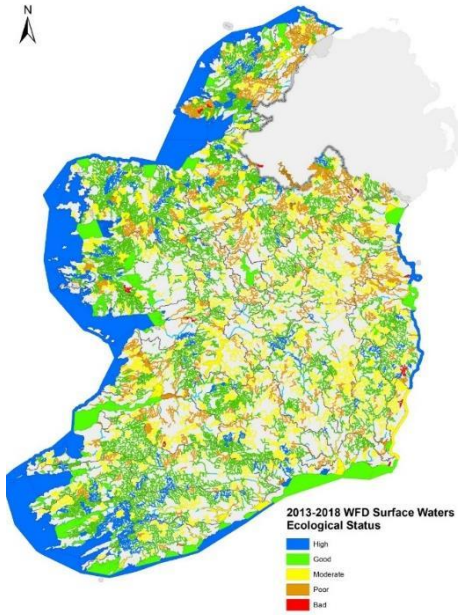
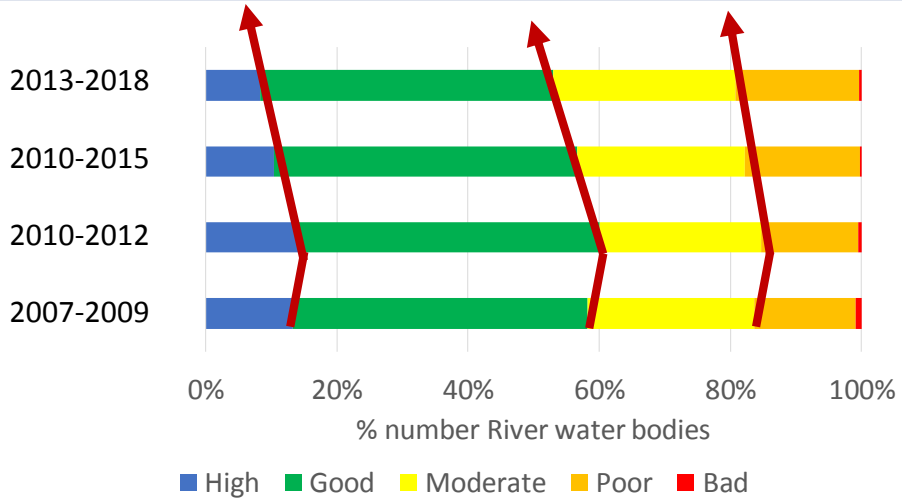
Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaoil

Water Quality
National problems, local solutions

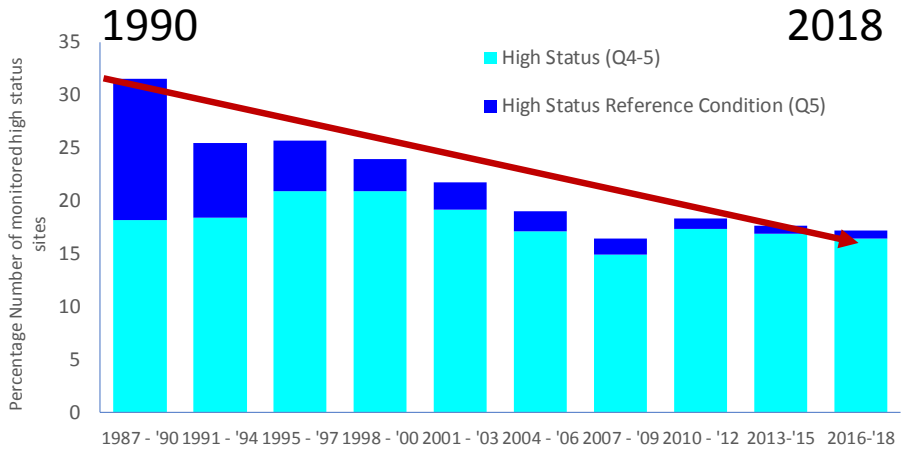
Water quality (ecological status) – condition and trends



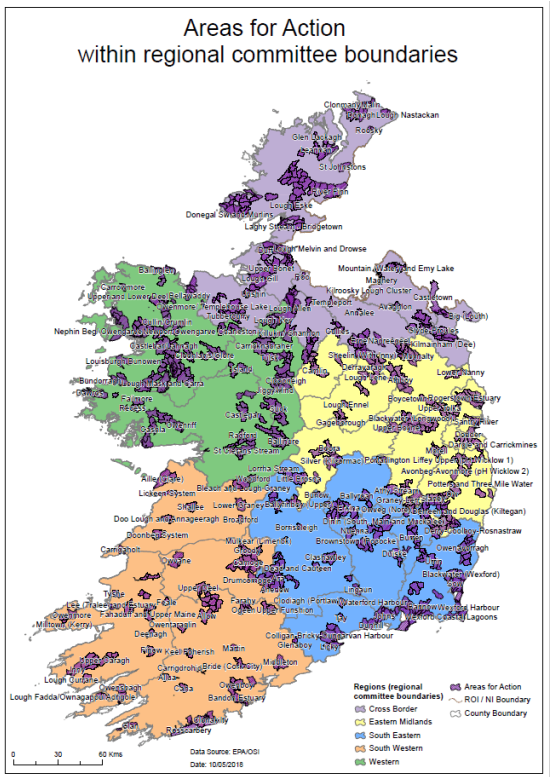
47% rivers and 62% estuaries unsatisfactory. Problems are widespread



Increase in Moderate and Poor

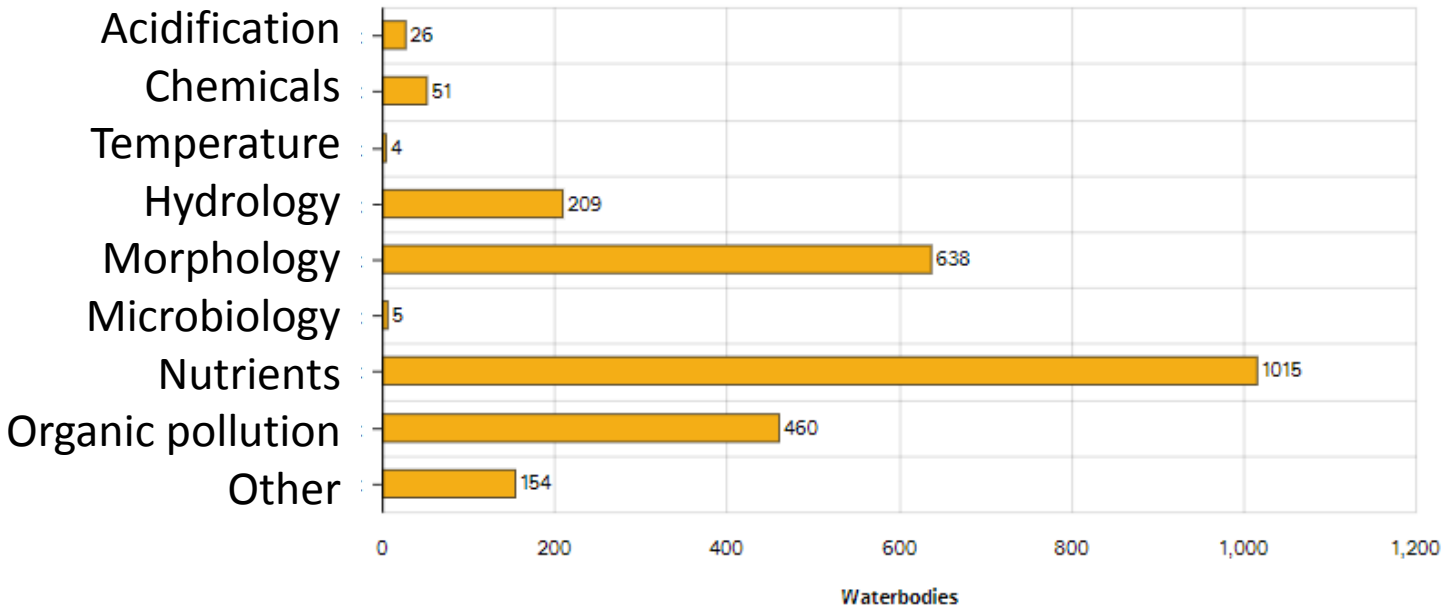


High status waters in decline

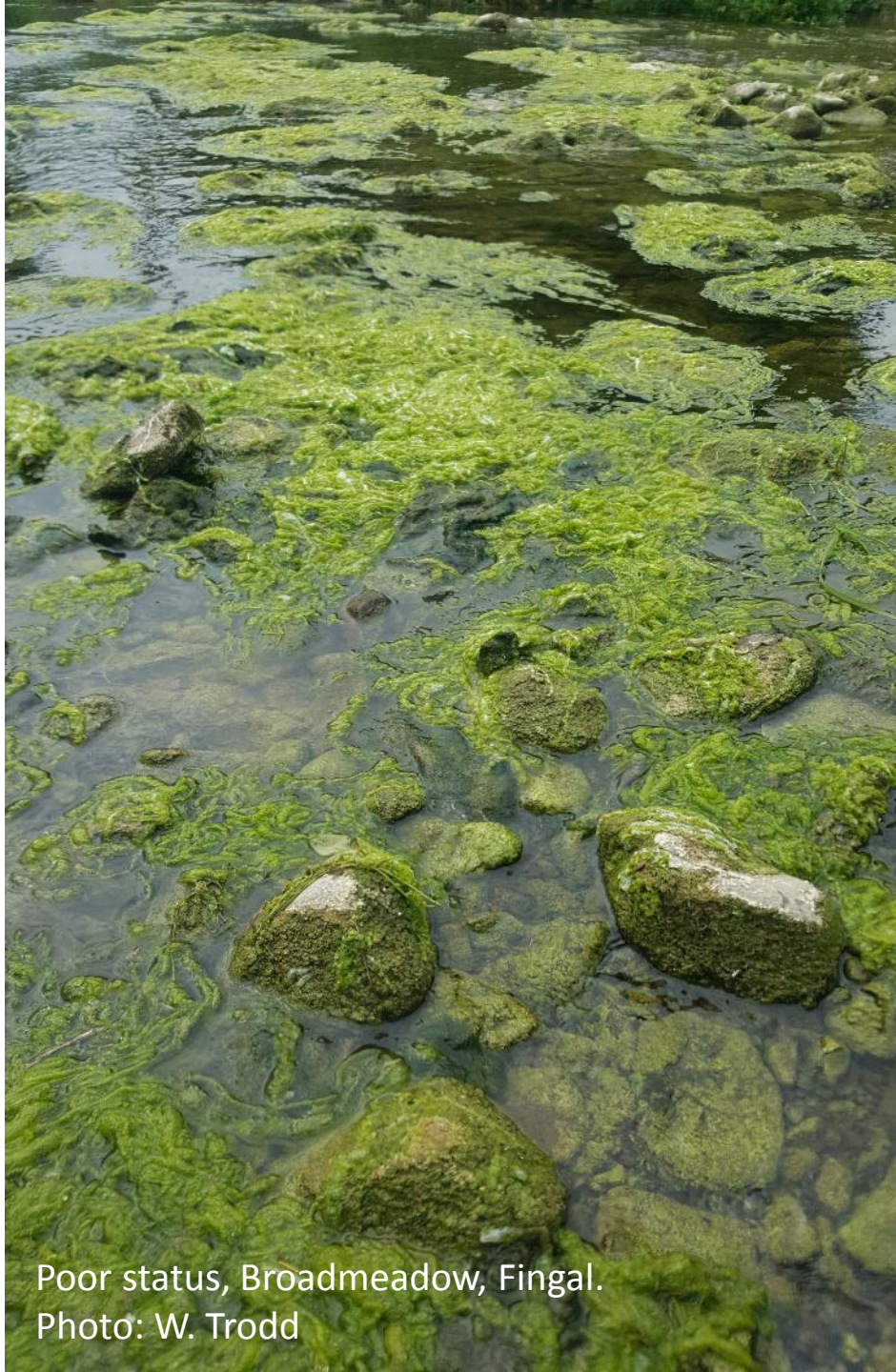


Net improvement in Priority Areas for Action in 2018, and 2019 (River biology only)

