

# Natural Flood Management

Presentation to England Fisheries Group  
July 2016

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# NFM - upland restoration



**Bare and restored peat on Kinder Scout**



# NFM – upland restoration



# NFM – pond creation



**Belford Burn, Northumberland**



# NFM – tree planting



**Woodland shelterbelt at Pont Bren**

## **Woodland planting on the Belford Burn**



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

# NFM – woody debris



Woody debris installed in Belford Burn



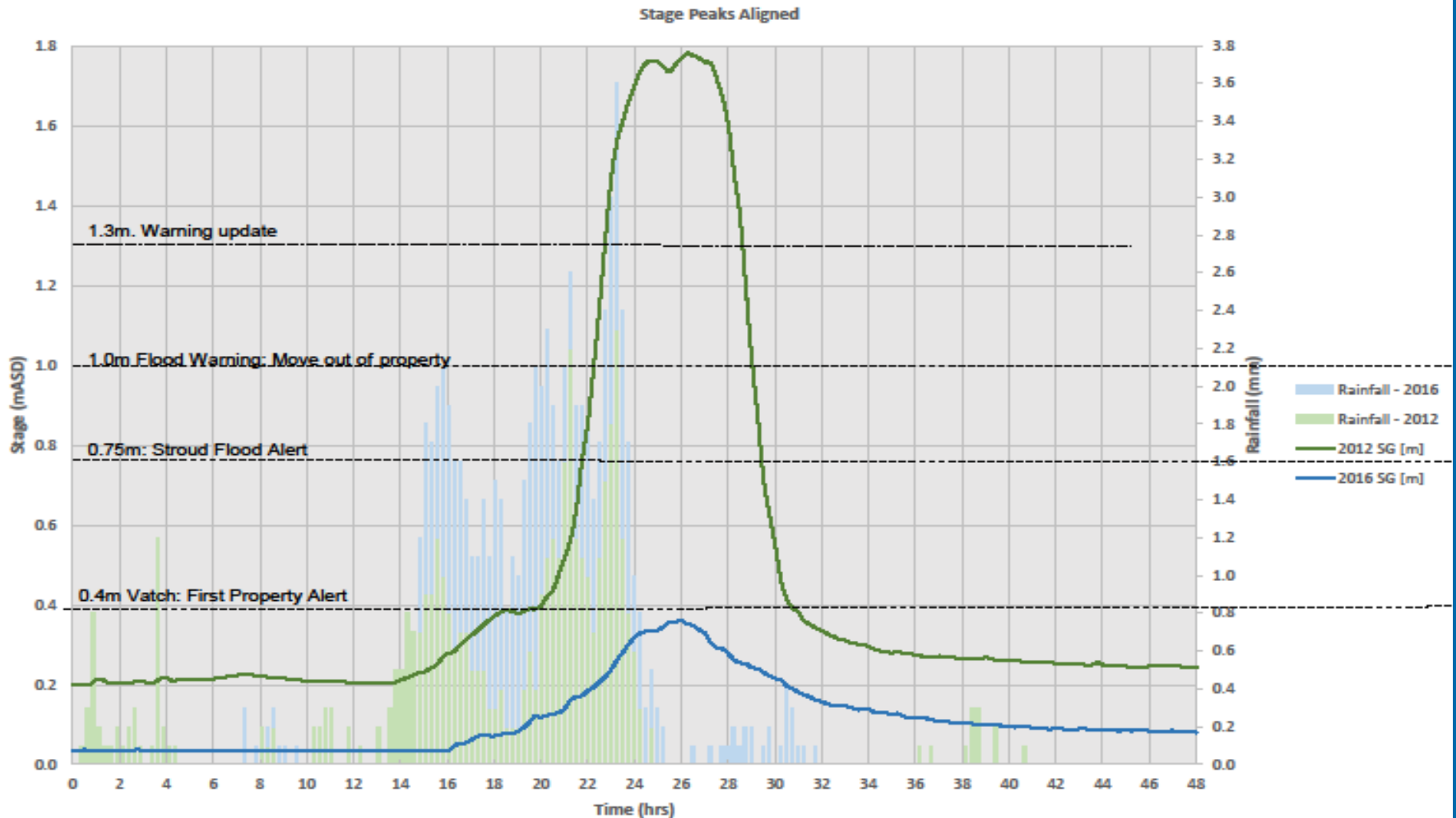
High flow woody debris dam in upper Slad Valley, Glos



Leaving woody debris in situ at Holnicote



# NFM – woody debris



# NFM – wetland creation



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

# NFM - SuDS



**Green roof, London**



**Surface water collection pond, Dunfermline**



**Cheltenham Rain Gardens**

# NFM - SuDS



**Hollickwood Primary**



**Susie Earnshaw Theatre School**



**Queen Elizabeth Girls' School, Pymmes Brook catchment, North London**



**Evidence from Lamb Drove SuDS project:** Maintenance costs associated with the Lamb Drove SuDS were 4% lower than those for equivalent pipe drainage systems

# NFM – coastal realignment



**Steart managed realignment project,  
Severn Estuary**



**Alkborough Flats managed  
realignment project, Humber Estuary**

# Putting it all together



**Grip-blocking and tree planting**



**Timber barriers across floodplain**



**High level timber dams**



**Flood storage area**

# Putting it all together



**Re-wetting upstream bog**



**Leaving woody debris in situ**



**Downstream  
woody debris  
combined with  
floodplain  
attenuation**



# NFM – soils – “the elephant in the room”



# NFM key messages

- ⇒ **NFM is not the silver bullet for solving all flooding problems**
- ⇒ Usually a mix of NFM and “traditional” civil engineering solutions will be necessary
- ⇒ **There is an increasing body of evidence to quantify the multiple benefits of catchment restoration**
- ⇒ Successful NFM may be achievable in larger catchments through large numbers of carefully targeted smaller scale interventions
- ⇒ **The challenges of “scaling up” mainly relate to the likely cost and complexity of dealing with multiple landowners and interests**