



A morphological impact assessment tool to support WFD implementation

UKTAG Rivers Morphology Project: WFD49

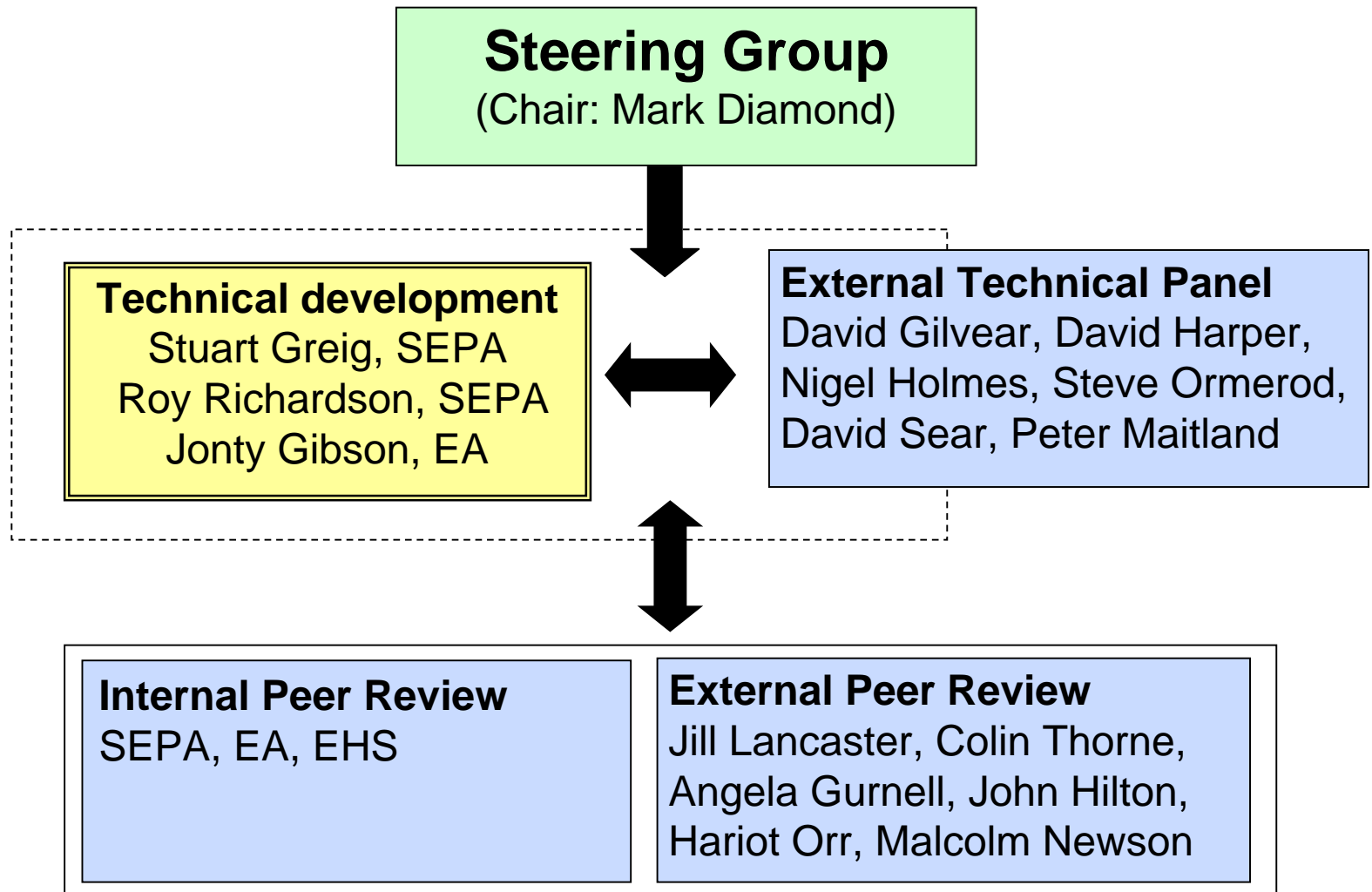
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Scottish Environment Protection Agency



**New morphological impact
assessment tool:**

Background

UKTAG River Morphology Project



Purpose of tool

- To underpin a simple, practicable decision-making framework for determining, whether:
 - I. A new river engineering activity on, or in the vicinity of, a surface water is liable to result in a deterioration in morphological and/or ecological quality;
 - II. The extent of existing morphological alteration within the affected river is likely to be compatible with the achievement of good or high ecological and morphological status.





