



# Natural Flood Management and Catchment Management: Background

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Jen, David, Nick, Mike, Gareth and Ian ...



# Runoff Management

Humans have always managed runoff

- Flood defences and flood plain inundation management
- For industry
- Water resource
- For energy
- For agriculture



# So what is runoff management?

The modification of hydrological flowpaths

1. of hillslope flowpaths (overland flow, subsurface stormflow and baseflow)
2. of drains and ditch networks
3. The manipulation of runoff in channels

Usually, close to the source of the runoff

**SLOW, STORE and FILTER**

*proactive . . . interventions*

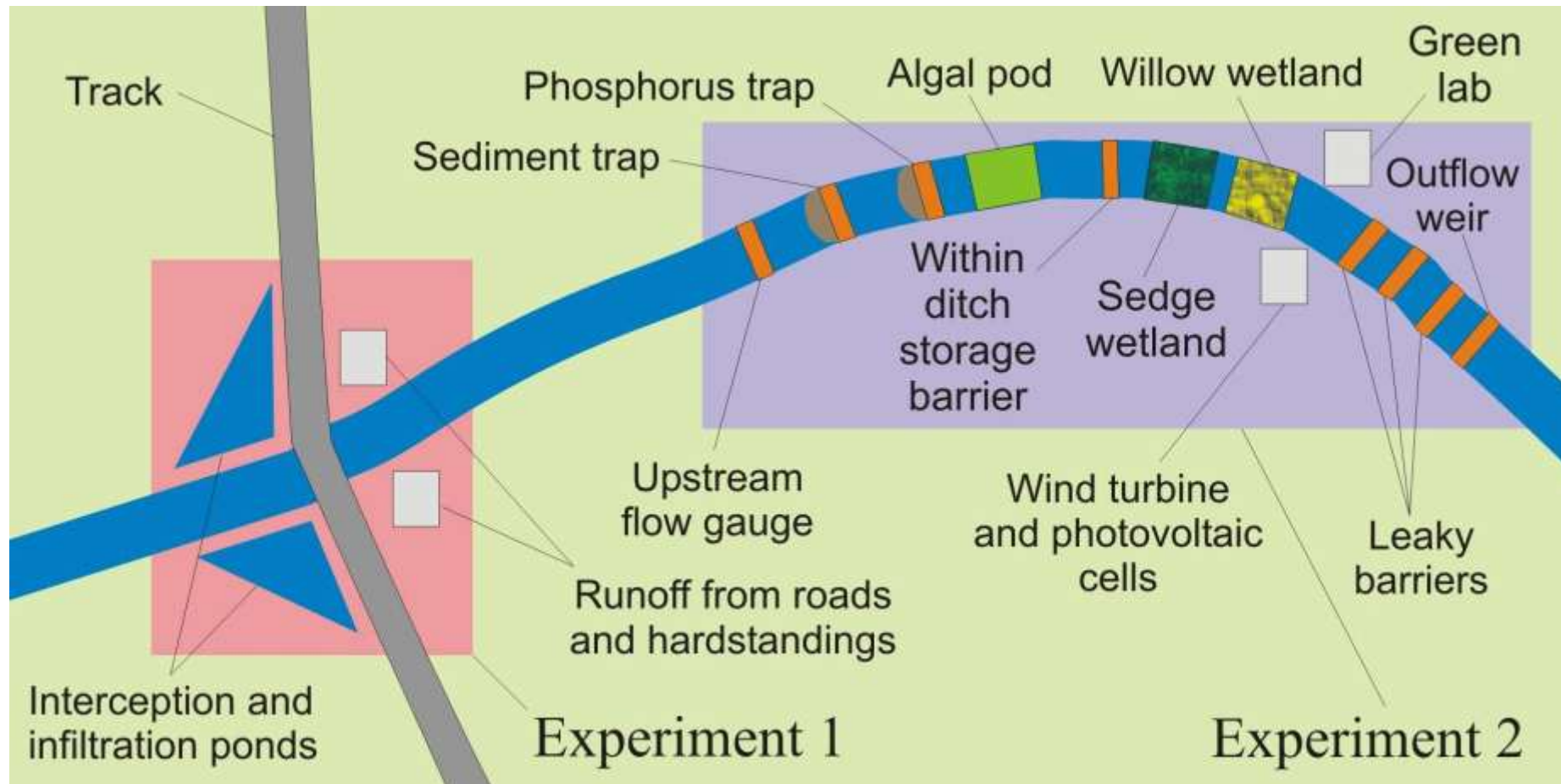


# Nafferton Demonstration Farm





# *proactive . . . interventions*



# Two Interception Ponds





# 5m Sediment trap





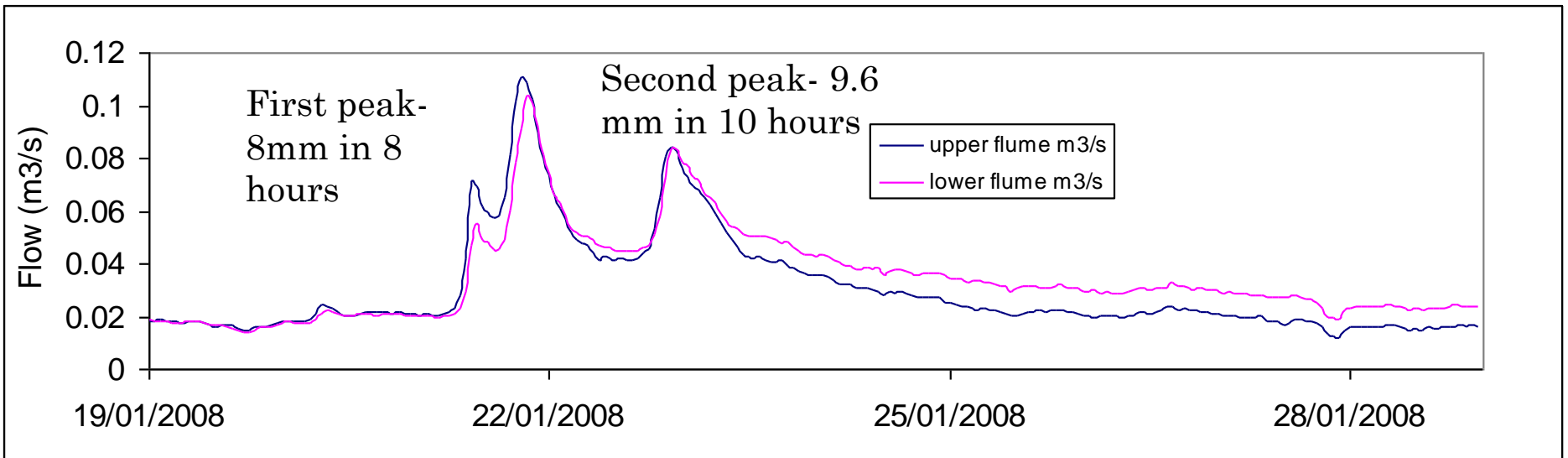
# Two Linear Wetlands





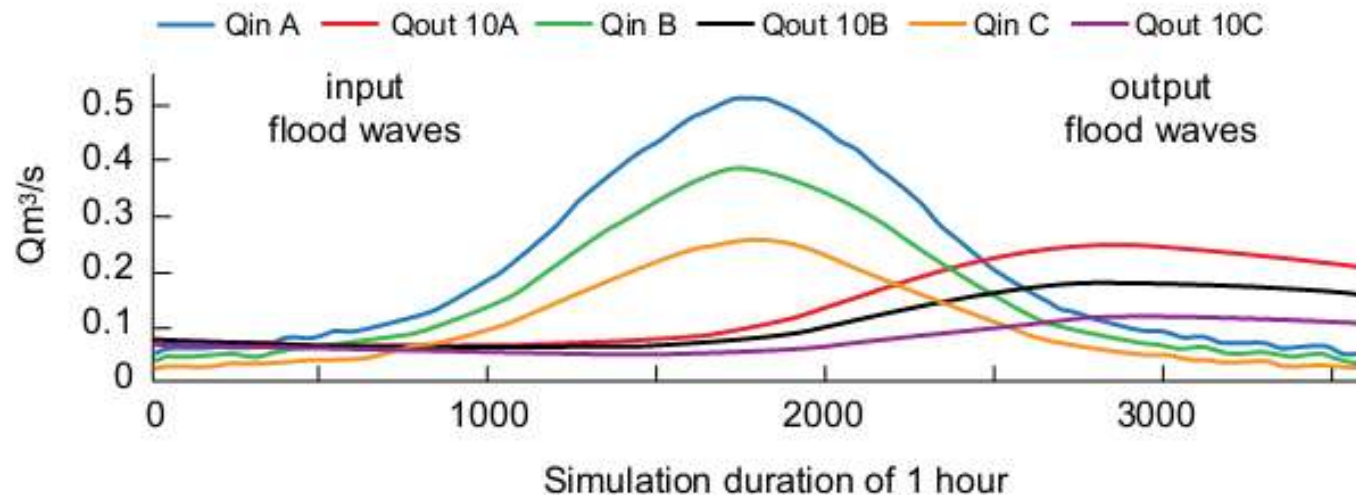
# Storm dynamics for **Storm A-** **17.6 mm in 18 hours**

