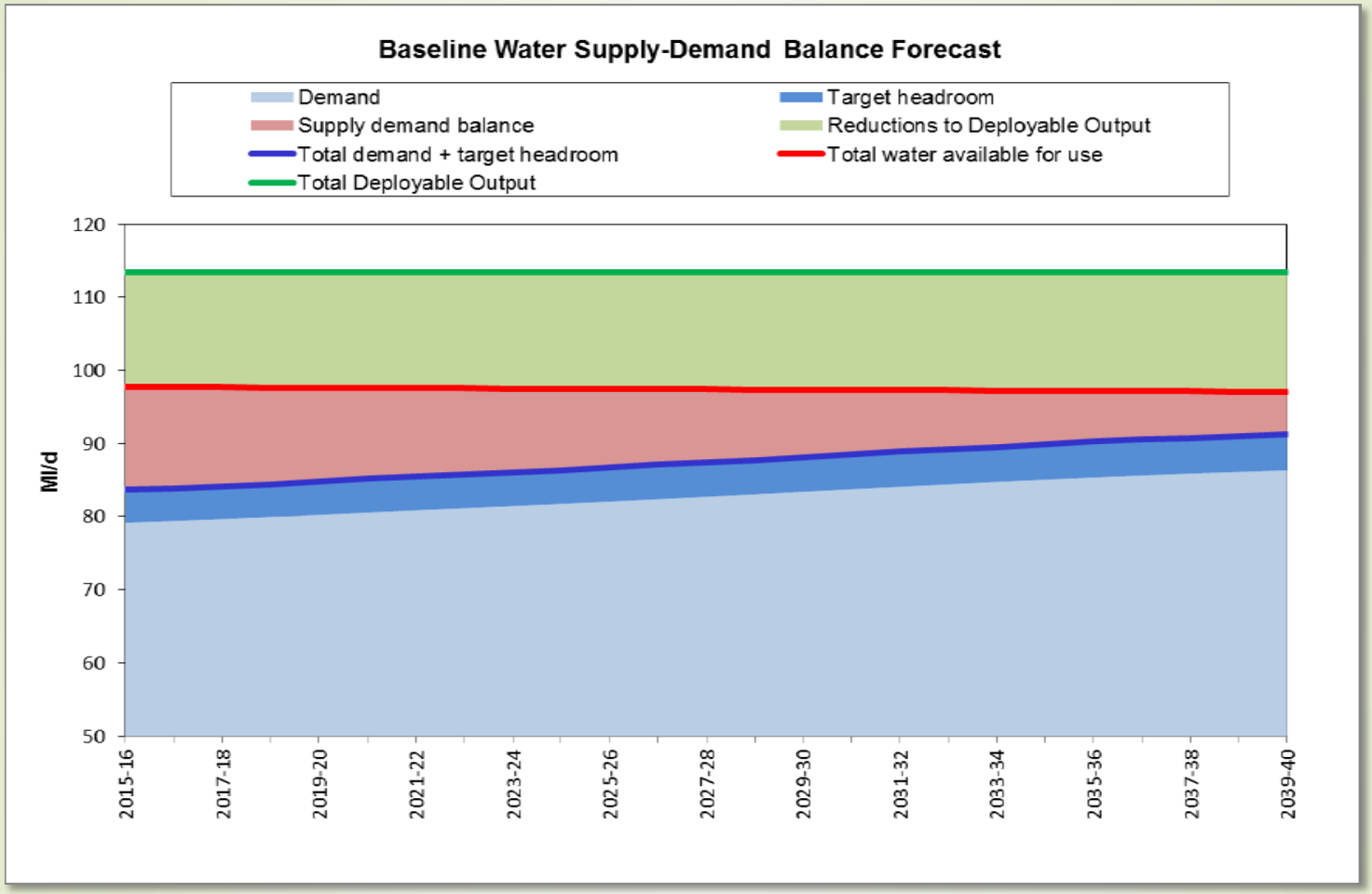


Why control runoff?



