

WFD: North of the border



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Key emphasis – predictive based

Limited impact data forces this approach, but.....

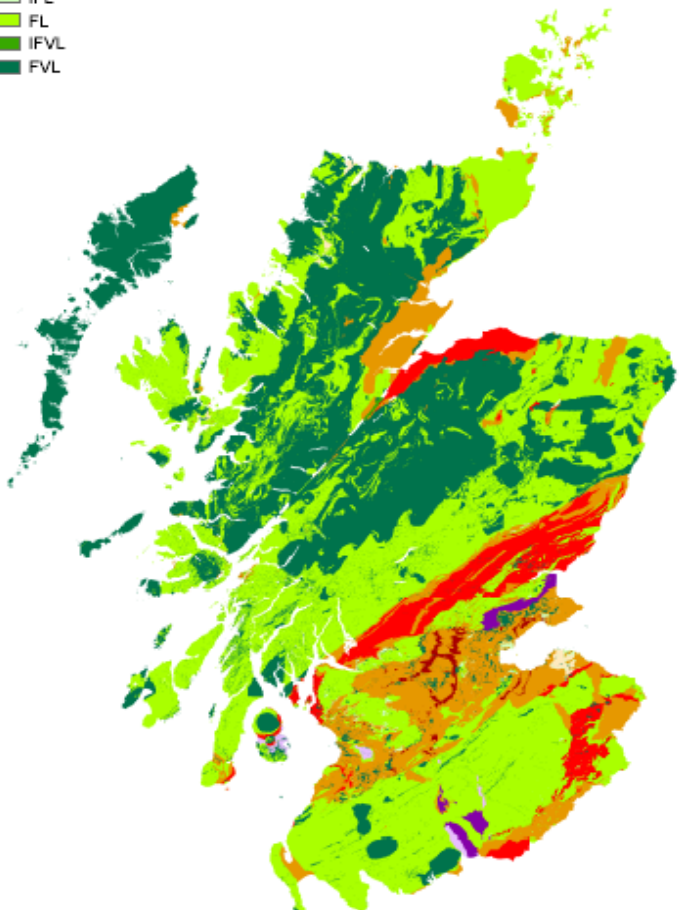
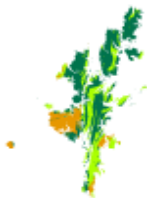
Limited existing knowledge...important to assess...



- Why is it at risk?
- Where should we monitor?
- What measures do we need?

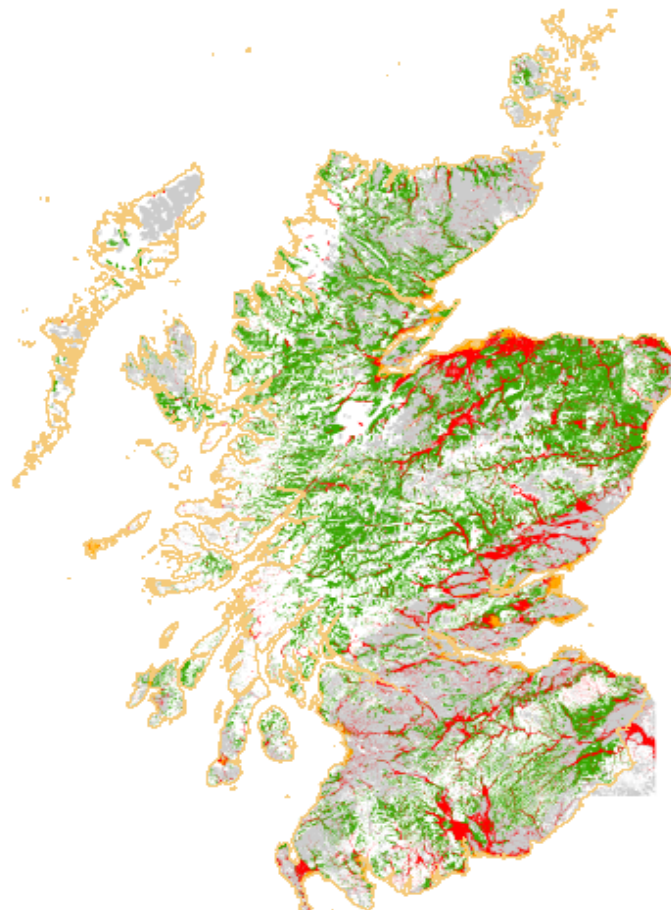
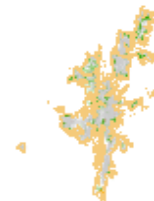
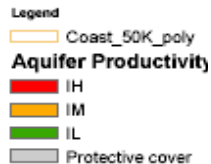
1. GW Bodies

