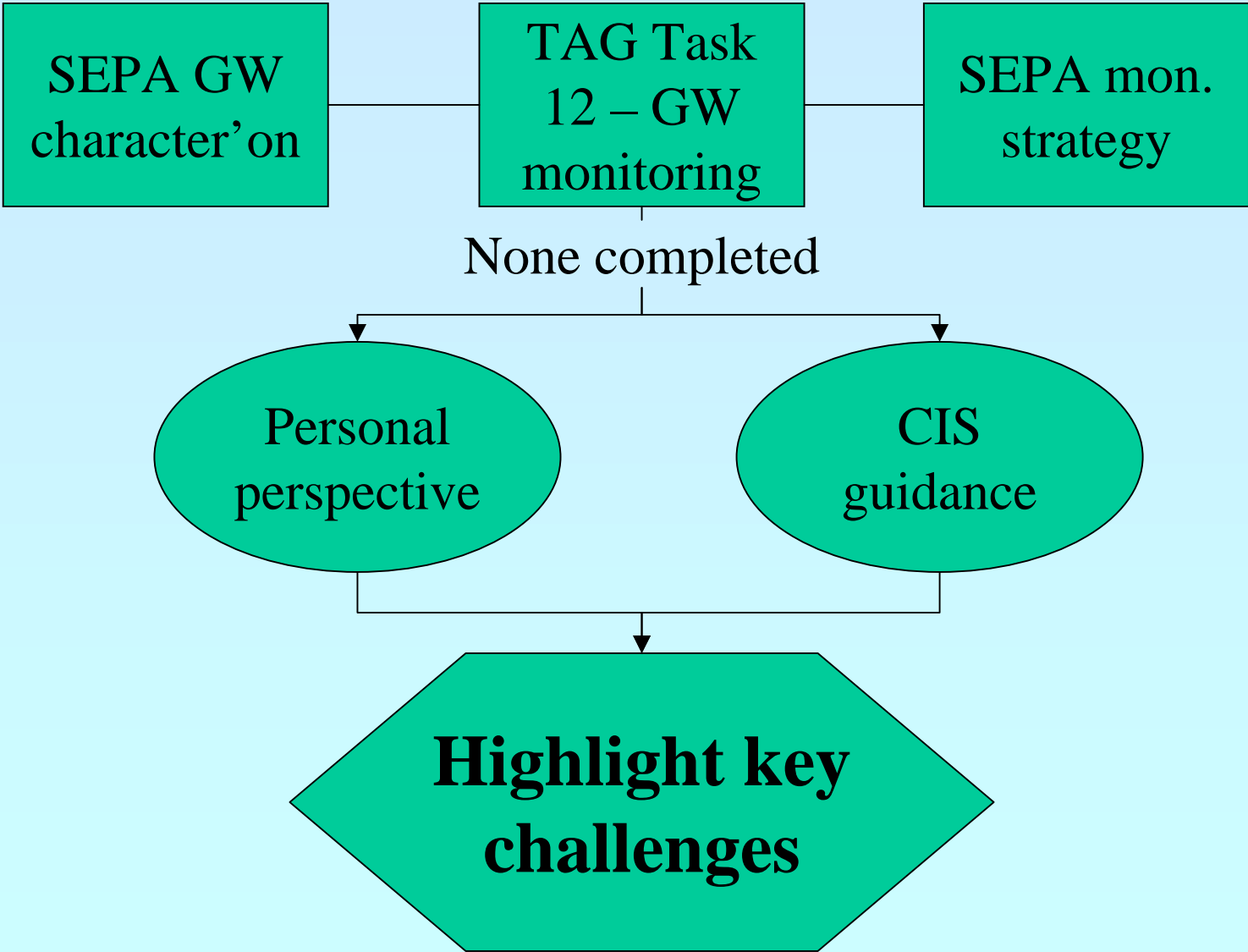


Title: (Ground)Water Quality Monitoring for WFD

Vincent Fitzsimons

- SEPA
- Hydrogeologist



Some challenges:

- Why / what / where / when ?
- Data handling & integration

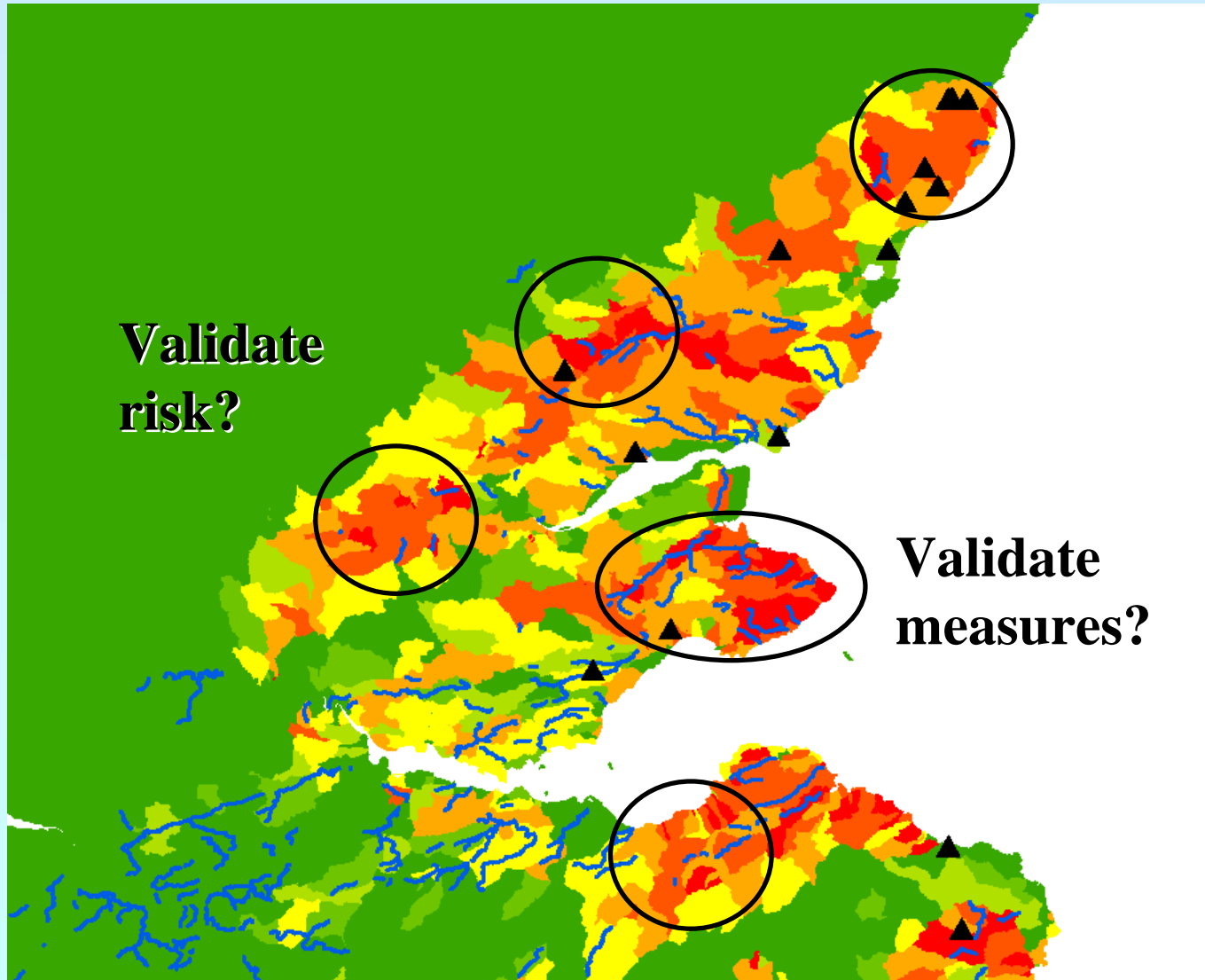
What / where
/ when?



