

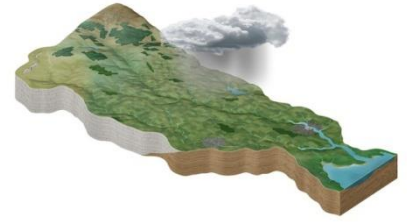
# Characterisation and beyond

## *Progress to date*



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Catchment Science and Management Unit

Acknowledgements: EPA colleagues (across  
Offices), RPS, LAs, IW, IFI, Dept Env



# Some WFD Implementation Principles

1. Integrated Catchment Management (ICM) approach as the framework
2. “Risk” is ‘**risk of not meeting WFD objectives**’ unless appropriate measures are taken
3. **Risk** drives action = **€€€**. Needs confidence. Therefore, assessment of problems and identification of solutions must be evidence-based
4. Characterisation is used to assess the risk, using a 3-tiered approach, thereby providing the basis for prioritising and targeting measures and informing the monitoring programme.

# Characterisation Approach

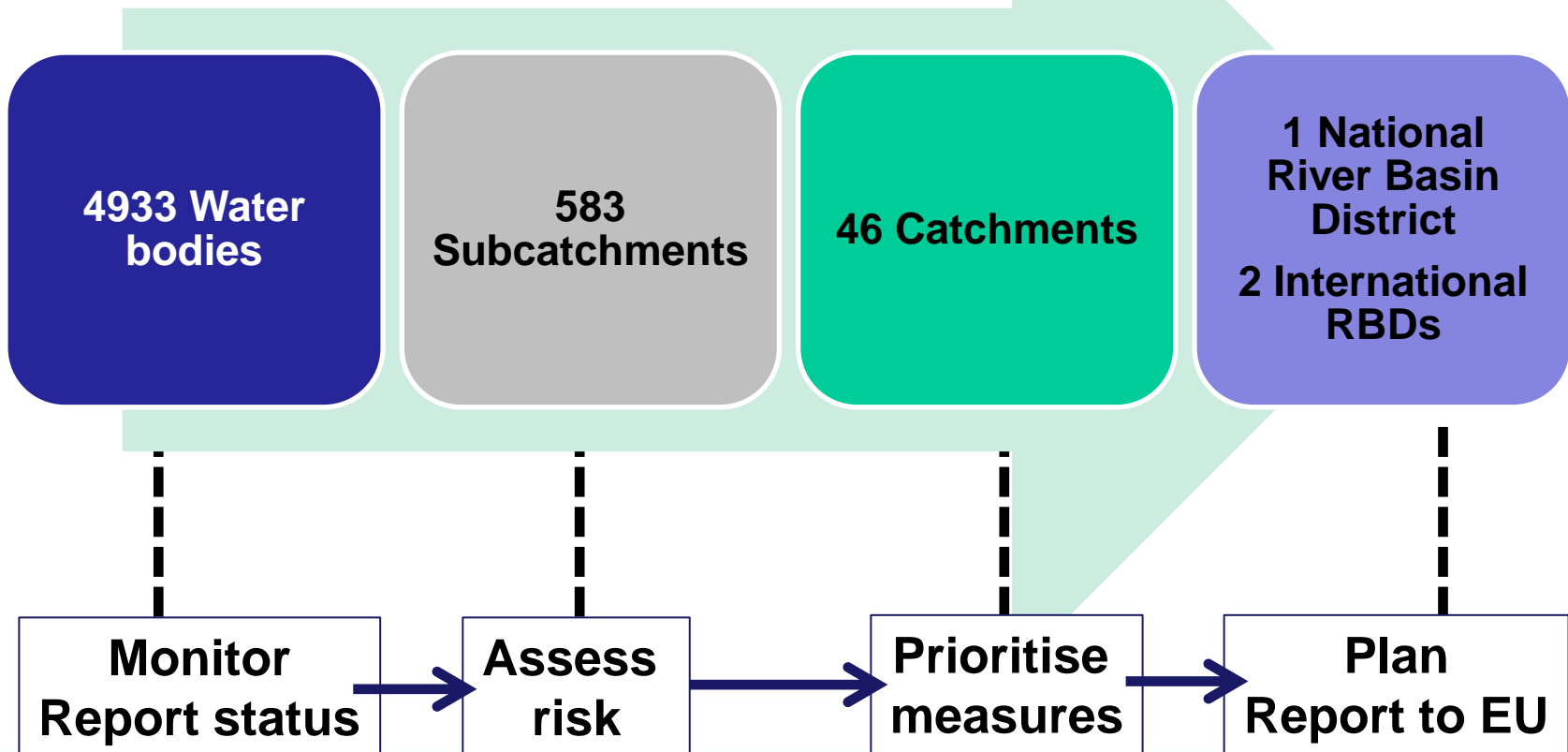
## Three **TIERS** of risk characterisation

so that the level of assessment is  
commensurate with the risk posed

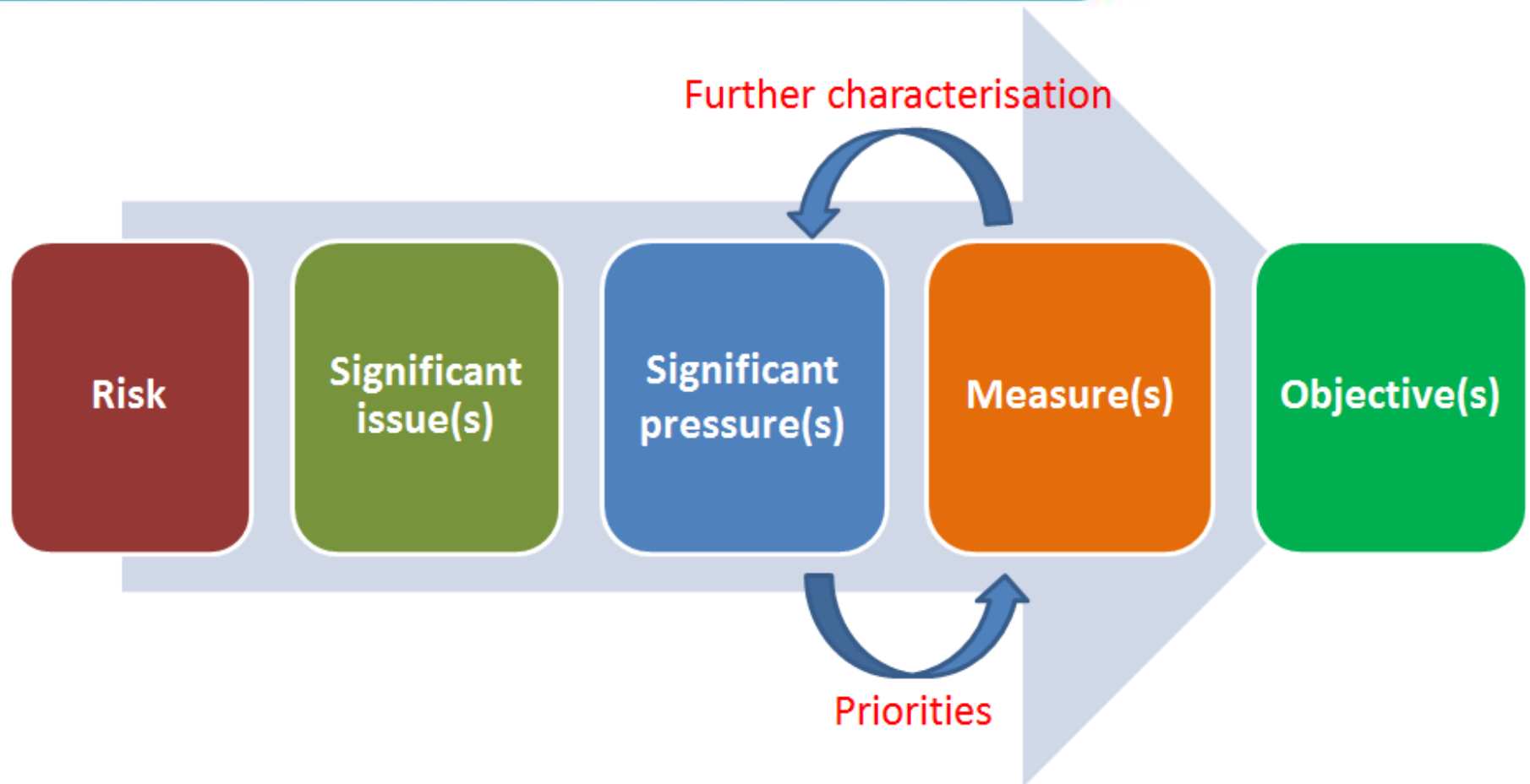
- 1: Preliminary risk screening
- 2: Initial characterisation
- 3: Further characterisation