Bedrock Aquifers (BGS)

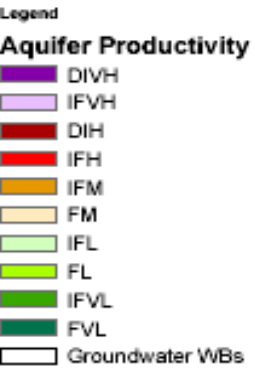


(c) SEPA, produced 11/04
(c) British Geological Survey

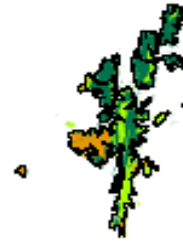
Superficial Aquifers (BGS)



(c) SEPA, produced 11/04
(c) British Geological Survey



Bedrock Aquifers (BGS)



Productive bedrock aquifers:

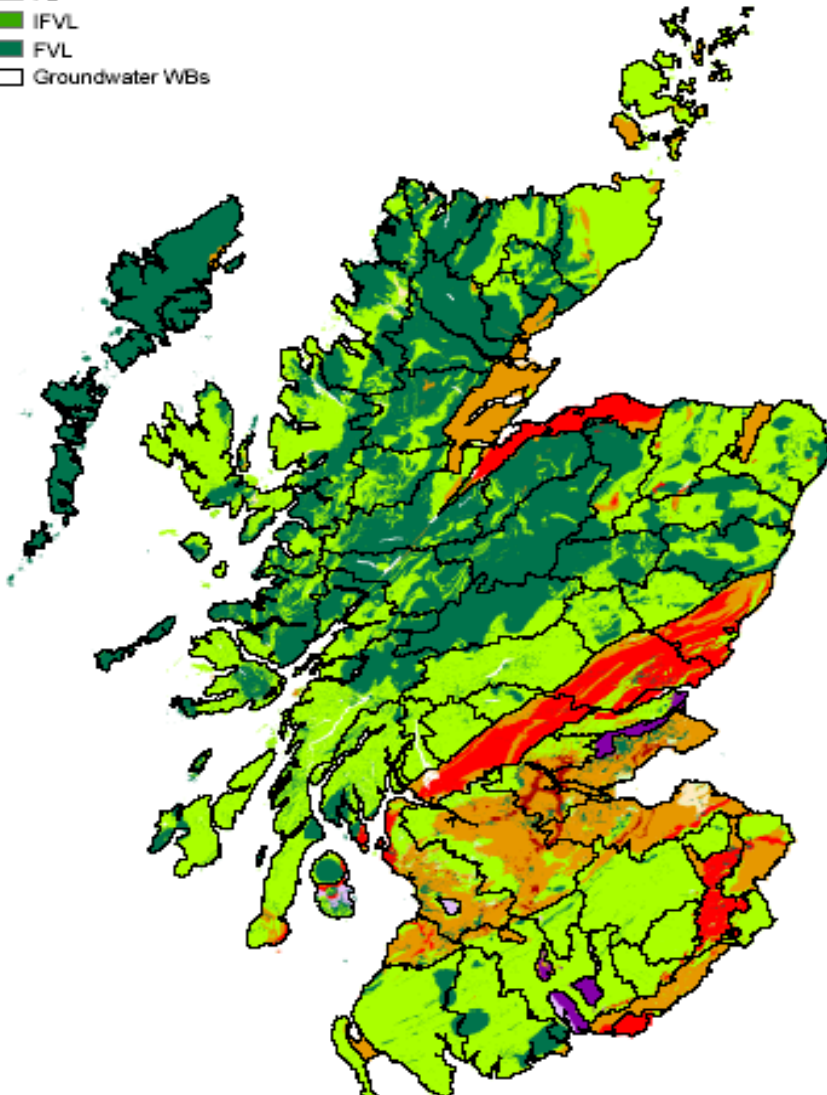
**Deep & long flow systems
→ Major catchments**