Impacts to waters that are At Risk



Excess nutrients (nitrogen and phosphorus) are the most widespread problem



Poor status, Broadmeadow, Fingal.
Photo: W. Trodd

Key impacts


Lough Inchiquin, Co Clare.
Photo: B. Kennedy

Phosphorus

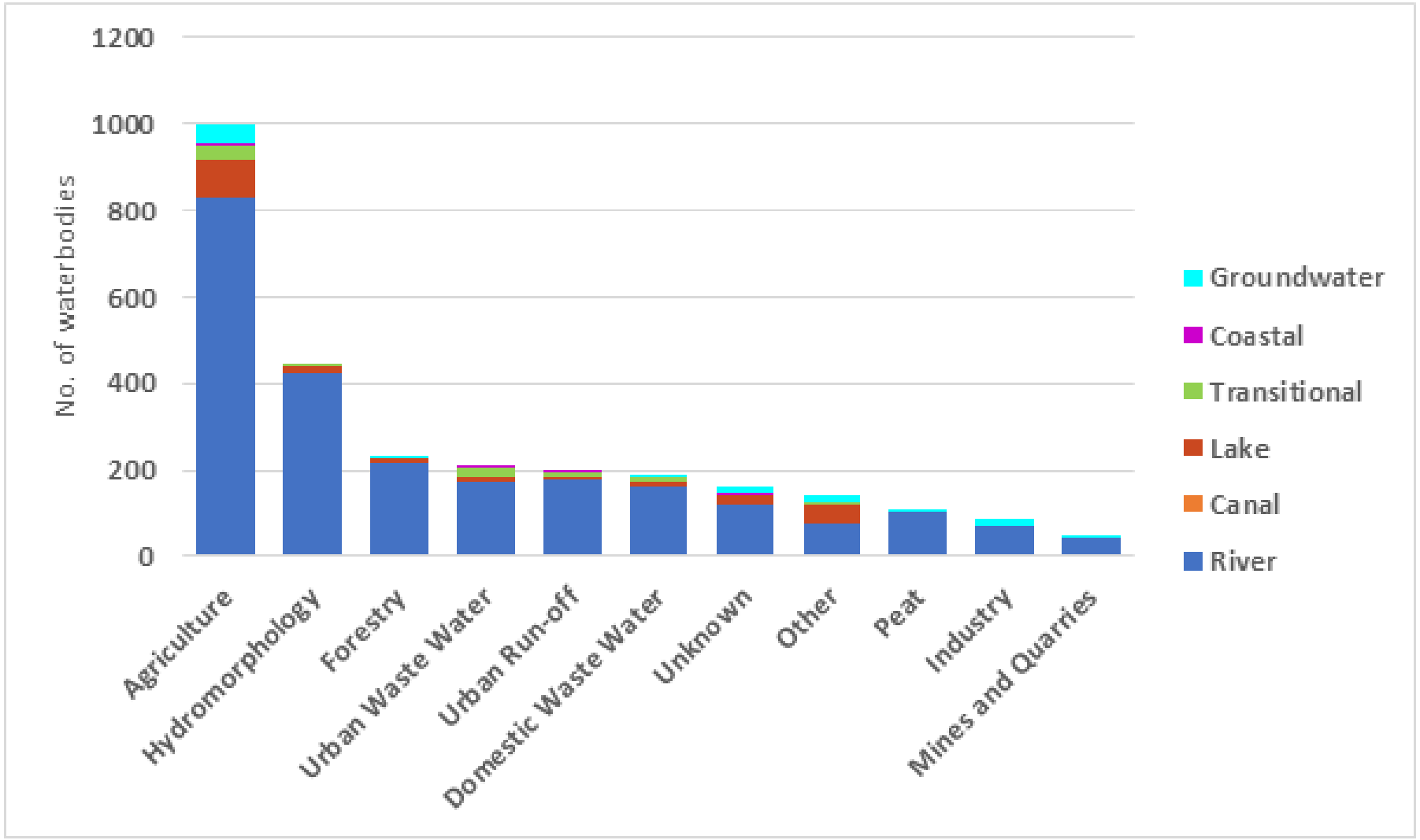
Nitrogen


South coast
Photo: S. O'Boyle

Drainage and sediment

Chemicals

Significant pressures causing impacts – 3rd cycle



Note:
1603 waterbodies are impacted (out of 4842)

Agriculture accounts for the greatest number, but is also the most widespread landuse

Hydromorphology pressures are attributable to multiple sectors

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N and P behave very differently in the landscape

High risk for **phosphorus** loss
Poorly draining soils
Overland flow dominant
Weak relationship with intensity
Need to break the pathway
Lag time weeks to months
Key issue for rivers/lakes

Mattock catchment, Co. Louth. Photo: J Deakin

High risk for **nitrogen** loss
Freely draining soils
Groundwater pathway dominant
Strong relationship with intensity
Needs source control
Lag time months to years
Key issue for estuaries/coastal

Nuenna catchment, Co. Kilkenny. Photo: J Deakin

Targeting Agricultural Nutrient Measures for Maximum Co-Benefits

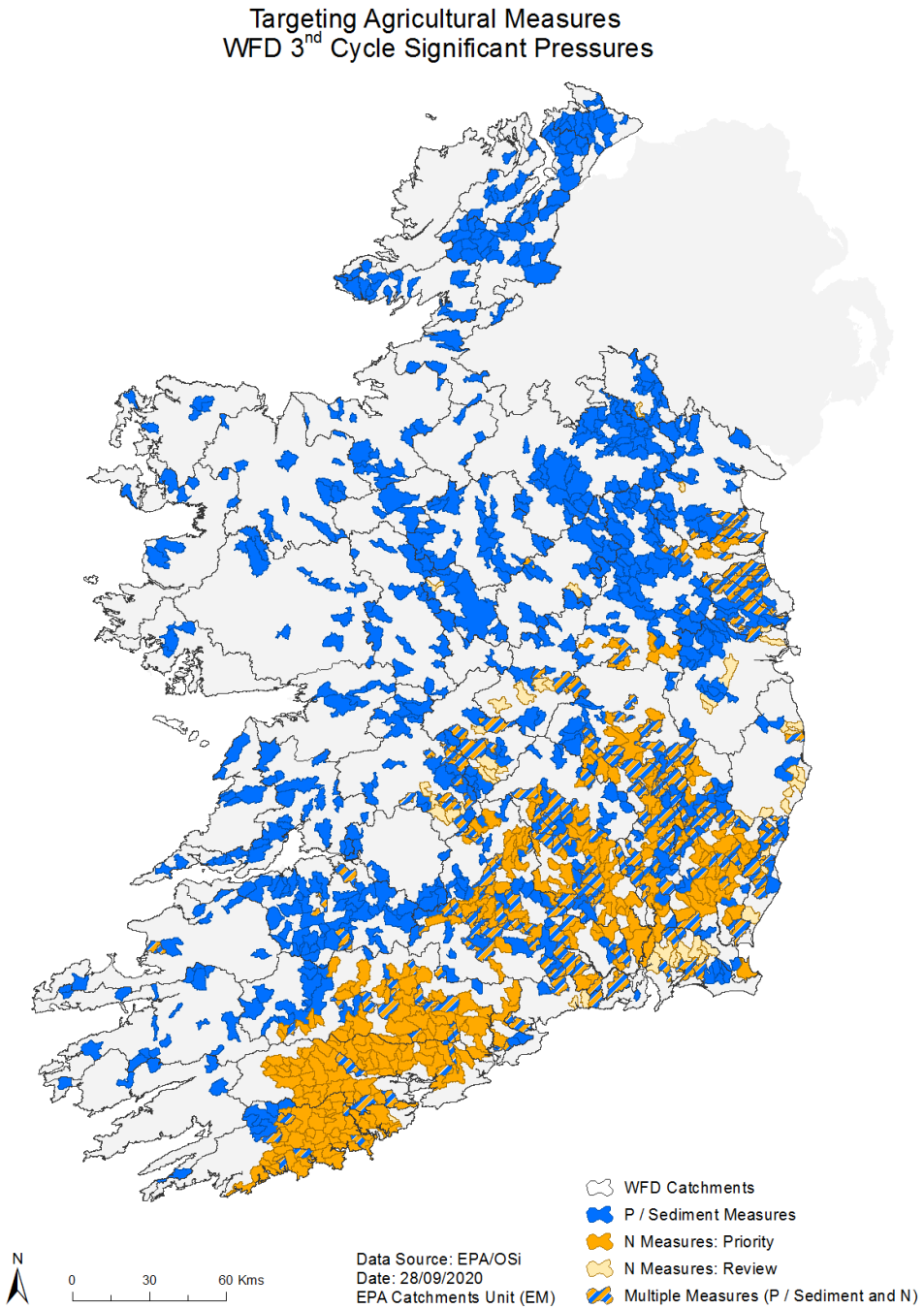
1. Measures to reduce phosphorus (and sediment) loss

‘Break the pathway’.
Co-benefits for biodiversity.

