



Water Enhancements through
Sustainable Treatment



PEACEPLUS
Northern Ireland - Ireland

Co-funded by the



European Union



UK Government



Rialtas na hÉireann
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Northern Ireland
Executive
www.northernireland.gov.uk

The WEST Project

Overview & Sustainable Treatment Strategy

Sam Dunn, McAdam Design

PMO Manager

MATCH FUNDERS



Department for
Infrastructure
www.infrastructure.ni.gov.uk



An Roinn Tithíochta,
Rialtais Áitiúil agus Oidhreacht
Department of Housing,
Local Government and Heritage

WEST PARTNERS



Delivering what matters



Peace Plus Programme



€1.1 Billion EU Funded programme



Tackling the needs and grasp opportunities to
boost economic growth & social regeneration
within NI & the border counties of Ireland



WEST falls under Investment Area 5.4





Follows on from the SWELL Project



€32M Project with an aim to improve water quality within the catchment



Capital Investment at 4 WwTW's (Demonstration Sites)



IEM Catchment Modelling / Sustainable Treatment Action Plans (Legacy)



Education & Outreach Programme

WEST Project Background



Sustainable Treatment Strategy

“WEST Project aims to Develop a sustainable treatment strategy and action plan to address Ww related pressures within the rural areas of the catchment domain”

1

- Research, Identify innovative technologies for suitability within the Priority catchment

2

- Use of Modelling Outputs to identify assets for future investment to meet WFD targets

3

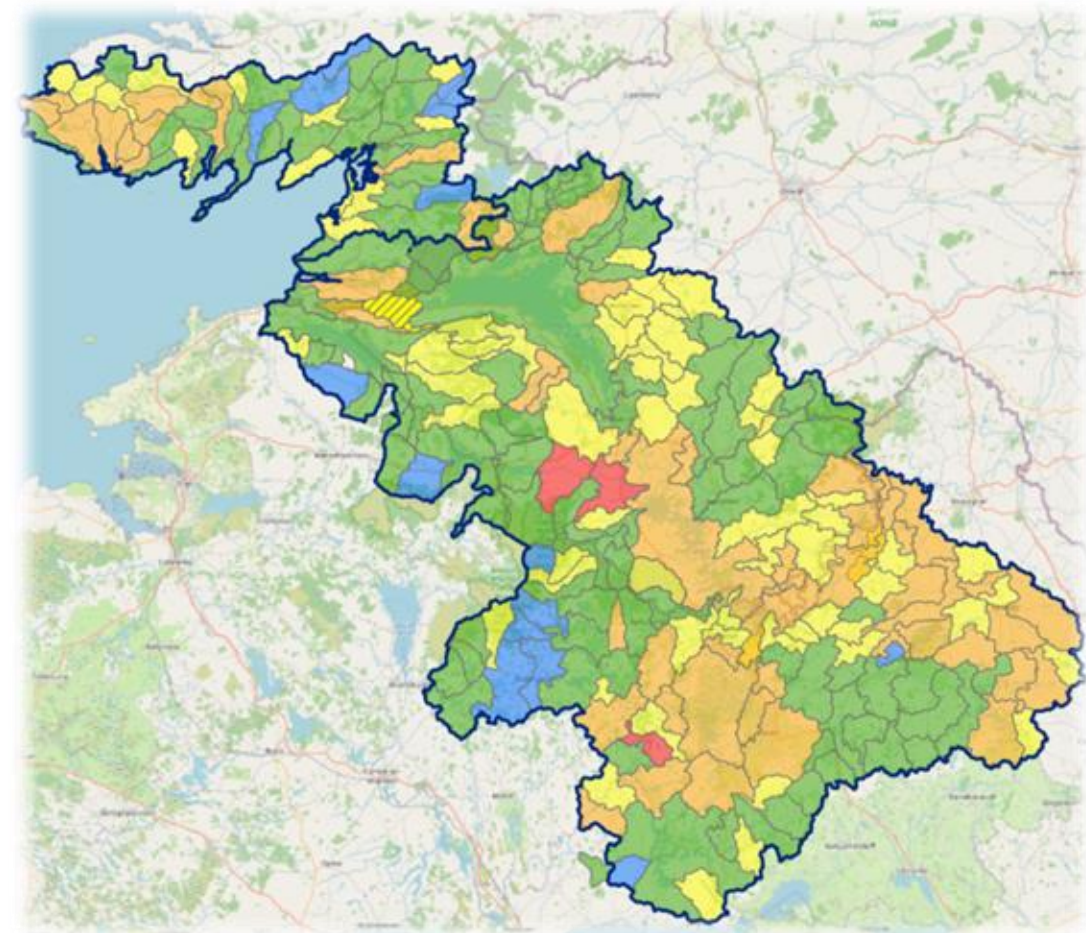
- Evaluate & Assess suitability for upgrade by sustainable solutions

