Title: (Ground)Water Quality Monitoring for WFD

Vincent Fitzsimons

• SEPA
• Hydrogeologist
SEPA GW character’on

TAG Task 12 – GW monitoring

SEPA mon. strategy

None completed

Personal perspective

CIS guidance

Highlight key challenges
Some challenges:

• Why / what / where / when?

• Data handling & integration
What / where / when?

• Strong emphasis on links with conceptual models

• CIS guidance excellent
What / where / when?

Validate measures?

Validate risk?
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

Hydrogeologists with area-specific knowledge

Groundwater Directives

Groundwater-specific databases

WFD

RBD & integrated reporting

“Black art”

Non-specialist data availability
## Data Integration

<table>
<thead>
<tr>
<th>Conc mg/l P</th>
<th>GW body, Aquifer, Vul, etc</th>
<th>Point pressure?</th>
<th>Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.05</td>
<td>…</td>
<td>N</td>
<td>Chemical Status</td>
</tr>
<tr>
<td>ND</td>
<td>…</td>
<td>N</td>
<td>Chemical status, (Prot Area)</td>
</tr>
<tr>
<td>0.04</td>
<td>…</td>
<td>Y</td>
<td>Prevent / Limit</td>
</tr>
</tbody>
</table>
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