- Soil erosion:
  - Soil erosion affects 76% of agricultural land
  - The agricultural contribution to total soil erosion is between 75% to 95%
  - Soil erosion leads to a build up of sediments and associated pollutants in rivers
  - Directly impacts on river ecology

Why control runoff?



- Area of water stress
- Diffuse pollution impacts on the amount of treatment required for potable water

Why control runoff?

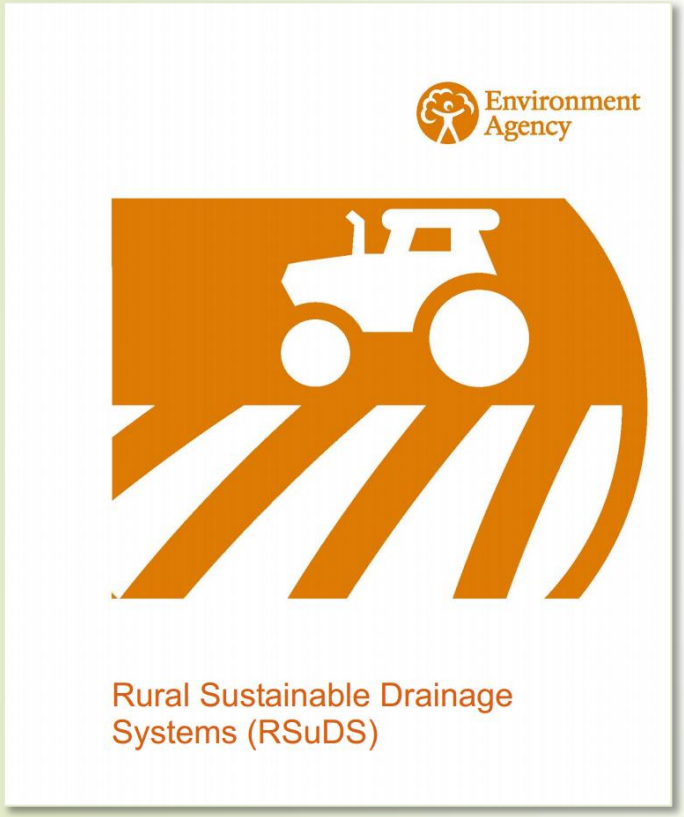
- Climate change:
  - hotter, drier summers
  - warmer, wetter winters
  - greater variability in year-to-year precipitation
  - changes in the number of intensive rainfall events
  - associated changes in soil moisture and the length of the thermal growing season

The Cam Corridor Strategy vision:

- **"A river system and riverside land that supports a flourishing and varied wildlife and provides an attractive environment for residents, visitors and businesses to enjoy."**

- **Sustainable drainage can go a long way to contributing to this.**

Guidance….
Rural sustainable drainage systems



Produced by:

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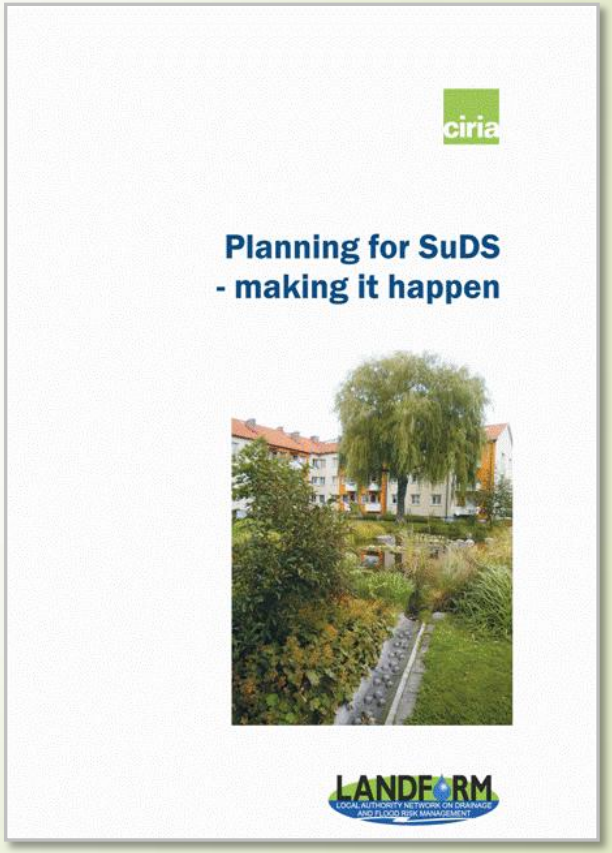
Planning for SuDS – making it happen (CIRIA C687)