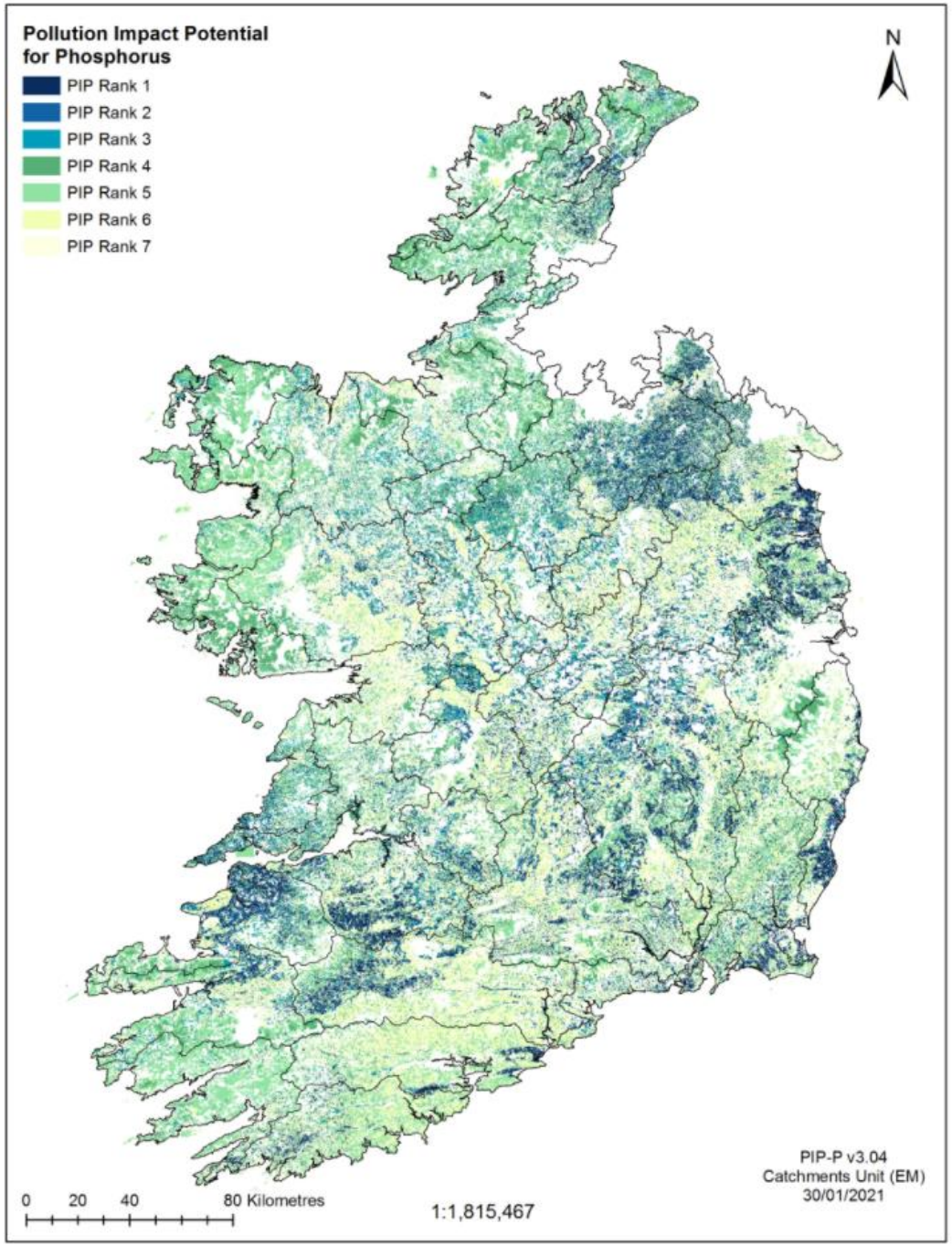
2. Measures to reduce nitrogen loss

‘Control losses at source’.
Co-benefits for climate and ammonia.

‘The right measure in the right place’



Mapping the highest risk areas for Phosphorus loss from diffuse agriculture



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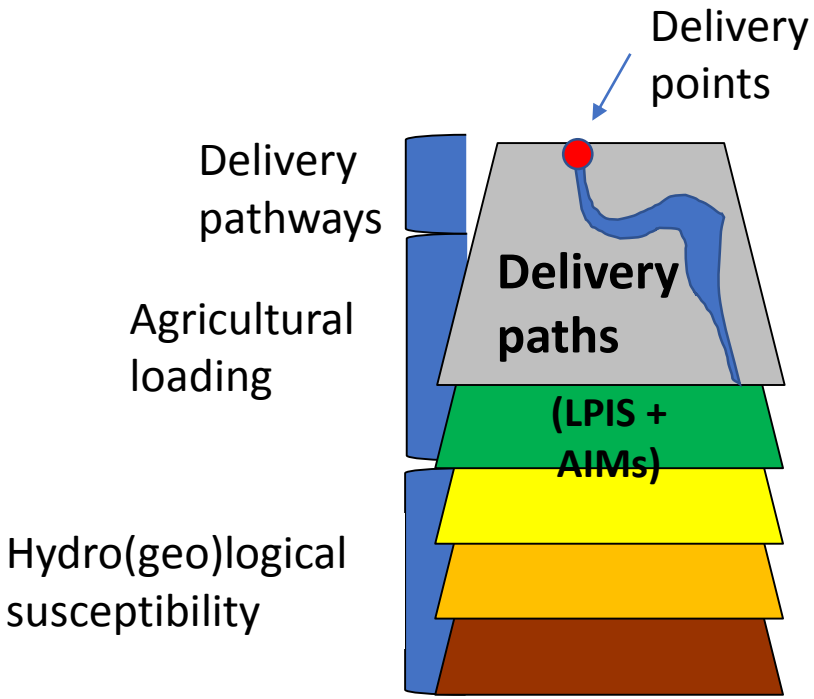
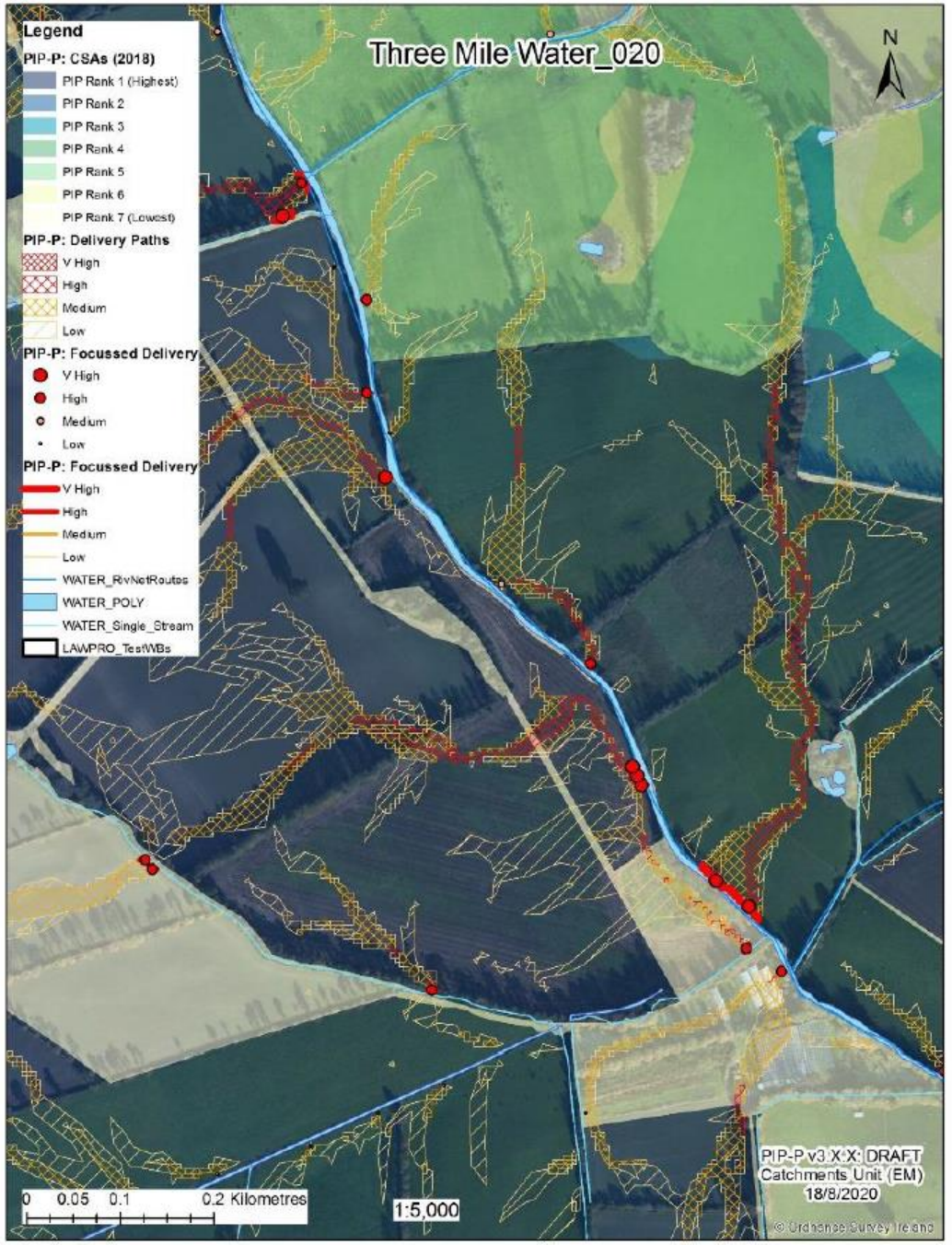
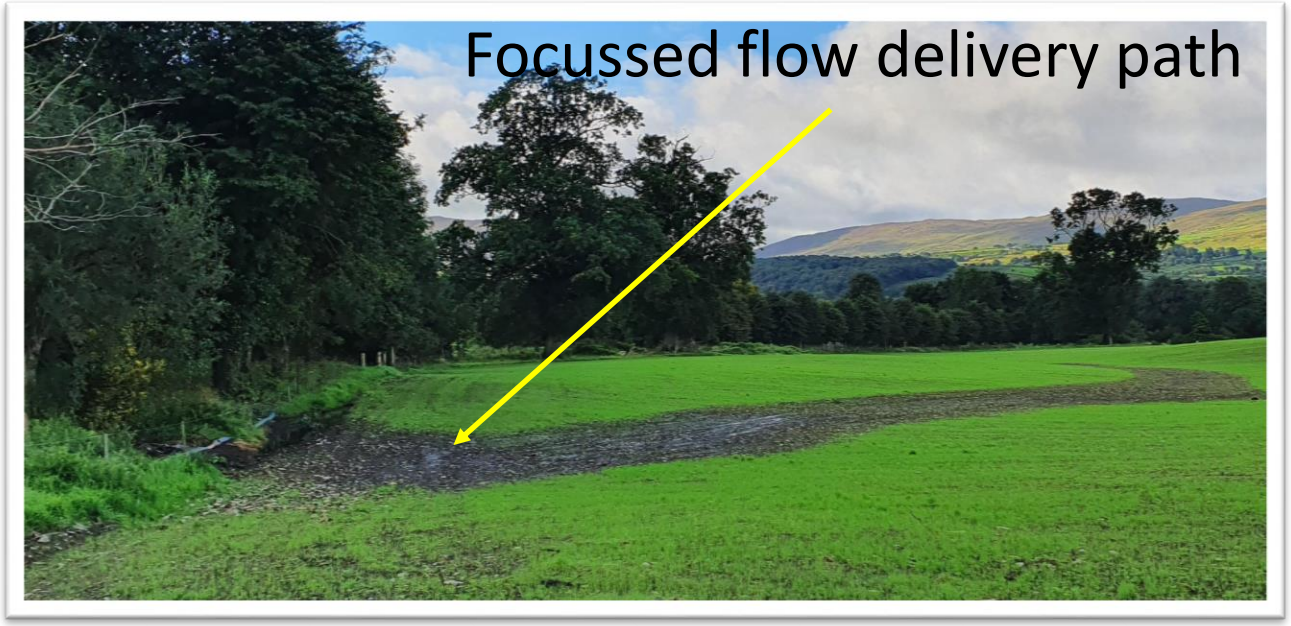
The Phosphorus Pollution Impact Potential map (PIP-P) Model structure





