Lough Leane & Kerry Lakes – *view to the future.*

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Co-funded by the European Union

Waters of LIFE

Overview

- LAWPRO background
- Our role in protecting and restoring lake water quality
- Oversight and governance

Local Authority Waters Programme (LAWPRO)

- Shared Service across all Local Authorities
  - 5 Regions – Border, West, Southwest, Southeast, and Midlands and east
- Formed following recommendations in the 2nd cycle River Basin Management Plan (2018-2021)
  - *"A new approach to implementation called 'integrated catchment management is being used to <u>support the development and implementation of this plan, using the catchment</u> … as the means to bring together all public bodies, communities and businesses"*

LAWPRO

LAWPRO's three core functions:

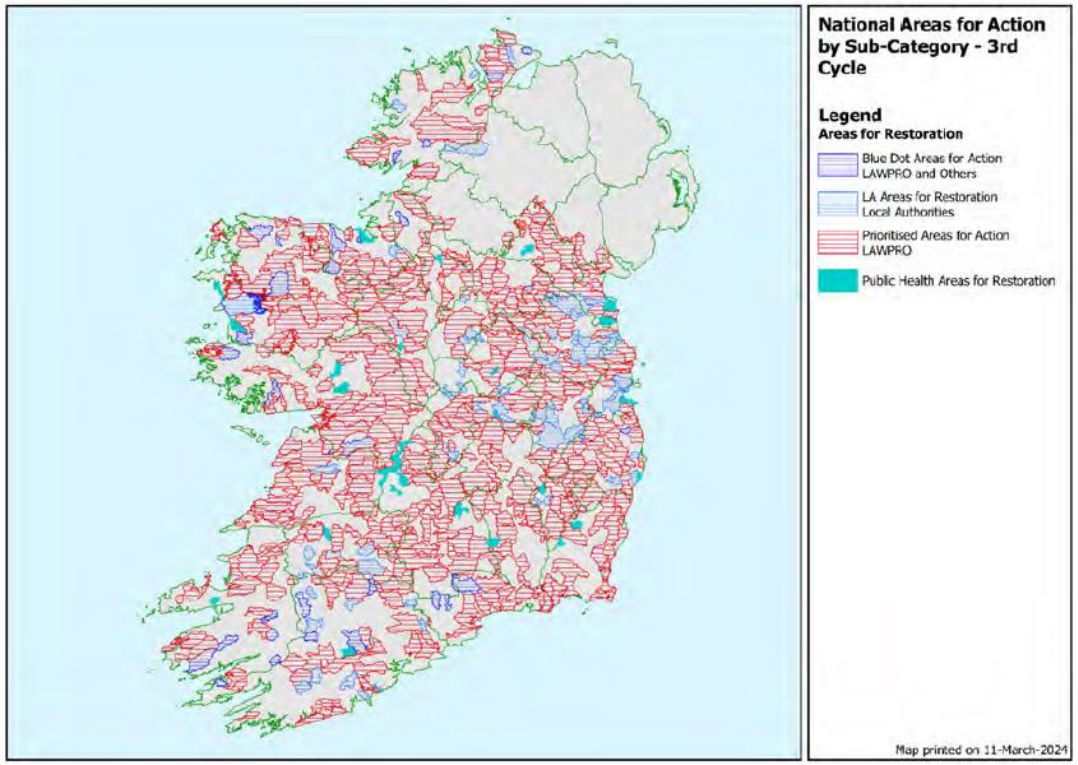
- **Coordination** on behalf of local authorities and public bodies
- **Catchment science and management**
  - *Working in Priority Areas for Action (PAA) identified in the River Basin Management Plan.*
  - *Building capacity within Local Authority sector through knowledge sharing and training*
- **Community engagement** at a local level and nationwide.

