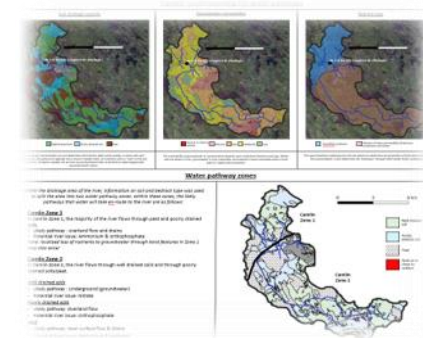
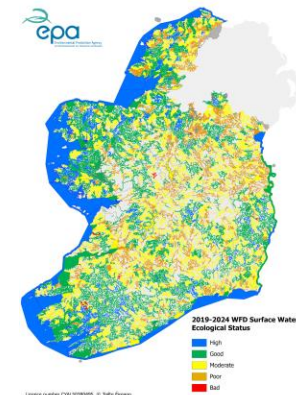
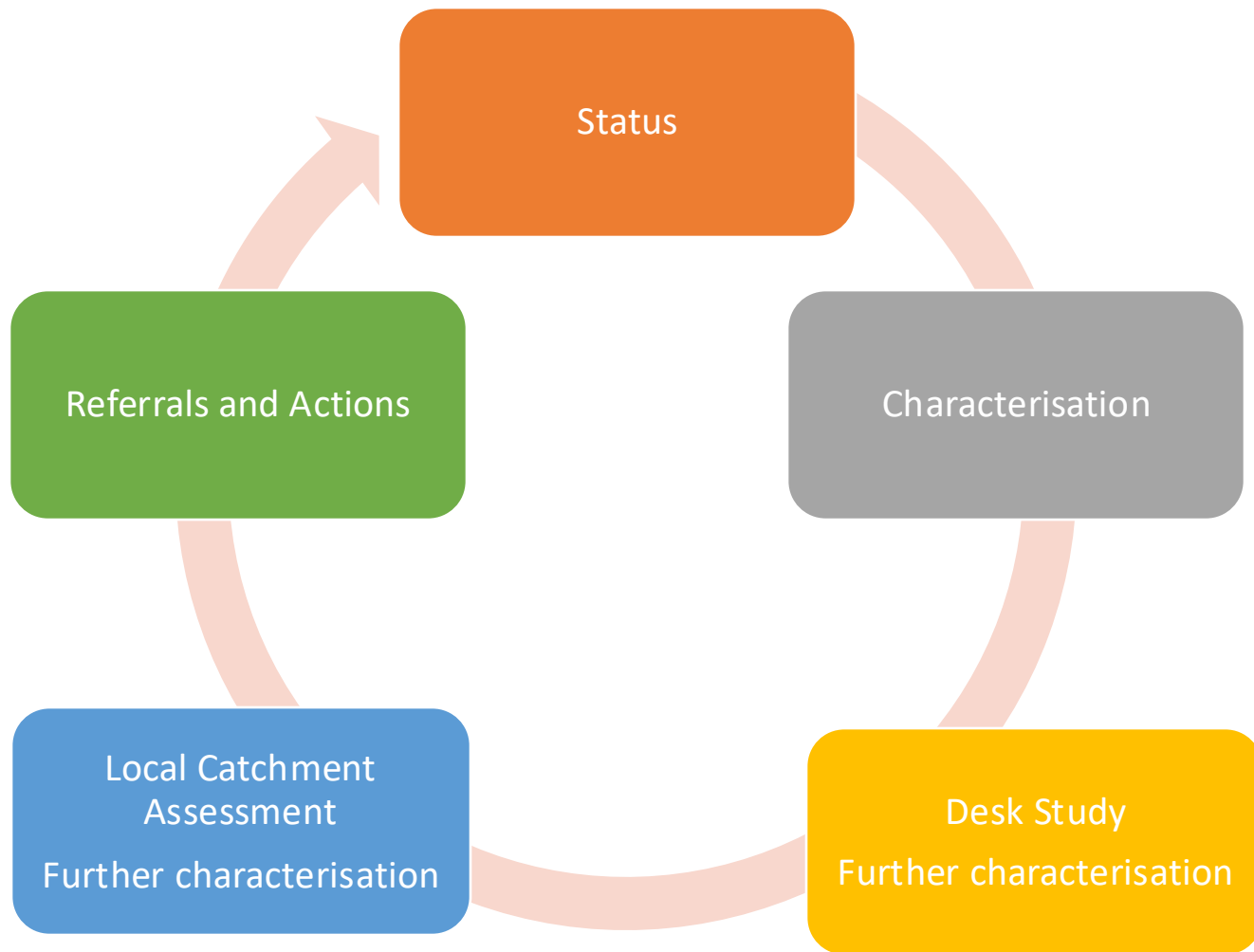
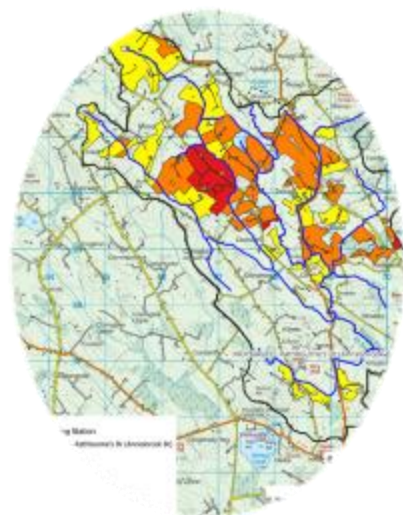


Catchment Science Informing Actions



Ruth Hennessy, Catchment Science Team Manager
River Basin Management Service

“Right measure in the right place”