4

- Promote use of Sustainable solutions through Stakeholder Engagement on a cross-border basis

5

- Develop the cross-border action plan for future investment as project legacy



Benefits of Sustainable Vs Conventional

- Simpler construction
- Lower construction costs
- Lower energy consumption
- Simpler operation / minimal operator intervention & expertise
- Reduced noise / odour nuisance
- Reduced sludge removal
- Flexibility to handle extreme flow variations
- Provides natural wildlife habitats

Sustainable Treatment



Garrison WwTW - Phragmifiltre®



Garrison Site Location



Key Issues



Design Criteria



Ravensbrae Gravity

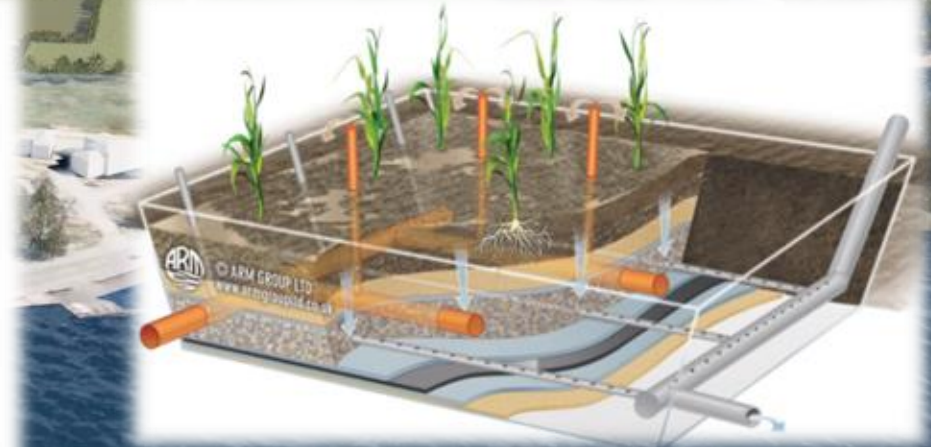
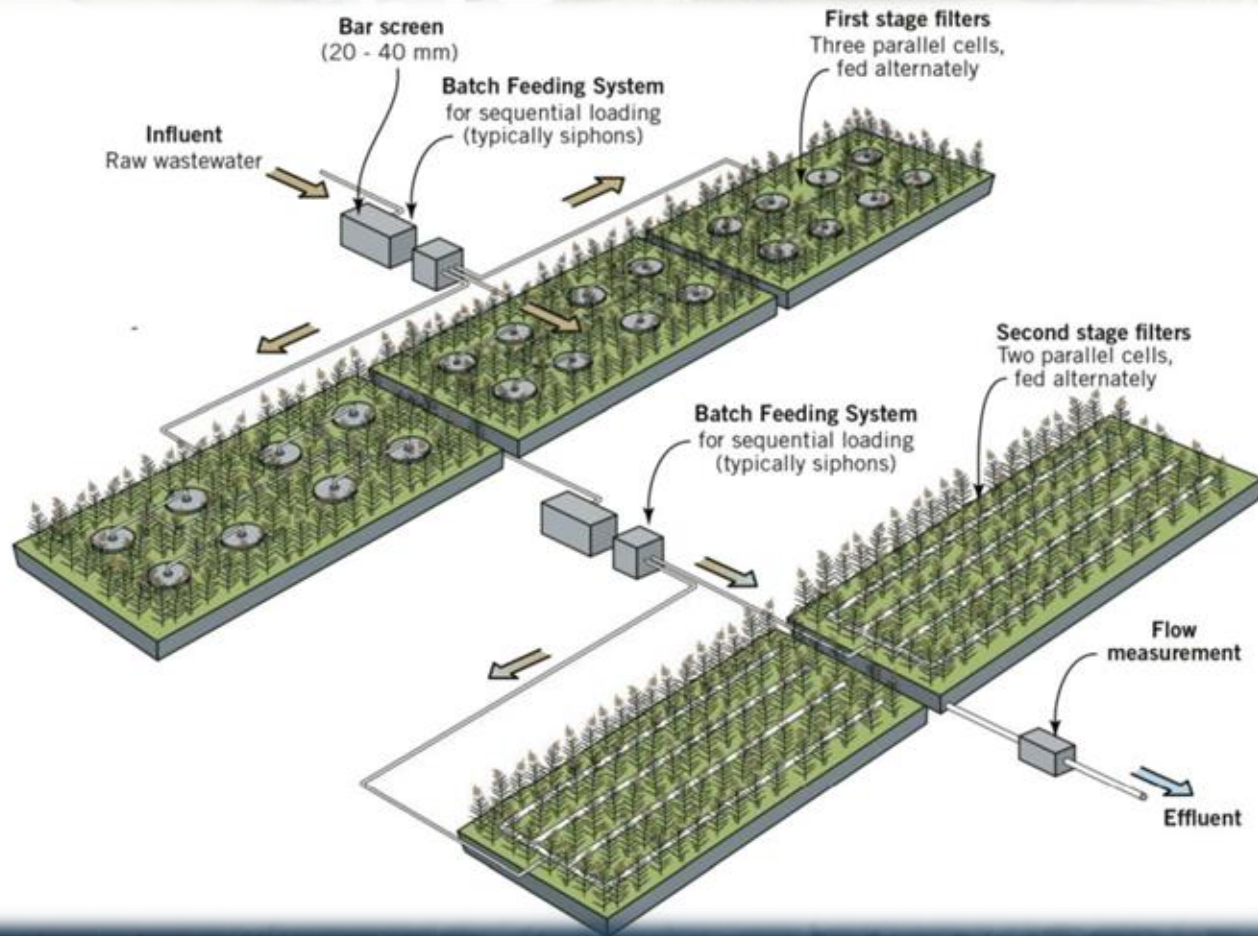


