

# Confluence 2019



# Upper Don Catchment: Hidden Heritage Secret Streams (HHSS) – the application of GIS for opportunity mapping

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#iCASP19

# Hidden Heritage Secret Streams:

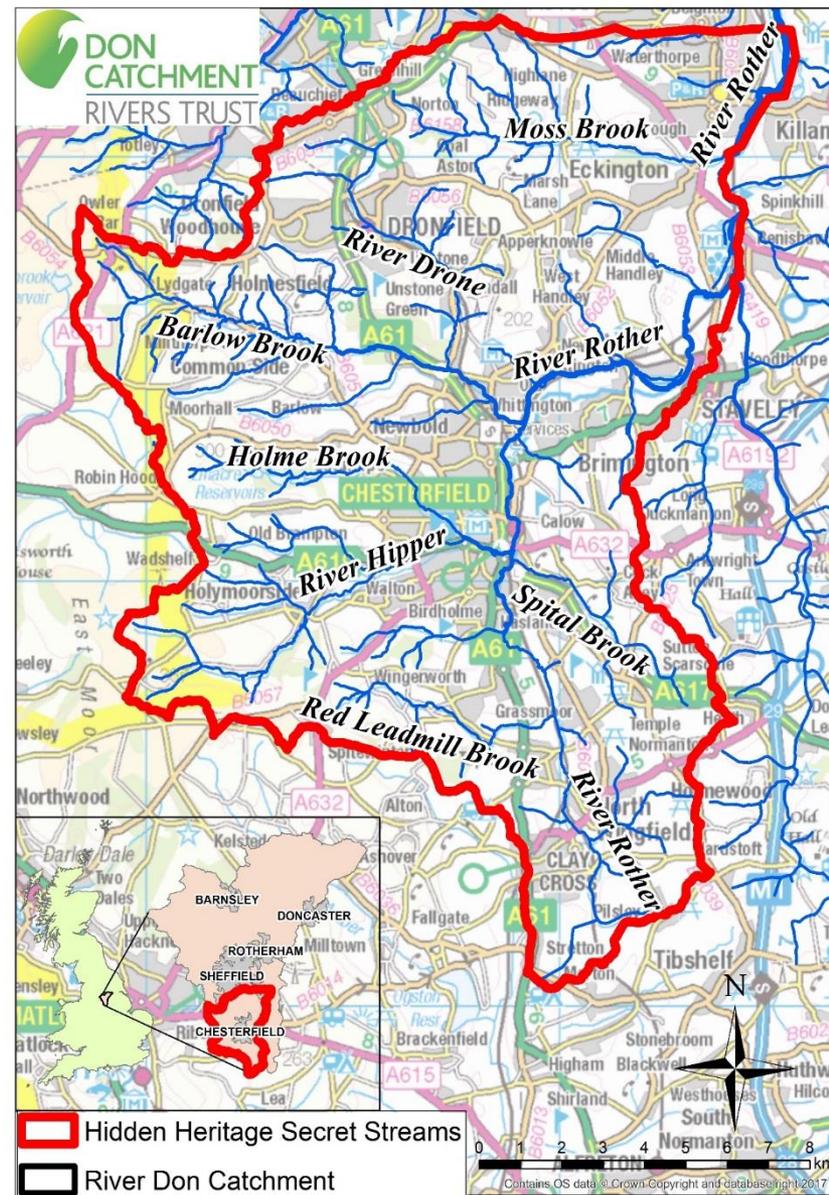
- The project is related to volunteer-led **land management activities**
- There is a lack of **consolidated evidence** on whether integrated solutions can and should be used, and whether these can be implemented by volunteers.
- **Mapping** will help identify problem areas and where land management is required to optimise their output.