UKTAG Criteria

- **Outputs to be used by Non-Experts**
- **Allow expert input where appropriate**
- **Based on best available information and/or Expert Opinion**
- **Pressure-based, but can be calibrated with empirical data on quality elements.**
- **Adaptable and transparent framework.**
- **Must provide a fixed point of assessment (e.g. Envi. Std.)**
- **Operate at a scale appropriate for regulation and be adaptable to assess waterbody status.**

Output summary

Regulation:

- Tool to allow screening of applications for new alterations

Classification:

- Tool to allow assessment of High Status
- Tool to allow assessment of Risk of failing Good ecological status

UKTAG River Morphology Project

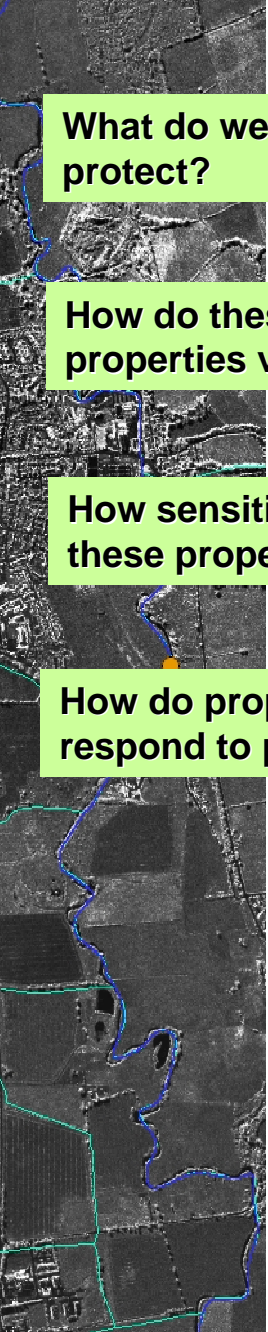
- **Replace need for detailed assessments**
- **Design tool**
- **Define remediation options**





**New morphological impact
assessment tool:**

Technical summary



What do we want to protect?

How do these properties vary?

How sensitive are these properties?

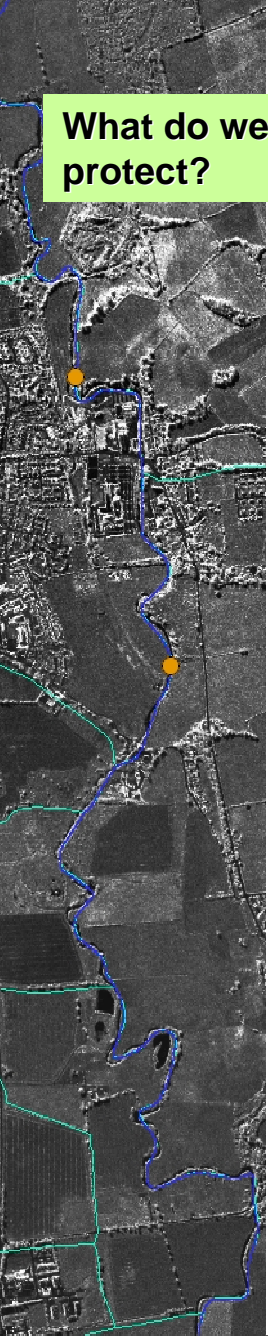
How do properties respond to pressures

What do we want to protect?