Parameters	Existing Design	Future Design (25 year)
PE	550	1198
Dry Weather Flow (m ³ /d)	146	246
Full Treatment Flow (m ³ /d)	292	897 (592)*
Formula A Flow (m ³ /d)	588	897*
WOC (BOD:SS:Amm:P)	40:60:N/A:2	40:60:10:2

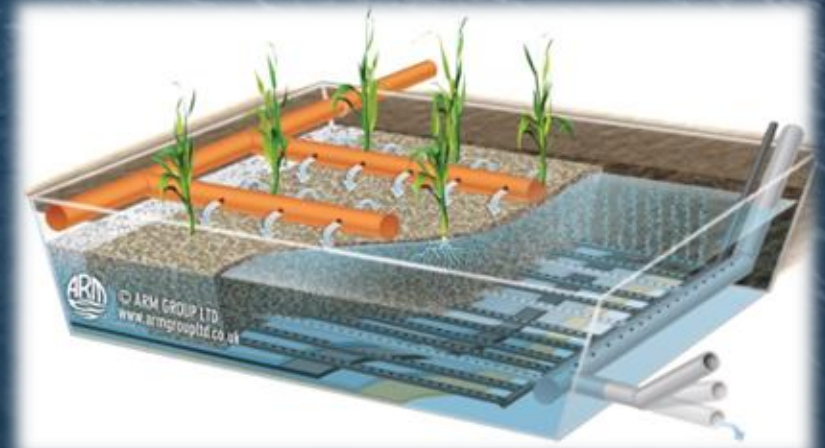
Garrison

Proposed WwTW

Devenish
St. Mary's GFC



1st Stage Reed Bed



2nd Stage Reed Bed



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Water Quality Modelling

Louisa Sinclair

NI Water, Network Performance Manager

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Delivering what matters



Irish Water



Water Quality Modelling

- What, Why, How, Where
- WEST Water Quality Modelling Strategy

What is the WEST water quality modelling programme?

Flexible, data-driven hydraulic and water quality models to assess the ecological health and identify pollution sources within the Erne catchment.



Northern
Ireland

Ireland

Why is water quality modelling important?