Local Authority Waters Programme

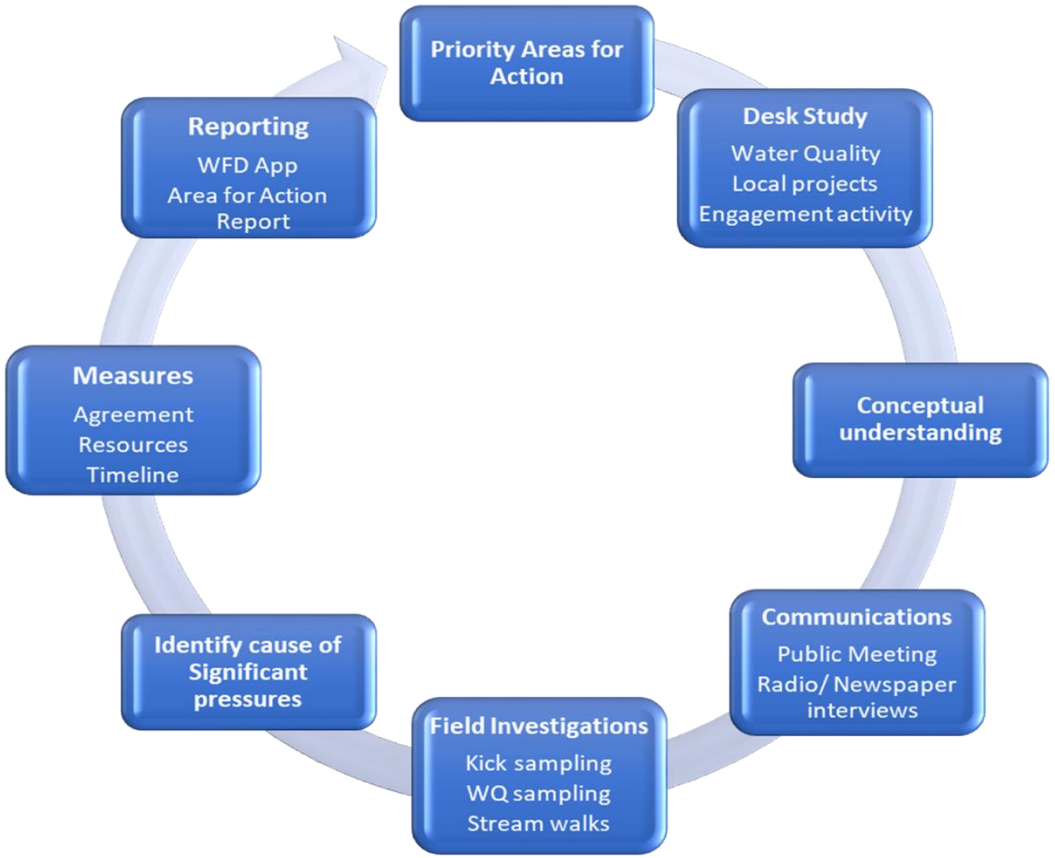
vibrant communities | catchment assessment | healthy waters

Our role in protecting and restoring lake water quality

Priority Areas for Action



Water Action Plan (2024): Areas for Action (Restoration)
3rd cycle River Basin Management Plan