Mockler, et al (2016); Mockler, et al (2017); Thomas et al (2016);

Measures for phosphorus

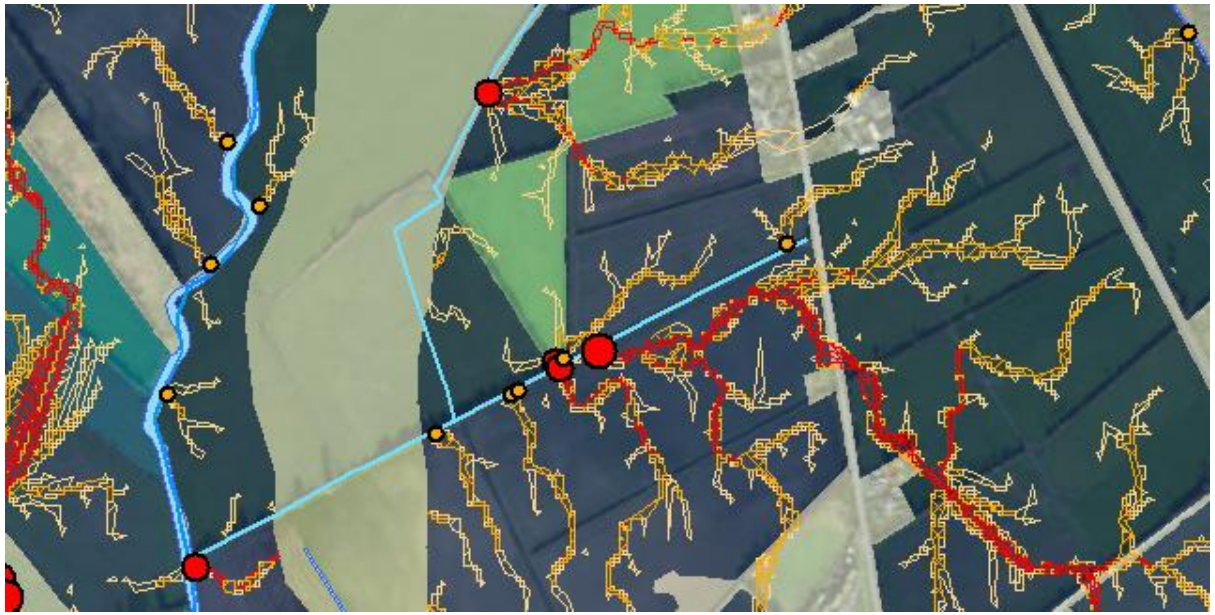


Issue

1007 waterbodies (60% of waters needing measures) are impacted by excess **phosphorus**, fine sediment, and/or chemical pollution from agriculture.

Targeting Action

- Critical source area maps developed (using DAFM data)
- Can pinpoint 2400 km of river bank (<2%) that needs pathway interceptions measures.



Co-Benefits

Biodiversity and Water.

ASSAP programme are using these tools

Targeting measures for phosphorus:

Riparian/buffer zones, woodlands, engineered ditches, wetlands, ponds. Co-benefits for biodiversity, sediment, pathogens


Photo: Newcastle University


Photo: R Little


Photo: Allerton farm


Photo: Woodlands Trust UK

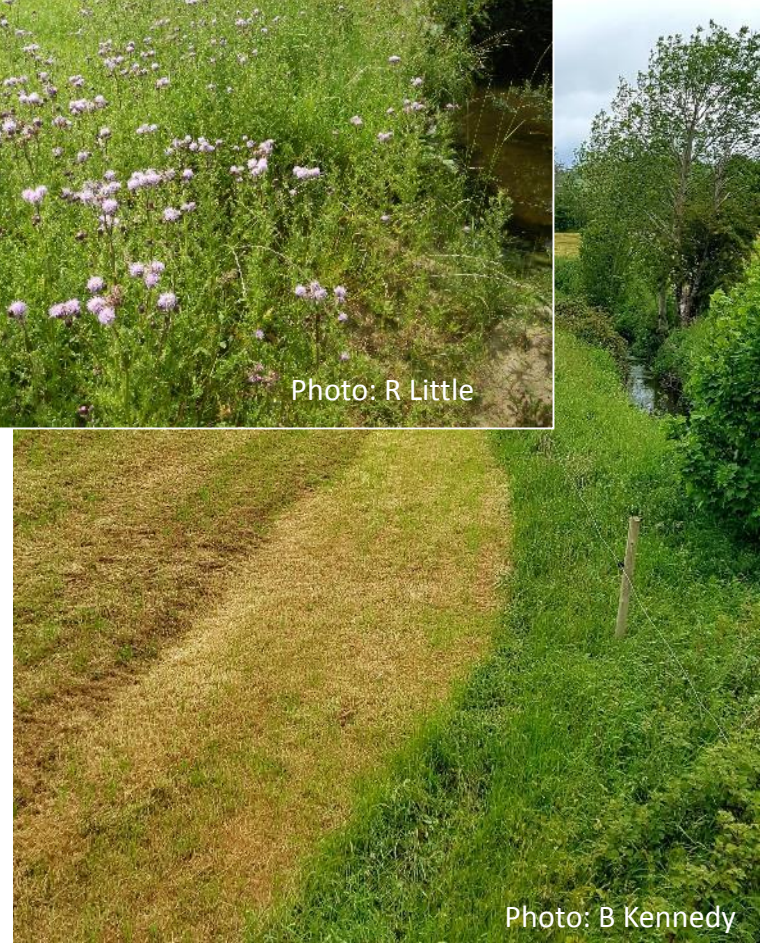
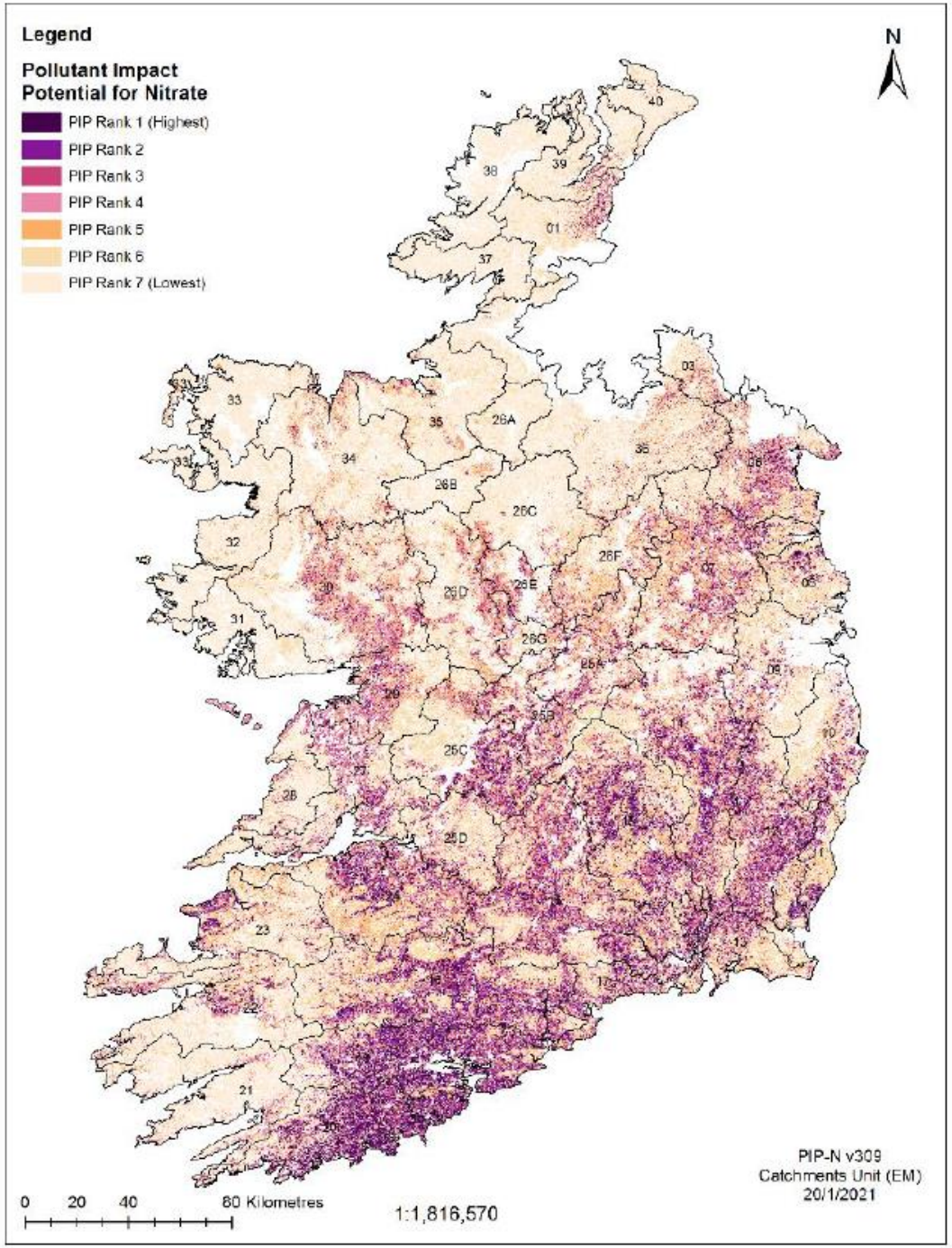