Increasing  
• Cost  
• Resources  
• Detail  
• Confidence

# Water management unit scales



# Summary of the approach



‘The right measure in the right place’  
Basic measures still apply



# The River Suir Catchment Story as an example



*Photo: E. Quinlan*



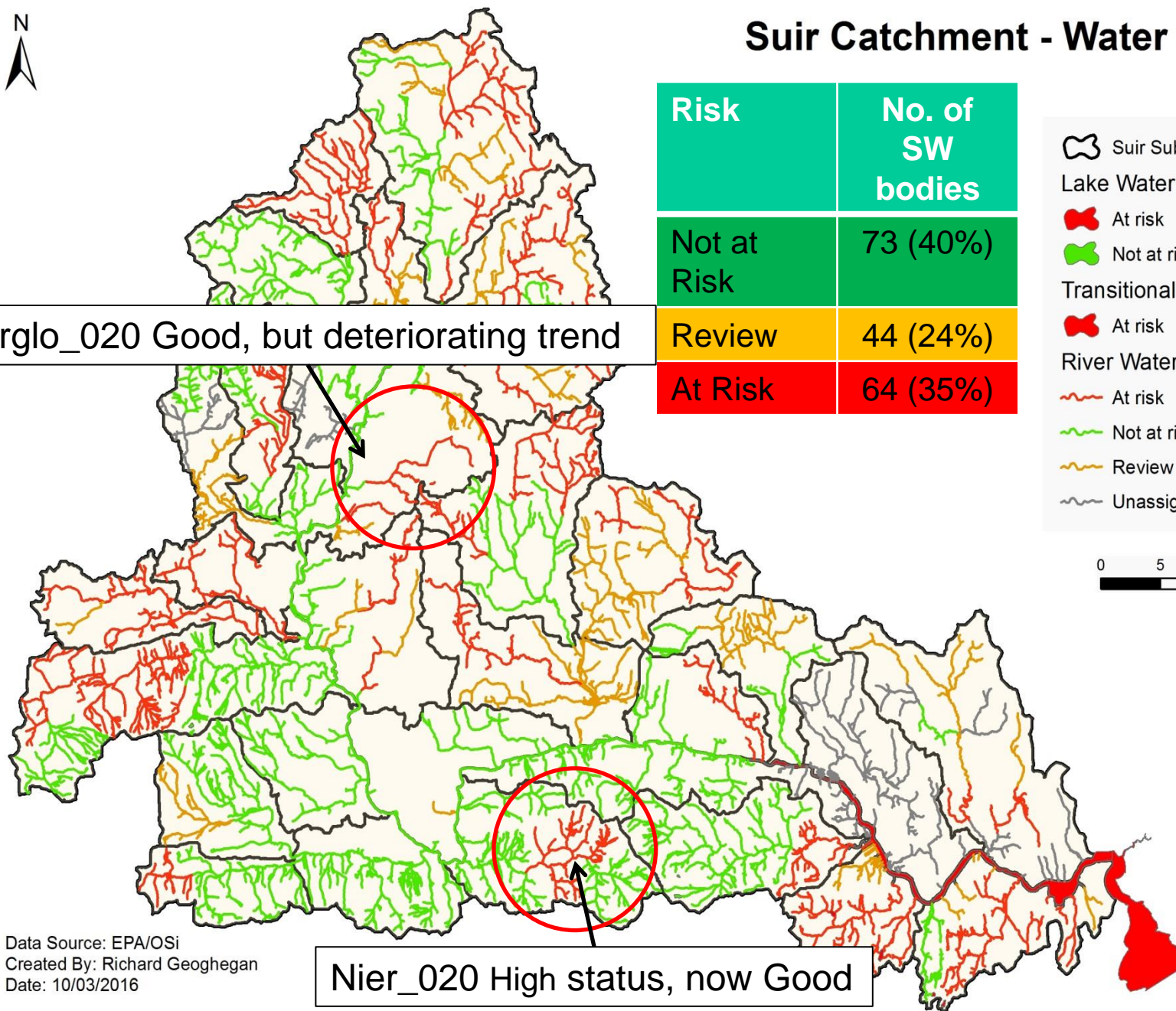


## Suir Catchment - Water Body Risk

| Risk        | No. of SW bodies |
|-------------|------------------|
| Not at Risk | 73 (40%)         |
| Review      | 44 (24%)         |
| At Risk     | 64 (35%)         |

-  Suir Subcatchments
- Lake Water Body Risk
-  At risk
  -  Not at risk
- Transitional Water Body Risk
-  At risk
- River Water Body Risk
-  At risk
  -  Not at risk
  -  Review
  -  Unassigned

0 5 10 20  
Km




Data Source: EPA/OSi  
Created By: Richard Geoghegan  
Date: 10/03/2016

Nier\_020 High status, now Good



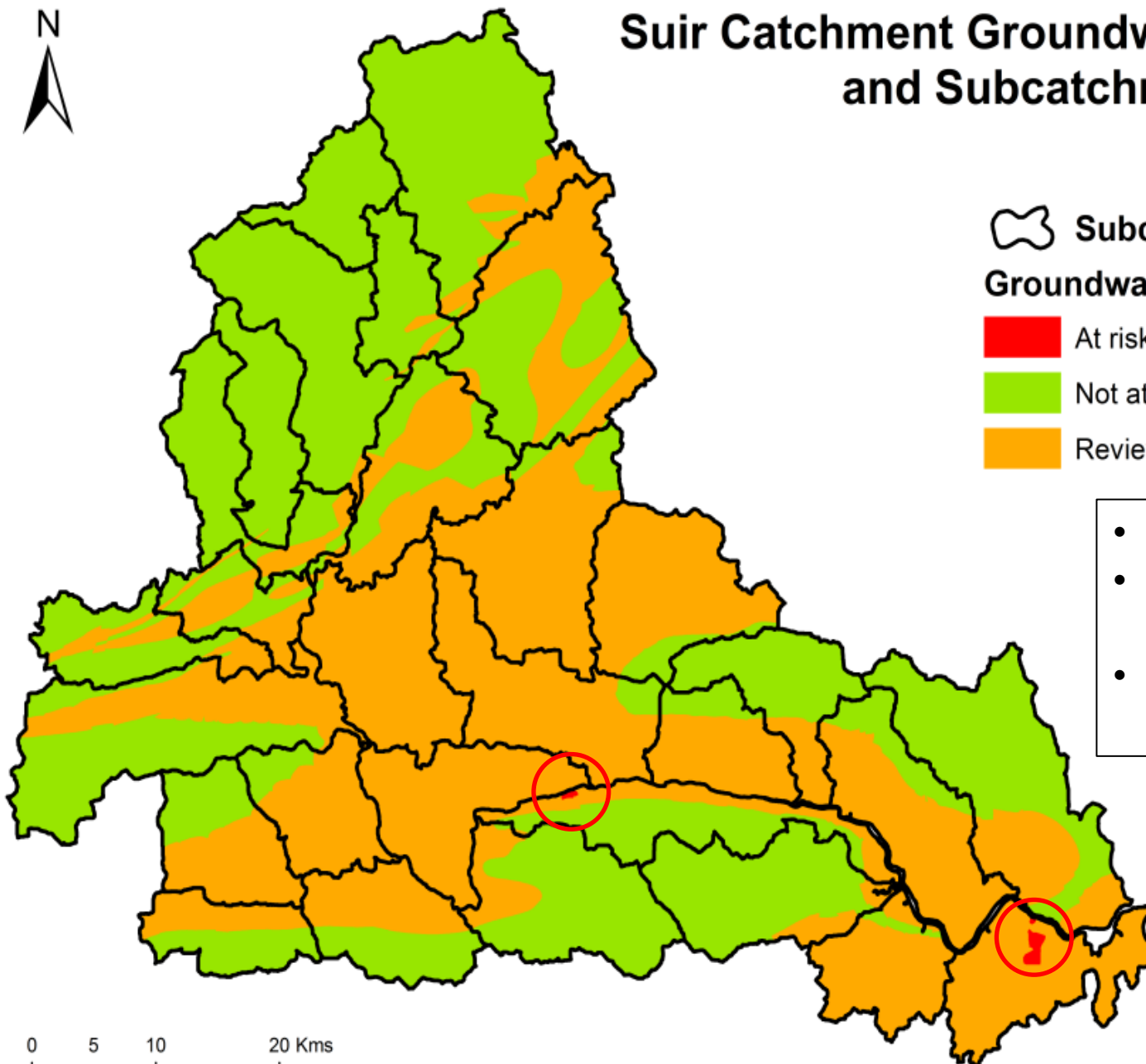
# Suir Catchment Groundwater Body Risk and Subcatchments