Local Catchment Assessment

Field chemistry and field observations

Biological sampling - invertebrates

River walks

Biological sampling - vegetation

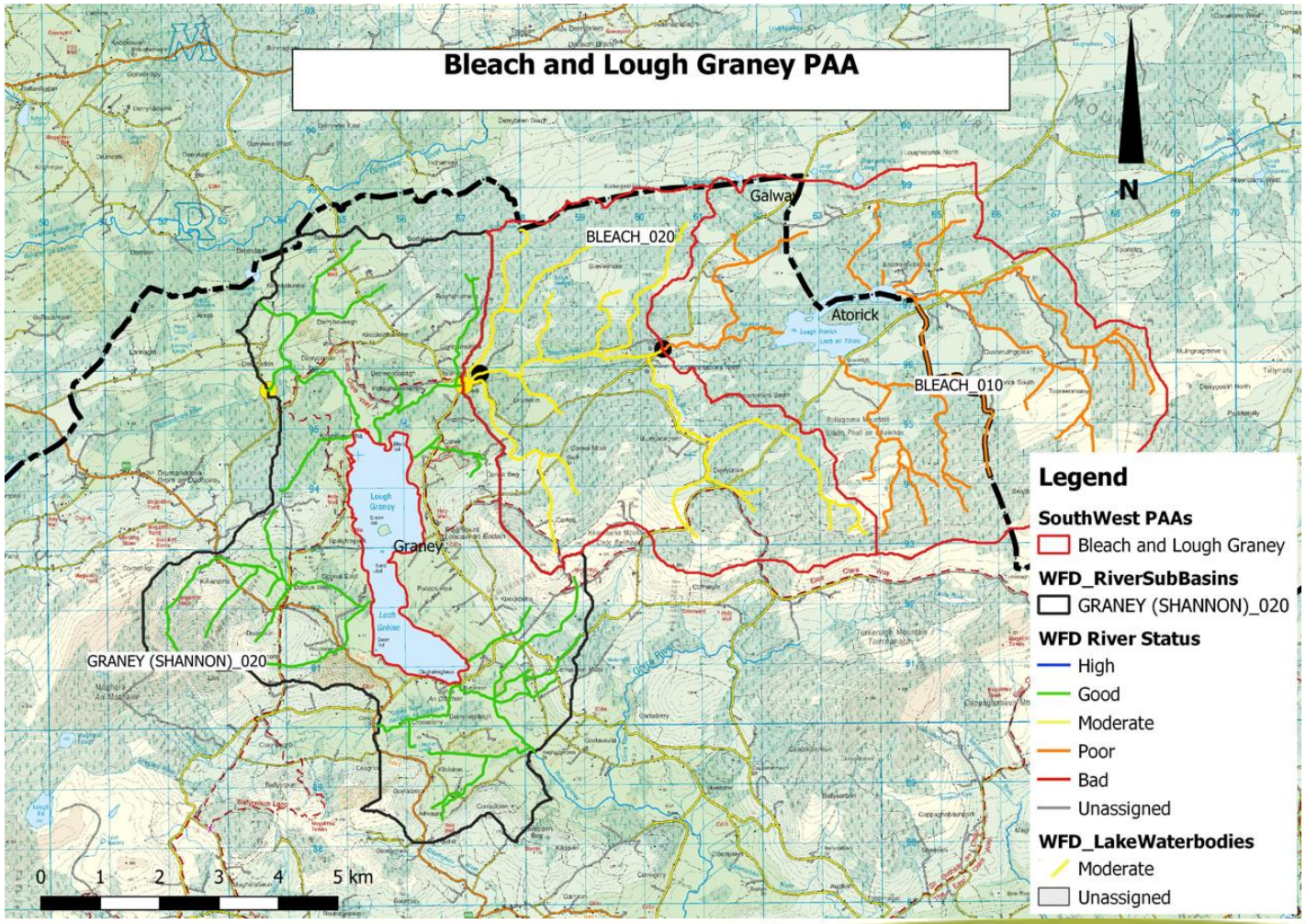
Chemistry sampling

Local Catchment Assessment - Lakes

- Steps taken to assess lakes
  - What WFD status element (phytoplankton, TP, fish) is driving status in the lake.
  - Review previous studies.
  - Review surrounding land use.
  - Review direct pressures on the lake – abstraction, recreation, wastewater etc
  - Sample inputting tributaries (macroinvertebrates, phosphorus, sediment) to identify which tributary is contributing the largest nutrient load.
  - If necessary, complete LCA on tributaries to further narrow down the critical source areas (CSAs).

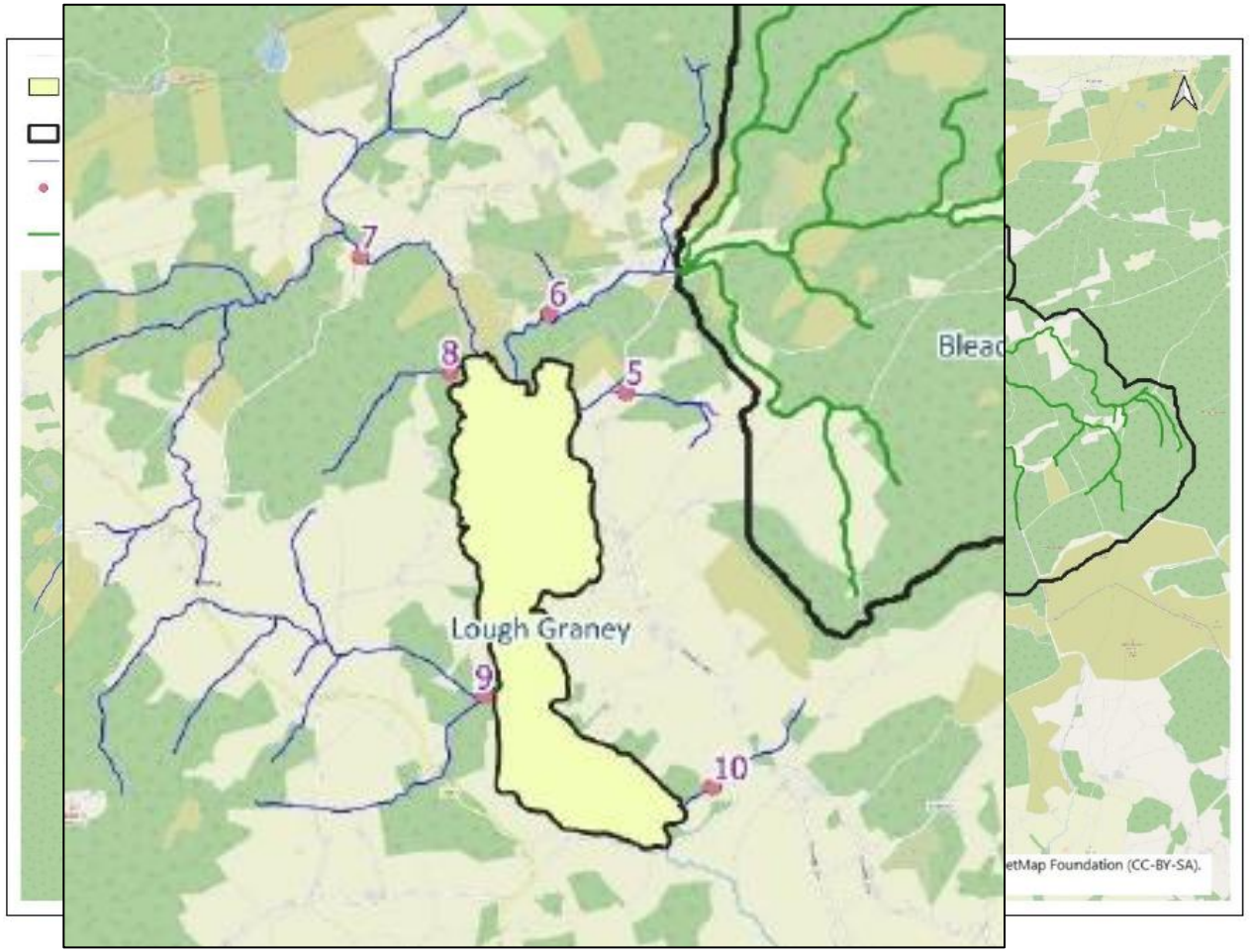
Local Catchment Assessment – Lakes
Lough Graney Example

- Moderate ecological status, driven by Macrophytes.
- Total Phosphorus and Chlorophyll were meeting objectives but remain close to the High Good boundary.
- Zebra mussels are present in the lake.