**Low productivity bedrock
aquifers:**

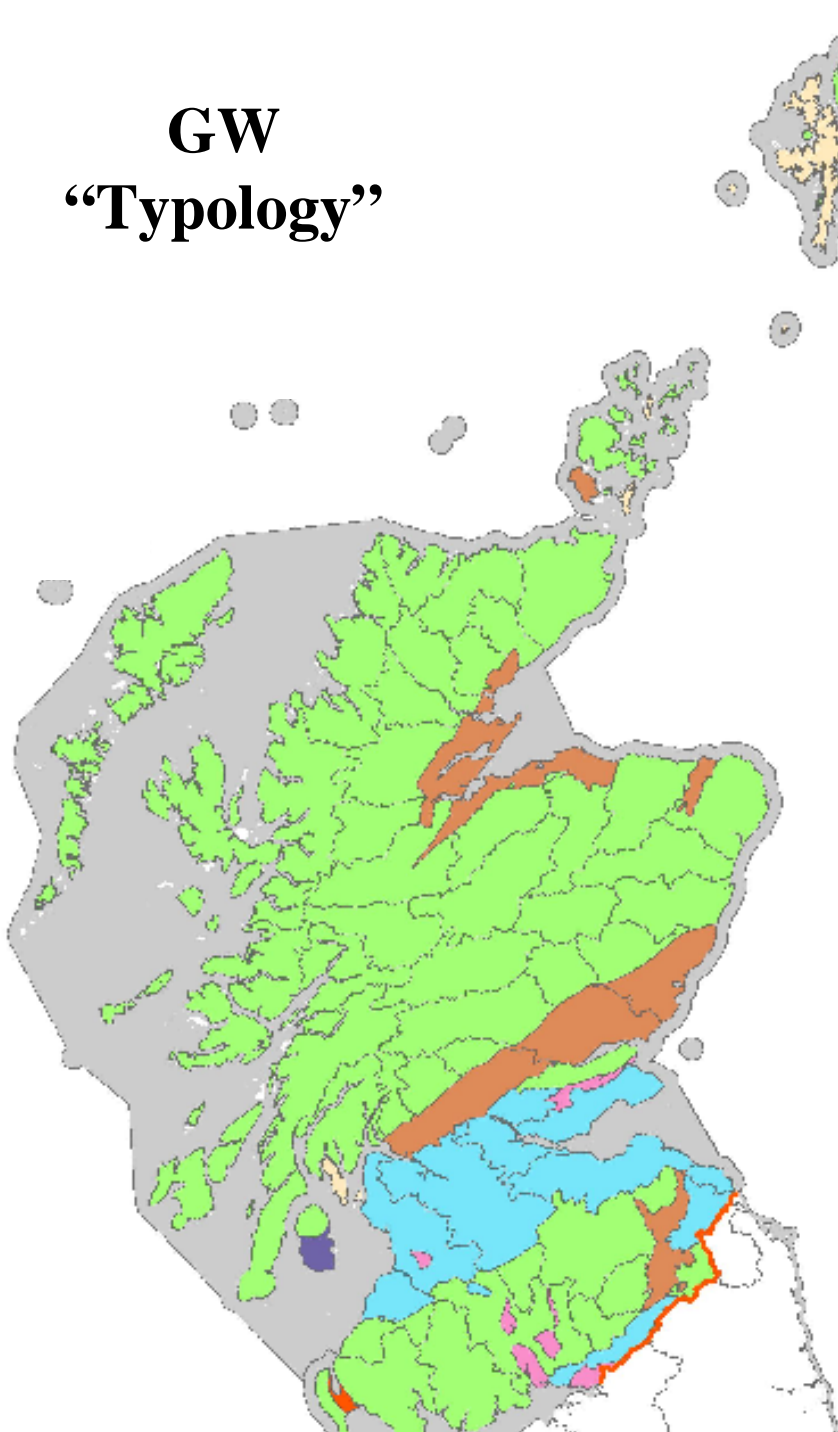
**Shallow & short flow systems →
Sub- catchments**

Superficial aquifers:

**Localised flow – not currently
used for subdivision**



GW “Typology”