UNIVERSITY of York



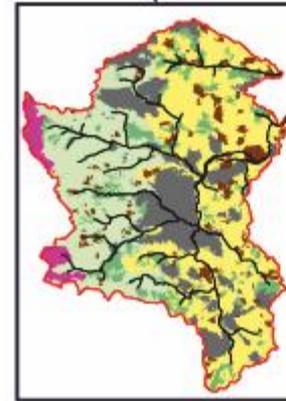
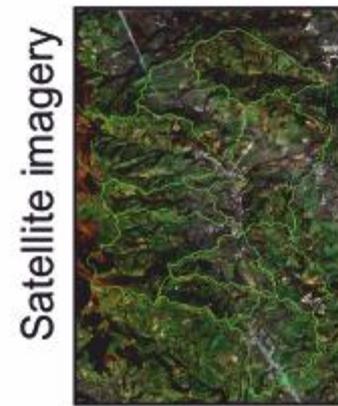
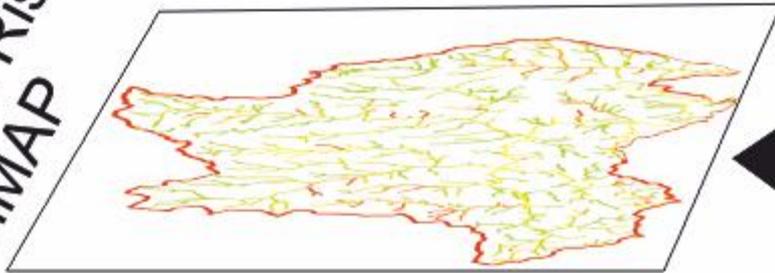
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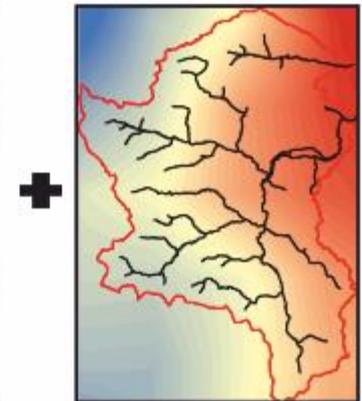
# Aim: Decrease diffuse pollution

- SCIMAP erosion risk simulations
  - With high resolution
  - Seasonal land use maps