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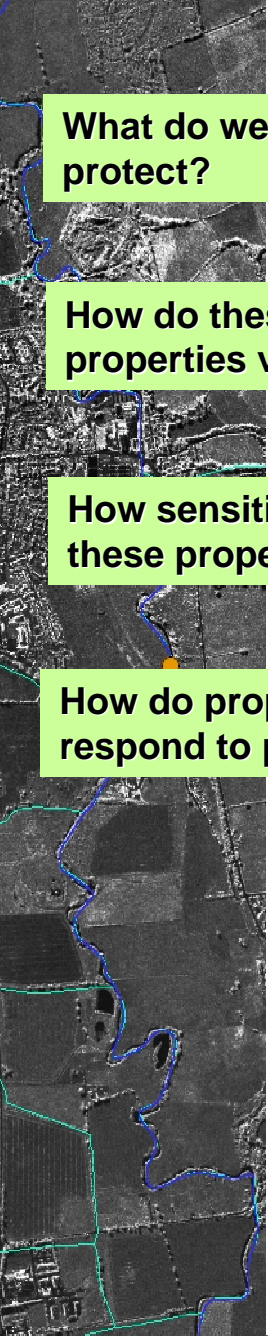
Attributes

Expert Input





Bio-geomorphic indicator	Identified survey tool
<i>Channel zone</i>	
<i>Hydraulic geometry</i>	
Planform	GeoRHS (GIS Module)
Cross section	GeoRHS
Profile (Slope)	GeoRHS
<i>Substrate condition</i>	
Substrate size	GeoRHS/RHS
Embeddedness	GeoRHS
Compaction	GeoRHS
<i>Erosion/deposition character</i>	
Lateral rate of adjustment	GeoRHS
Bar character	RHS/GeoRHS
Bedform pattern	RHS/GeoRHS
<i>In-channel vegetation</i>	
Structure and extent of instream vegetation	RHS
Structure and extent of Woody debris	RHS
<i>Banks and Riparian zone</i>	
Bank morphology	GeoRHS
Riparian vegetation structure	RHS
Bank roughness	RHS/GeoRHS
<i>Flow zone</i>	
Biotope diversity	RHS
<i>Floodplain zone</i>	
Floodplain extent	GeoRHS (GIS Module)
Floodplain vegetation structure	RHS
Floodplain connectivity	GeoRHS
<i>Longitudinal connectivity</i>	
Migratory movement	RHS/GeoRHS
Sediment transport	RHS/GeoRHS

