

Woodlands of Ireland Conference 2024

"Protective tree cover in catchments"

An introduction to the work of the Local Authority Waters Programme and the use of functional planting to protect, restore and enhance our waters."

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Woodlands Presentation Outline

- Outline work of LAWPRO esp. in CS Team and local CA work, ASSAP advisor network; and Blue Dots
- Using the Source-Pathway-Receptor Model in Integrated Catchment Management
- Forestry in the Water Action Plan
- Using the Pollution Impact Potential Maps as a tool for identifying intervention sites for functional forestry planting.
- Water EIP Forestry/Planting measures.
- Some examples.





- Local Authority shared service, working with all 31 Local Authorities, across five operational regions.
- Formed following recommendations in Ireland's 1st
 Cycle River Basin Management .
- Coordinating the Local Governments role in river basin management planning and the implementation of the EU Water Framework Directive in Ireland.
- Funded by Department of Housing, Local Government & Heritage (DHLGH Water Advisory Unit).

About LAWPRO





About LAWPRO

LAWPRO's three core functions:

- 1. Coordination on behalf of local authorities and public bodies.
 - Regional Committees (incl. cross-border representation).
 - Nationwide Catchment Management Plan Template
- 2. Community engagement at a local level and nationwide. Advocating for a healthy water environment to deliver multiple benefits for health and wellbeing, biodiversity, climate, and local communities.
- **3. Catchment science and management** to inform decision making:
 - Working in Priority Areas for Action (PAA)
 - Building capacity within Local Authority sector through knowledge sharing and training.





Coordination Role

- LAWPRO Programme delivery.
- Regional structures (committees).
- Inter-Agency Collaboration.
- National level representatives.
- Building relationships: stakeholder cooperation and collaboration.
- Facilitating knowledge transfer and learning.
- Wide dissemination of best practice.

Collaboration Between Public Bodies





Community Role

- Public participation & engagement
 - > Listening to communities and supporting local projects.
 - > 2024 Community Water Development (> €700k awarded).
 - > 2024 Community Support Fund (> €500k awarded).



WFD Article 14 - three levels of participation: information, consultation and active involvement – emphasis on 'public' as key stakeholder



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- Community training and knowledge transfer





WFD Article 14 - three levels of participation: information, consultation and active involvement – emphasis on 'public' as key stakeholder







Blue Dots

- High Status Objective Waterbodies
- A network of 402 waterbodies considered capable of achieving our highest water quality standards
- Can support our best ecology and some of our most iconic and protected species (Trout, Salmon, Char, Pearl Mussel, etc.)
- Present in most counties
- Majority along the Western seaboard, Wicklow and mountainous areas of the Midlands and South
- Blue Dot Catchments programme
 - Collaborative programme that brings together key agencies/stakeholders
 - Aims to focus resources to protect and improve status in Blue Dots





Blue Dots

- Affected mainly by agricultural and forestry pressures
 - Particularly physical modifications such as drainage (Hydromorphology)
- Trees have huge potential to be part of the solution in Blue Dots
- Nutrients
 - Blue Dots are predominantly found in areas with poorly draining soils therefore
 - In this context trees and hedgerows effective in nutrient interception, especially in regards Phosphorus.
- Hydromorphology
 - As for nutrients can intercept sediment in Critical Source Areas
 - Riparian planting could be particularly effective in mitigating historical channelisation
 - Reduces erosion bank stabilisation
 - Introduces roughness and woody debris
 - Creates shade
 - Currently being trialled by the Waters of Life EIP under their results based payment scheme









Catchment Science - EPA Characterisation Approach



Aiming for 'The right measure in the right place'





EPA Characterisation Tools





- Data analysis to understand & refine the significant issue(s)
- Pathways conceptual model specific to the significant issue(s)

Further Characterisation Tools



Within the drainage area of the Bandon Estuary, information on soil, groundwater vulnerability and bedrock type was used to split the area into two water pathway zones.

Bandon Pathway Zone 1

Significant issue: Phosphate & Ammonium loss.

- Bandon Pathway Zone 1 (blue colouring) is dominated by poorly draining soils on moderately fractured bedrock.
- High risk pathway : Surface overland flow and drains.
- High risk time: Heavy rainfall
- High risk receptor: River ecology (aquatic insects & fish) Travel time: Rapid

Bandon Pathway Zone 2

Significant issue: Nitrate loss.