 Subcatchments

Groundwater Body Risk



- 4 small GWBs
- Landfill and industrial sites
- Currently under review



0 5 10 20 Kms

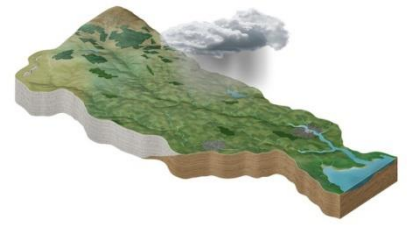
Data Source: EPA  
Author: Tony Kent  
Date: 17/05/2016



## Significant issues (and possible pressures)

| Issues                | Possible pressures  |
|-----------------------|---|
| P – eutrophication    | Agriculture, WWTPs, DWWTSs, Urban areas, Forestry, Industry |
| Ammonium              | Peat extraction, WWTPs                                      |
| Fine sediment         | Channel maintenance, forestry, agriculture                  |
| Channel modification  | Channel maintenance, drainage works                         |
| Industrial pollutants | Landfills, industry   |

But we need the **significant** pressures for each water body



# Determining significance

1. Desk based assessment using the S-P-R model
  2. Application of new nutrient modelling tools
    - Source Load Apportionment Model
    - Load reduction calculations
    - Pollution Impact Potential Maps for diffuse agriculture
  3. Local knowledge from EPA colleagues
  4. Workshops and discussions with LAs (and IFI in later catchments), incorporating their data and knowledge
- 
- More than one pressure may be significant
  - Investigative assessments are the link to bring sector level significance down to site/field significance

## Legend

Sum of Fields



- WWTPs
- Industry
- DWWTs
- Pasture
- Arable
- Forestry
- Peat
- Urban runoff
- Atmospheric

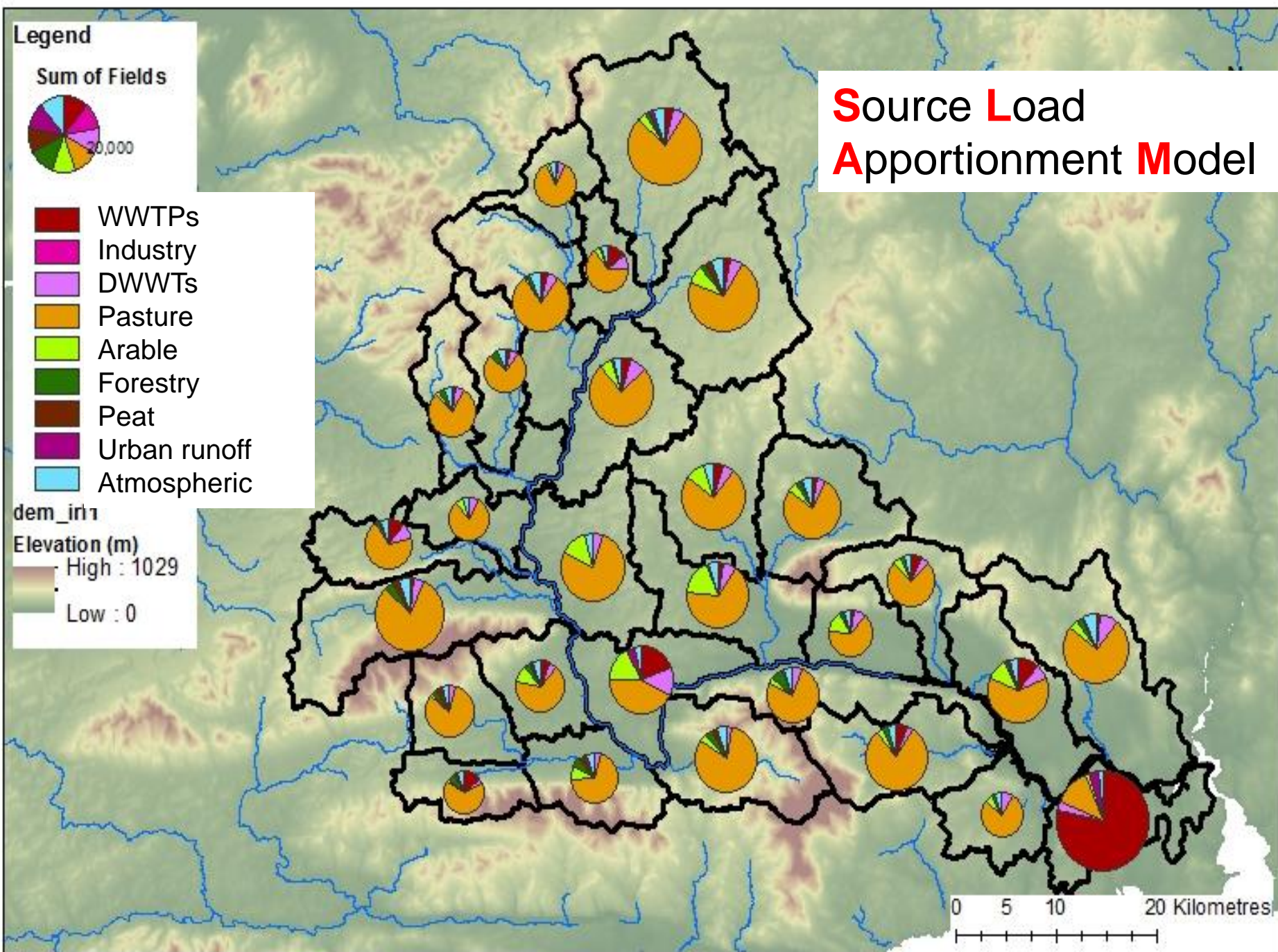
dem\_in1

Elevation (m)