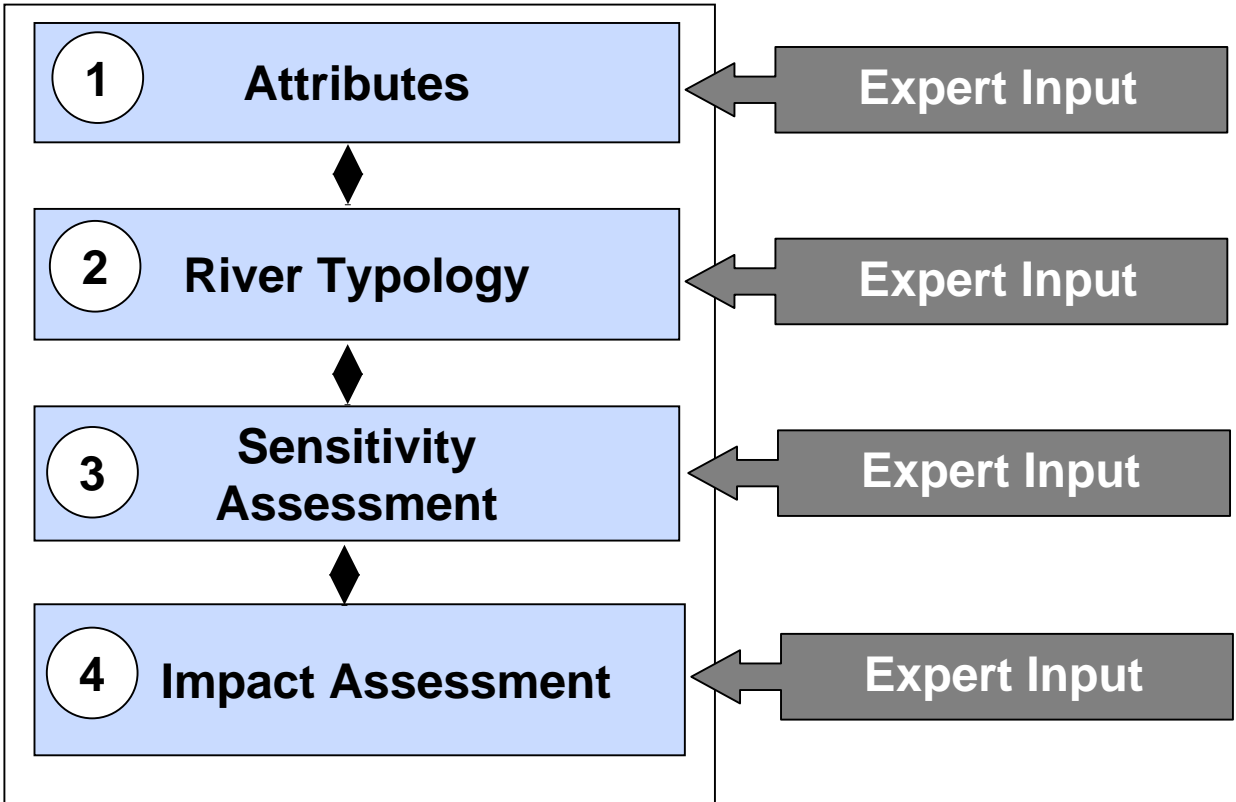


What do we want to protect?

How do these properties vary?

How sensitive are these properties?