Contents:

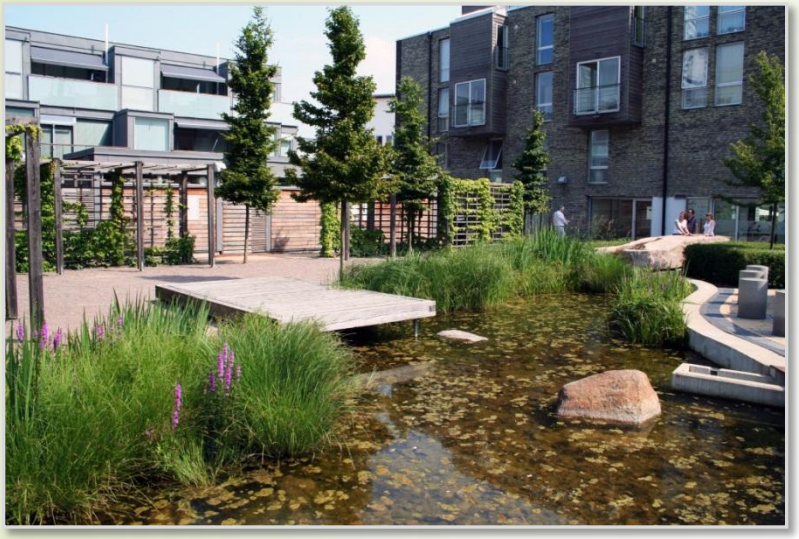
- Why sustainable drainage systems?
- What are sustainable drainage systems?
- How to work with the planning and development process
- How to make sustainable drainage happen
- How to specify sustainable drainage
- What SuDS maintenance is required