High : 1029

Low : 0

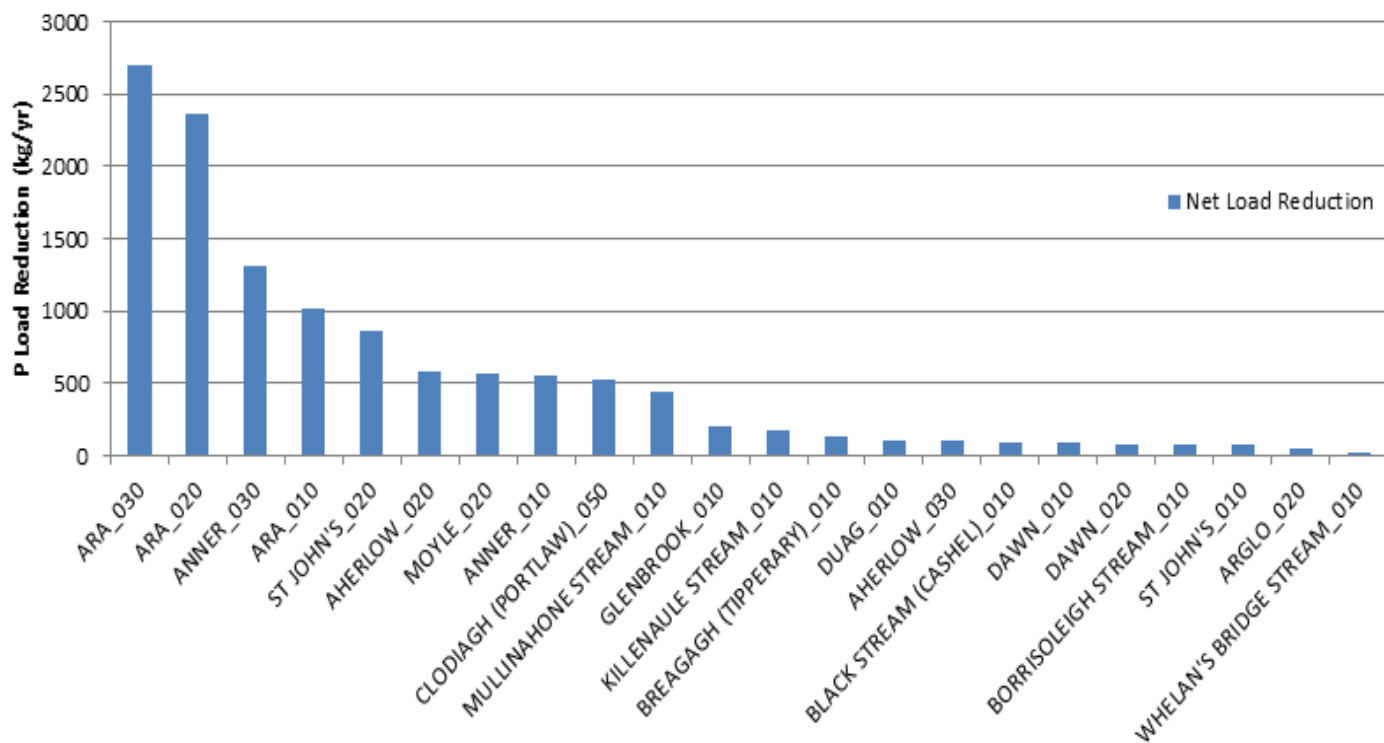
**Source Load**  
**Apportionment Model**





# WB load reductions needed

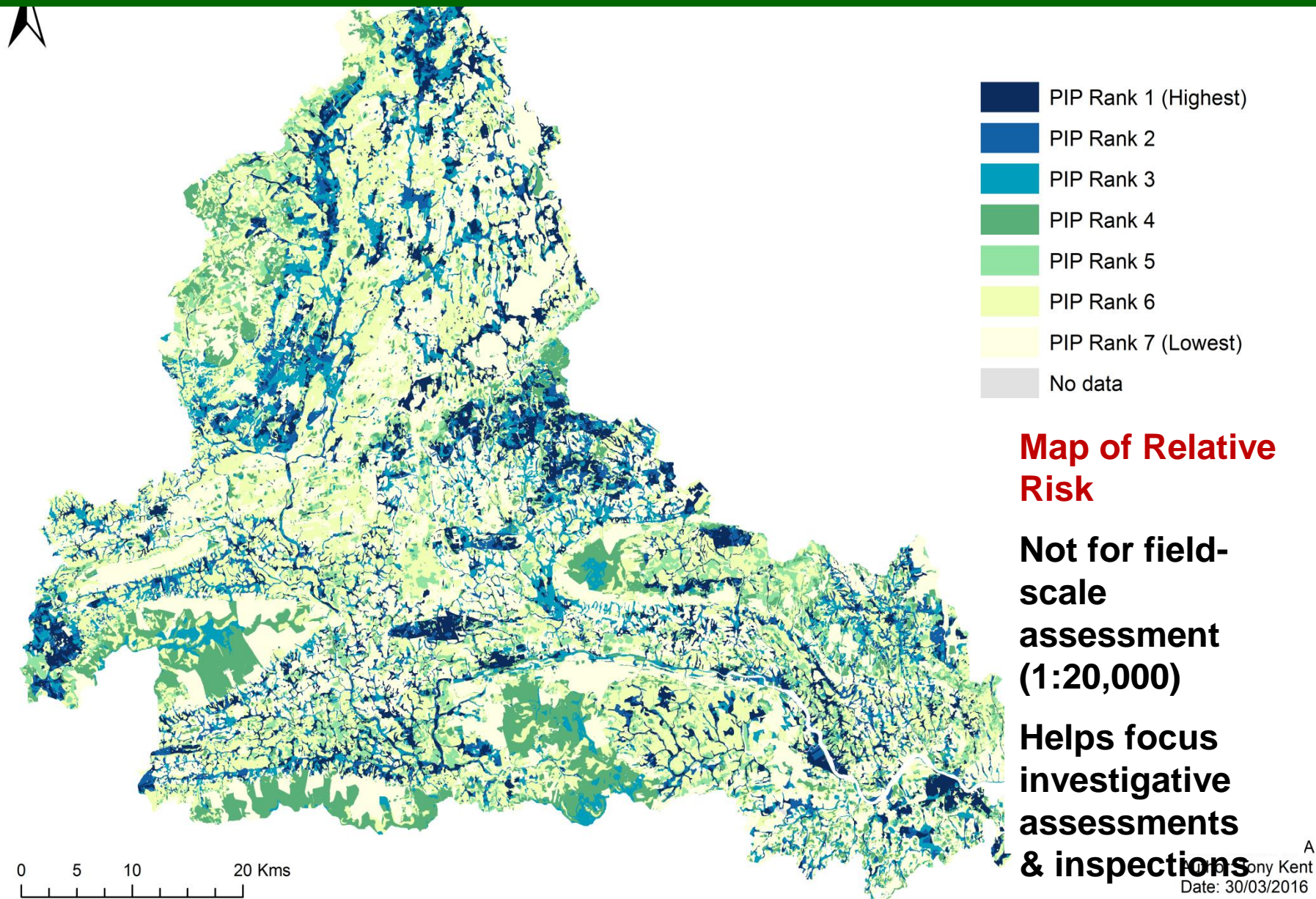
Suir: Net Load Reduction (Draft)