Local Catchment Assessment – Lakes
Lough Graney Example

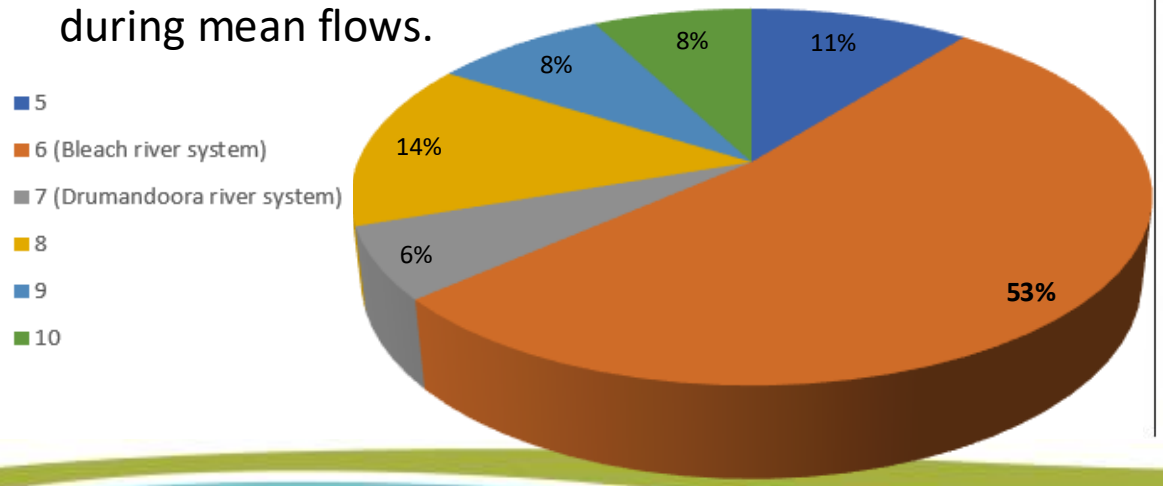
- Desk study identified forestry and agriculture as potential significant pressures.
- LCA set out to collect SSIS, field parameters and chemistry samples at locations 5 – 10 in map.
- Chemistry samples were collected in high flows.