Erosion Risk  
SCIMAP



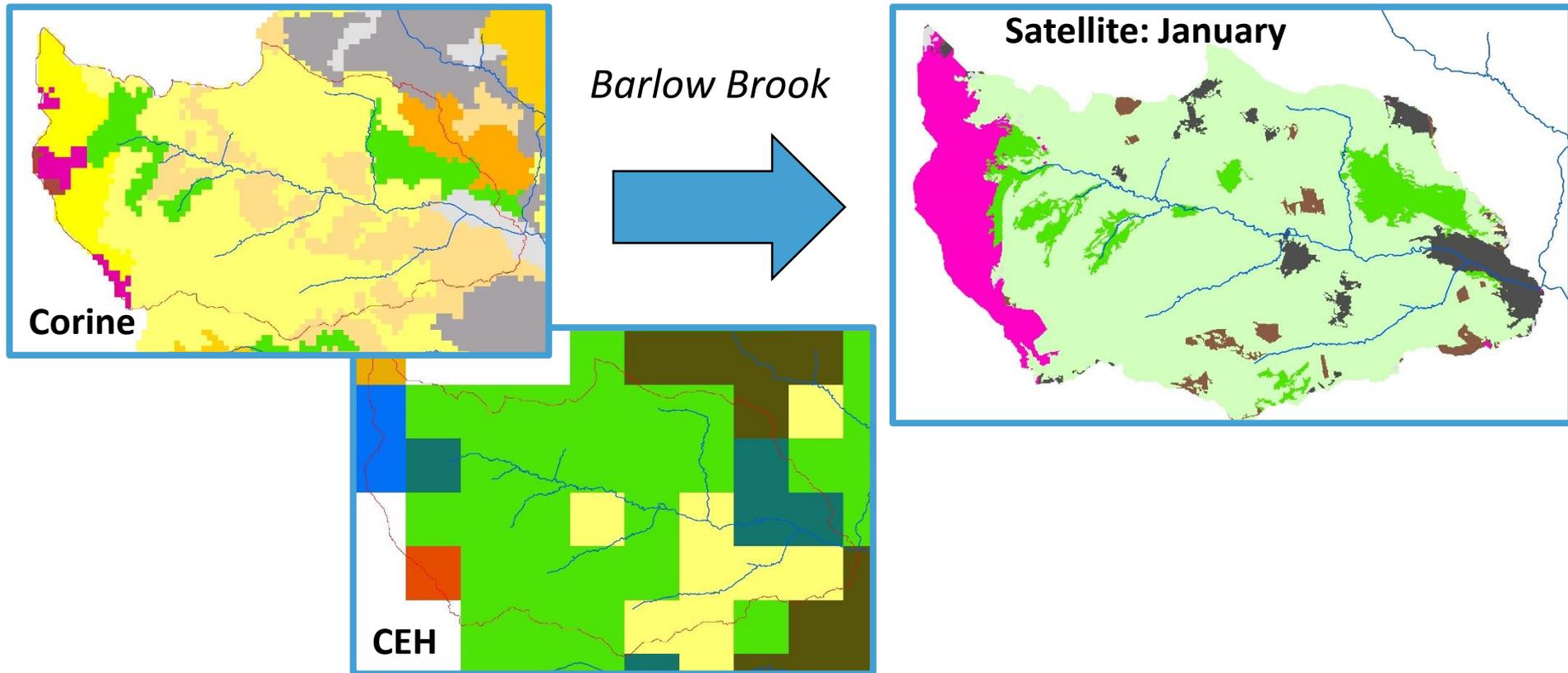
Seasonal high res  
land use map



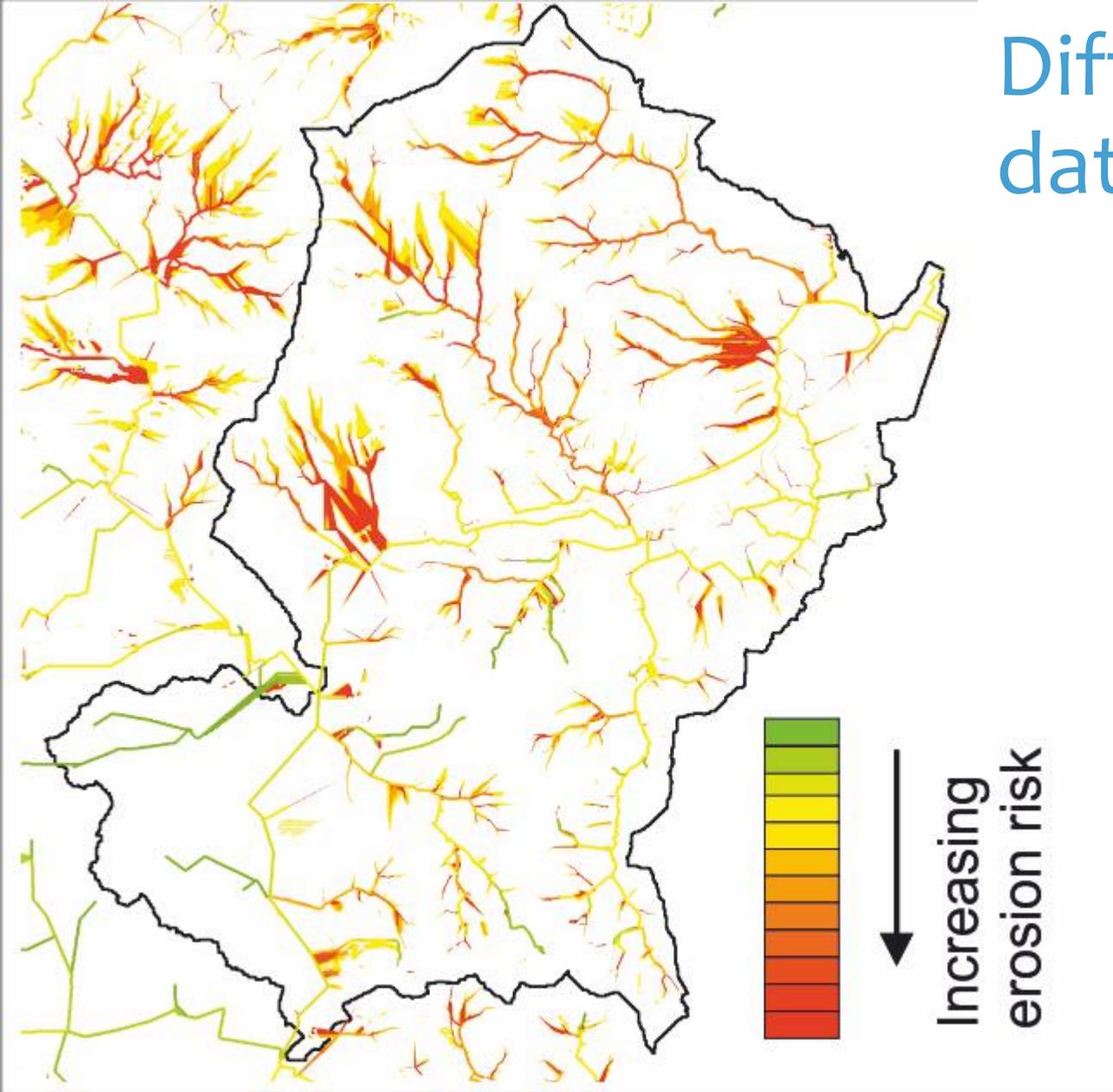
Monthly long term  
average rainfall

# Seasonal land use maps ...

- Satellite data allows for high resolution land use maps
- Identification of bare land – important in agricultural areas