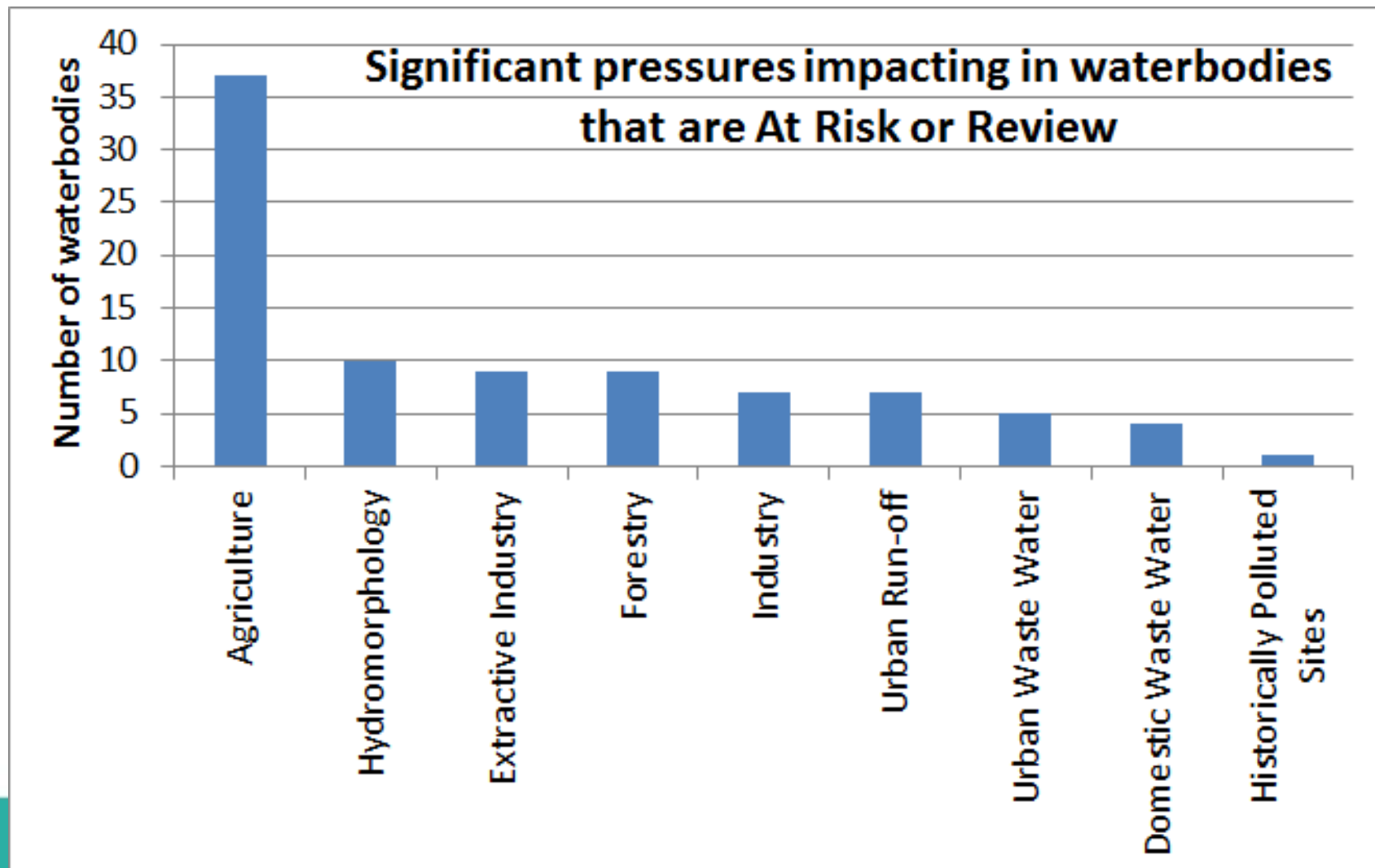
**Additional reductions may also be needed following further investigations**

**Total known reductions for improving rivers and lakes is sufficient for improving TraCs**

# Pollution Impact Potential (PIP) for Phosphate to Surface Water Arising from Diffuse Agricultural Sources



## Significant pressures in the Suir







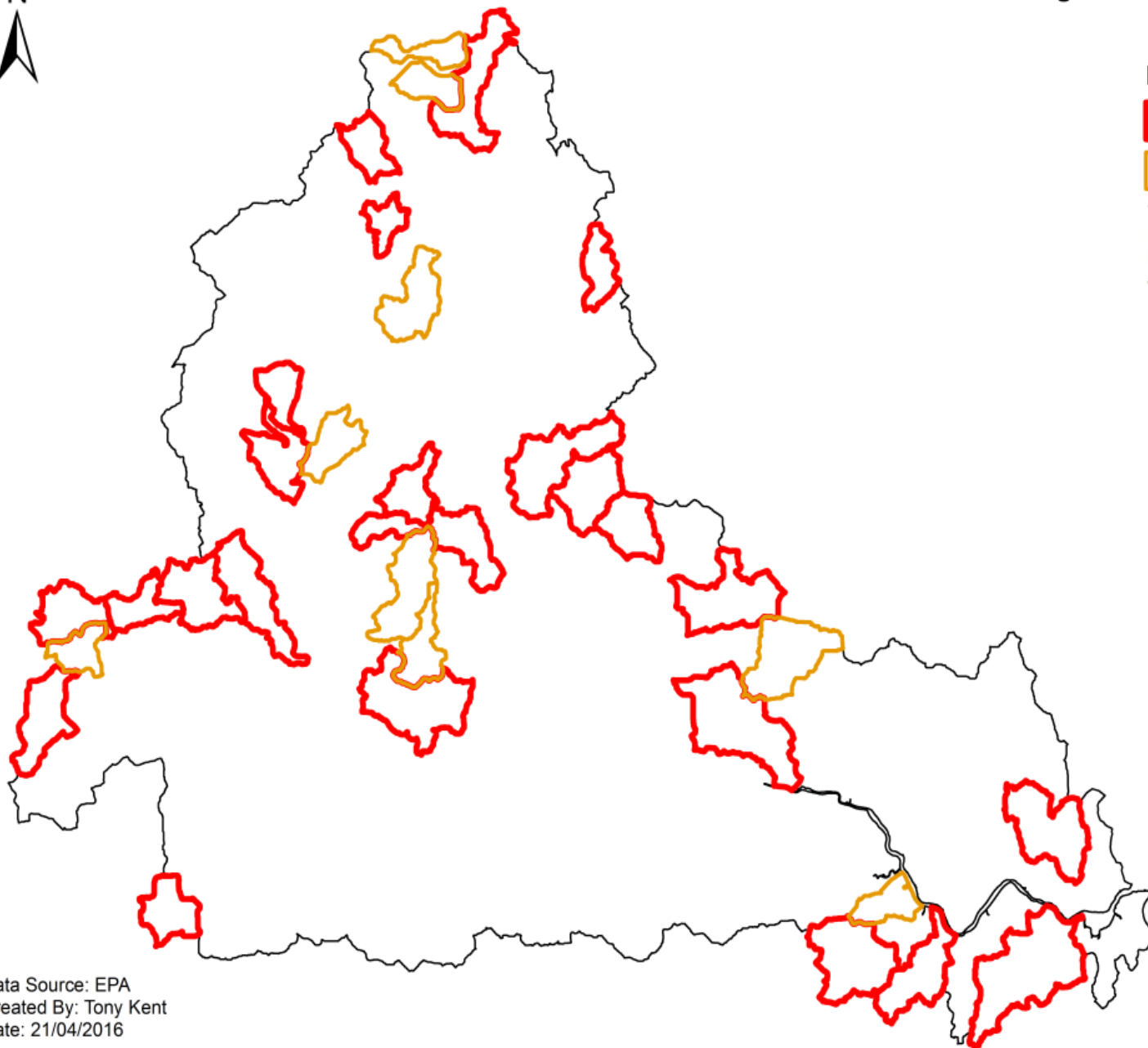
## Catchments of River Water Bodies in At Risk or Review Arising from Agricultural Sources