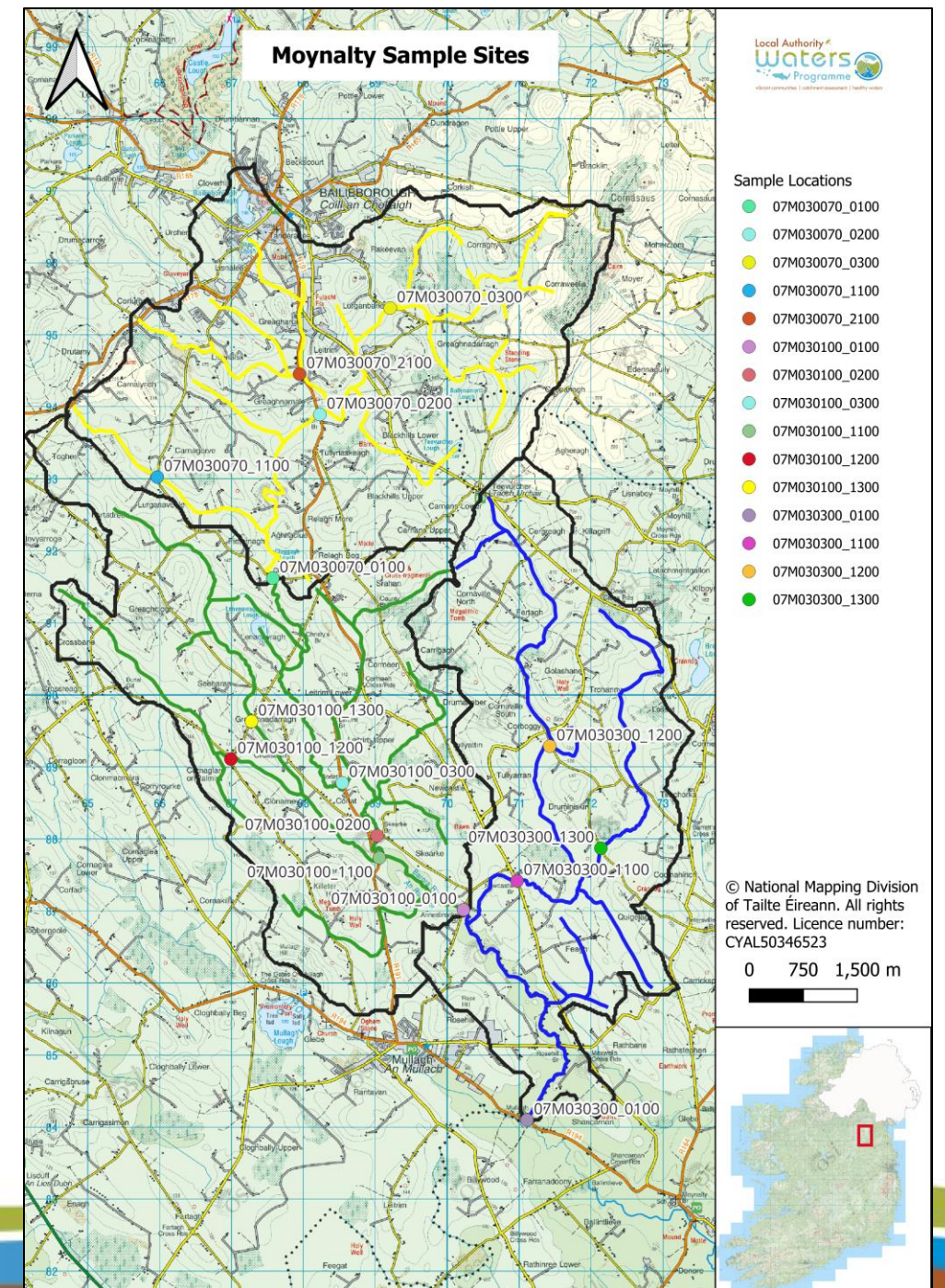


Moynalty Closed Period Sampling

Understanding Diffuse P Loss from Agriculture



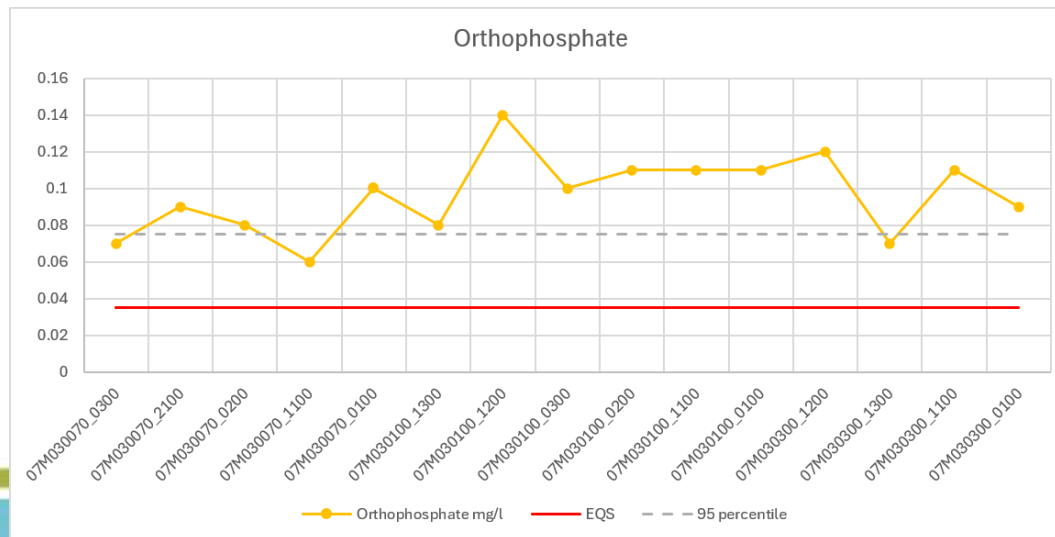
- Focused on the headwaters of the Moynalty PAA
- Steeply sloped and have poorly draining soils
- Agriculture is the main land use
- Diffuse P issues identified from the desk study
- In 2024 the Catchment Science team sampled a week prior to the closed period, every fortnight during the closed period, and then weekly when the open periods commenced
- Sampled 15 sites across three waterbodies on each occasion

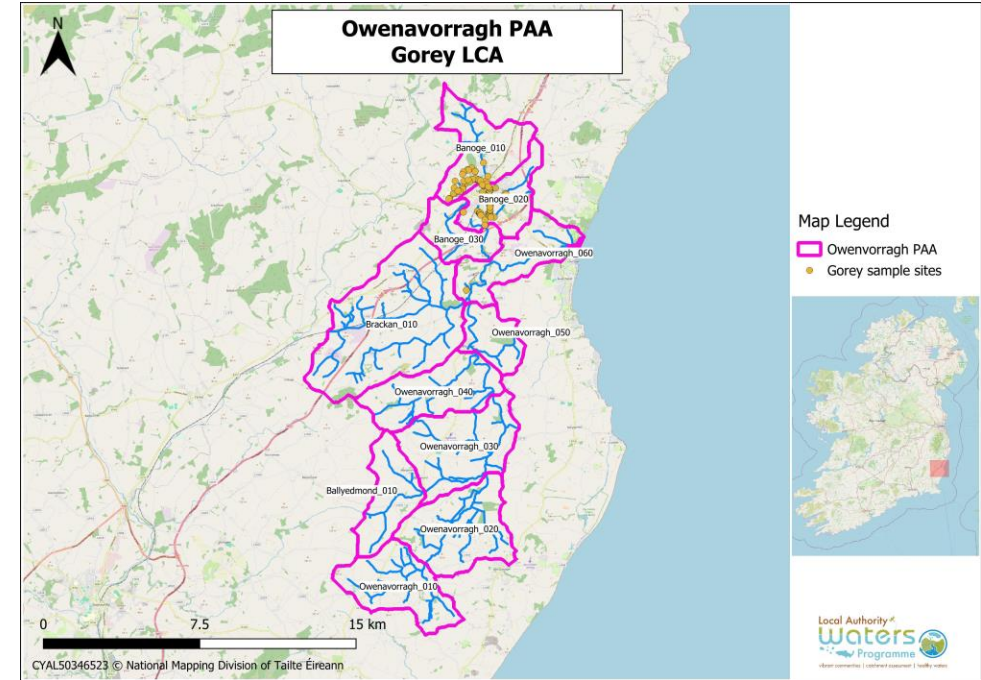
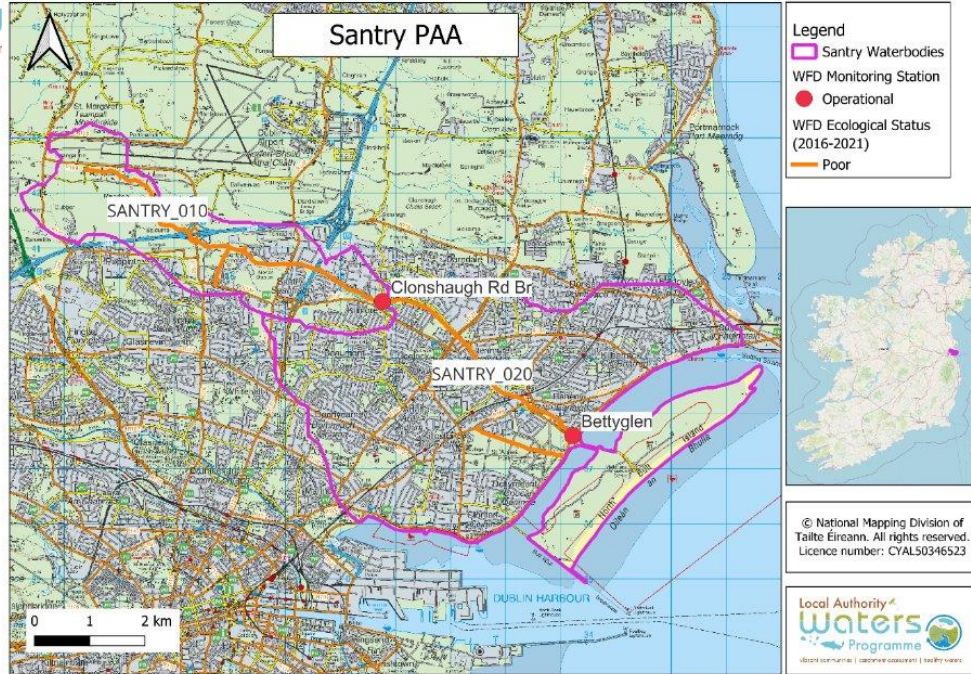


- Between September 2024 and February 2025, 14 rounds of chemistry were collected
- The first chemistry sampling round was carried out on the 27th September 2024. Approximately 30.6 mm of rain had fallen the previous seven days with 29.2 mm falling the two days prior to sampling.
- All 15 samples collected on the day exceeded the AA-EQS for ammonium, orthophosphate and BOD. Poorly draining soil and heavy rainfall indicated that these losses were driven by diffuse runoff from the land surface during rainfall immediately preceding the closed period.
- During the closed period there were two instances when the ammonium, phosphate and BOD collectively exceeded the EQS at three of the sites through the sampling period



- Monitoring confirmed overland flow pathways are active, particularly following heavy rainfall. Pathway interception measures and compliance with GAP Regs are required to mitigate these losses
- Based on these findings, a targeted agricultural referral was made to ASSAP
- Targeted Effort: Farm visits focusing on high-risk areas for nutrient losses from slurry spreading using tools like the PIP maps and diffuse tools maps to target the areas where we know losses are occurring