Photo: B Kennedy

Mapping the highest risk areas for Nitrate loss from diffuse agriculture



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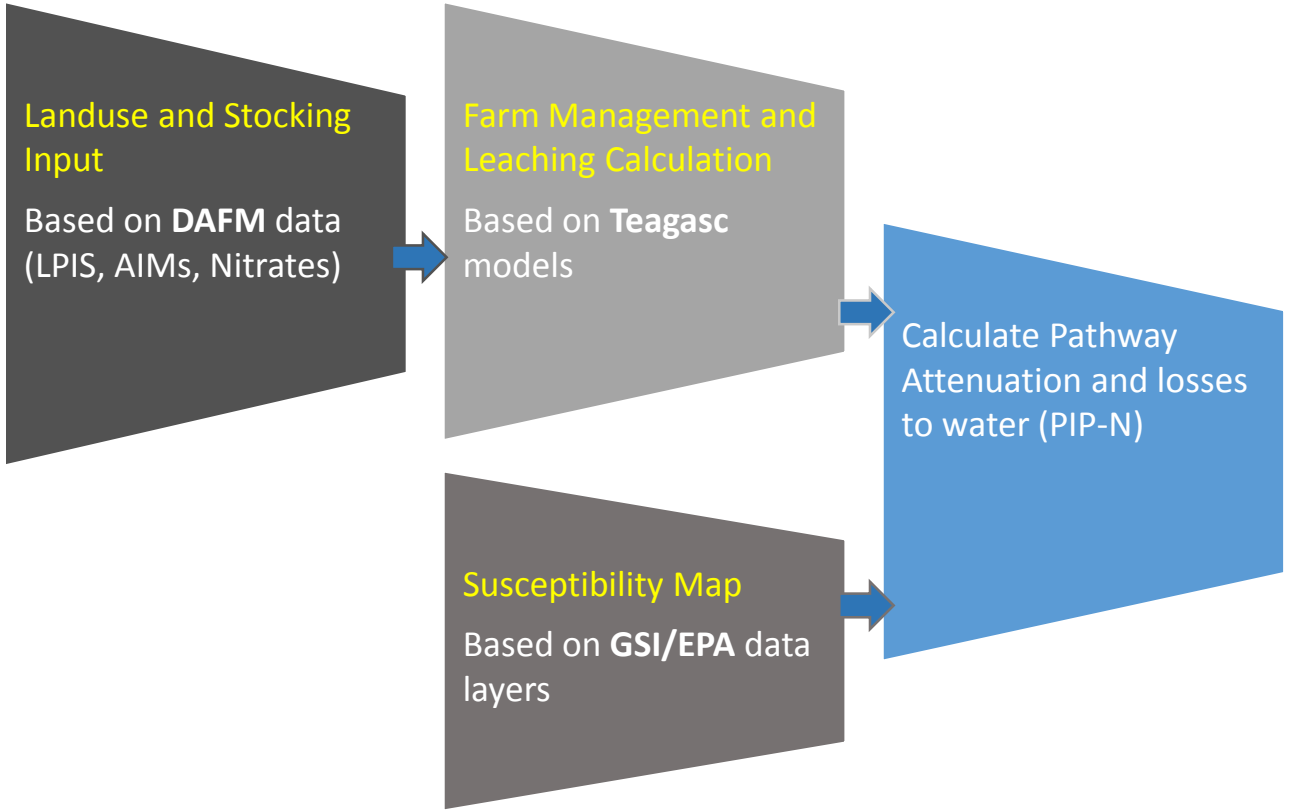
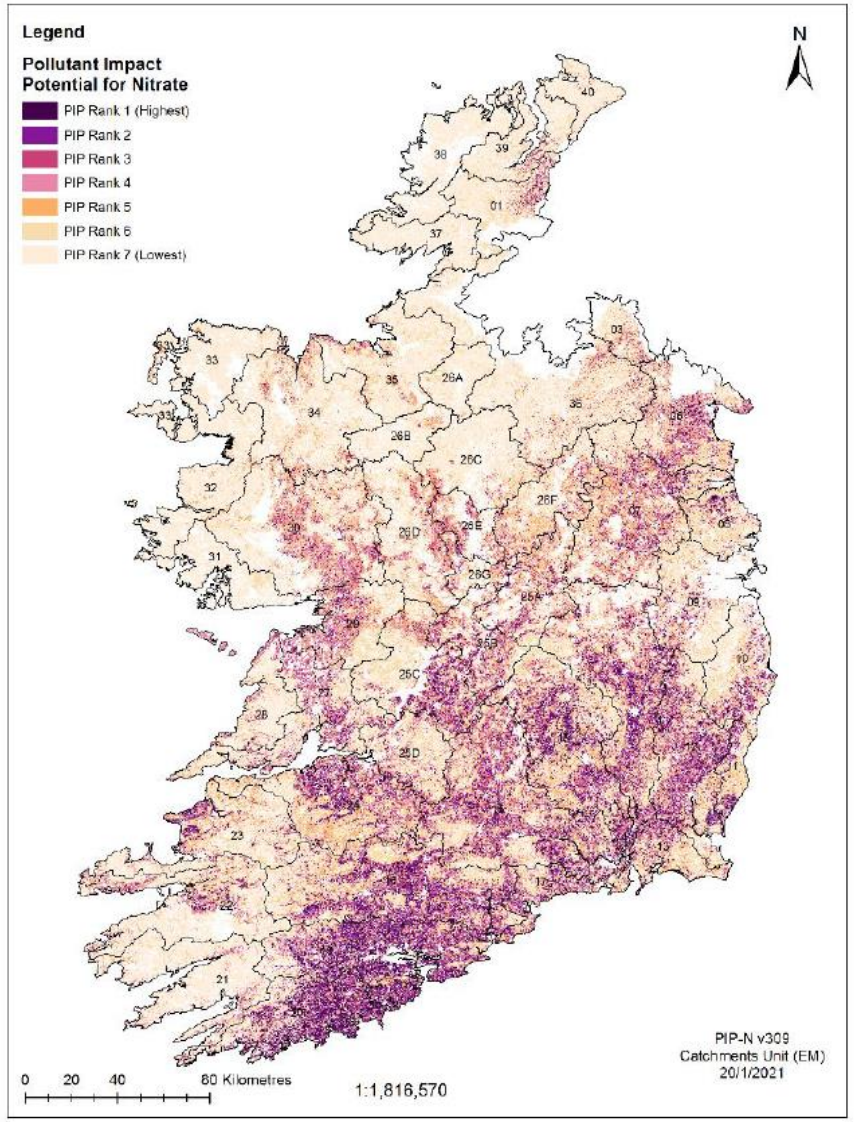
The Nitrate Pollutant Impact Potential map (PIP-N) Model structure





Mockler, et al (2016); Mockler, et al (2017); Packham et al (2020)

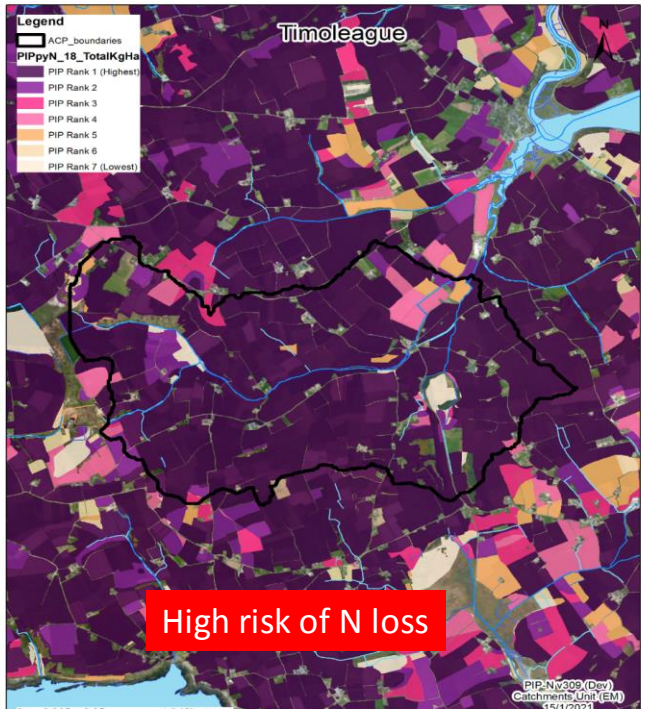
Measures for Nitrate

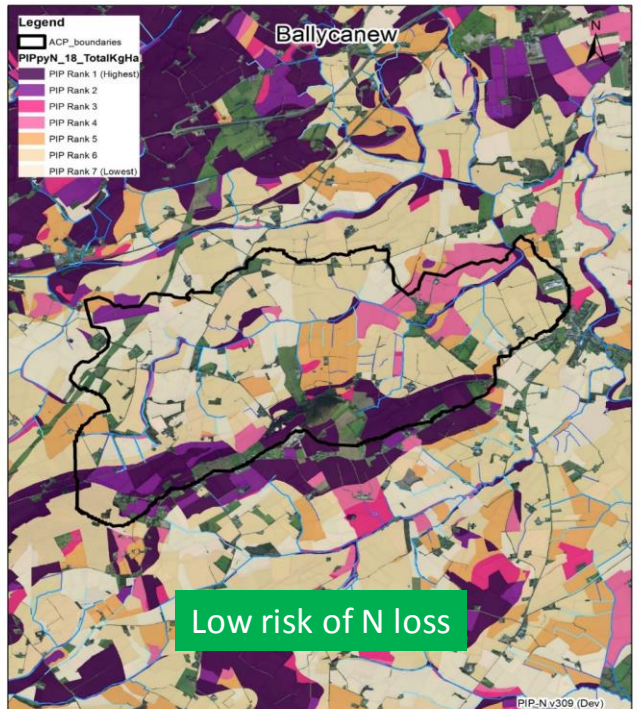
Issue

535 waterbodies (32% of waters needing measures) are impacted by excess **nitrate**.
18 drinking water supplies are impacted by nitrate and trends are increasing elsewhere.

Targeting Action

We have mapped 6900 km^2 of highest risk Critical Source Areas, where nitrate losses from farms are highest in South and SE. Can now use these to target nitrogen reduction measures.





