

# Achieving multiple benefits through sustainable catchment management

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**Through upland restoration** 



**Operation Peatland, Forest of Bowland** 









KILLER FACT from Making Space for Water project – Peak District NP: restoration of bare and gullied peat reduced peak flows by 30% and increased lag times by 20 mins.

**♦ Through pond creation** 





**Belford Burn, Northumberland** 







KILLER FACT from Belford Burn: a "leaky" pond holding 800 m3 of water takes roughly 8-12 hrs to drain completely and delays the peak flow 1 km downstream by app. 15 mins

Through woodland planting





**Woodland shelterbelt at Pont Bren** 

**Woodland planting on the Belford Burn** 



KILLER FACT from Pont Bren project: infiltration rates are up to 60x higher under young native woodland shelterbelts compared to adjacent heavily grazed pasture

## Through woody debris



Woody debris installed in Belford Burn



Woody
debris
combined
with
floodplain
attenuation
at NT
Holnicote.
Somerset



Leaving woody debris in situ at Holnicote





KILLER FACT from the Belford Burn project – Northumberland: Installation of 6 large woody debris structures in the headstream more than doubled the travel time for the peak of the flood 1 km downstream

**→** Through rural wetland creation





Lunt Meadows, North Merseyside



KILLER FACT from study of ponds in Northumberland: Organic carbon is 10% in uncompacted sediments in permanent ponds compared with 3% in adjacent agricultural land

#### Through flood storage area enhancement



Flood storage area of very limited biodiversity value



R. Beam Parklands, Dagenham



#### **→** Through urban river restoration



Restoration of the R. Medlock at Clayton Vale LNR, Manchester









KILLER FACT: Visitors to Ladywell Fields urban greenspace in South London increased by >250% after restoration of the River Ravensbourne through the park

#### **♦ Through urban flood risk management**





River Quaggy at Sutcliffe Park, South London, before and after flood alleviation work



KILLER FACT from the Mddx Univ Socio-economic study of the R. Quaggy: The average amount of time spent per person in Sutcliffe Park increased by 44% after "daylighting" of the river.

### **♦ Through SUDS**



**Green roof, London** 



**Surface water collection pond, Dunfermline** 



SUDS for Schools project, Queen Elizabeth Girls' School, Pymmes Brook catchment, North London



KILLER FACT from Environment Agency Introduction to SUDS: On average, urbanisation without SUDS trebles the rate of run-off during storm events

**→** Through coastal realignment



Steart managed realignment project, **Somerset** 







Environment KILLER FACT from EA Ecosystem Services Case Studies report: 400 ha Alkborough Flats managed realignment scheme cost app. £10M and provided £12M of storm protection to land and property. Other ecosystems services benefits = app. £1M p.a.

### **Through soil management**















KILLER FACT from Defra Soil Strategy for England 2009: The water treatment cost of soil erosion is app. £21 million p.a. in England. Agriculture is responsible for 75% of the sediment in rivers and 25% of the phosphorus