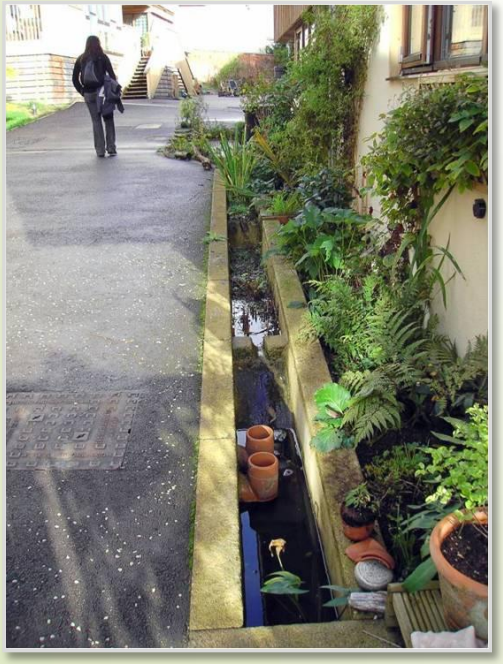


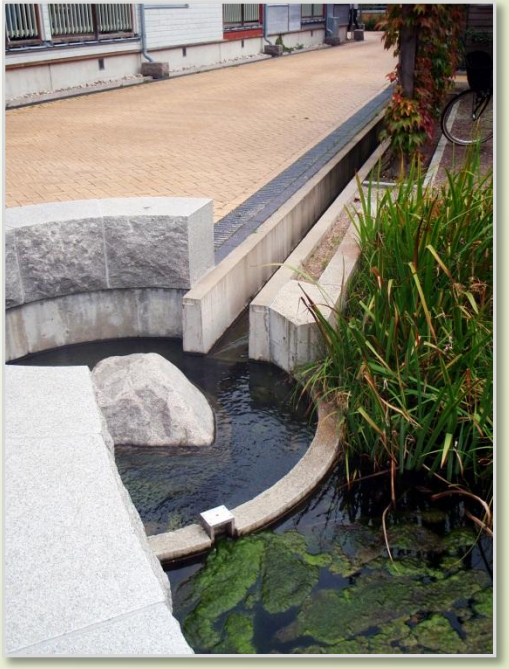
Components of a system

Component	flow	suspended solids	phosphorous	nitrogen	pesticides	pathogens
Green roofs	H	n/a	n/a	n/a	n/a	n/a
Permeable paving	H	M	M	L	M	M
Sediment trap	M	H	M	L	M	M
Swale	M	H	M	M	M	M
Infiltration trench	H	H	M	M	M	H
Filter/French drain	H	H	M	L	M	M
Barriers/traps in ditches/swales	H	M	M	L	L	L
Dry detention pond	H	H	M	M	M	M
Infiltration basin	H	H	M	M	H	H
Retention pond	H	H	M	M	H	H
Woodland belt	M	H	M	M	H	M
Filter strip	M	M	M	L	M	M
Dry buffer strip	M	H	H	M	H	H
Wet buffer strip	M	M	M	H	L	L
Constructed wetlands	H	H	M	M	M	H