Targeting measures for nitrogen:

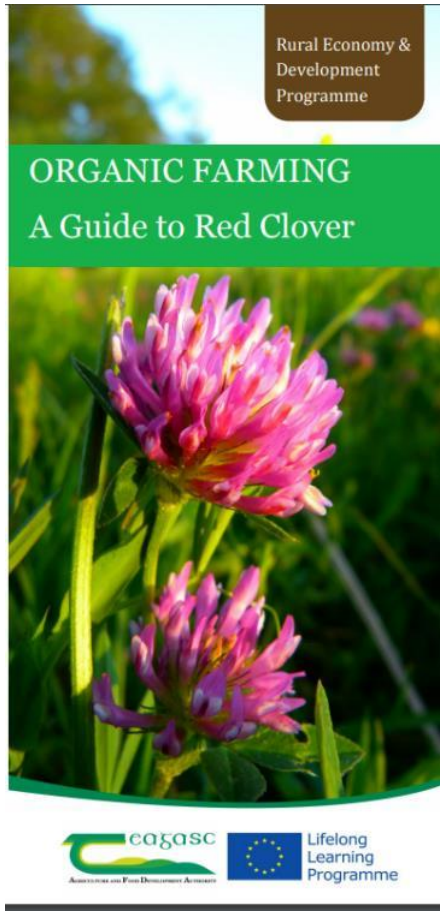
Nutrient management planning, soil fertility, protected urea, mixed swards, reduce application of chemical N, use of LESS.

Co-benefits for ammonia, green house gases


Photo: Teagasc


Photo: Teagasc

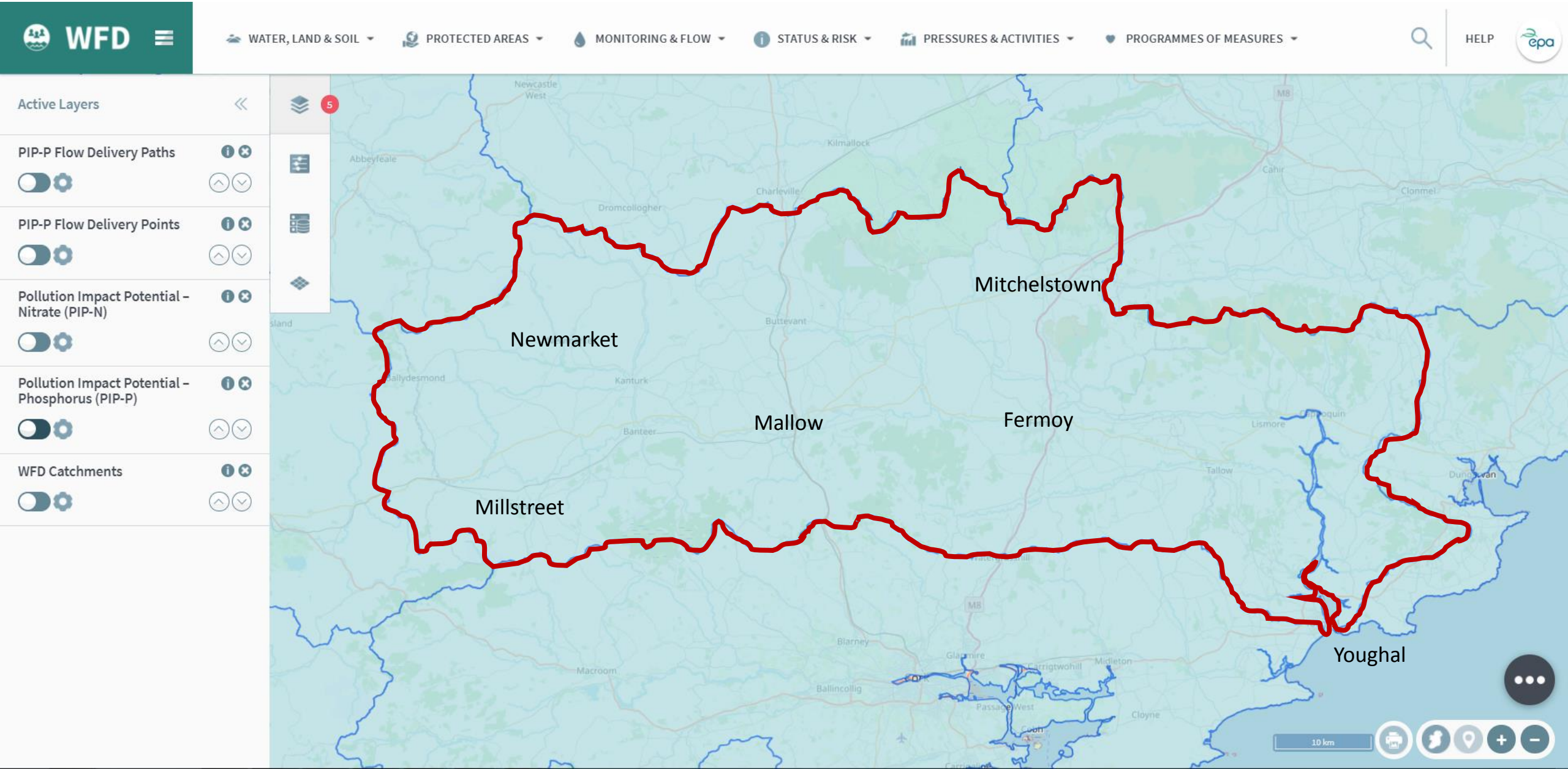

Photo: Farmers Journal



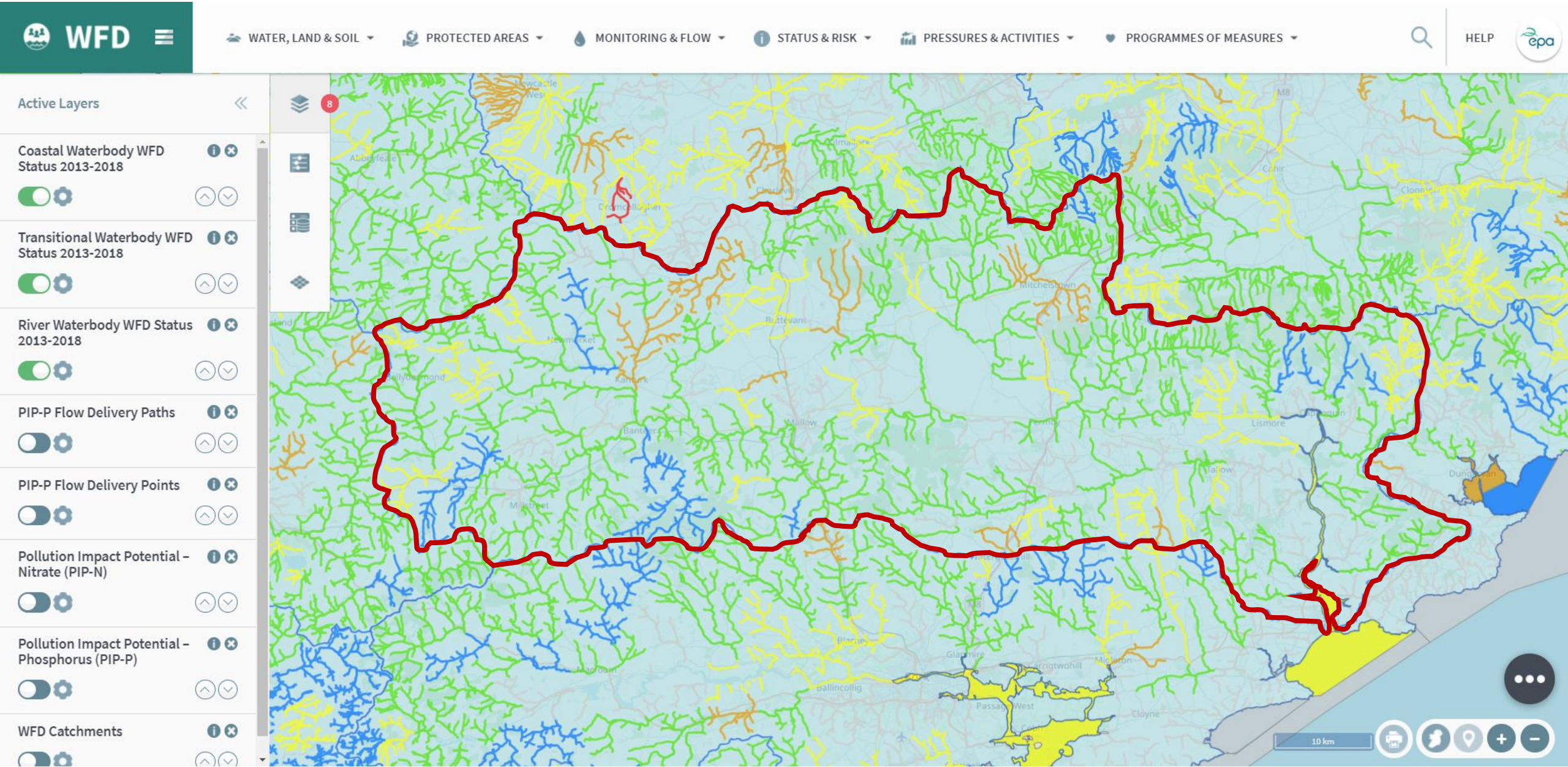
A brisk tour of the Blackwater catchment, Co. Cork