Know where the
problems are and
the causes

Achieve Water
Quality
Compliance

Make Evidence
Based Decisions

Target Investment

Prioritise
Investment

Cost Effectively
make
environmental
improvements

Not invest where it
isn't needed

Develop buildable
Solutions

Increase
Confidence

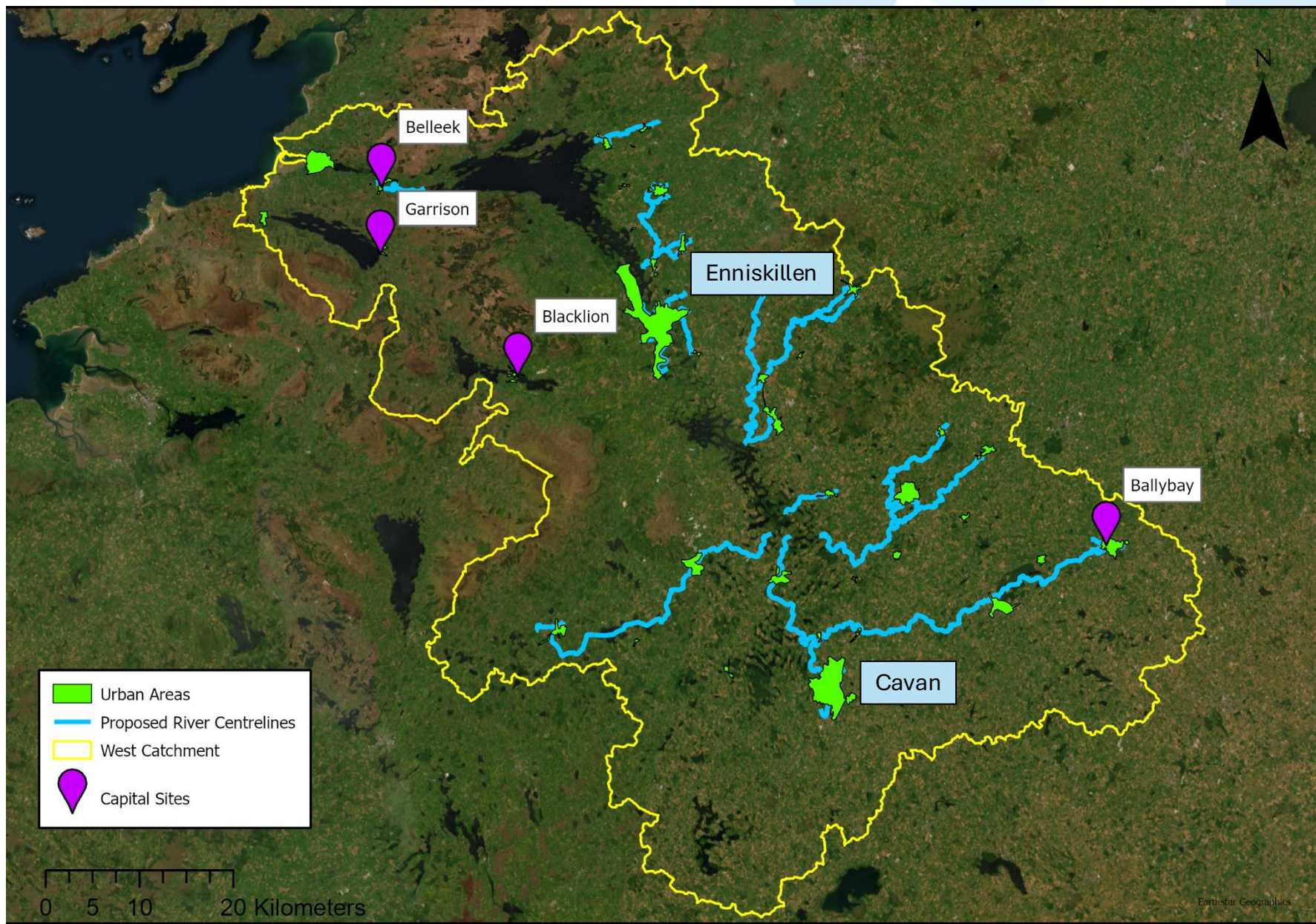
No Regret
Solutions

Deliver Leaner
Greener Solutions



Coverage

The largest populated areas covered by the modelling are Cavan and Enniskillen.