Urban SuDs

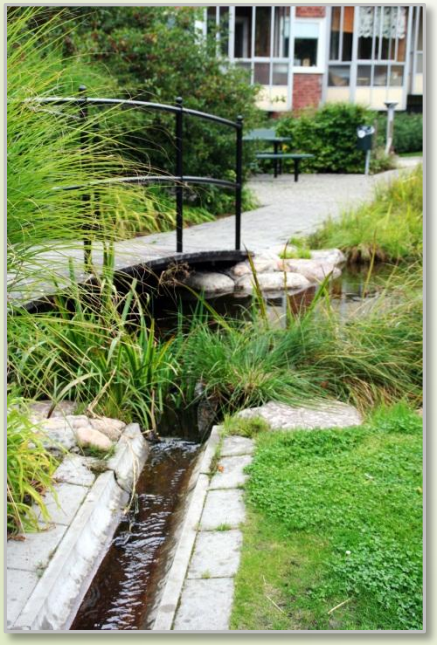


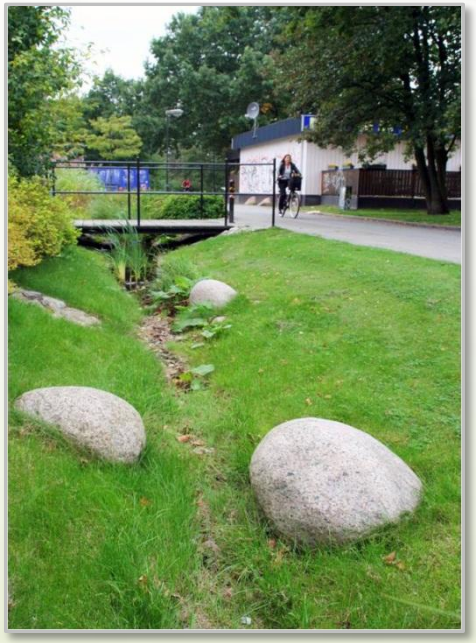


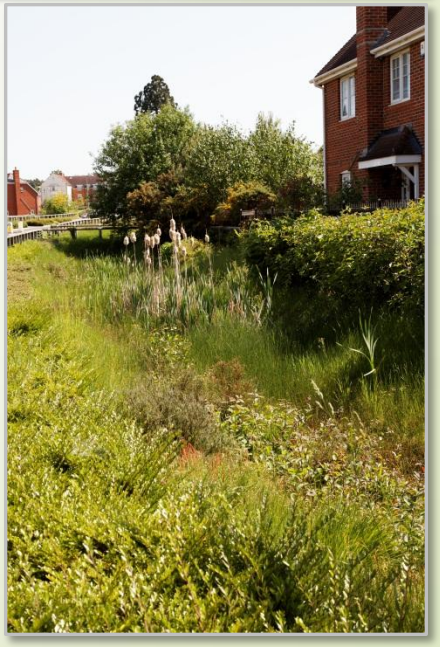


Green roofs

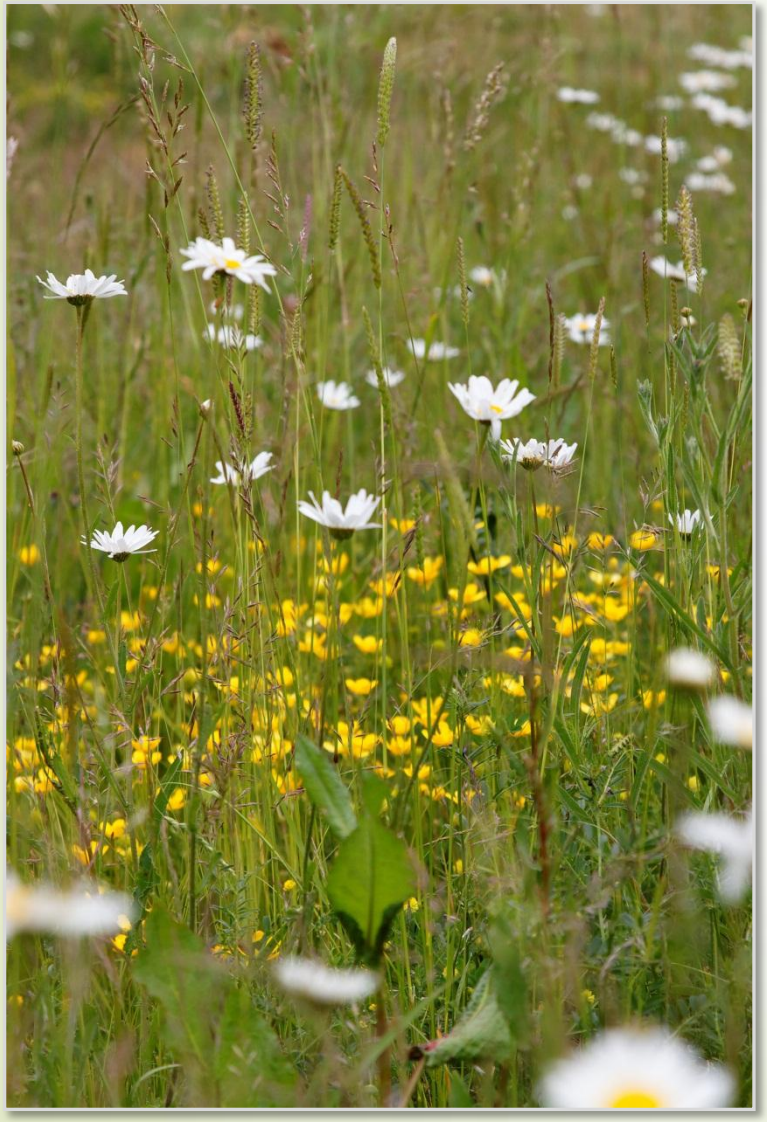
Swales and Rills







Wetlands and basins



Conclusions

- SuDs:
  - Replicate natural processes
  - Use natural features
  - Manage runoff, slowing the flow, providing treatment and increasing biodiversity potential and amenity