Using the mapping tools on www.catchments.ie

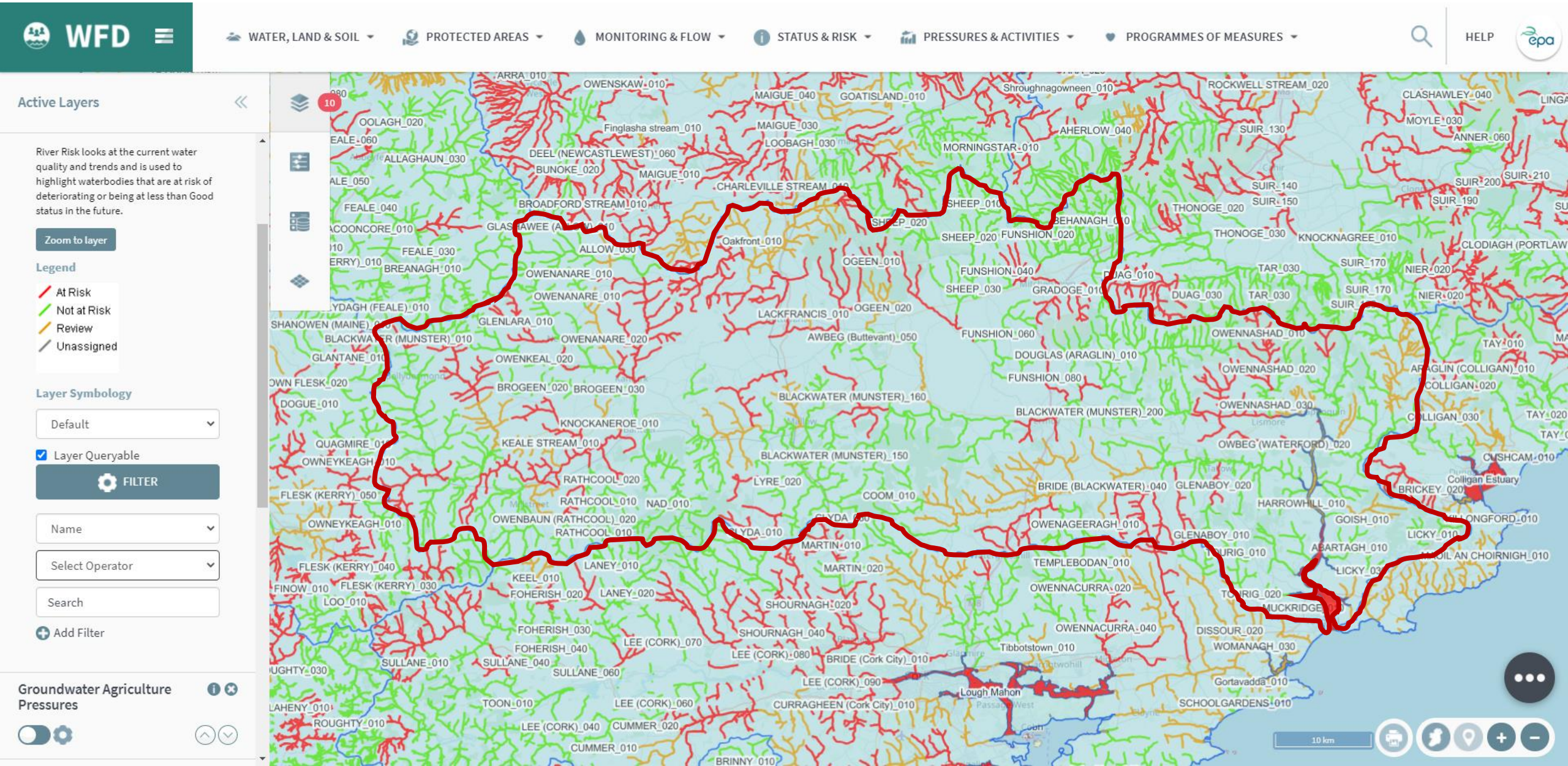
Blackwater catchment boundary



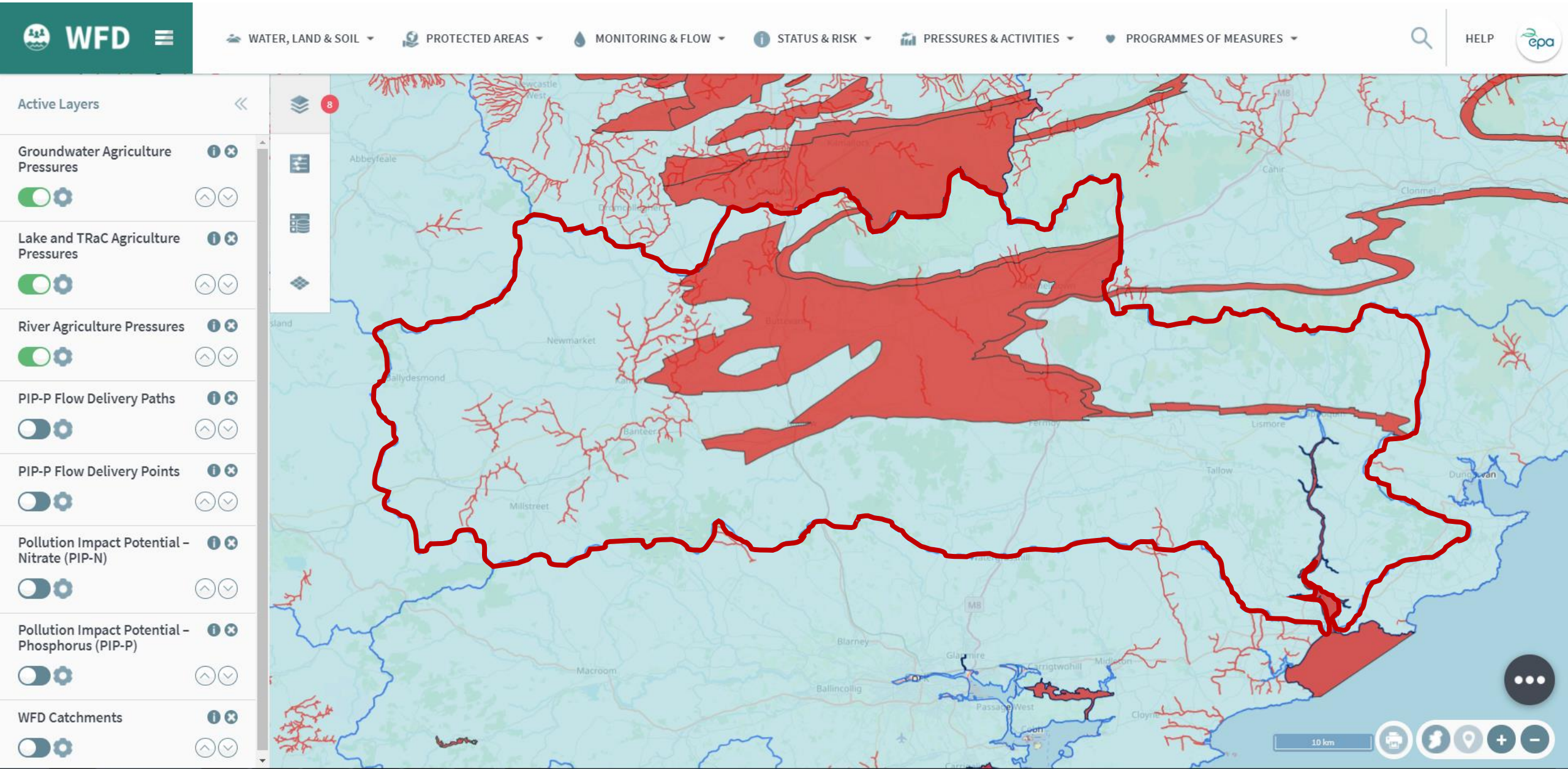
Waters quality – ecological status



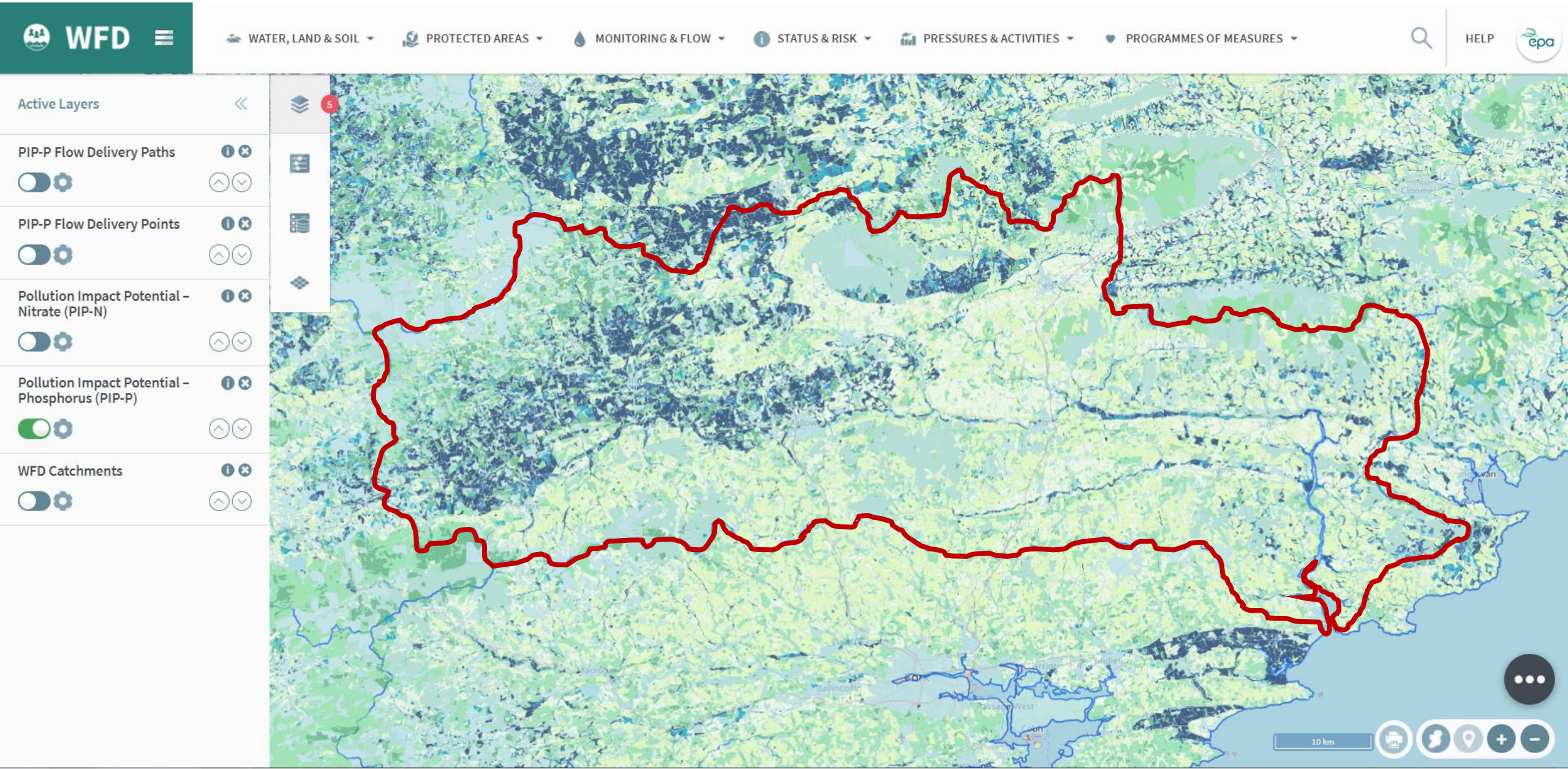
Risk of not achieving water quality objectives



