# The Characterisation of Catchment Scale Multiple Pollutant Processes to Inform Water Industry Catchment Management

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stream

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## Background

By only considering end of pipe treatment for increasing levels of raw water contaminants such as pesticides, nutrients and colour, water companies:

- Will have increasing CAPEX and OPEX
- Be pushing the design limits of existing treatment works
- Be unsustainable by only considering 'cure' and not 'prevention'
- Be noncompliant with legislation such as the WFD (2000/60/EC).

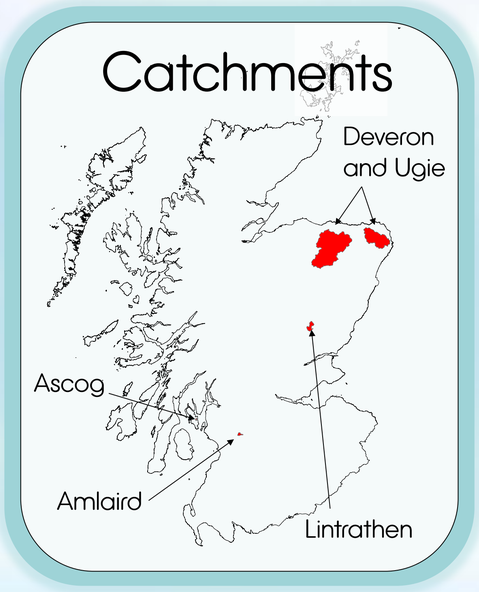
Thus, catchment management schemes that work with other stakeholders to improve raw water quality are being widely adopted.

*What is needed for **Catchment Management** to be successful?*

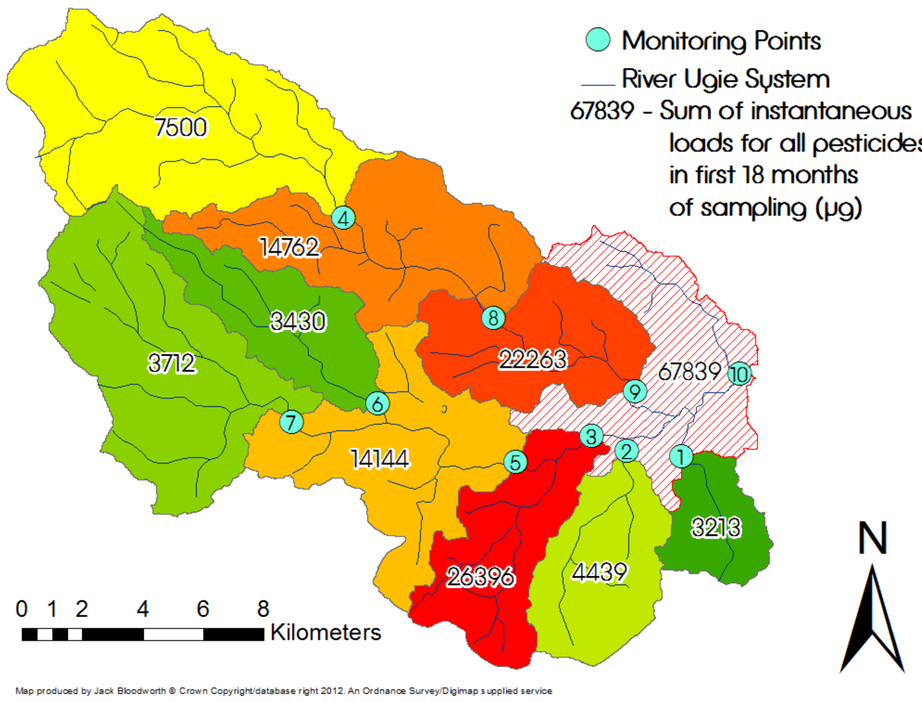
## Aim

A methodology that can determine catchment scale diffuse pollution intervention options according to the needs of the water industry, based on spatio-temporal knowledge of key catchment pollutant processes and their determinands.

## Catchments




## Example Data Analysis – River Ugie




- Total instantaneous pesticide load for first 18 months sampling.
- Sub-catchment 3 has high contributory load.
- Analysis of land cover data shows catchment is 85% arable land.
- Soils data (HOST) highlights potential delivery pathways.
- A picture of why certain sub-catchments are worse than other can be built.

## Future Work

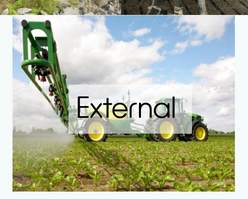
- Development of methodology to characterise processes and determine riskiest characterisation
- Supplementary sampling to fill gaps in data required for methodology
- Apply methodology to Scottish Water Catchments
- Intervention recommendations in Scottish Water catchments

## Methodological Conceptual Framework

1. Land use characteristics
2. Climate variables
3. Pollutant characteristics
4. Physical catchment features

*Determines Spatio -Temporal Variation*

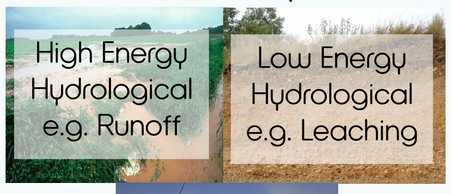
Source


Mobilisation



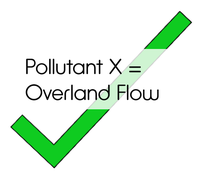
Delivery



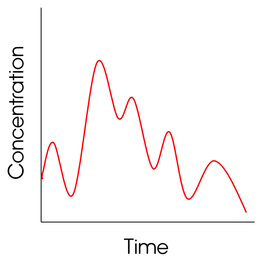


Reassess Process Characterisation

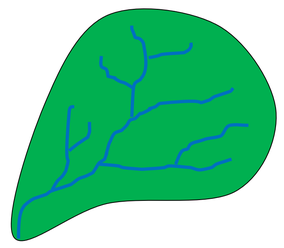
### Define Highest Risk Process Characterisation according to:




Importance For Pollutant




Spatio-Temporal Occurrence



Hydrological Connectivity

### Select Intervention According to Highest Risk Process Characterisation

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