Urban Pressures

Local Catchment Assessment to identify Urban Pressures

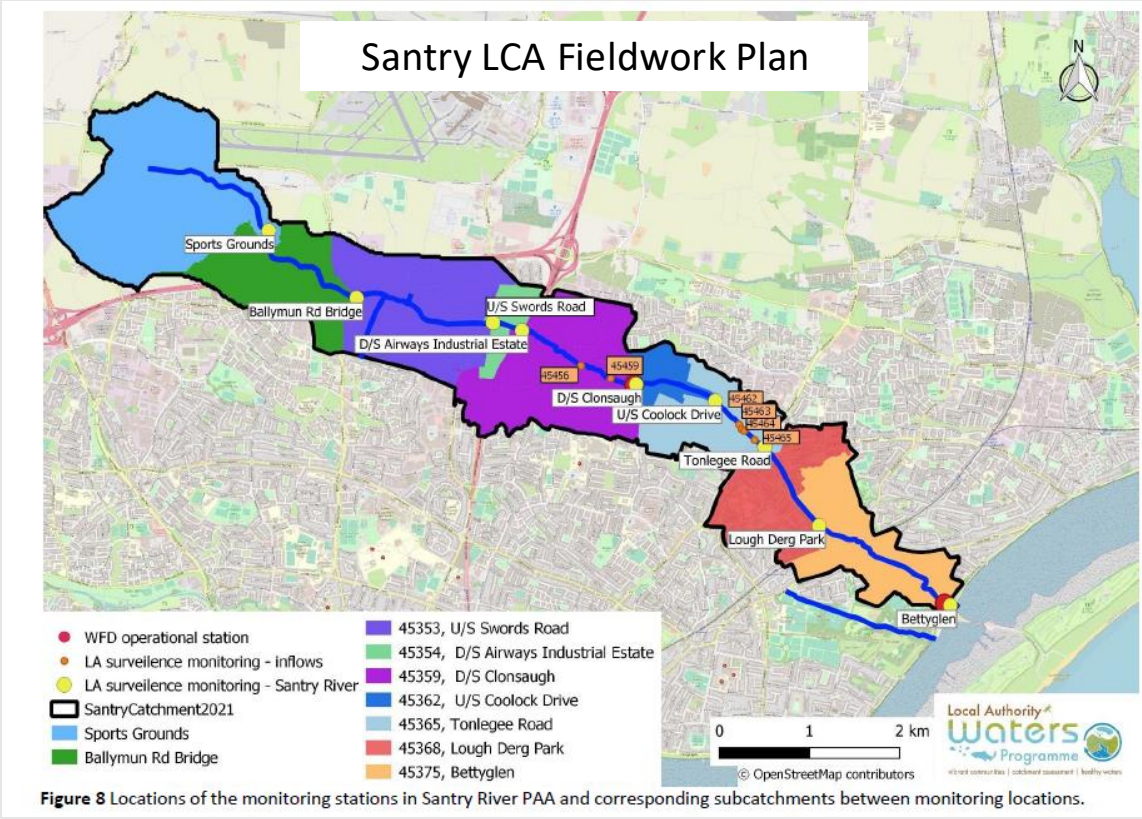
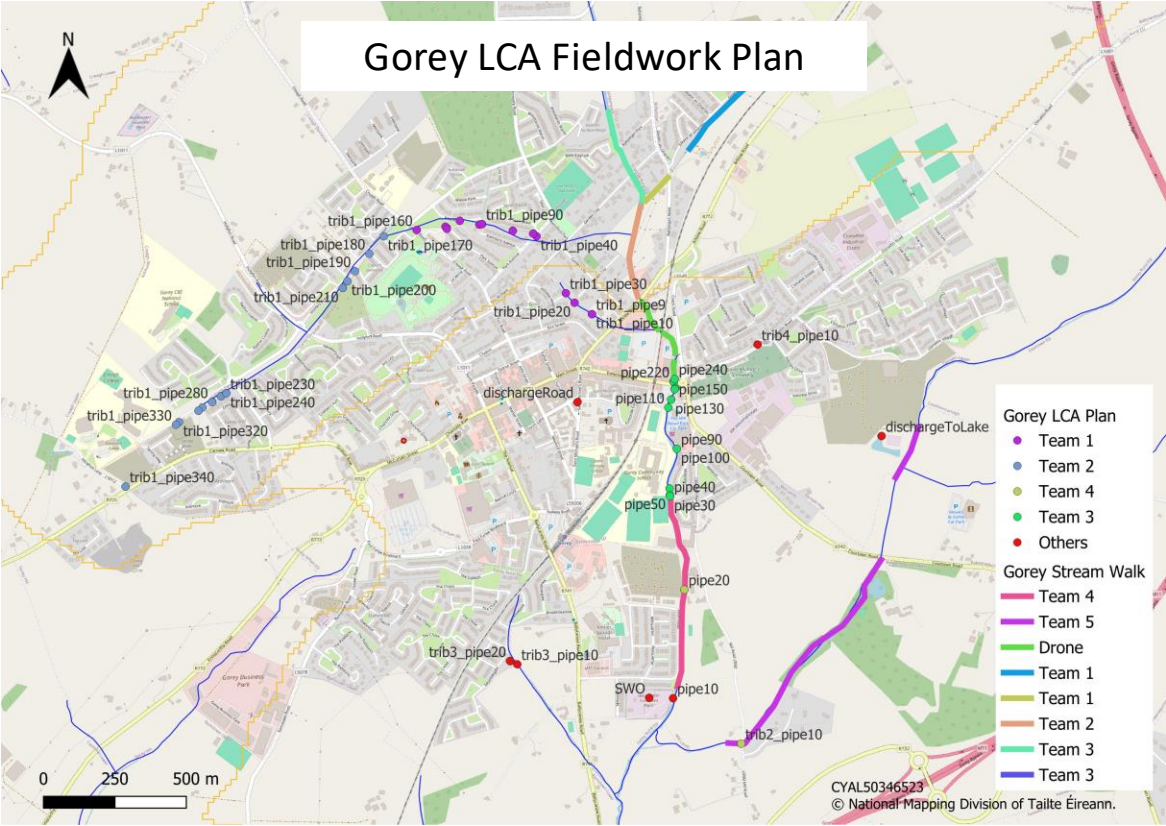


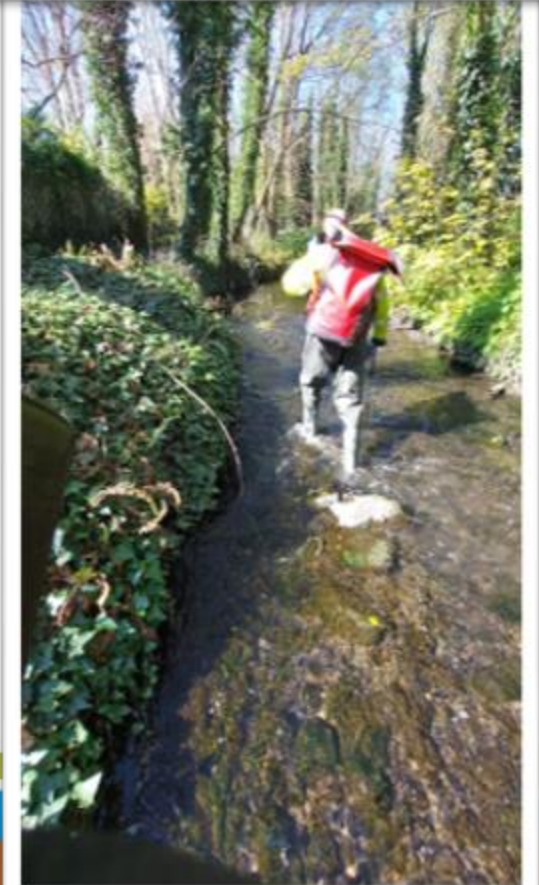
Table 1 WFD Actions for Owenavorrhagh PAA

Water body	Significant Pressure	LCA Action
Banoge_010	Urban Run-off	Diffuse urban to be investigated
Banoge_020	Urban Run-off	

Table 2 WFD Actions for Santry River PAA.

Santry River	Identifier	Responsible Organisation	Description
IE_EA_09S010300	SANTRY_010	Local Authority Waters Programme (LAWPRO)	Diffuse Urban pressure to be investigated. Include review of existing data collected by Fingal and Dublin CoCo.
IE_EA_09S011100	SANTRY_020	Local Authority Waters Programme (LAWPRO)	Diffuse Urban pressure to be investigated. Include review of data collected by Fingal and Dublin CoCo.