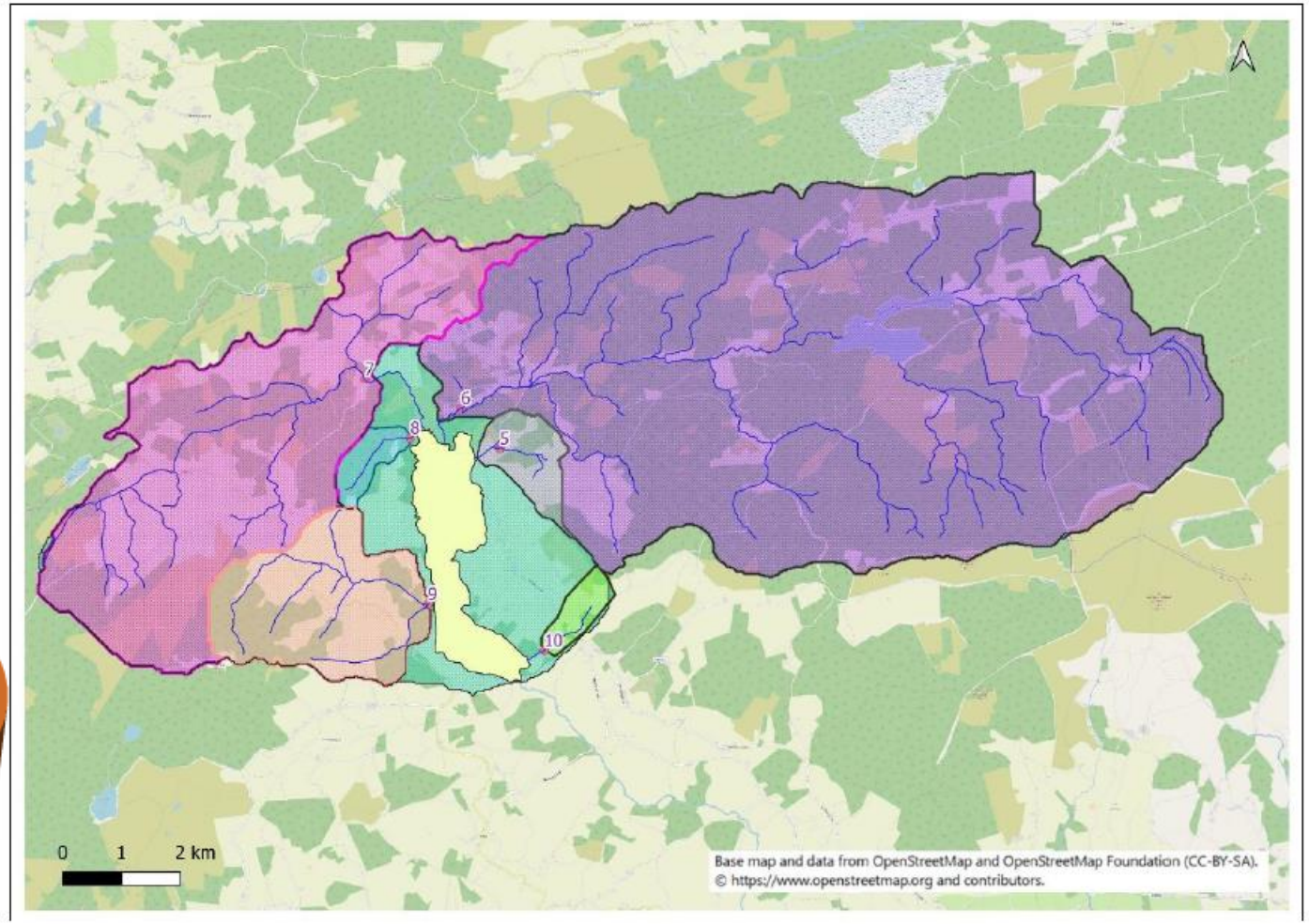


Local Catchment Assessment – Lakes
Lough Graney Example

Site	OPW nearest flow data m3/sec	Q?_ile	loading kg/day	catchment size km2	loading kg/km2/day
6	8.078	40	26.065	65.63	0.397
6	28.302	5	18.180	65.63	0.277
6	14.759	20	5.402	65.63	0.082

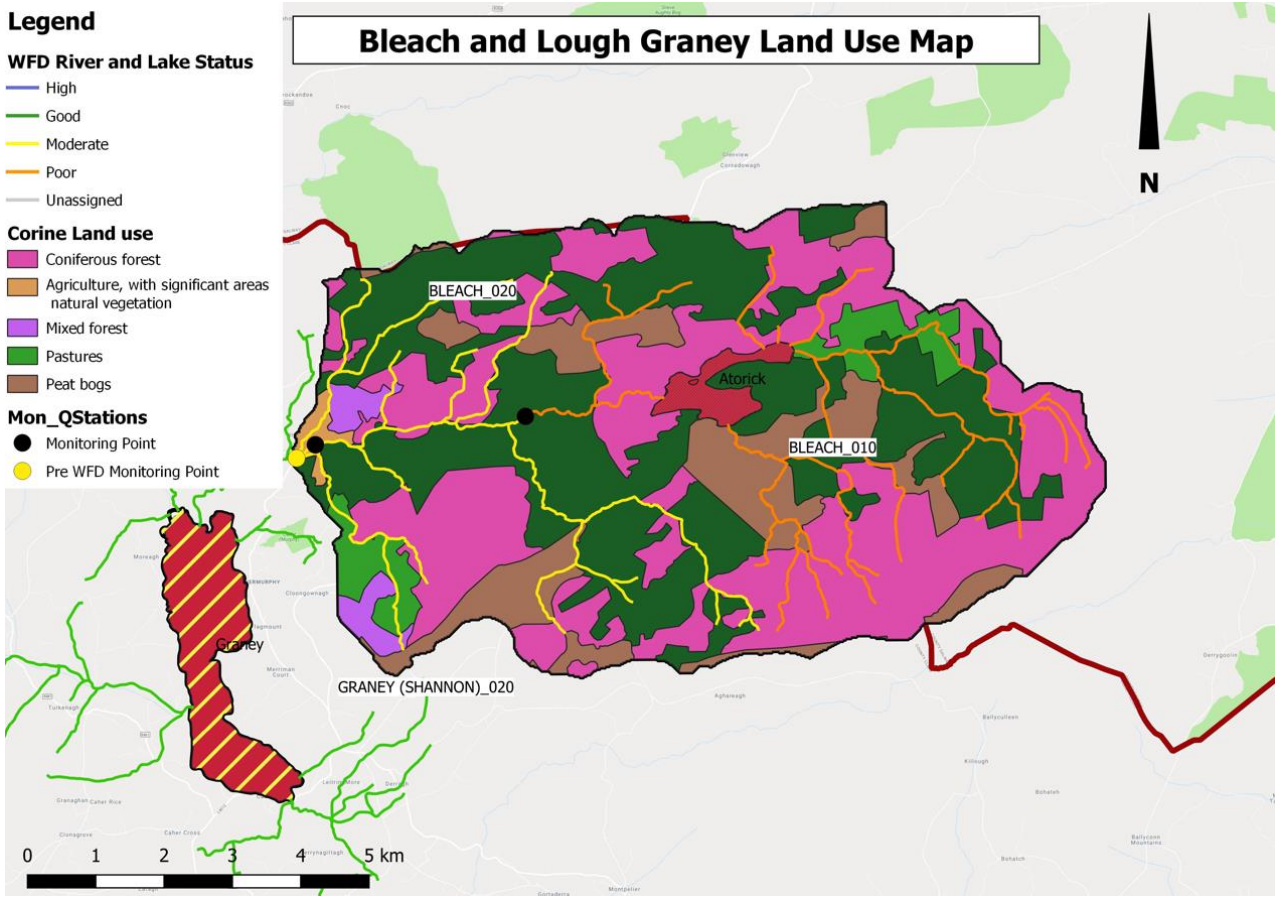
- The highest load to the lake occurred in mean flow conditions.
- The Bleach river system made up 53% of the load during mean flows.