•CIS guidance excellent

•Strong emphasis on links with conceptual models

What / where / when?



Why ?

Is this always as obvious as it seems?

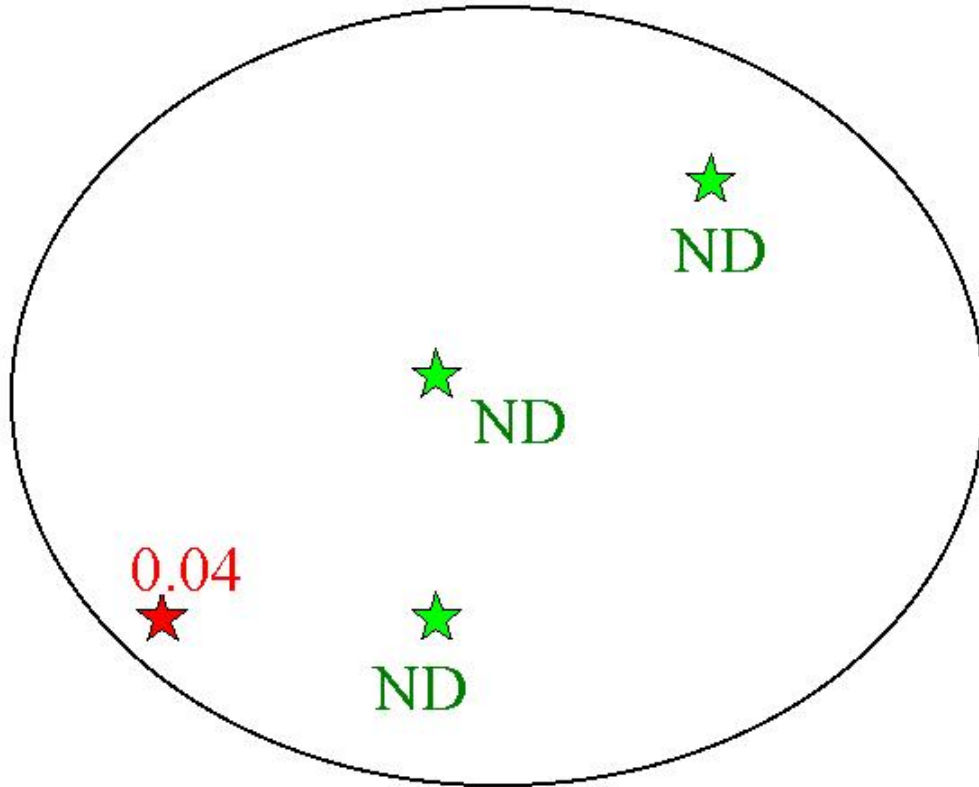
Many possible reasons. WFD alone:

- Prevent / Limit
- Chemical status
- Quantitative status
- Pollutant trends
- Protected areas
- Lower Objectives

Key:

- **Value for money**
- **Misinterpretation**

Data Integration



All: 0.02 mg/l

Shallow: 0.04 mg/l

Deep: ND + point

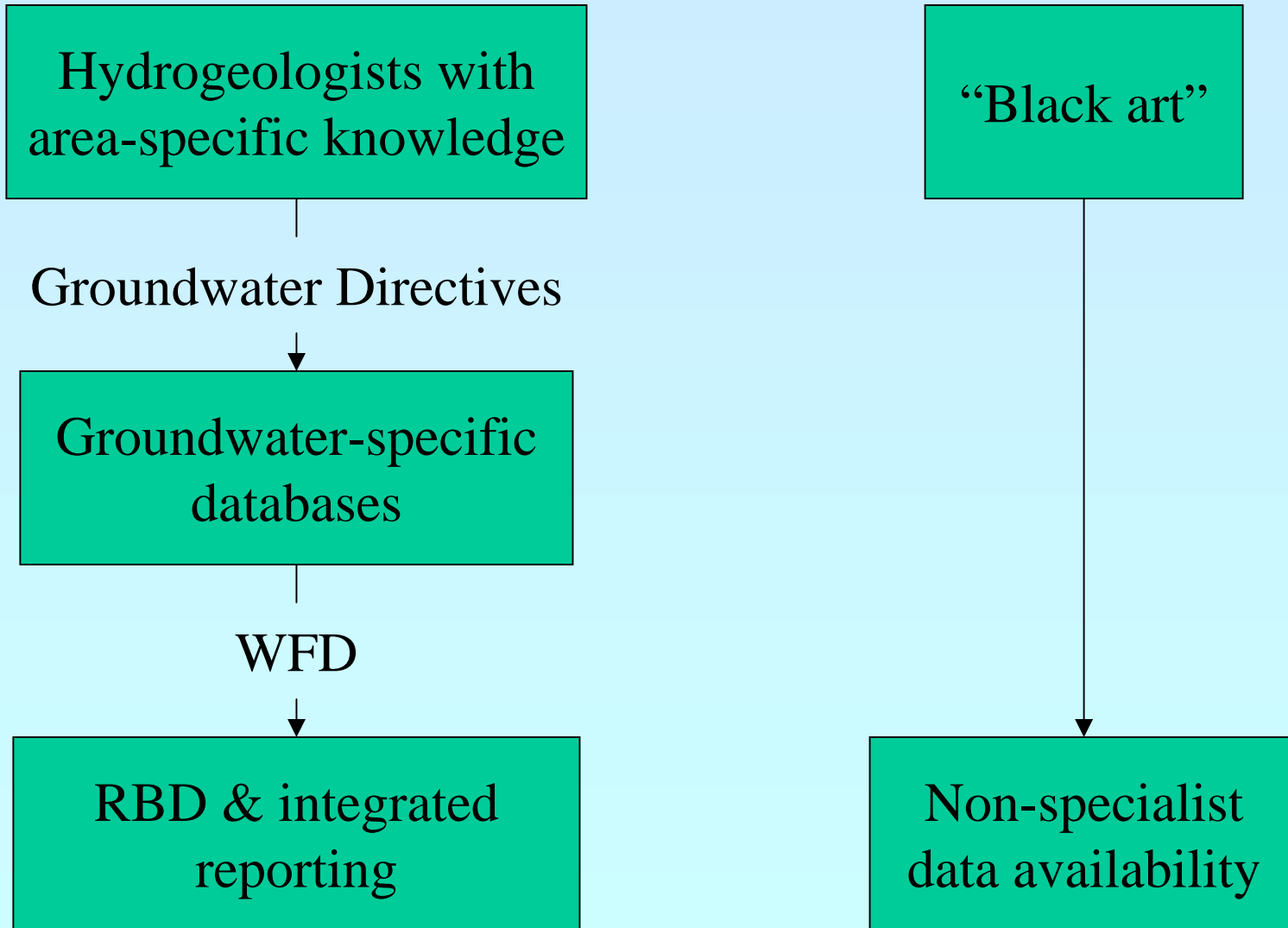
Obvious issues?

Obvious to whom?

Data
Integration



Data Integration



Data Integration

Conc mg/l P	GW body, Aquifer, Vul, etc	Point pressure?	Purpose
0.05	...	N	Chemical Status
ND	...	N	Chemical status, (Prot Area)
0.04	...	Y	Prevent / Limit

Examples of remaining uncertainties

Low productivity aquifers

Daughter Directive

- Averages?

Lower Objectives

- How much prediction?
- Trends in fractured rock?

Drinking Water Protected Areas

- All compliance points?

Summary

WFD - many uncertainties remain

What is clear:

- Conceptual model vs characterisation vs. monitoring design
- Minimum data standards
- Purpose each location