### River Water Body Risk

 At Risk

 Review

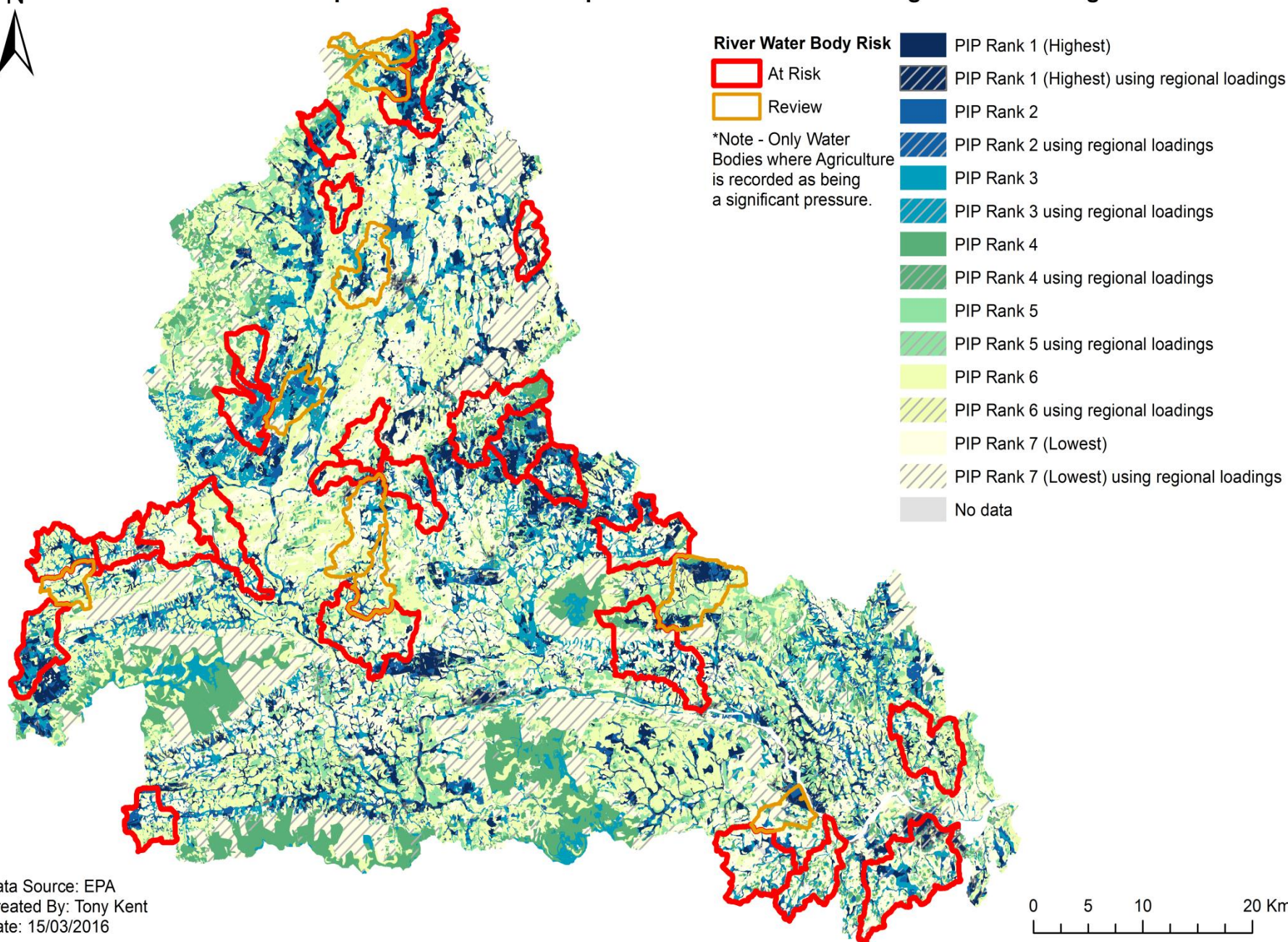
\*Note - Only Water Bodies where Agriculture is recorded as being a significant pressure.



Data Source: EPA  
Created By: Tony Kent  
Date: 21/04/2016

0 5 10 20 Kms

# Pollution Impact Potential for Phosphate to Surface Water Arising from Diffuse Agricultural Sources



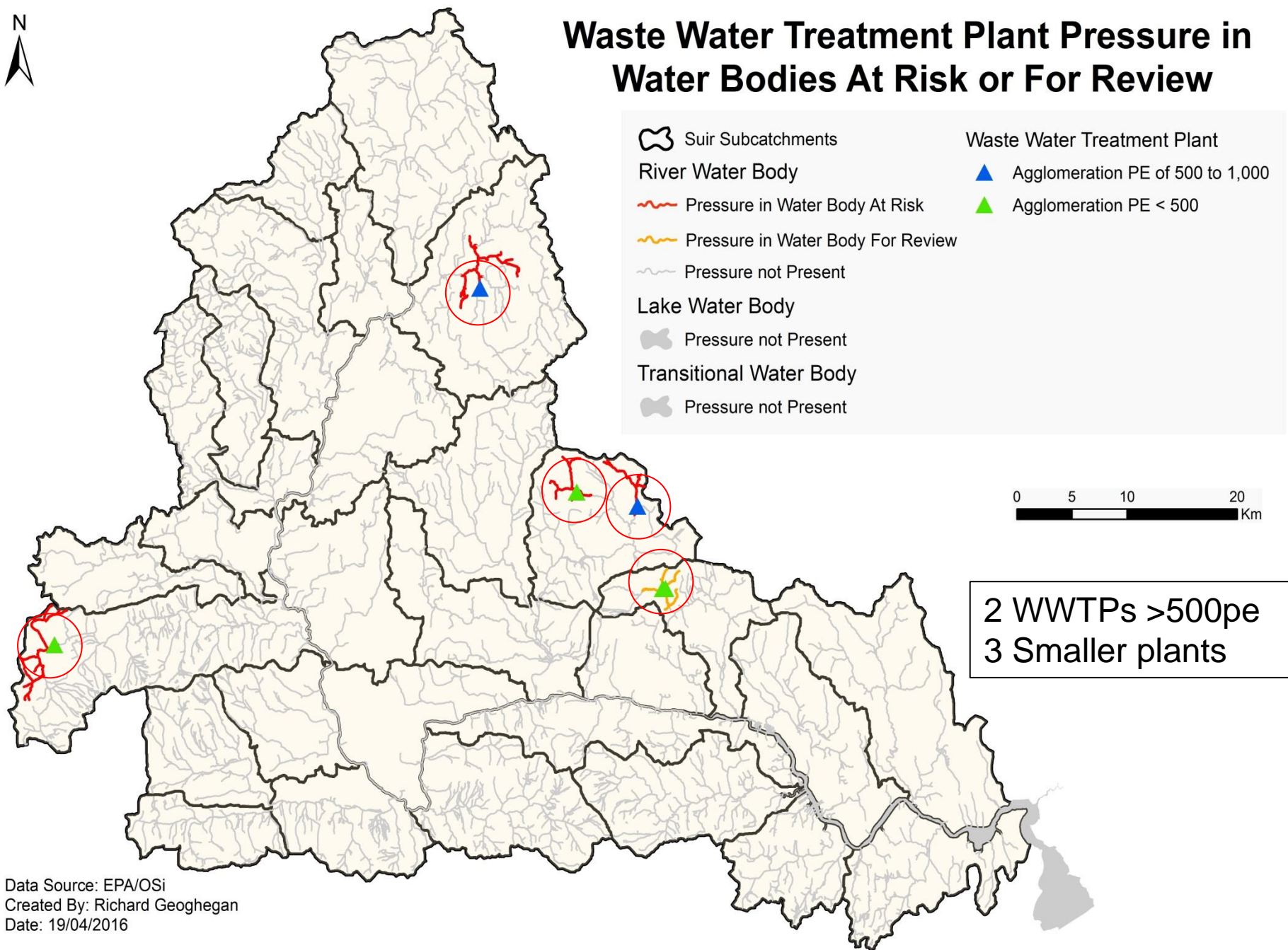
Data Source: EPA  
Created By: Tony Kent  
Date: 15/03/2016