Local Catchment Assessment – Lakes
Lough Graney Example

- Forestry is the main land use across the catchment.
- 44% of the Bleach river system is covered by forestry.
- LCA on the Bleach river system did not identify high phosphate CSAs.
- Possible next steps
  - Long term monitoring on inputting tributaries.
  - LAWPRO's work may be limited to further characterisation and reporting on WFD App.



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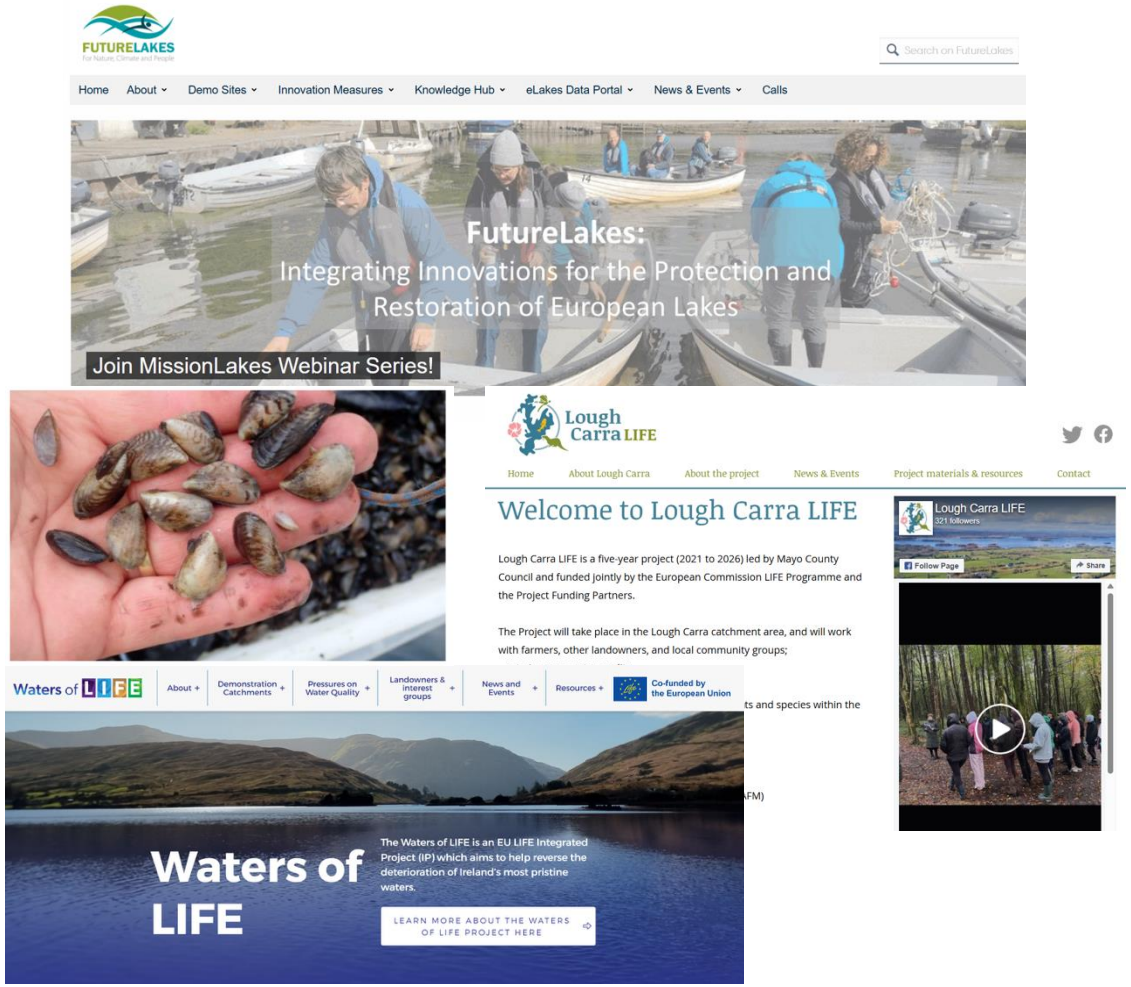
Local Catchment Assessment – Lakes Challenges

- Challenges
  - Limited to sampling inputting tributaries.
  - Nutrient impacted lake but low nutrient concentrations in inputting tributaries.
  - Assessing impact of sediment in inputting tributaries on the nutrients in the water column.
  - Assessing nutrient mobilisation from benthic sediments.
  - Long term monitoring may be required to assess load from tributaries.
    - This is also necessary to record year on year variations.