# Diffuse pollution data output

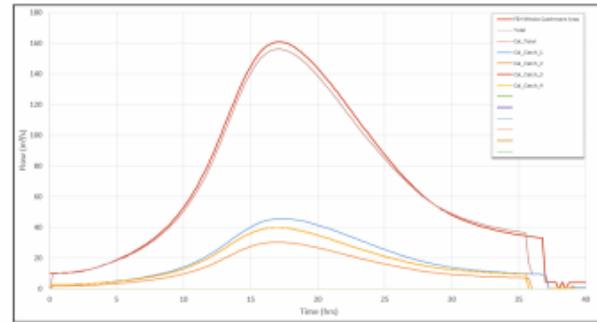
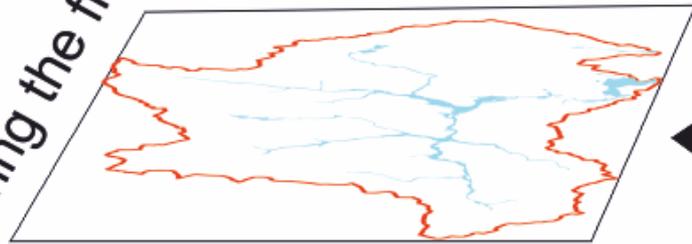


- Relative risk and not absolute volumes
- Red = higher risk

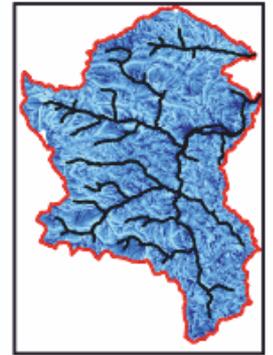
# Aim: Slow the flow

- Overland flow modelled through SCIMAP
- Environment Agency's storage calculator used to look at storage and time to peak of catchment hydrographs