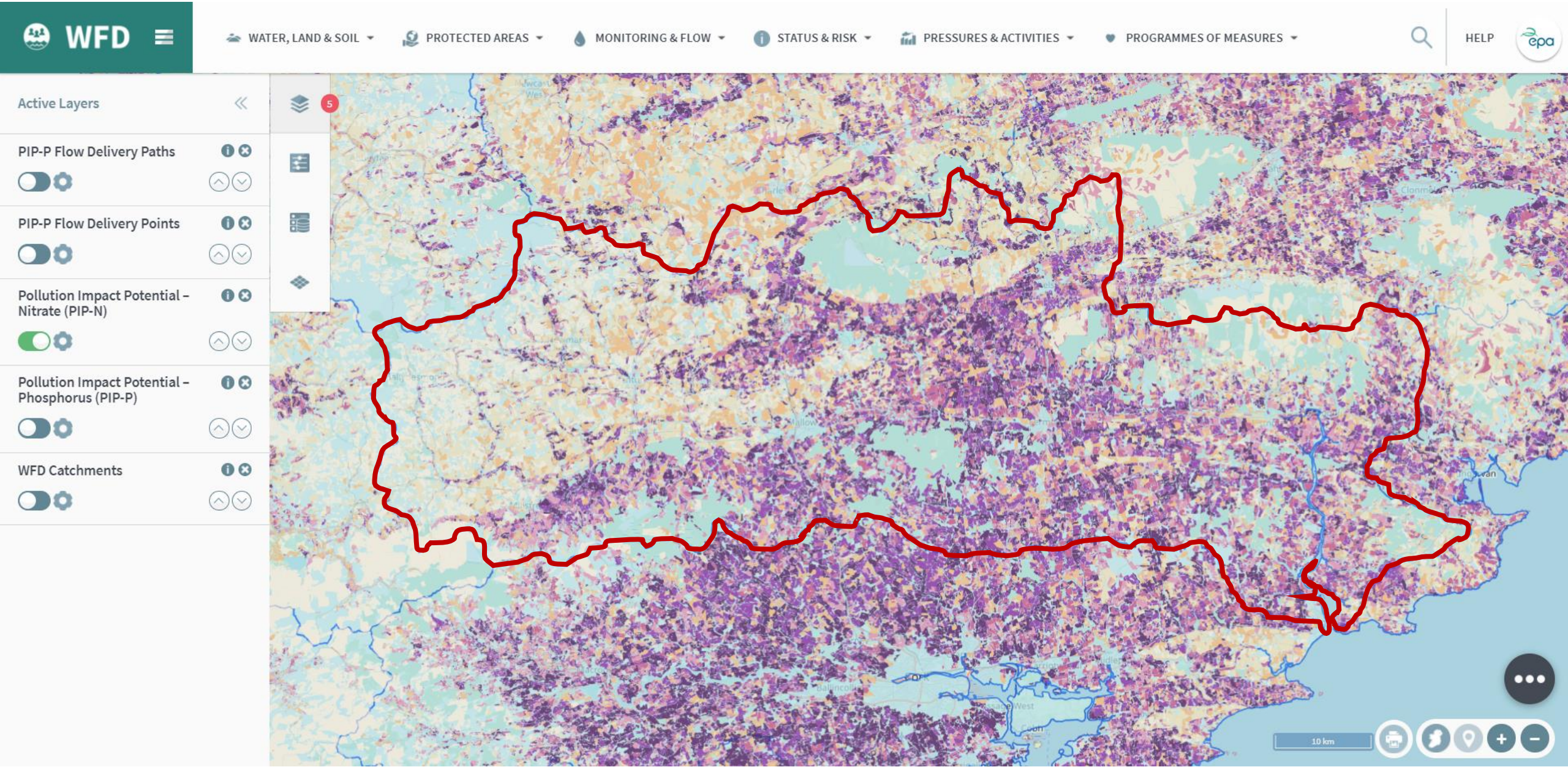
Waters that are impacted by agriculture that need restoration



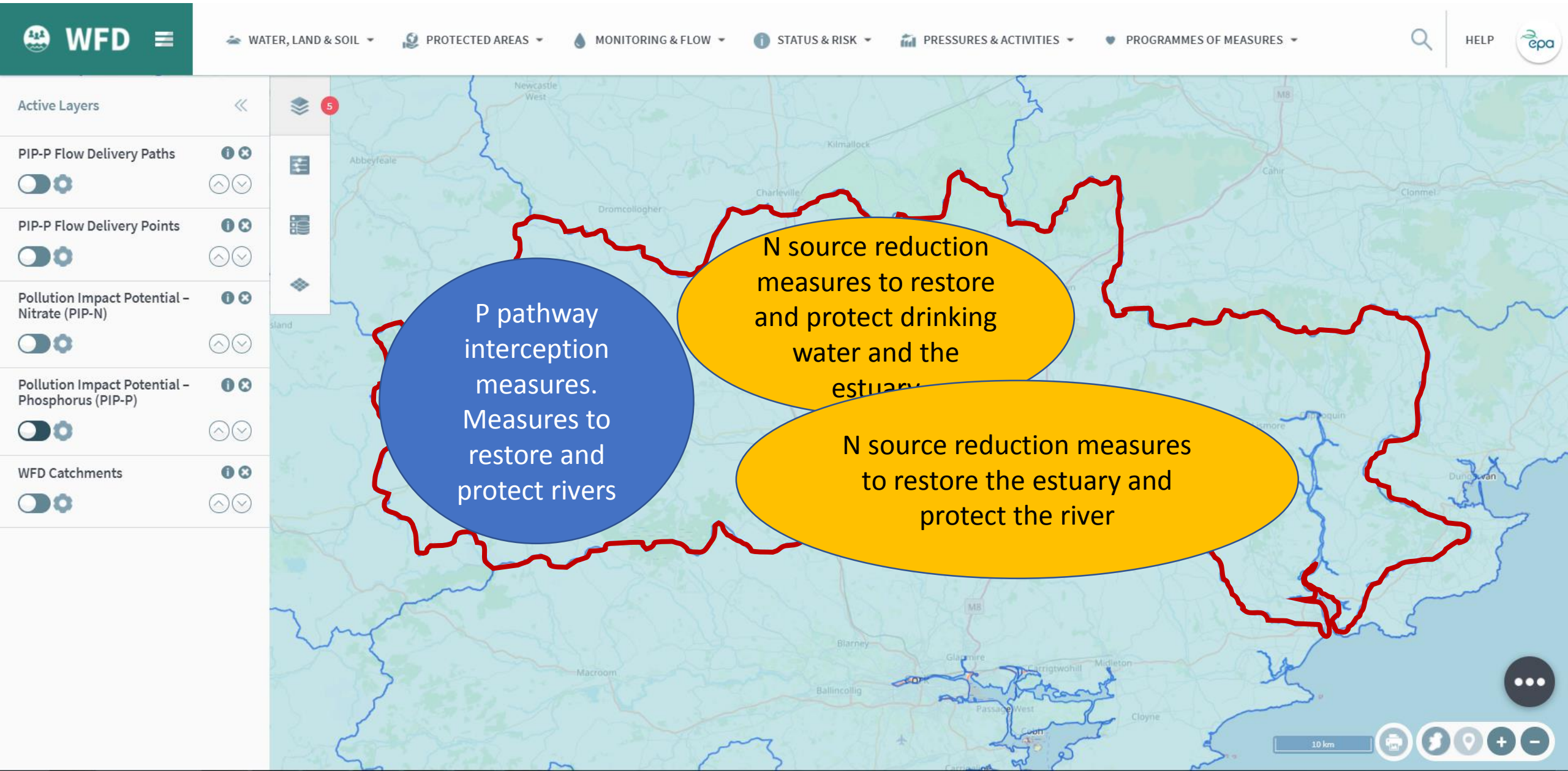
Pollution impact potential - Phosphorus



Pollution Impact Potential - Nitrate



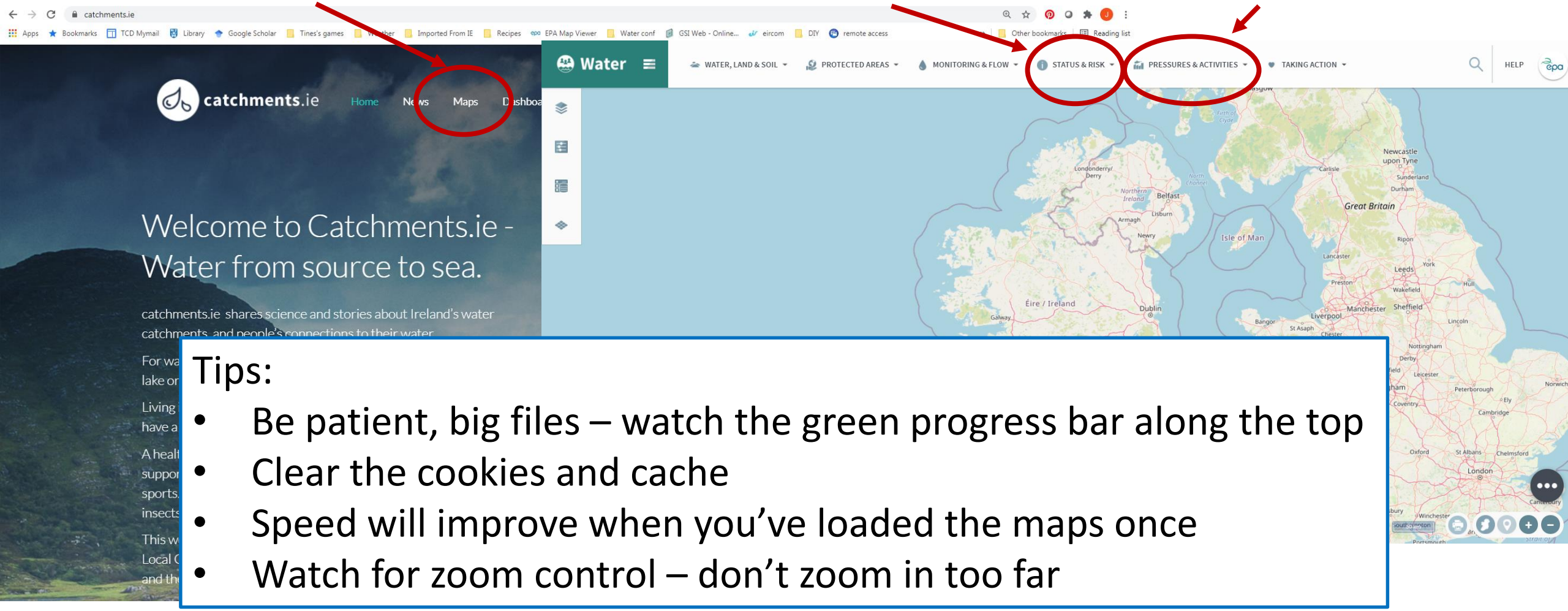
Actions needed?



Find out about the water quality and pressures in your local area

Visit www.catchments.ie
Click on ‘Maps’

Explore
Click on Status & Risk; and Pressures & Activities



Tips:

- Be patient, big files – watch the green progress bar along the top
- Clear the cookies and cache
- Speed will improve when you’ve loaded the maps once
- Watch for zoom control – don’t zoom in too far

Key messages

- We need to take action to improve water quality
- Not all farms need the same actions
- We have the science and tools to better target ‘the right measure in the right place’
- Need to join up the policy, messaging, actions and supports
- Target measures with multiple benefits:
  for water quality, air quality (ammonia), biodiversity, climate, natural flood mitigation, amenity, and health and well-being

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Good status, Dalgan River, Co Mayo
Photo: B. Kennedy