0 5 10 20 Kms





# Waste Water Treatment Plant Pressure in Water Bodies At Risk or For Review







# Industry Pressure in Water Bodies At Risk or For Review

1 IPPC, 5 S4s



Suir Subcatchments

River Water Body



Pressure in Water Body At Risk



Pressure in Water Body For Review



Pressure not Present

Lake Water Body

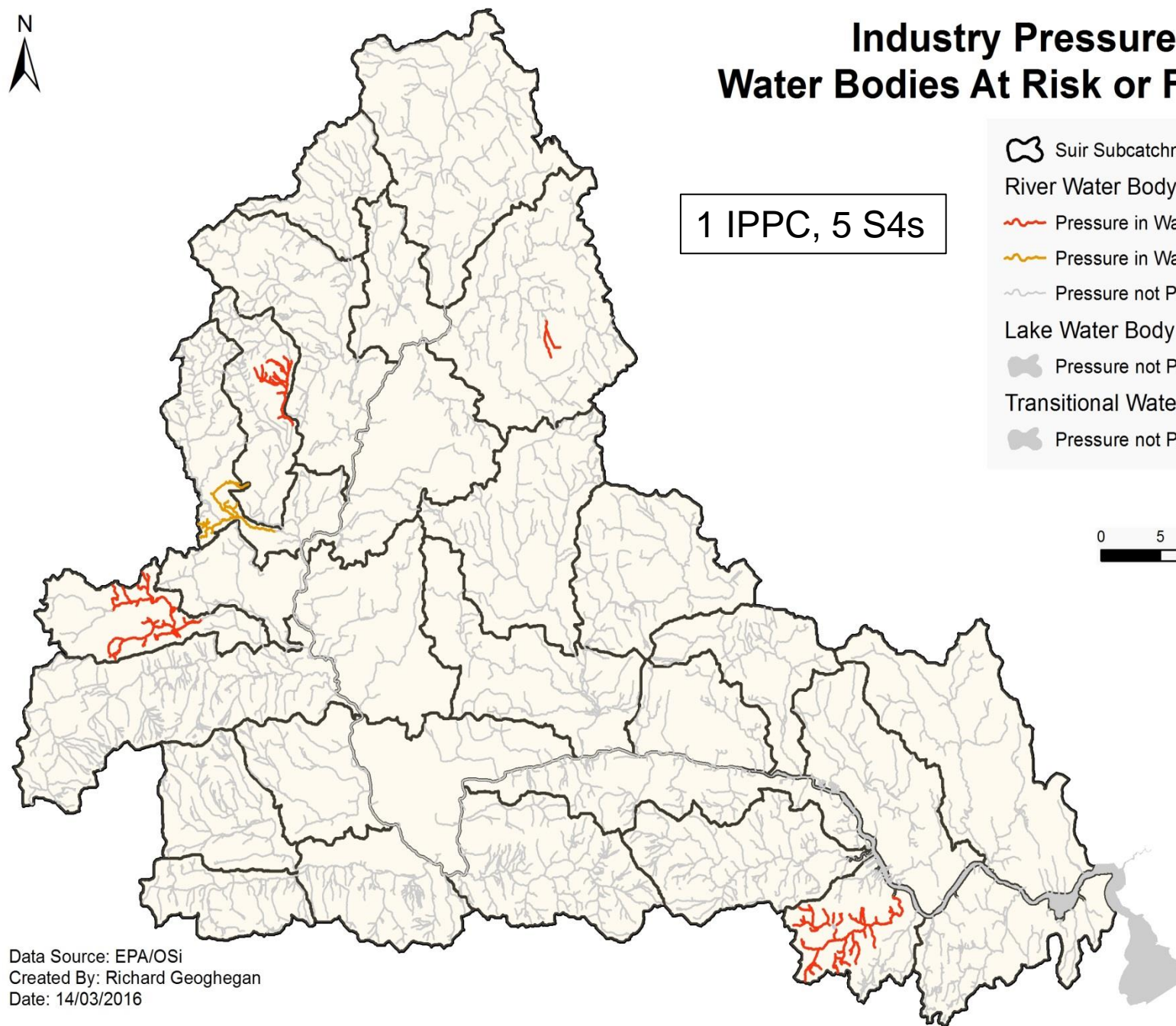
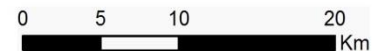


Pressure not Present

Transitional Water Body





Pressure not Present





# Diffuse Urban Pressure in Water Bodies At Risk or For Review

3 towns  
covering 7  
WBs

-  Suir Subcatchments
-  River Water Body
  -  Pressure in Water Body At Risk
  -  Pressure not Present
-  Lake Water Body
  -  Pressure not Present
-  Transitional Water Body
  -  Pressure not Present