How do properties respond to pressures

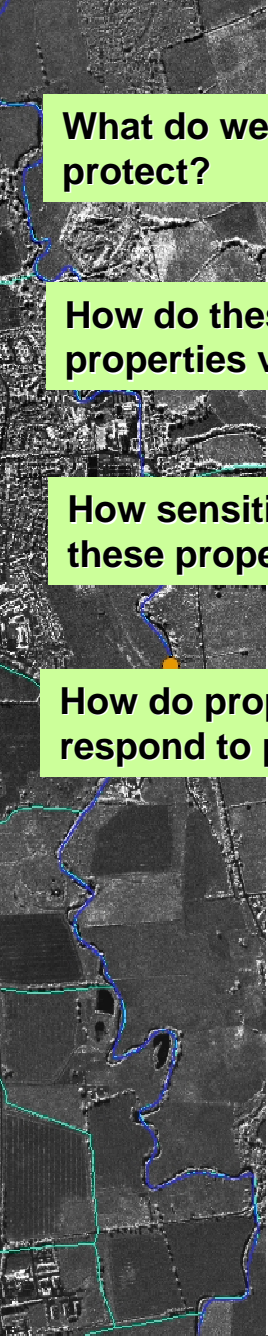


Example of impact ratings



● **Type 1 Low resistance-moderate resilience : eg. Pool/riffle**

● **Type 2: Low resistance- low resilience eg passive meandering**