Slowing the flow

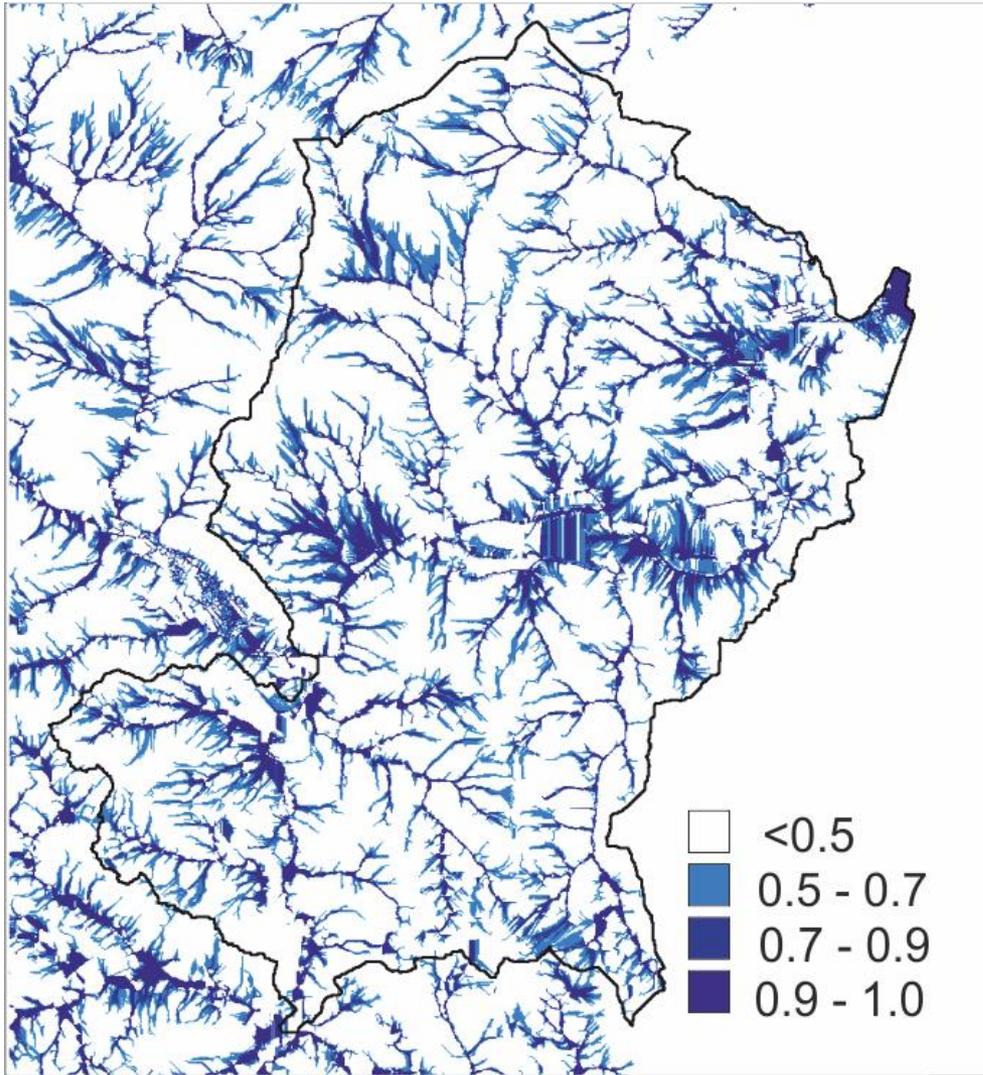


EA NFM Storage Calculator



SCIMAP overland flow connectivity

# Slow the flow data output

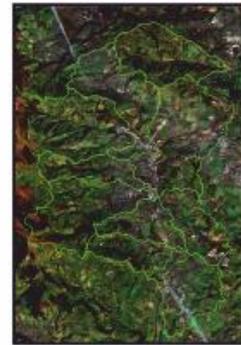
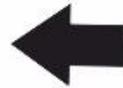
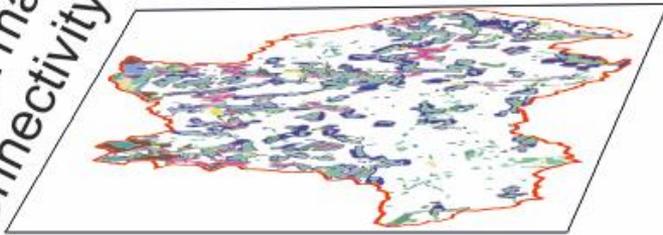


← Darker blue = higher connection to drainage net

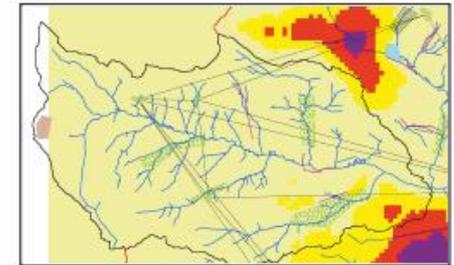
# Aim: increase landscape connectivity

- Habitat map from satellite imagery
- Habitat connectivity calculated using GIS plugin ('Linkage Mapper')