- Bandon Pathway Zone 2 (highest risk areas shown in red) consists of well drained soils overlying moderately fractured bedrock.
- The well drained soils, subsoils and fractured bedrock offer little attenuation capacity for nitrogen, whereas phosphate sticks to the shallow soil.
- High risk pathway: soil to groundwater, groundwater to stream, stream to estuary
- High risk time: Recharge (leaching) period: (October-March)
- High risk receptor: River ecology (aquatic insects & fish) & estuary Travel time: Short (approx. 1 month – 3 years, location depending)

Pollution Impact Potential Map (Nitrate).

The Pollution Impact Potential (PIP) map for nitrate combines the geological risk to groundwater with the amount of N applied/lost from the land surface. Highest risk = highly stocked farm coinciding with a geologically vulnerable area.



Pollution Impact Potential for Nitrate (PIP)

The PIP map combines the winerability of the underlying groundwater with the nitragen load applied/excreted at the land surface. Put simply, highest PIP = extreme valuerability + highly stacked form.







Oli: Red Sandyrone Brid-

Rock at or near se



- Data analysis to understand & refine the significant issue(s)
- Pathways conceptual model specific to the significant issue(s)
- Field **Biological** assessments to sub-divide stream reaches.

Further Characterisation Tools

Pollution sensitive

Pollution tolerant



VS.



Further Characterisation Tools

- Data analysis to understand & refine the significant issue(s)
- Pathways conceptual model specific to the significant issue(s)
- Field **Biological** assessments to sub-divide stream reaches.
- Stream walk to find significant **Pressures**.



Integrated Catchment MGMT - Framework

Deskstudy: Develop SPR conceptual pathways model, high level conclusion on significant issues/likely pressures.

Local Catchment Assessment Step 1:

Design monitoring programme.

Local Authority *

vibrant communities | catchment assessment | healthy waters

LCA Step 2: Biological assessment: *How extensive is the problem?*

LCA Step 3: Data pattern analysis: *Refine the significant pressure.*

LCA Step 4: Focused streamwalk based upon deskstudy and LCA steps 1-3. Identify the significant pressure locations.

Final step: Right Measure, Right Place





Next Generation Pollution Impact Potential Maps (PIP Maps)

• PIP: Focussed Delivery Flow **Paths**

Focussed Delivery Flow Paths are the areas of converging runoff that results in an increasing accumulation of flow. It is important to consider the available source of phosphorus in these contributing areas when deciding whether to target measures (check the underlying PIP-CSA rank). The red flow paths have the highest surface runoff. Where these cross High PIP areas, expect higher P losses. The map can highlight areas to target phosphorus pathway interception actions e.g. hedgerows.

• Focussed Delivery Flow Points

Focussed Flow Delivery Points are where Focussed Flow Paths enter a watercourse. The size of the point indicates the relative volume of flow delivered to water. It is important to consider the available source of phosphorus in the upslope contributing areas. The map can highlight areas to target phosphorus pathway interception actions e.g. riparian/buffer zones, woodlands, engineered ditches

"Right Trees, in the Right Place, for the Right Reasons"

Source:

https://gis.epa.ie/EPAMaps/Water (Pressures and activities Tab) PIP Maps Access and Utilisation Guide: <u>Pollution Impact Potential Maps on catchments.ie</u> (youtube.com)





Water Action Plan: Ireland's River Basin Management Plan 2022 – 2027

- Innovative measures and building on work of Cycle 2.
- Multiple Benefits
- Public Participation
- Implementation of the Programme of Measures – Under 8 Action Areas.
- 517 Areas for Action
- Further details: www.gov.ie/RBMP





National Water Action Plan: Forestry

Well sited and managed woodlands and forests can play in protecting and enhancing water quality, through the delivery of a range of water-related ecosystem services. Key measures for the third-cycle include:

- Continual improvements to the licence applications process for key forestry activities. For example, these include an increase the area of forests with appropriate water setbacks through the ongoing restructuring of existing forest stands at clearfell / reforestation stage.
- Promotion of support measures that have a clear role in relation to the protection of water, including: the Continuous Cover Forestry Scheme; the various native woodland and agro-forestry options under the Afforestation Scheme, the Native Woodland Conservation Scheme, and the Reforestation for Climate Resilience Scheme.
- Launch of the new Forests for Water scheme with added incentives to promote the creation of new native forests specifically to provide water services, including improvements to water quality, drinking water source protection, natural water retention, the improvement of aquatic and riparian habitats, and the expansion of alluvial woodland

Rialtas na hÉireann Government of Ireland

Water Action Plan 2024

A River Basin Management Plan for Ireland

Appendix 2: Programme of Measures - List of Measures

Prepared by the Department of Housing, Local Government and Heritage www.gov.ie/RBMP



WAP: Proposed Local Community Fora and Catchment Management Plans

Under Water Action Plan:

- ✤ 46 Catchments 5 Pilot Catchments
- LAWPRO currently working with Sectoral Partners to establish Templates for Local Catchment Management Plans.
- These plans will guide the local implementation of measures to protect, enhance and restore water quality.
- LAWPRO currently scoping the establishment of Local Community Catchment Fora in the 5 Pilot Catchments



Local Catchment Management Plan: Proposed Structure





Farming for Water EIP

WATER EIP Aim:

Combining targeted measures and European Innovation Partnership funding to deliver water improvement.....for the public good.