Santry Field Work 20th April 2023

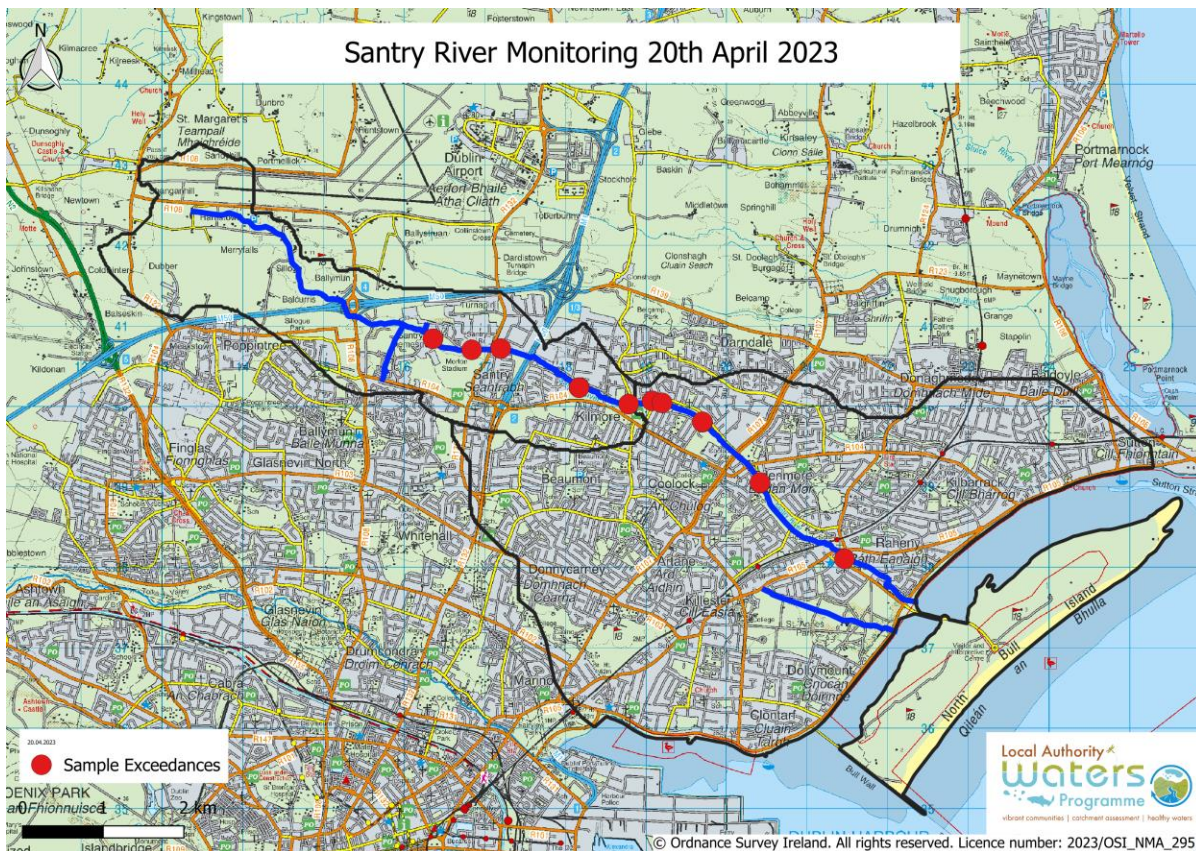




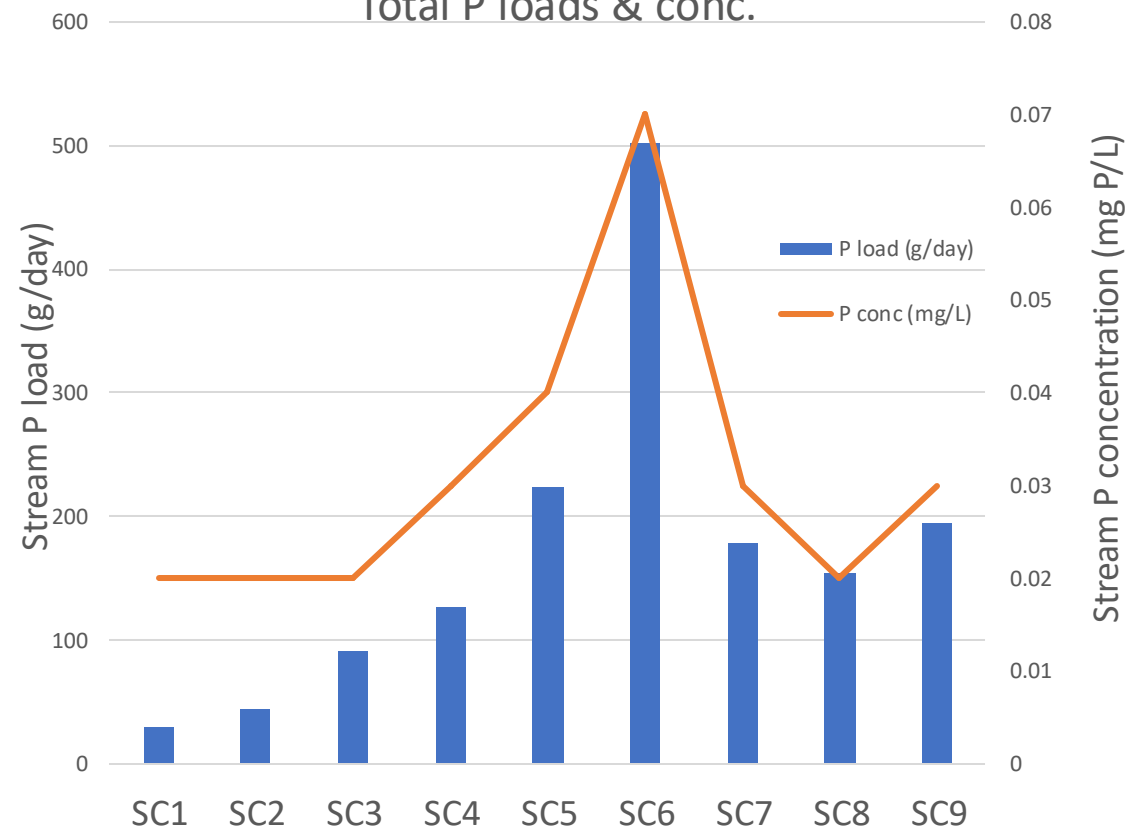
Urban Assessment: Gorey

Santry LCA: Outcomes

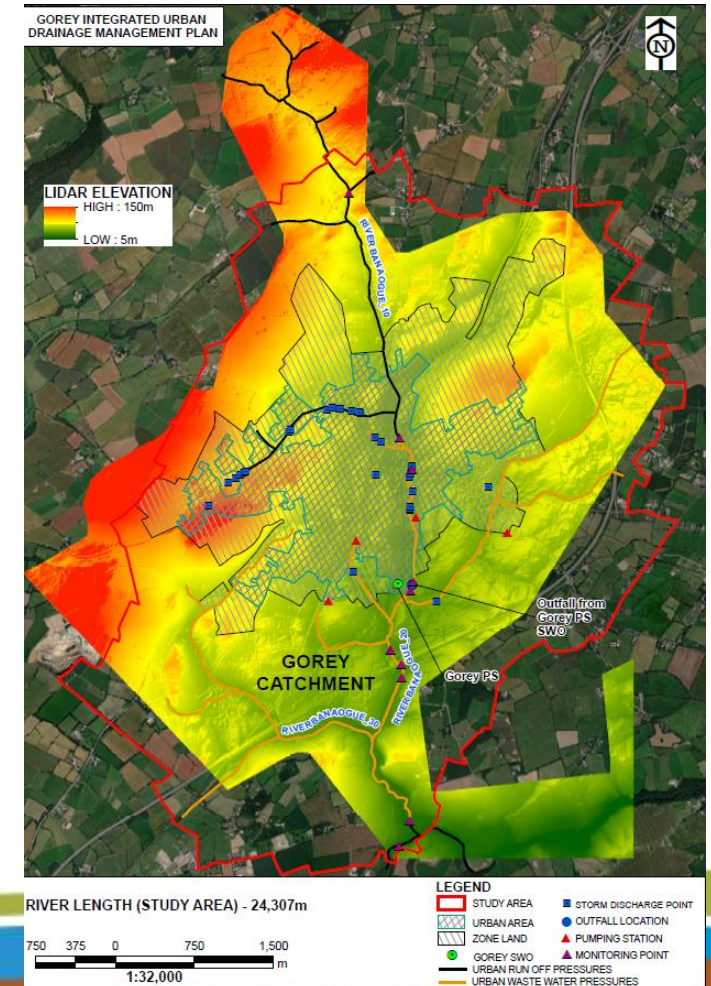
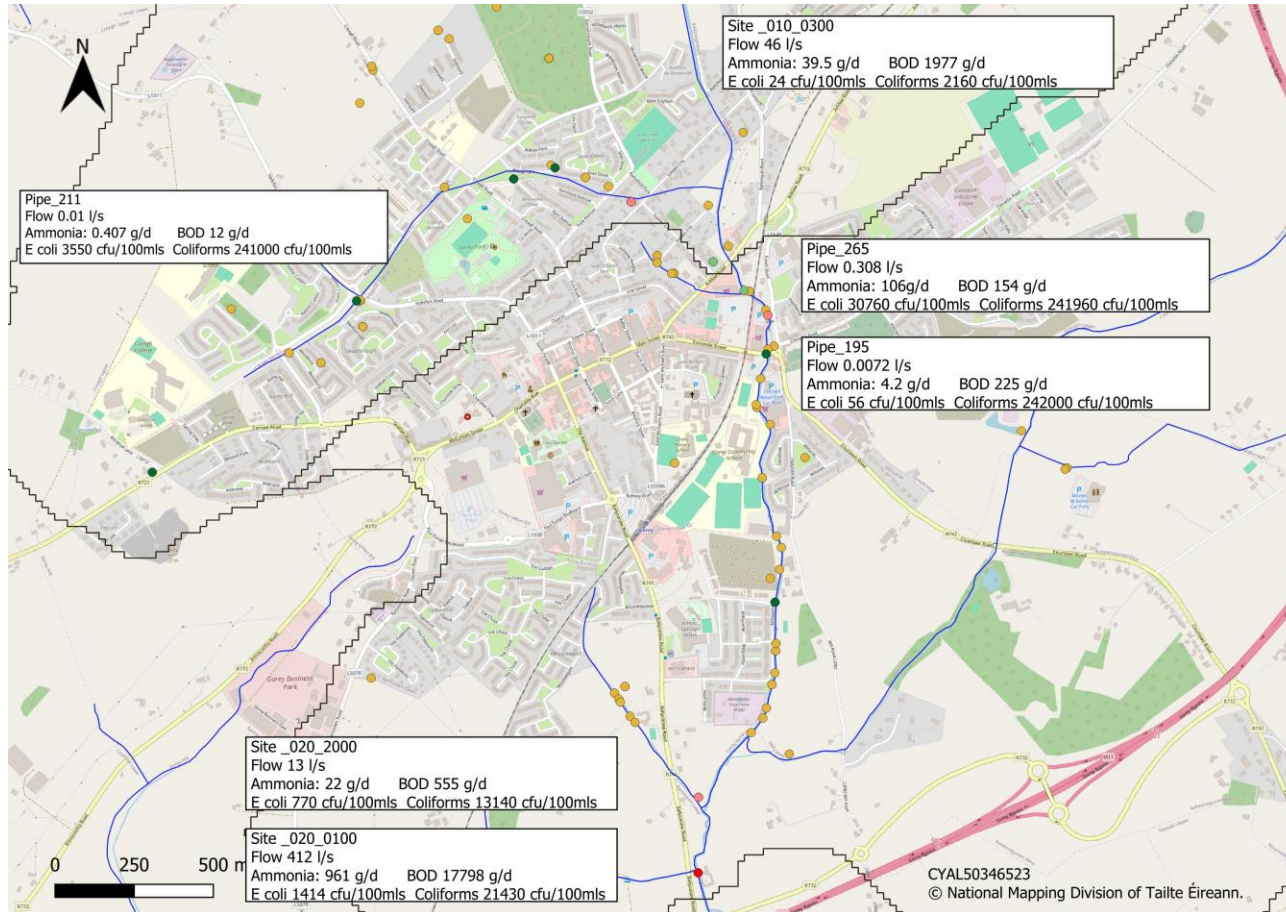
Santry River Monitoring 20th April 2023



Santry River
Total P loads & conc.



Gorey LCA: Outcomes



Cypermethrin Study in the Finn Catchment (Donegal)

Linking pressures and impacts



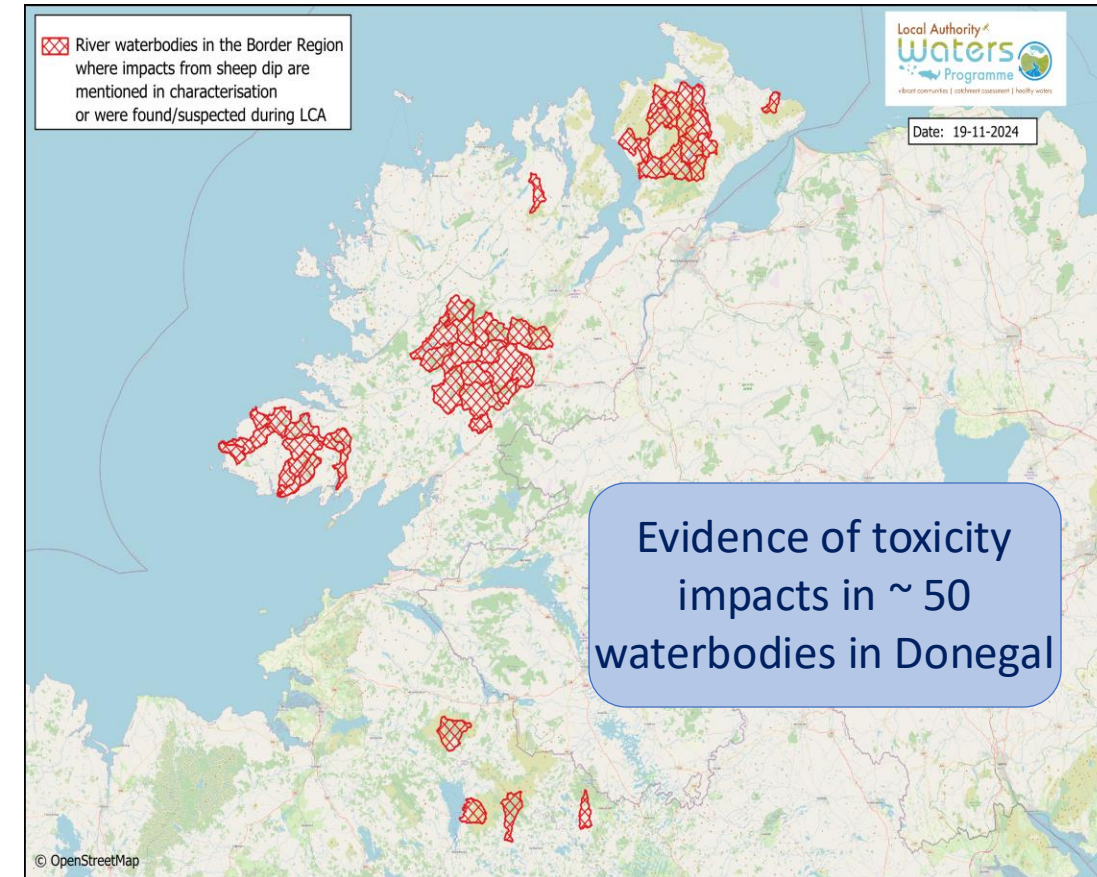
Cypermethrin Study in the Finn Catchment

Toxic impacts (sheep dip) ongoing major issue, particularly in Donegal

Insecticide Chemicals Commonly Used in Donegal

Sector	Chemical	Key Point
Sheep Dip	Cypermethrin (Pyrethroid)	More toxic to aquatic life than Organophosphates
	Diazinon (Organophosphate)	More commonly used in the past, health concerns of acute poisoning and neuropsychological impacts from long-term exposure
Forestry	Acetamiprid (Neonicotinoid)	Coillte stopped use in 2019, revoked for private forestry in 2022 (use-up allowed). Acetamiprid - Lower aquatic toxicity than cypermethrin; used for pine weevil control.

Sheep dipping controls external parasites (mites, lice, ticks, blowflies) and provides protection for up to 9 weeks; typically carried out in Aug–Nov.