Habitat mapping +  
connectivity



+

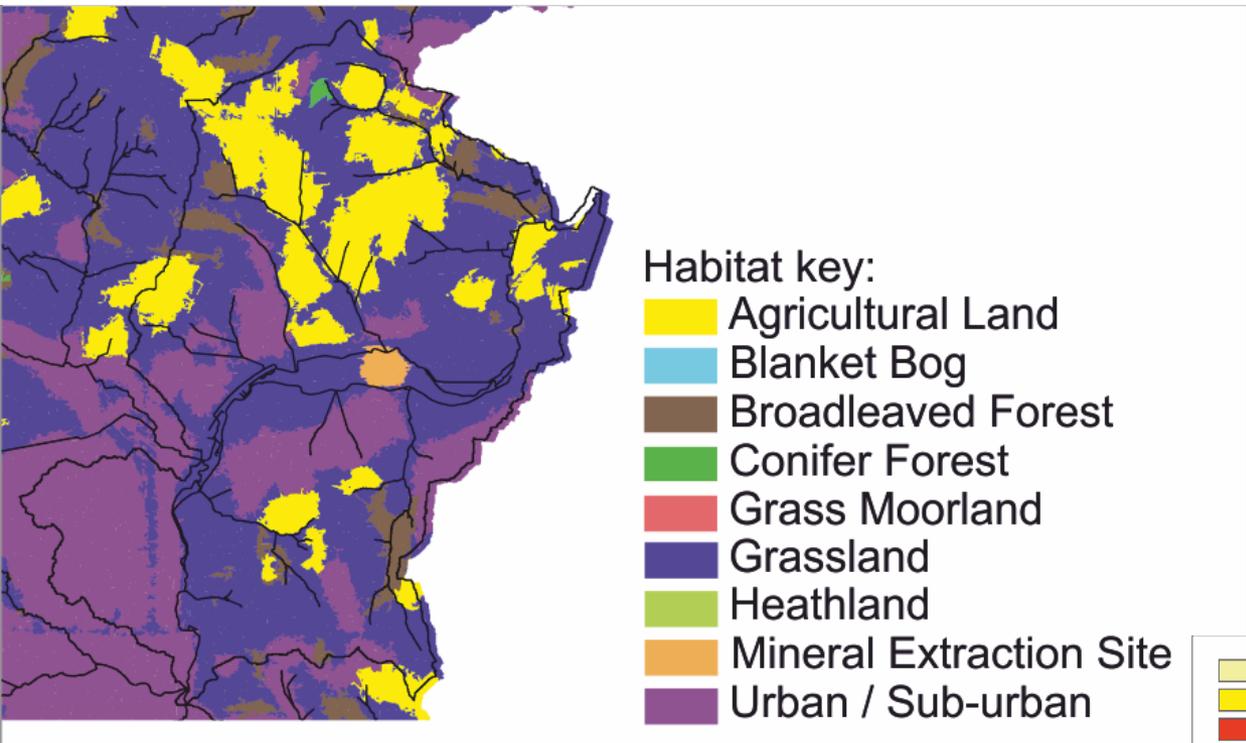


Connectivity of Local Wildlife Sites

Satellite imagery = land use

McRae, B.H. and D.M. Kavanagh. 2011. Linkage Mapper Connectivity Analysis Software. The Nature Conservancy, Seattle WA. Available at: <http://www.circuitscape.org/linkagemapper>