WATER EIP Measures:

The project specifically focuses on reducing losses of phosphorus, nitrogen, sediment and, where relevant, pesticides to water from agricultural lands by promoting the adoption of innovative best practice in nutrient management, the application of nature-based Natural Water Retention Measures (NWRM) and other suitable measures at the farm level following the principals of Integrated Catchment Management (ICM) and science.

Water EIP Notes:

- Advisor led, promoting "Water stewardship" with the farmer at the centre of decision making and mapping of measures.
- Following catchment science principles, local farm knowledge resulting in targeted actions.
- Focus on water quality but also multiple benefits including climate.
- Aim to target all Ag sectors (as much as possible)
- Aim to integrate with sustainability initiatives, draw in complimentary supports including additional partners (e.g., OPW)
- Wider public information campaign to explain "the why" i.e., Water Quality is a public resource underpinning all sectors and a healthy society
- Strong support from the industry and sectors will be necessary



More Info: <u>Farming for Water European Innovation</u> <u>Partnership - Farming for Water EIP</u>

RAINWATER MANAGEMENT PLAN DEVELOPED WITH FARMER

Rainwater Management Plan to identify issues on the farm by following rainwater pathways across, after determining the nature of pollution vulnerability from Pollution Impact Potential (PIP) Maps.

FARMS IN

Field Scale Assessment





Water EIP

Measures - Farming for Water EIP

Pathway Interception Measures



Hedgerow Establishment on Low Earthen Mound

Hedgerows are very effective in reducing the risk of land-spread material moving over sloped ground during heavy weather

See projects using this measure



Spatially Targeted Riparian Buffer Zones

A spatially targeted riparian buffer zone is an area left uncultivated adjoining rivers/streams/drains/ponds/lakes/turloughs etc. that will help

See projects using this measure



Tree Planting

A wooded buffer along one or both banks of the river is very beneficial to the river. Trees

See projects using this measure



IRD Duhallow/Blue Dot - Tree Planting for Water Quality Project

Booklet-of-Measures-Interactive.pdf (irdduhallow.com)

Site 1 Background	and Reasons for Selection
River	OWENKEAL_020
Enterprise	Dairy
Actions	85m hedgerow, 15m hedgerow, 10m hedgerow, native grove (7 Trees), 300m treeline
Site Selection	 Derogation farm PIP-Rank 1 in parts Steep Topography Duhallow Farming for Blue Dot Catchments EIP Demo Farm High-status River Poor ecological connectivity





IRD Dahallow





IRD Duhallow/Blue Dot - Tree Planting for Water Quality Project

Site 2 Background	and Reasons for Selection	2.1
River	DALUA_030	
Enterprise	Dairy	
Actions	150m hedgerow, 75m hedgerow	
Site Selection	 PIP-Rank 1 High-status Objective (Blue Dot River) Intensive farm 	





River	ALLOW_050
Enterprise	Dairy
Actions	Hedgerow (250m), native grove (15 trees), treeline* (20 trees)
Site Selection	 Derogation farm PIP-Rank 1 At-risk WFD waterbody with agriculture (pasture) significant pressure characterised High-status objective (Blue Dot) river Margaritifera river





Functional Tree Planting to Protect Water Quality and accrue Multiple Benefits: examples

- Waters of Life: <u>Foresters Waters of Life</u> and <u>Measures</u> <u>Forestry.pdf</u> (watersoflife.ie)
- Natural Flood Management OPW/Inishowen Rivers Trust/Slow Waters
- **RESI River**: Interreg Project use of NBS
- Upland Restoration: Use of light density upland Scots Pine.
- Loughs Agency: Wet Woods
- Multi-Species Riparian Buffer Zones







Summary

- LAWPRO use of Integrated Catchment Management and Science to get the right measures in the right place to protect, restore and enhance Water Quality
- Multiple Benefits New Water Action Plan
- Public Participation
- Use of PIP maps and tools
- Implementation and innovation move from concept through to trees in the ground





Thank You

 "Water is not a commercial product like any other but, rather, a heritage which must be protected, defended and treated as such"

EU Water Framework Directive, 2000