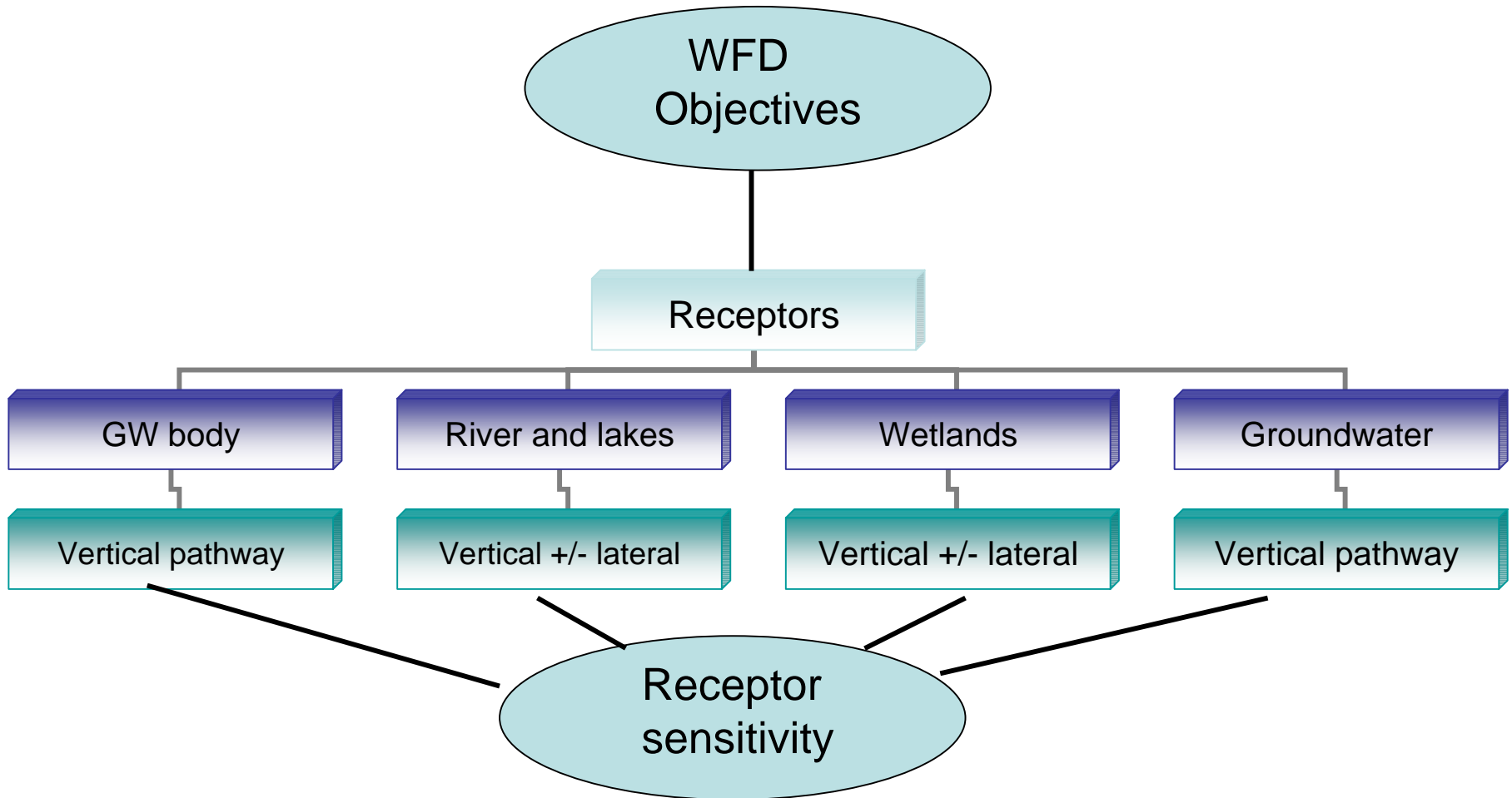
Simple 3D conceptual models of

- Flow type (fracture, etc)
- Storage type
- Transmissivity
- Flow path length
- Flow path depth
- Natural chemistry

Mainly for use by non-specialists

2. Risk Assessment

WFD: North of the border



Prediction

Receptor

GWDTE

Rivers

Pressure

Abstraction

Abstraction

Pathway

Proximity & aquifer

Catchment

Receptor sensitivity

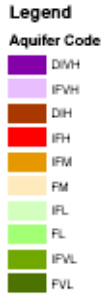
Drawdown

Flow vs Q95



Bedrock Aquifers

(BGS)