Projects

- Lough Key
- FutureLakes
- Waters of LIFE
- Lough Carra LIFE project
- Lough Rinn



Lough Rinn Project

Lough Rinn

- Poor ecological status (failing for nutrients mainly P and macrophytes)
- Approximately 1.65km2
- Maximum depth is 8 to 9m
- Two inputting waterbodies
  - Rinn_010 (Poor Status, main issue P and sediment)
  - Rinn_020 (Moderate Status)

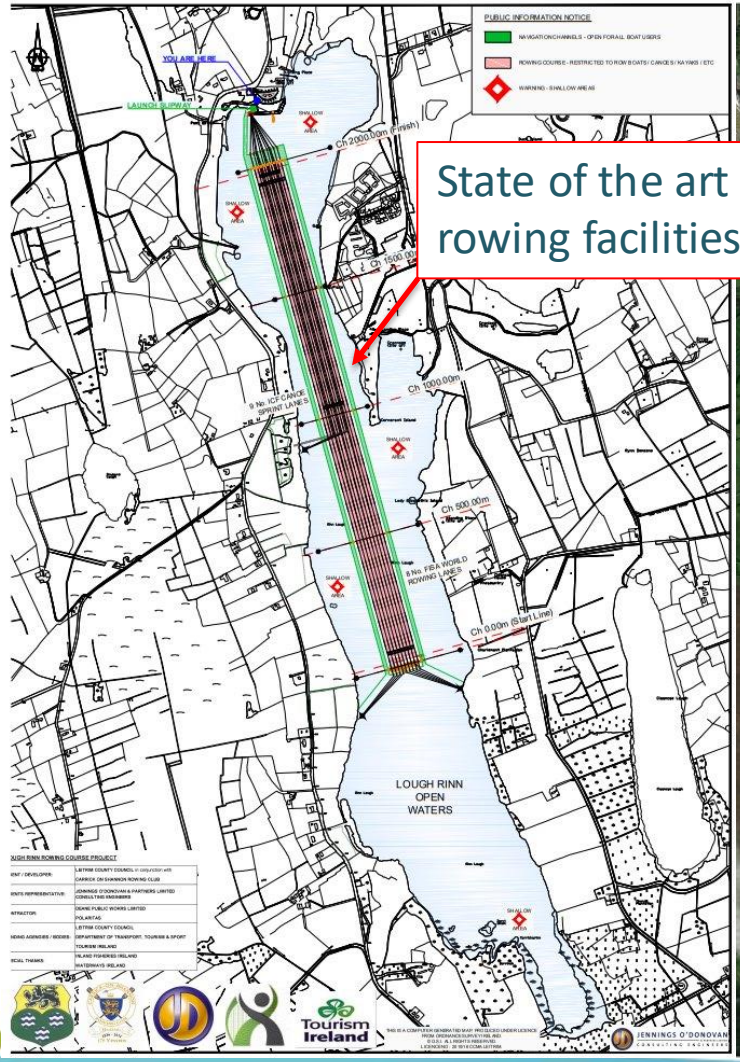
Project Aim

To develop an approach that could be adapted to other lakes being assessed by the LAWPRO Catchment Scientists where nutrients and sediment have been identified as an issue.

Project Questions

- Is the lake susceptible to internal phosphorus release from the benthic sediment?
- What is the contribution of sediment and phosphorus to the lake from the inputting waterbodies?
- What is the sedimentary deposition rate to the lake bed over the period of a year?

Lake Parameters



- Thermistor chain Installed in early 2023
- Three lake sediment traps installed early 2023
- Sample collection – monthly, at the deepest point.
  - Samples collected at the surface of the lake (0 m) and every meter thereafter.
  - Chlorophyll *a* samples (~3) taken in the upper photic zone (is calculated based on 2.5 x the Secchi depth measured on the day).

Lake Parameters analysed:

- Suspended Solids
- Ortho P as P
- Total Phosphorus
- Chlorophyll *a*
- Ammonia as N
- Nitrate as N
- Total Nitrogen
- Water level
- Secchi depth
- DOC
- Colour (Unfiltered)
- Temperature
- Dissolved Oxygen
- Conductivity
- PH

River – Sediment Traps

- Sediment traps installed at the inflowing waterbodies to Lough Rinn and at the outflow of the lake.
- Sediment traps placed across the width of the stream, with the inflow and outflow below the water level.
- Water samples collected once a month same day as the lake samples across all three sites
- Parameters analysed include:
  - Ammonia as N
  - Nitrate as N
  - Total Nitrogen
  - BOD
  - Total Phosphorus
  - Orthophosphate
  - Suspended Solids
  - pH
  - Temperature,
  - Dissolved Oxygen
  - Conductivity

Sediment traps emptied periodically and taken up after 1 year.