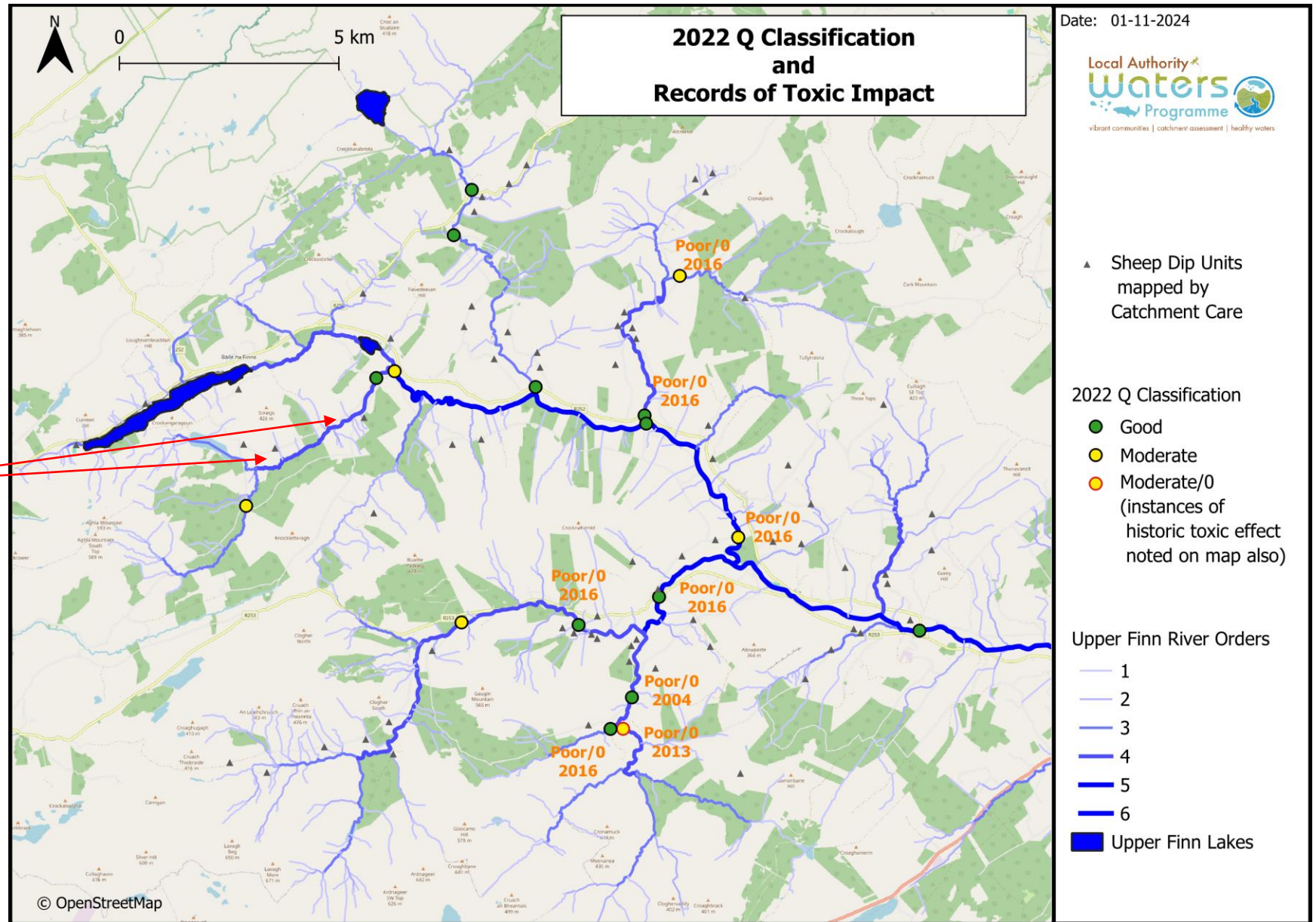


Background to Finn PAA

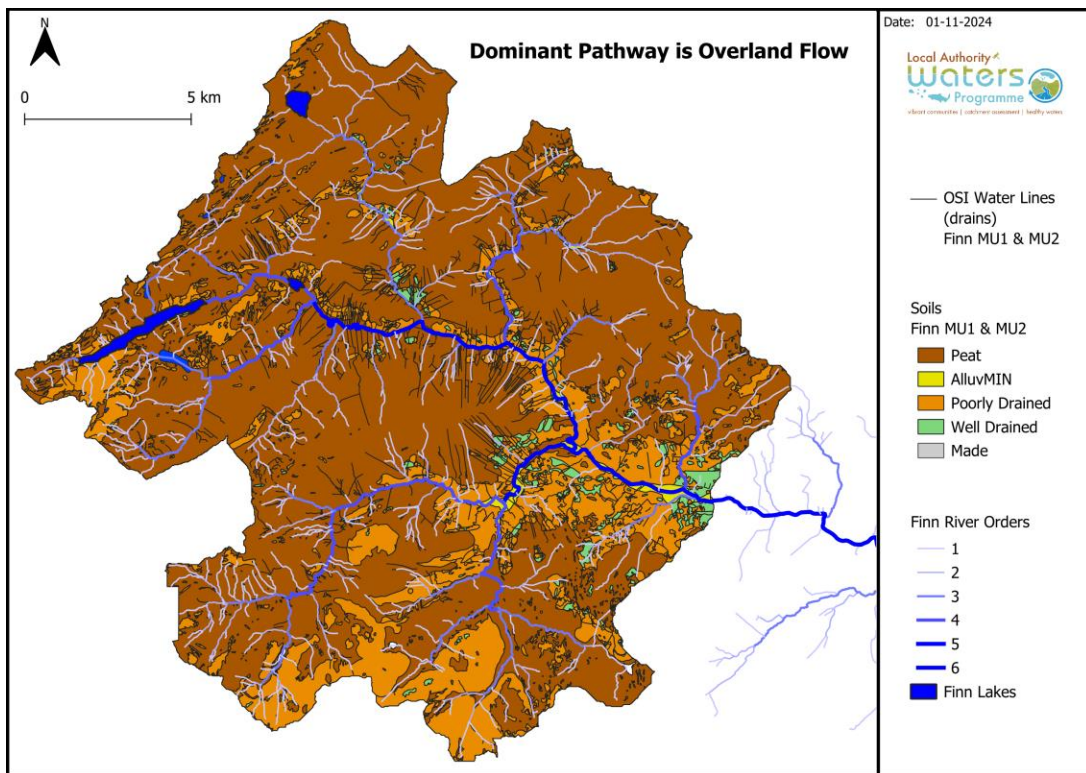
- **Finn (Donegal) PAA** – 20 waterbodies (18 RWB & 2 LWB)
- **Flashy System**, topographic setting is “Hill to Mountain”
- Low to moderate levels of natural sediment accumulation expected
- **Suitable habitat** available for macro-invertebrates. Main channel either bedrock dominated or dominated by coarse substrate (boulders, cobbles)
- **Main Finn channel** tends to support bryophytes such as *Fontinalis squamosa*, *Fontinalis antipyretica*, *Hygrohypnum ochraceum*, *Platyhipnidium ripariodes*. FGA tended to be low or absent, indicating low nutrient conditions.

CatchmentCARE (2018–2023)

- Mapped out sheep dipping units in the Finn catchment (~103 identified)
- Installation of two constructed wetlands for spent dip disposal in the Stranagoppoge_010 waterbody
- Awareness raising - video on sheep dip disposal best practice
- Carried out Passive Sampling Survey