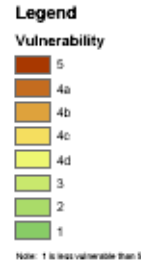


• Horizontal pathway term
(downgradient receptors)

• Storage

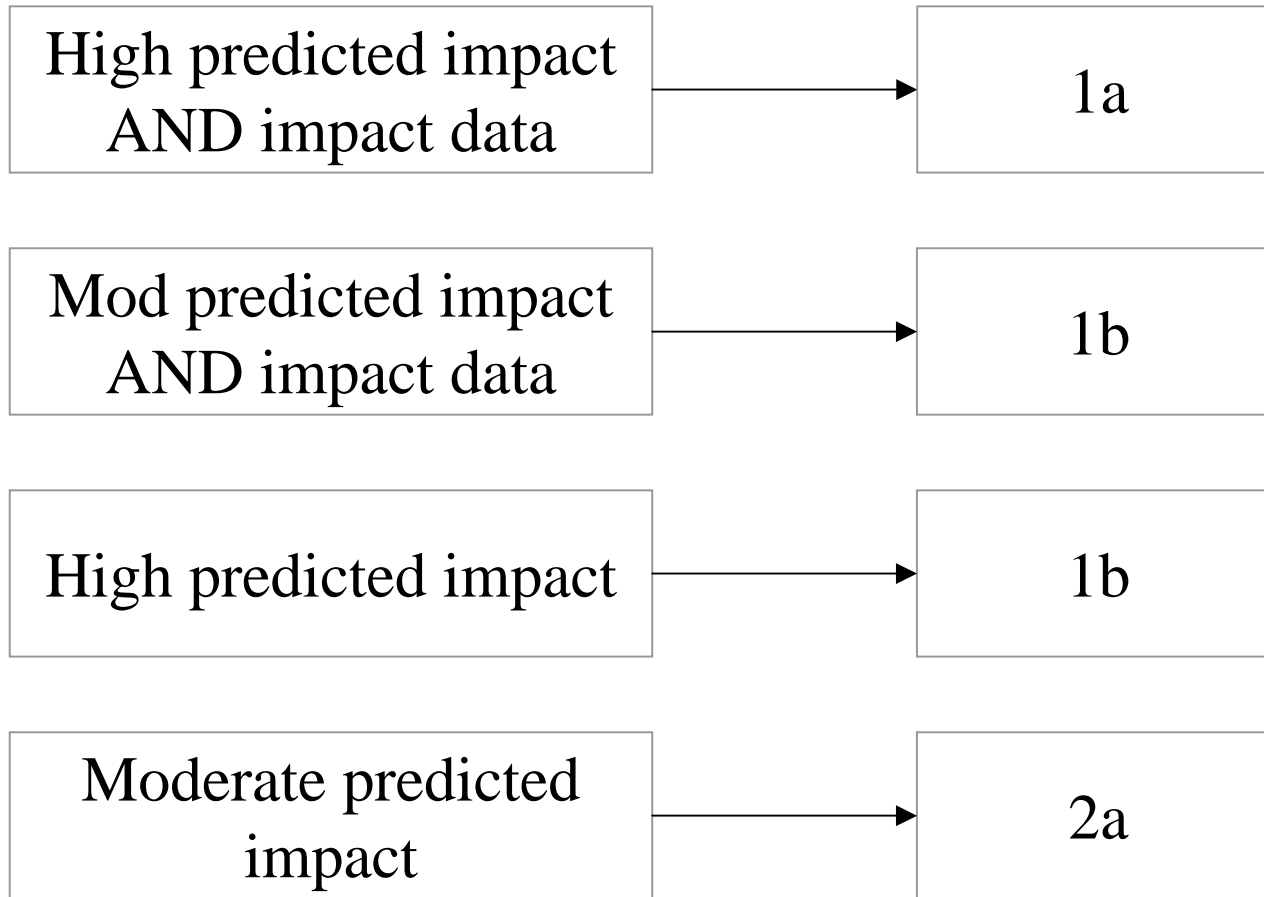
Groundwater Vulnerability

(BGS/MLURI)