- Two identical flumes 400m apart

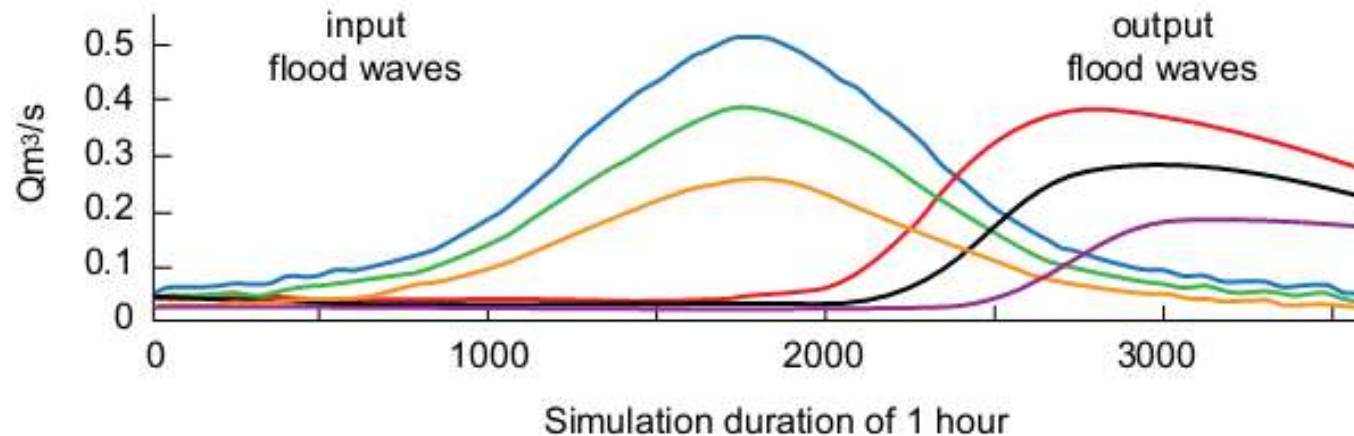


N.B. the flow is lower downstream than upstream  
the first flood wave is greatly attenuated  
The second peak is less attenuated