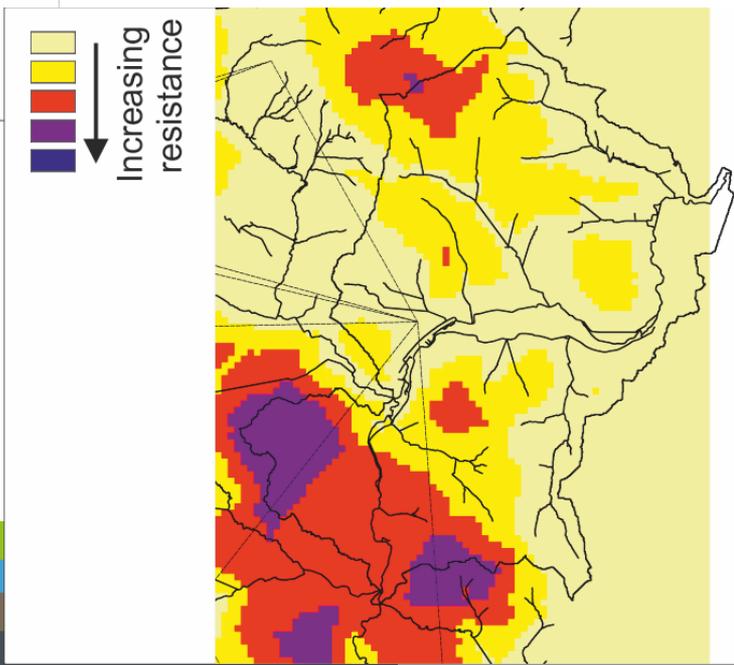
# Landscape connectivity data output



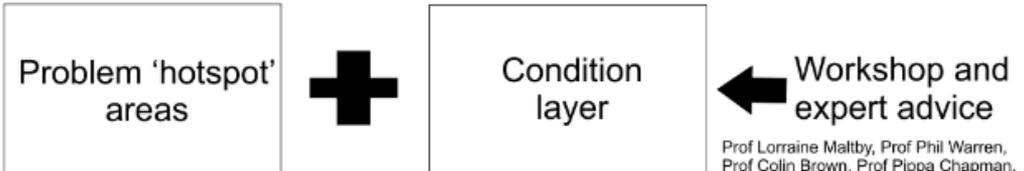
← Satellite derived habitat map

Resistance map of potential corridors →

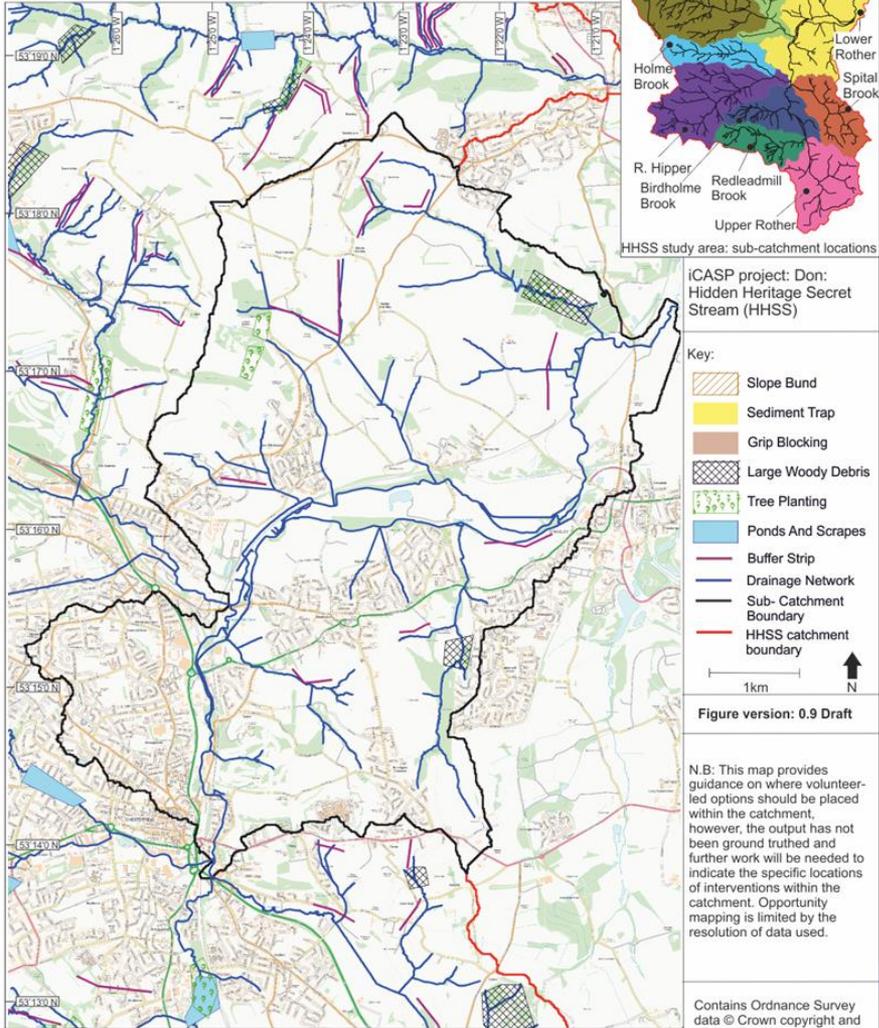
Blue / purple = higher resistance



# Opportunity mapping



Prof Lorraine Maltby, Prof Phil Warren, Prof Colin Brown, Prof Pippa Chapman, Dr Megan Klaar, Dr Chris Hassall and Dr Paul Kay + key stakeholders



- Shapefiles of opportunities have a score out of 3 so they can be ranked in order of effectiveness.