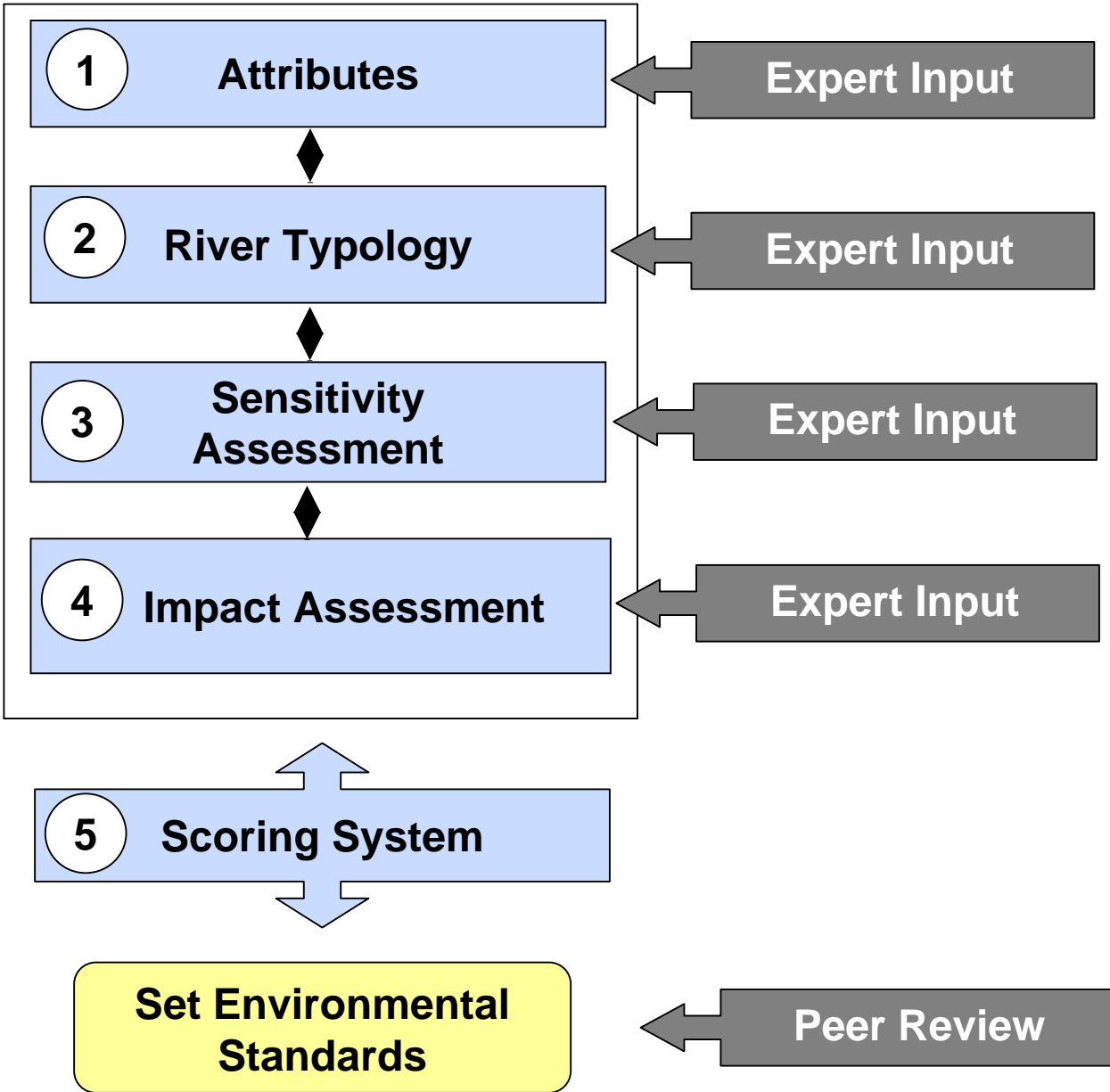


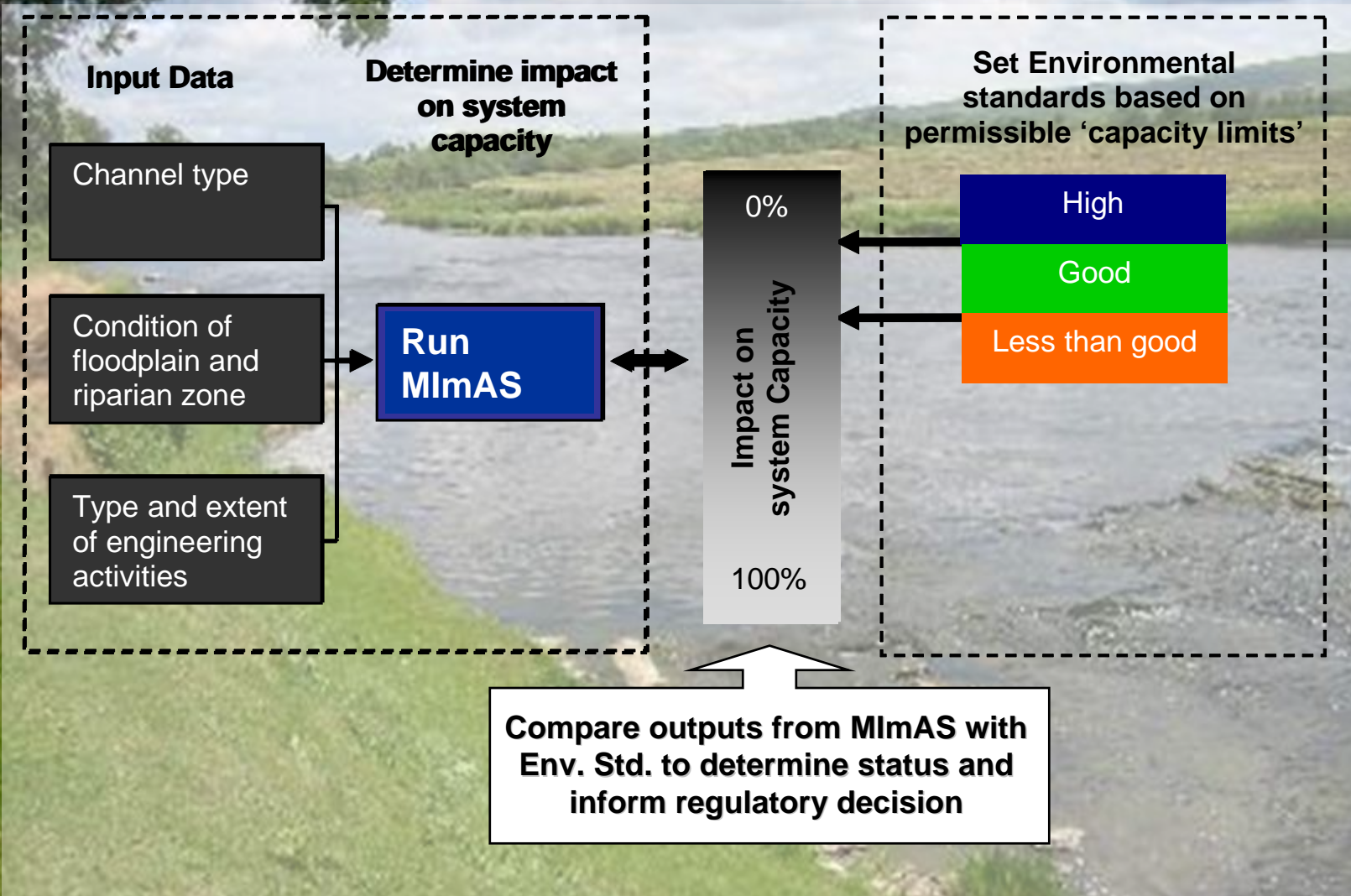
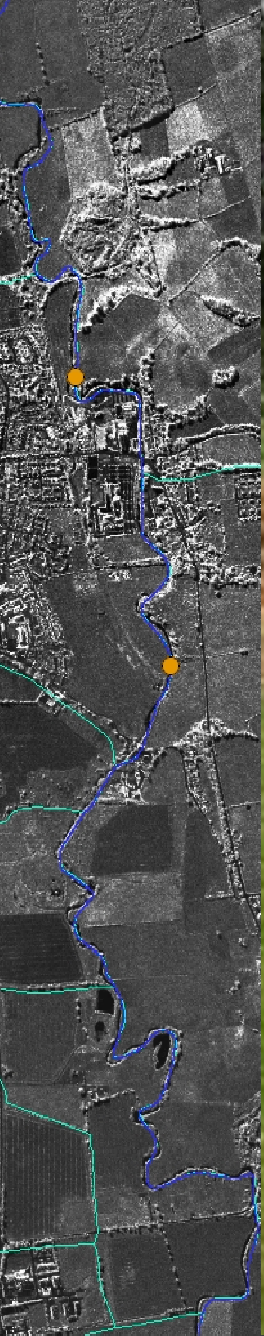
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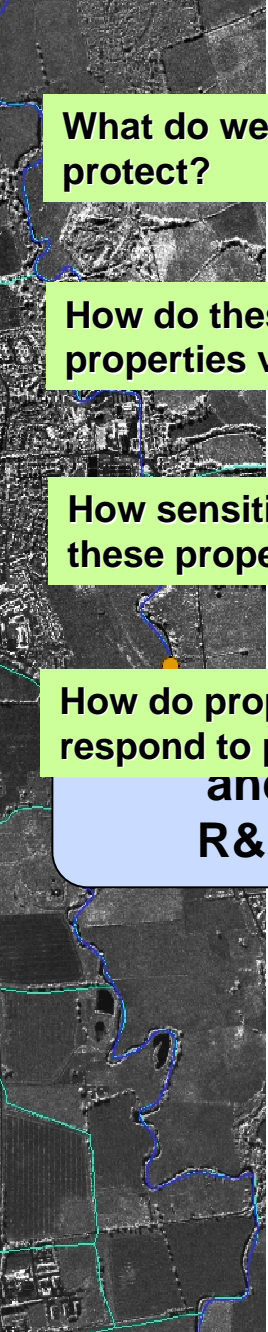
How do these properties vary?