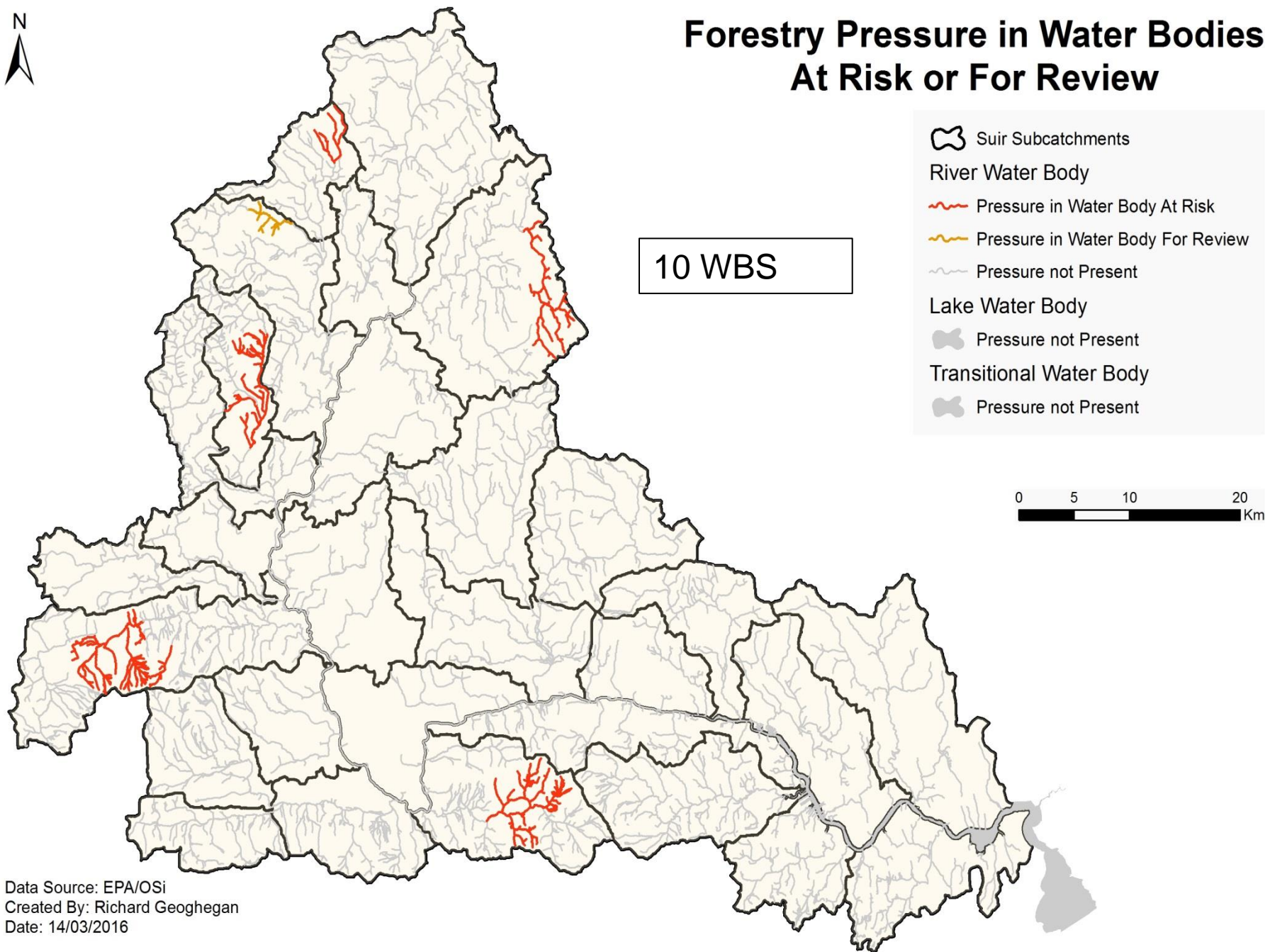
0 5 10 20  
Km

Data Source: EPA/OSi  
Created By: Richard Geoghegan  
Date: 14/03/2016





# Forestry Pressure in Water Bodies At Risk or For Review







# Hydromorphology Pressure in Water Bodies At Risk or For Review

2 main rivers  
(Fishmoyne  
and  
Farneybridge)



Suir Subcatchments

River Water Body



Pressure in Water Body At Risk



Pressure in Water Body For Review



Pressure not Present

Lake Water Body

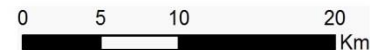


Pressure not Present

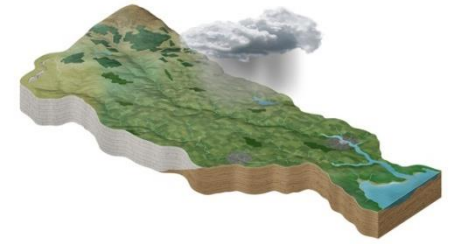
Transitional Water Body



Pressure not Present



## WFD Environmental Objectives as context for consideration of measures



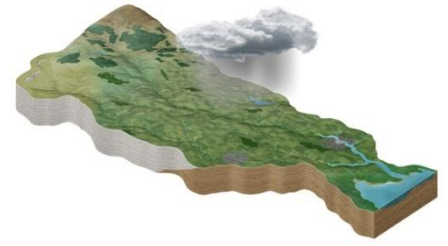
- Prevent deterioration in status.
- Aim to restore to good status by 2015.
- Comply with the standards and objectives for Protected Areas.
- Alternative objectives may be set, such as:
  - An extended deadline, e.g., good status by 2021 or 2027.
  - A less stringent objective, e.g., achieving good status after 2027.

# Priorities to inform Objectives and measures

- Priority 1:**
- (a) High status sites
  - (b) Protected areas (Drinking water, SACs, etc)
  - (c) No deterioration (reverse trends)
- Priority 2:**
- (a) Improvements in a feasible number of subcatchments (multi-disciplinary projects)
  - (b) Complete all Investigative assessments
- Priority 3:**
- (a) Protect sites that are not currently At Risk (Basic measures adequate)
  - (b) Restore all sites that are not at Good Status



# Management strategies for achieving objectives

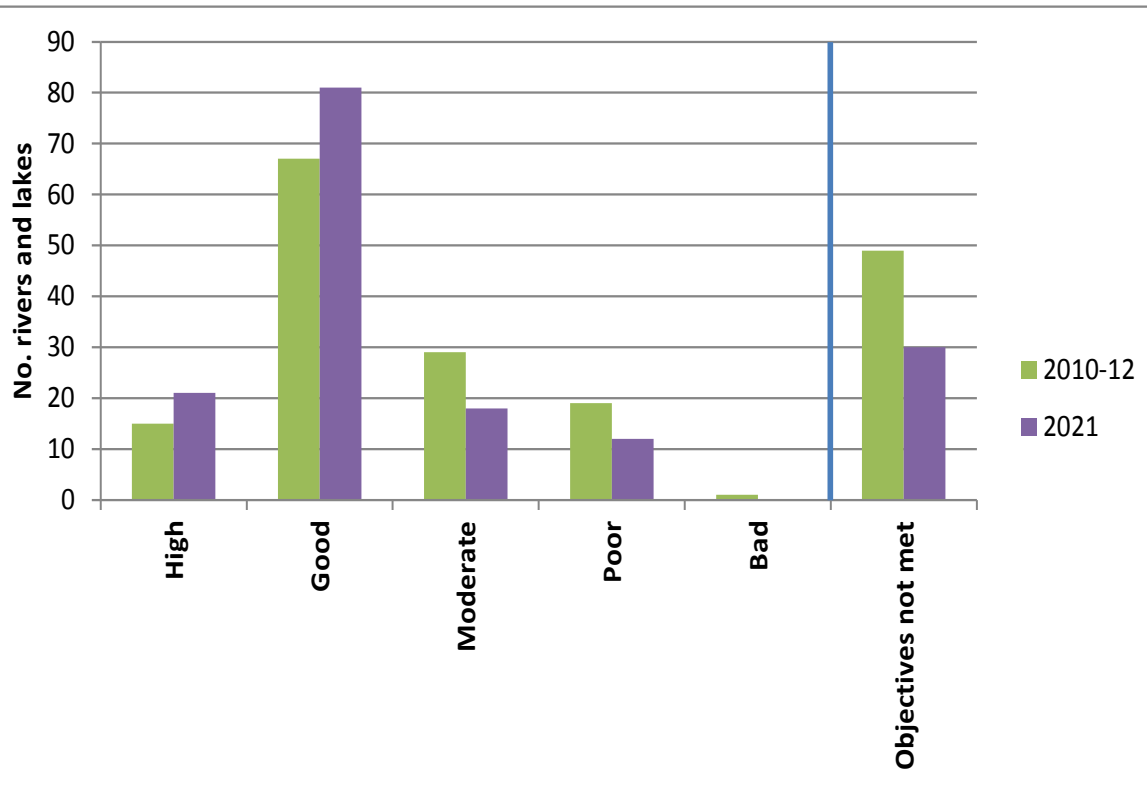


1. Local (site/field) mitigation measures (e.g. buffer zones)
2. Engagement & knowledge exchange  
(catchment water officers and farm advisors crucial)
3. Incentives (e.g. Glas, RDP, Septic tanks, etc, locally led)
4. Innovation and new technology
5. Integration into the planning process
6. Licensing of discharges (& abstractions eventually)
7. Compliance checking & enforcement

# Proposed Suir measures

- One WWTP upgrade (+ 6 others post-2021)
- Consider improvements at 3 small WWTPs (CoAs)
- Investigate & mitigate pesticide issues at one supply
- Investigative assessments (IAs) in 20 priority WBs
- WB specific measures as determined through the IAs for agriculture, forestry, industrial, diffuse urban and DWWTS pressures
- 2 substantial multi-disciplinary, multi-agency projects (Clashawley and Ara subcatchments)
- Work plans in place for remediating point sources impacting on groundwater

# Target improvements 2021



If measures are implemented and are successful, we are aiming to achieve:

- **20 WBs** improved to **Good or High status.**
- **2 WBs** improved but remain <Good
- **Protected Area objectives achieved**

All data, assessments, objectives (incl tracking of progress towards measures) are being recorded in detail in the WFD Application, and summarised in catchment assessments



## Next steps

1. Complete the remaining **subcatchments** (end Oct)
2. Progress the **catchment assessments**
3. Further development of the **WFD Application**
4. Contribute to the **draft RBMP**
5. Review, update and **finalise** in 2017
6. More **engagement** in 2017, particularly in relation to the catchment assessments