Learnings to-date

- Equipment was tampered with or removed.
  - Thermistor chain removed late 2023
  - Lake sediment traps removed early 2024
- Project still on-going, new thermistor installed in 2024-2025 which will be collected shortly and data analysed.

Communities

- Strong lake based community groups developing nationally, including in Kerry.
- Community project focussed on bathing water quality in Lough Ennell won Ireland's Greenest community award for 2025.

Lough Ennell.

Dysart River Project crowned Ireland's Greenest Community

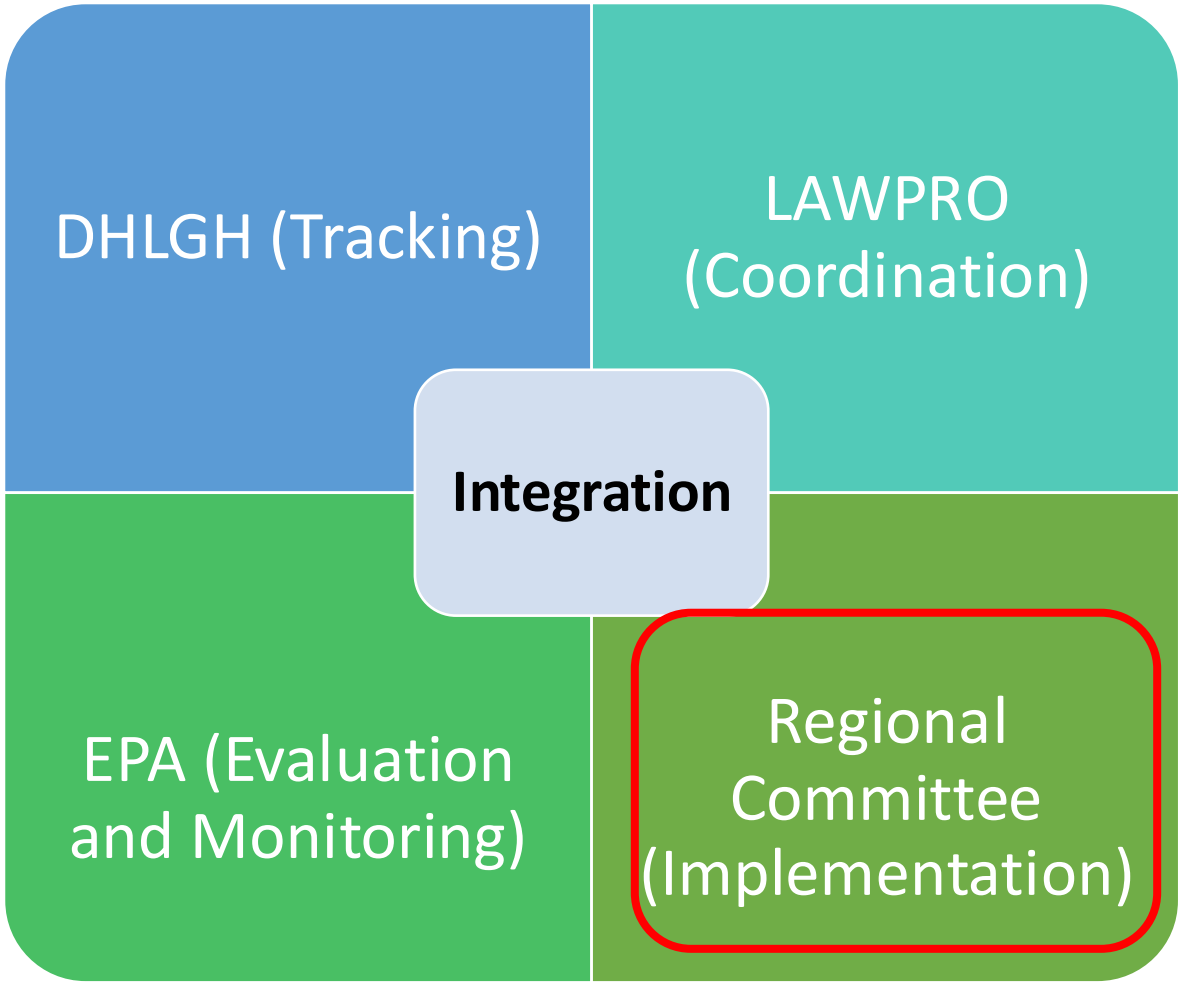
Local Authority Waters Programme

vibrant communities | catchment assessment | healthy waters

Governance Structures

Oversight

- DHLGH: tracking by Programme Delivery Office
- EPA: evaluation & monitoring
- LAWPRO: coordination, facilitation
- Regional Committees: implementation tracking



Regional Committees

- Regional Operational Committees
  - Bring public bodies together.
  - Knowledge transfer.
  - Identification of regional issues and solutions.
  - National issues are directed up to Regional Management committees.
- Regional Management Committees
  - Tracking Implementation

View to the future

- Completing local catchment assessments
- Supporting projects
- Continued community engagement
- Facilitating coordination of state agencies