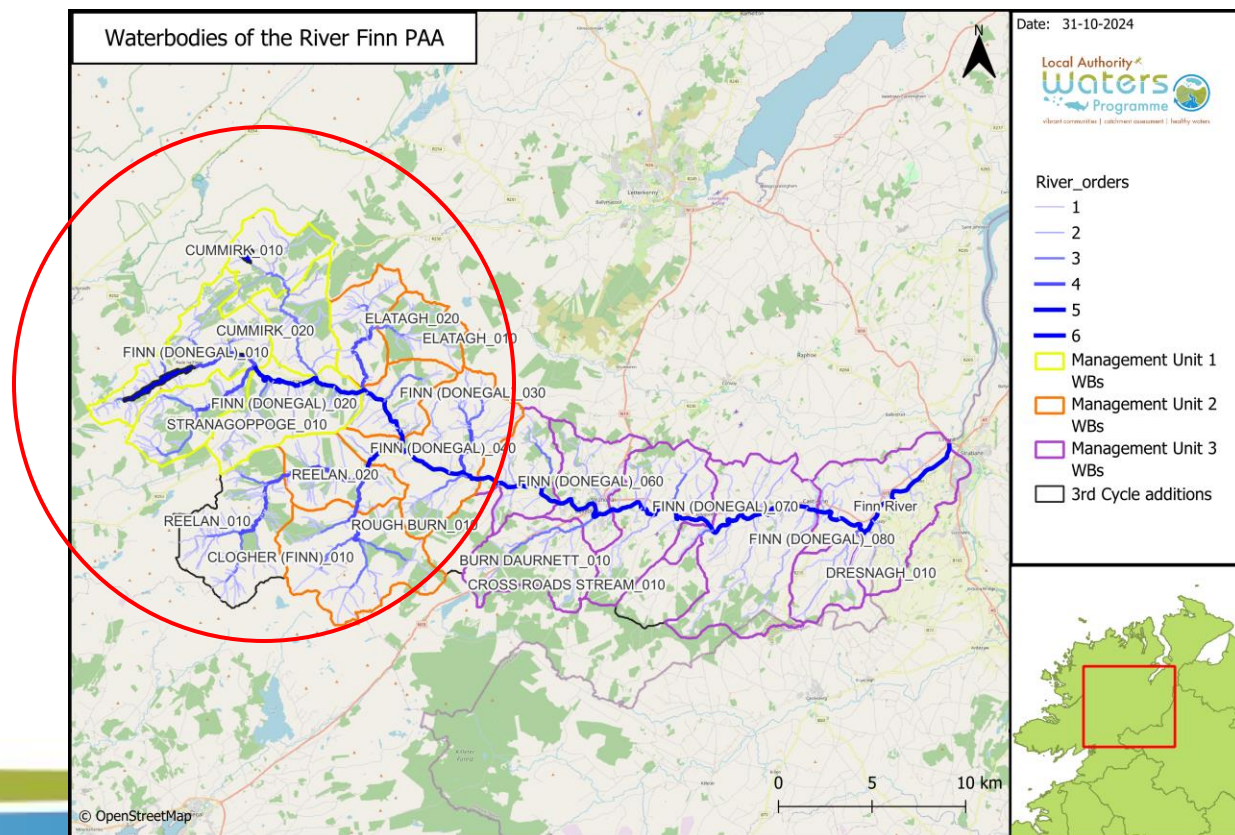


River Finn: Study focus area

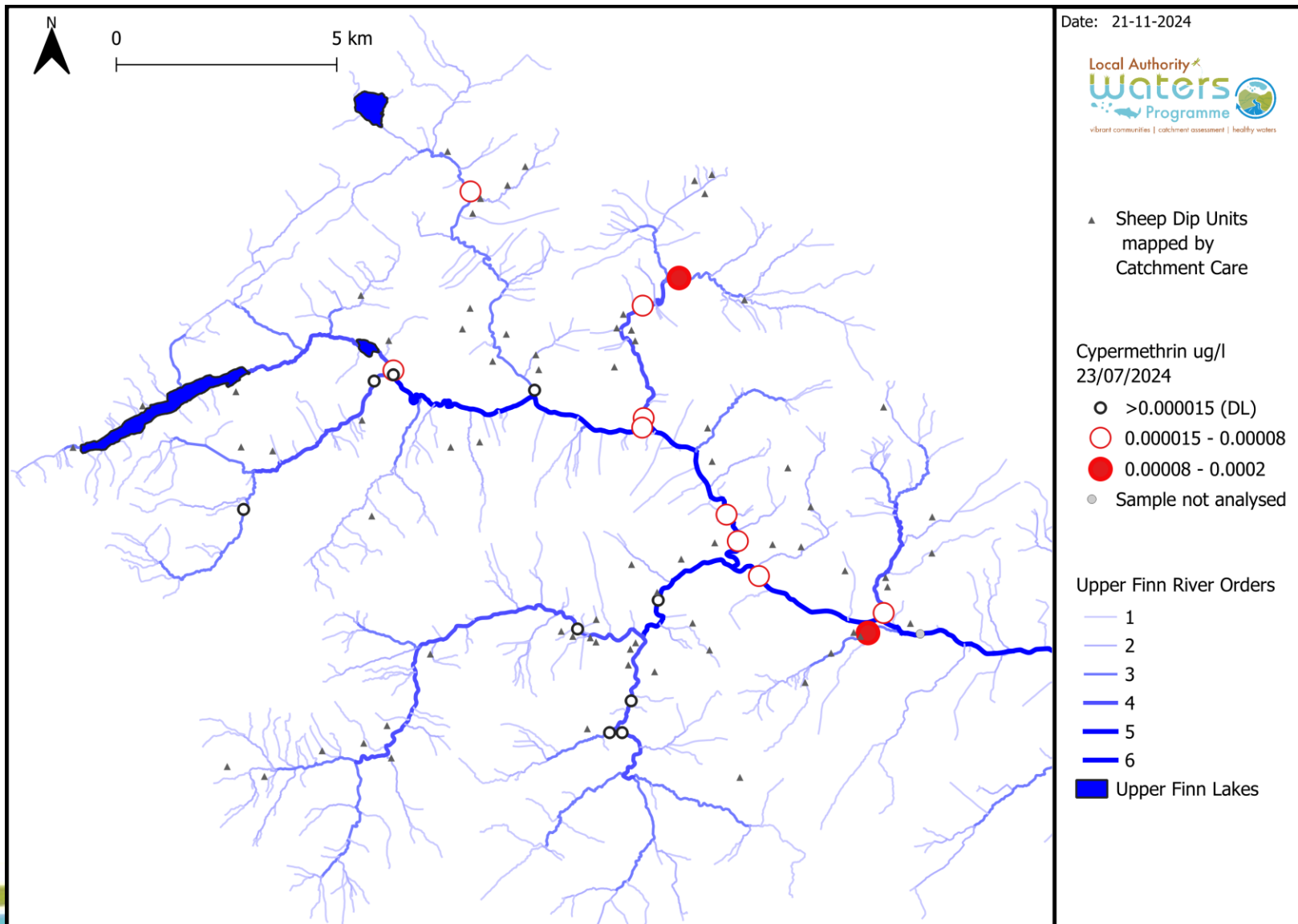


- Upper Finn (MU1 & MU2) is dominated by upland peaty soils with extensive open drainage.
- Land use is mainly agricultural (~69%), largely permanent sheep pasture, with forestry covering ~25% (Coillte ~18%, private ~7%).

- LCA study carried out in MU1 (yellow WBs) and MU2 (orange WBs) summer 2024.
- Over 3 days: nutrients and cypermethrin sampling carried out at 21 sites, with SSIS carried out at 18 sites.



Cypermethrin & Nutrient Analysis



Cypermethrin

- **Cypermethrin** detected in **11** out of 21 samples
- **2** samples exceeded the annual average EQS
- Highest concentrations detected in tributaries, however, Cypermethrin also detected in the main River Finn channel.
- These grab samples are very unlikely to be the highest recent concentration of Cypermethrin.