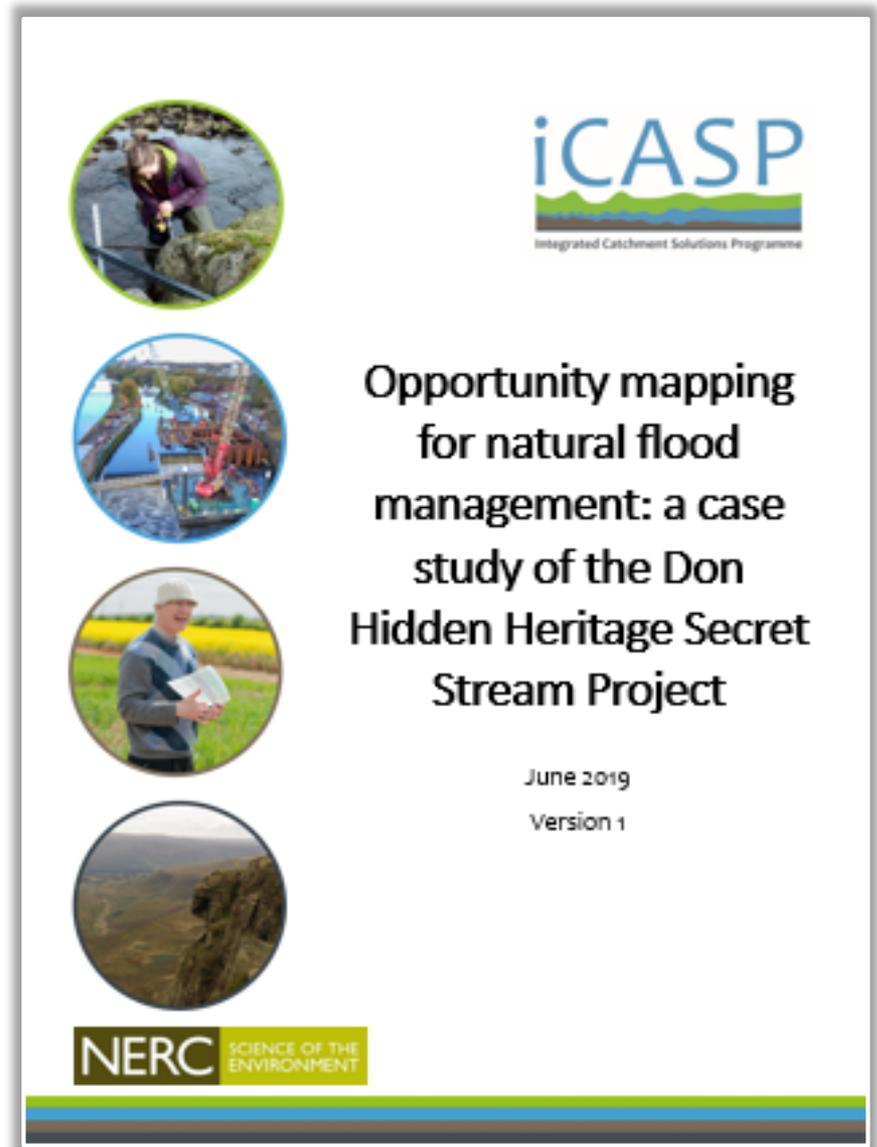


Options from workshop

# Outputs

- Integration of open source data and open source software to create opportunity maps
- Opportunity maps for 10 sub-catchments of the HHSS study area
- GIS database
- A report detailing the step by step approach taken – will be available on our website.

<https://icasp.org.uk/>



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# Questions?

Keep up to date through:



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