# Hydraulic simulations - NOAAH



*500 m ditch with a 30\*50m wetland*



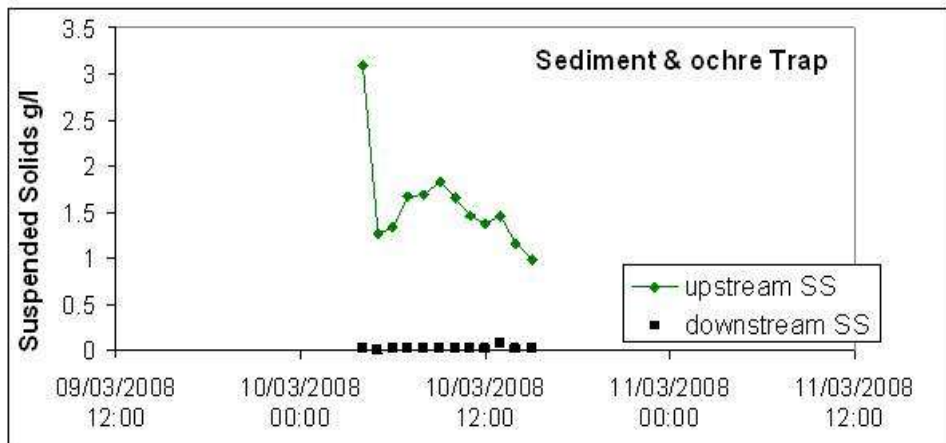
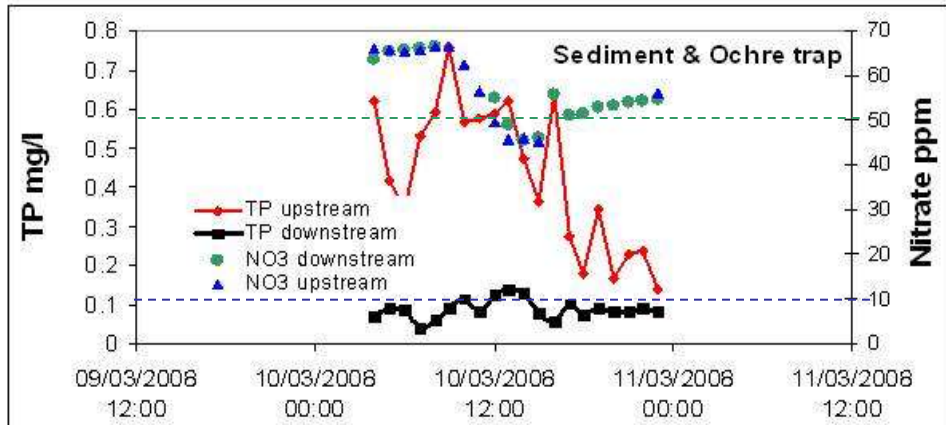
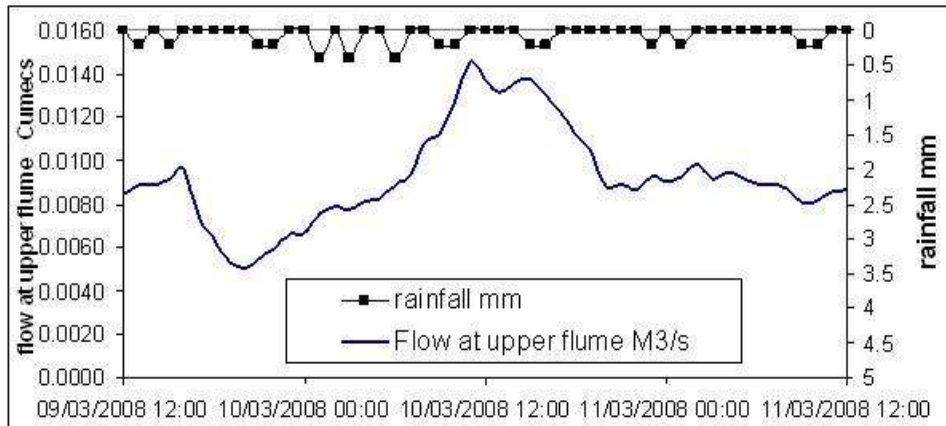
*Widened ditch 3\*500m and willow*



# The Green Lab

PV array



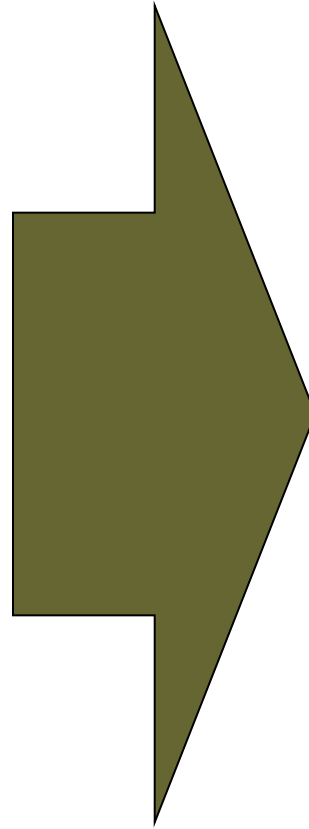


## 20m long combined sediment & ochre Trap

- Typical small storm
- 68 % reduction of TP during several small storms
- Little effects on nitrate concentrations
- 98 % reduction in sediment



# Local & Catchment Scale Problem Solving



**Is there a link?**

# Workshop Goals

- To show you what we have done - **DEMONSTRATION**
- To see the nature of the data we have collected – **DATA**
- The role of localised runoff management for catchment management– **SCALE**
- How do we convert data to – **EVIDENCE**
- To what degree can we model and upscale the evidence - **MODELLING**