Nutrients - Low

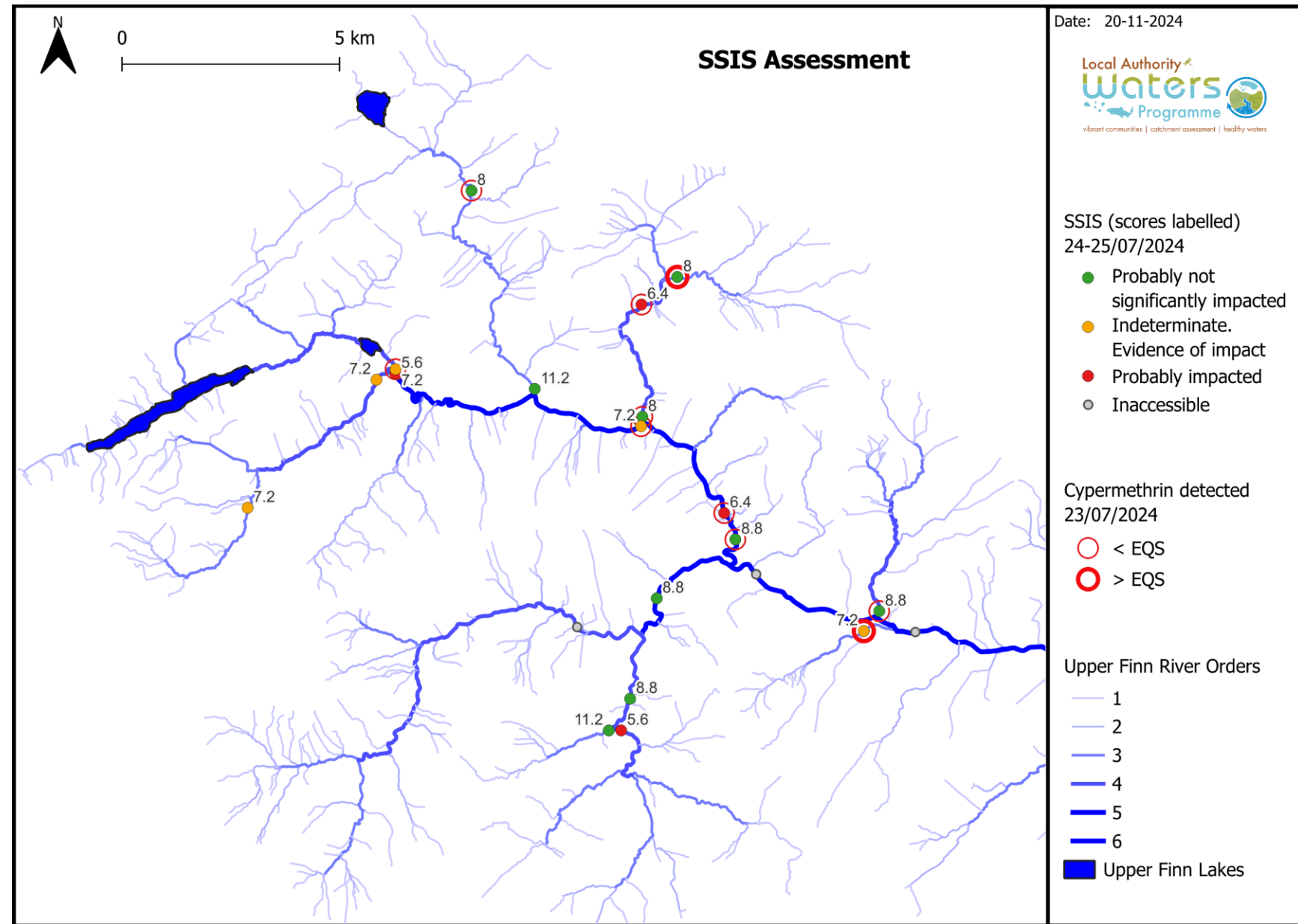
- **Ortho-P** <0.006mg/l P at all 21 sites
- **Total Ammonia** <0.04mg/l N at all 21 sites
- Highest **TON** concentration recorded was 0.074mg/l N, majority were <0.036mg/l N
- **pH** ranged from 5.63 – 7.36

SSIS Assessment – 18 sites

9 sites – Probably not significantly impacted

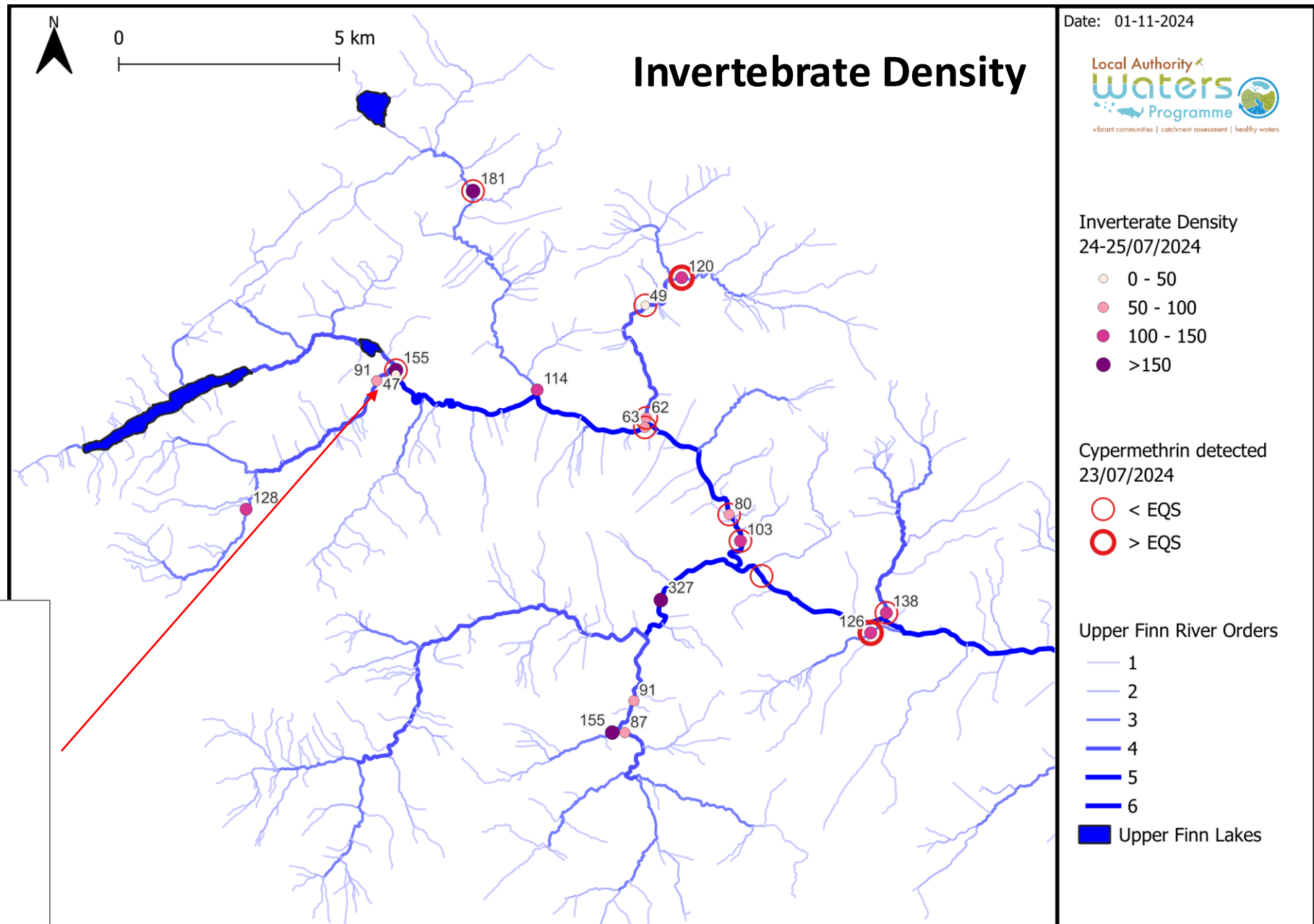
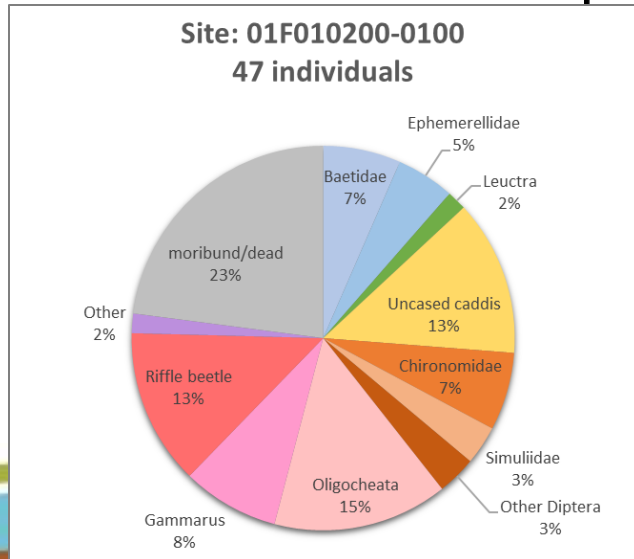
5 sites – Indeterminate, evidence of impact

4 sites – Probably impacted



Invertebrate Density

- Low invertebrate densities noted at sites.
- In general Chironomids were most abundant, but these samples also had low numbers of other taxa – not a balanced community





Cypermethrin: a chronic problem?

- SSIS assessment did not show “classic acute” toxic impact
- Move to a community dominated by those that have a short generation time and good ability to recolonise e.g. Chironomidae
- Taxa with longer generation times e.g. Ephemeroptera, less able to recolonise
- Communities not able to recover – Moderate Status
- Cypermethrin / insecticide likely a hidden pressure impacting macroinvertebrate community.
- Very difficult to narrow down the problem, usually issue is widespread throughout the whole catchment
- Education is key to changing behaviour on sheep dipping practices

Conclusion

- Local Catchment Assessment: strengthens the evidence base and confidence for measures
- Collaboration is vital
- Challenges and opportunities



Crotty's Lake, Co. Waterford



Acknowledgements:

I would like to acknowledge and thank my colleagues across the country for their contributions to this presentation.