• Vertical pathway term

Risk Assessment Principles



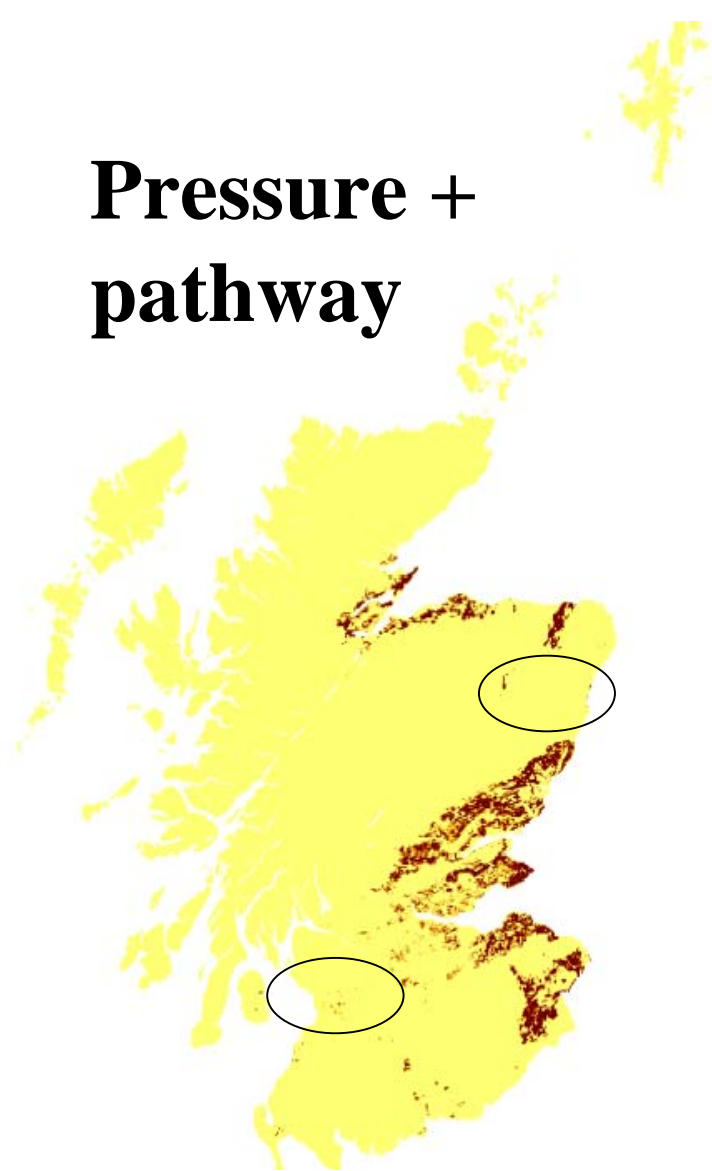
3. Diffuse

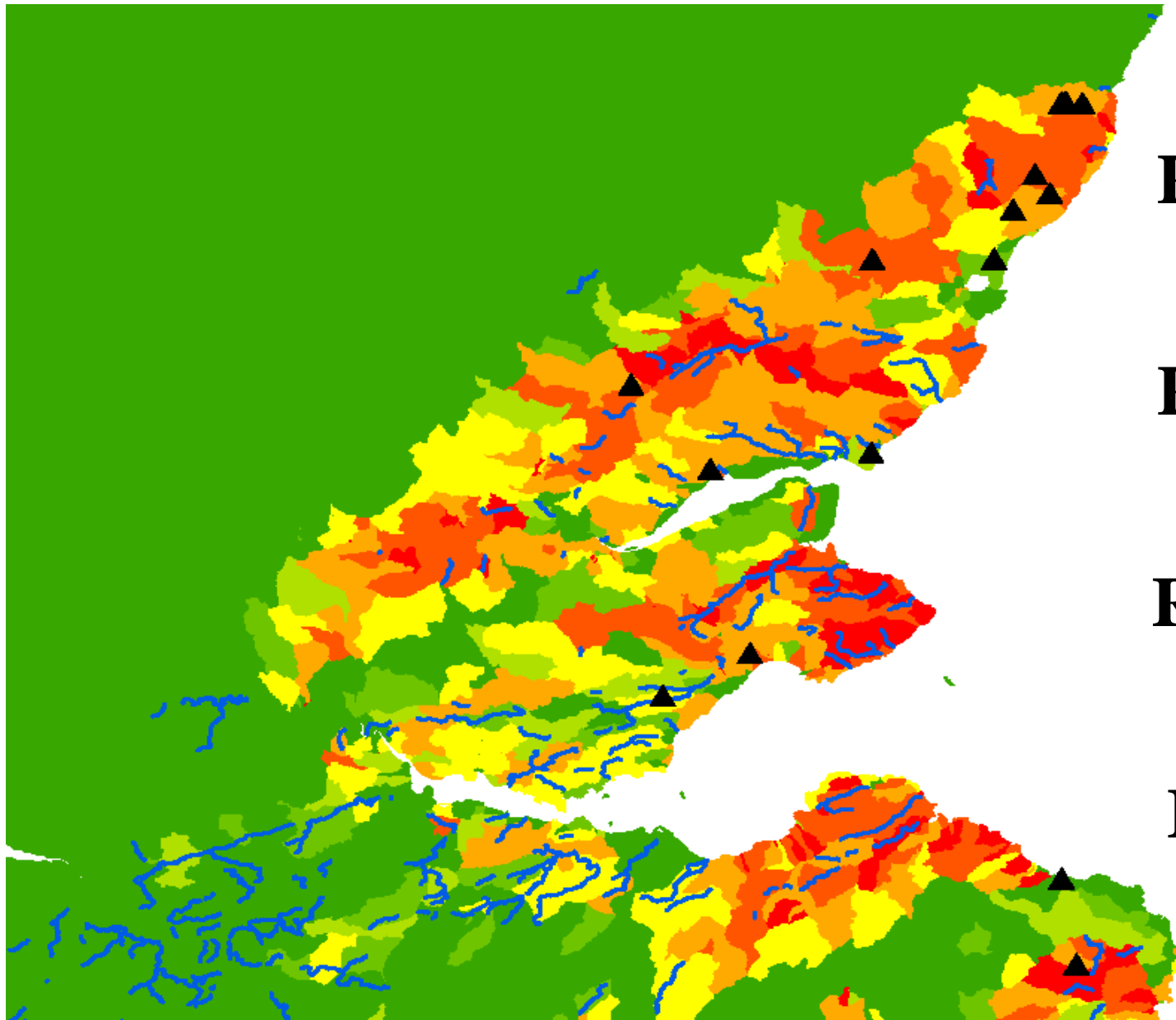
Phosphate

Pressure



**Pressure +
pathway**





Pressure

+

Pathway

+

Receptor

+

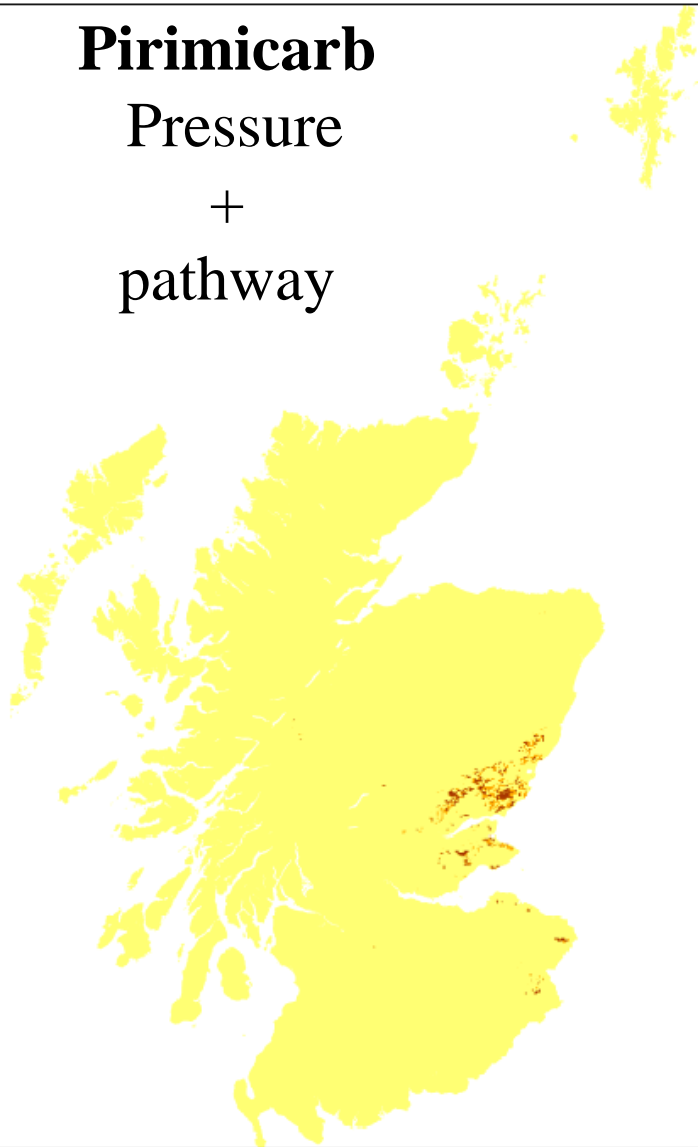
Impacts

Pirimicarb

Pressure

+

pathway

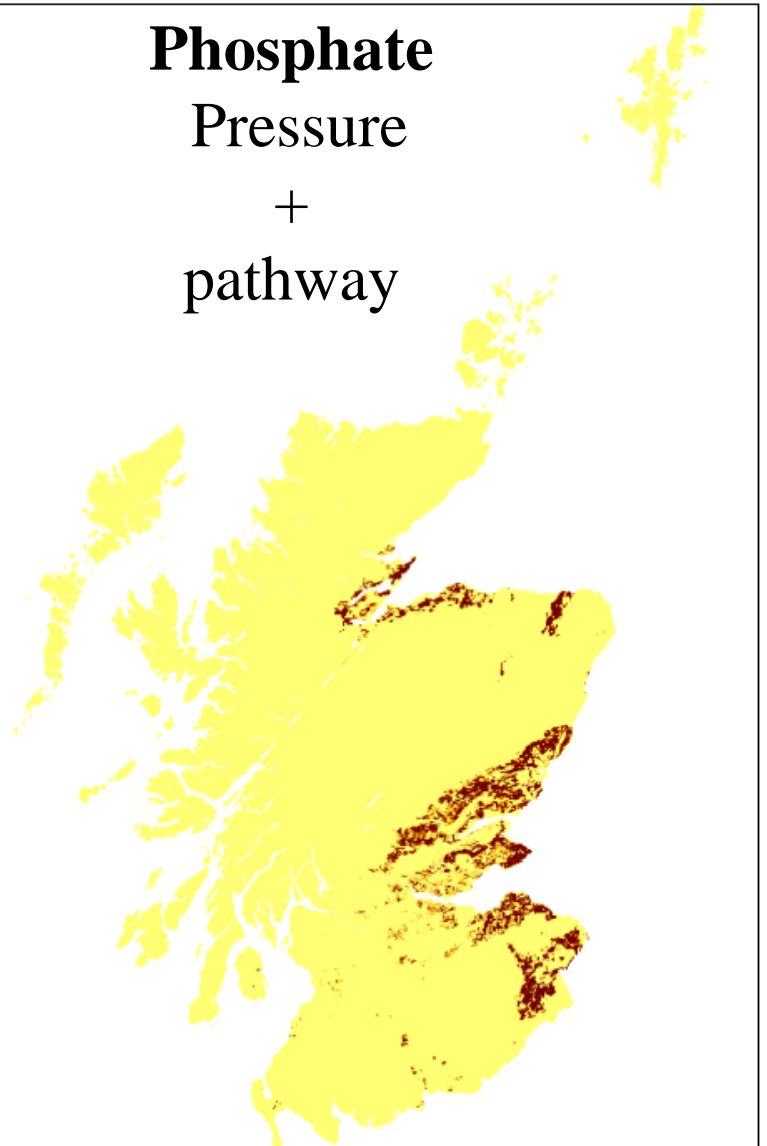


Phosphate

Pressure

+

pathway



4. Point, mining, abstraction
examined similarly

“By products” for monitoring & guidance

- **GIS dataset: vulnerability + aquifers + GW receptors**



- **Point sources with known impacts on groundwater**

- **Distributed recharge maps**

Next steps

- **Refine characterisation outputs (further characterisation)**
- **Develop monitoring network using risk assessment to prioritise**
- **Produce procedures guidance to support new Groundwater Protection Policy for Scotland and new regulatory regimes**
- **Prepare for requirements of GDD**

Legislative situation

- **Water Environment and Water Services (Scotland) Act 2003 Controlled Activities Regulations (consultation in April; planned to Parliament in September; expected to commence 2005)**
- **Diffuse Pollution control regime + restoration powers (expected in 2005/6 to commence 2006)**

Summary

Emphasis on:

1. Predictions

- **Simple, but logical concepts (?)**
- **Consistency / transparency**

2. Preparation for the next steps