How sensitive are these properties?

How do properties respond to pressures





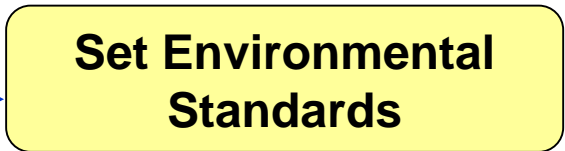
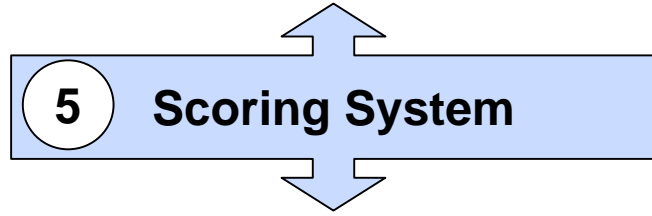
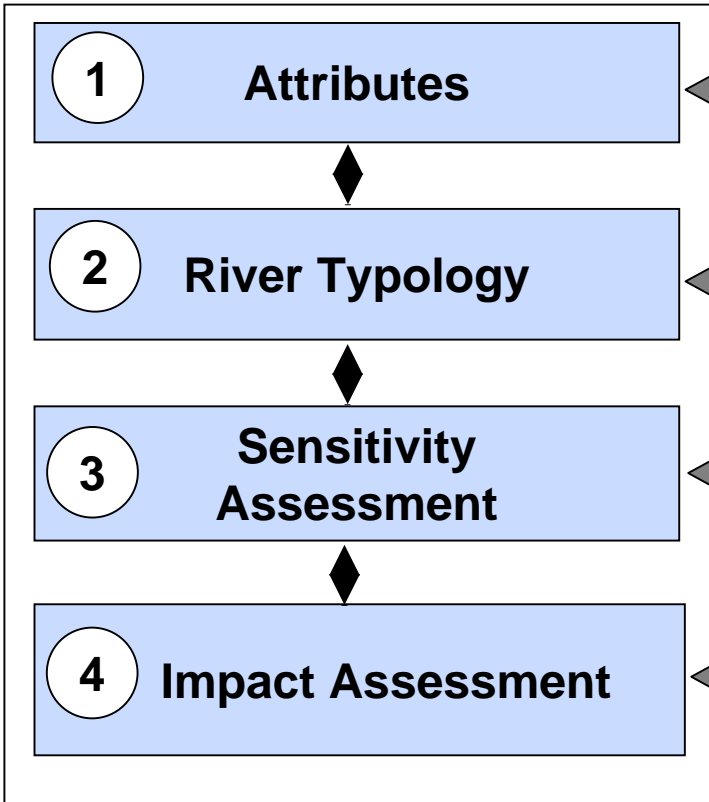


What do we want to protect?

How do these properties vary?

How sensitive are these properties?

How do properties respond to pressures and R&D





On-going work

- **Complete peer review process**
- **External/stakeholder consultation**
- **Propose methods for applying tool to assess waterbody status**
- **Define monitoring strategy and research programme to support longer-term tool development**