Building blocks for water quality modelling



Urban -
Modelled
Spills

Septic Tanks

Landuse

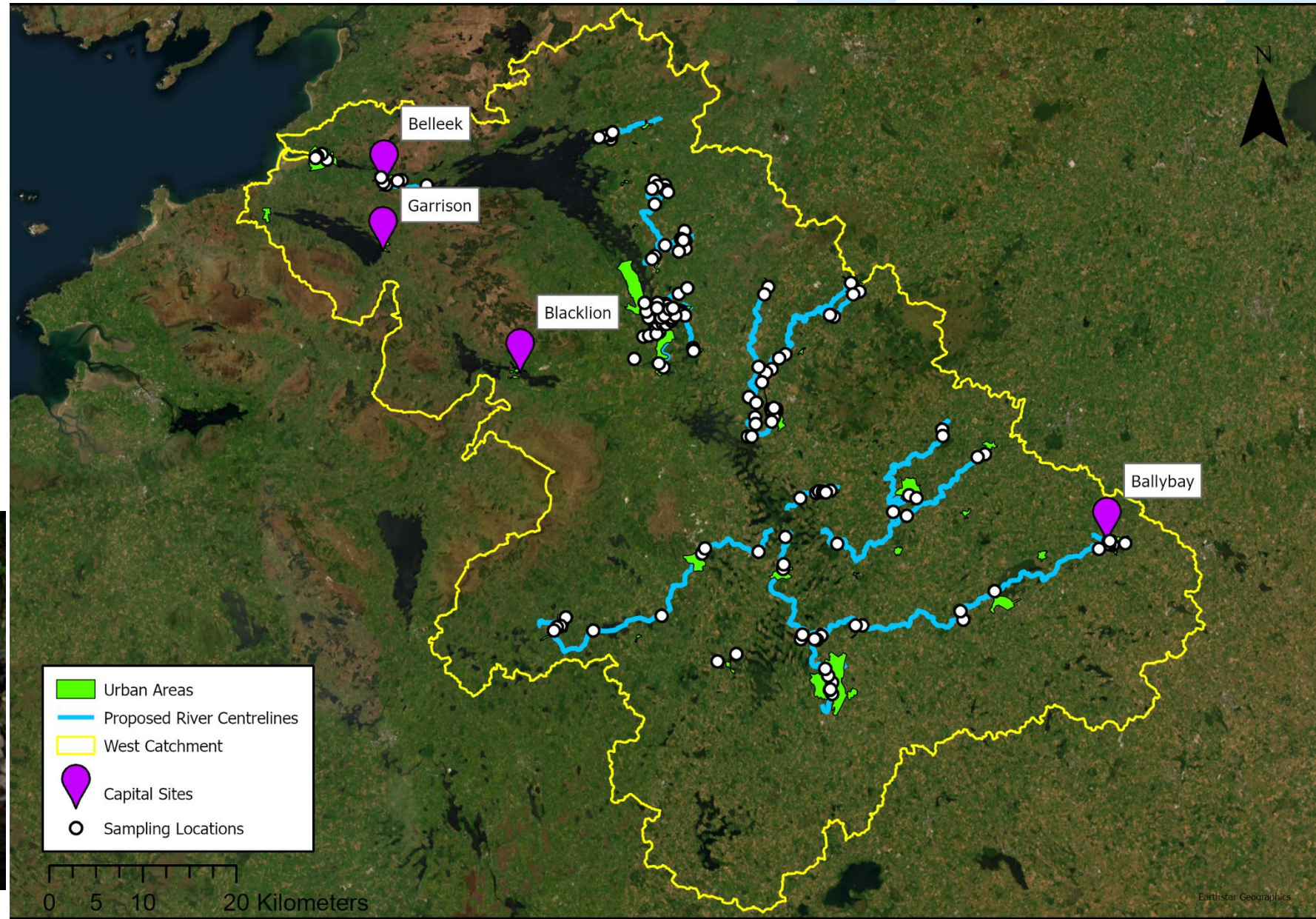
Traders

CFRAM / River
models

Data Collection

2026 will consist of on-site
data collection

- continuous monitoring
- fortnightly sampling
- wet weather events



Equipment

- >55 SONDEs
- >55 River gauges
- >10 rain gauges



Sampling



- >90 routine sampling and wet weather sampling

All sampling analysed by a UKAS accredited lab.



Dashboard

WEST Sampling & Gauging Tracker

Data Set
No category selected

Sample Category
No category selected

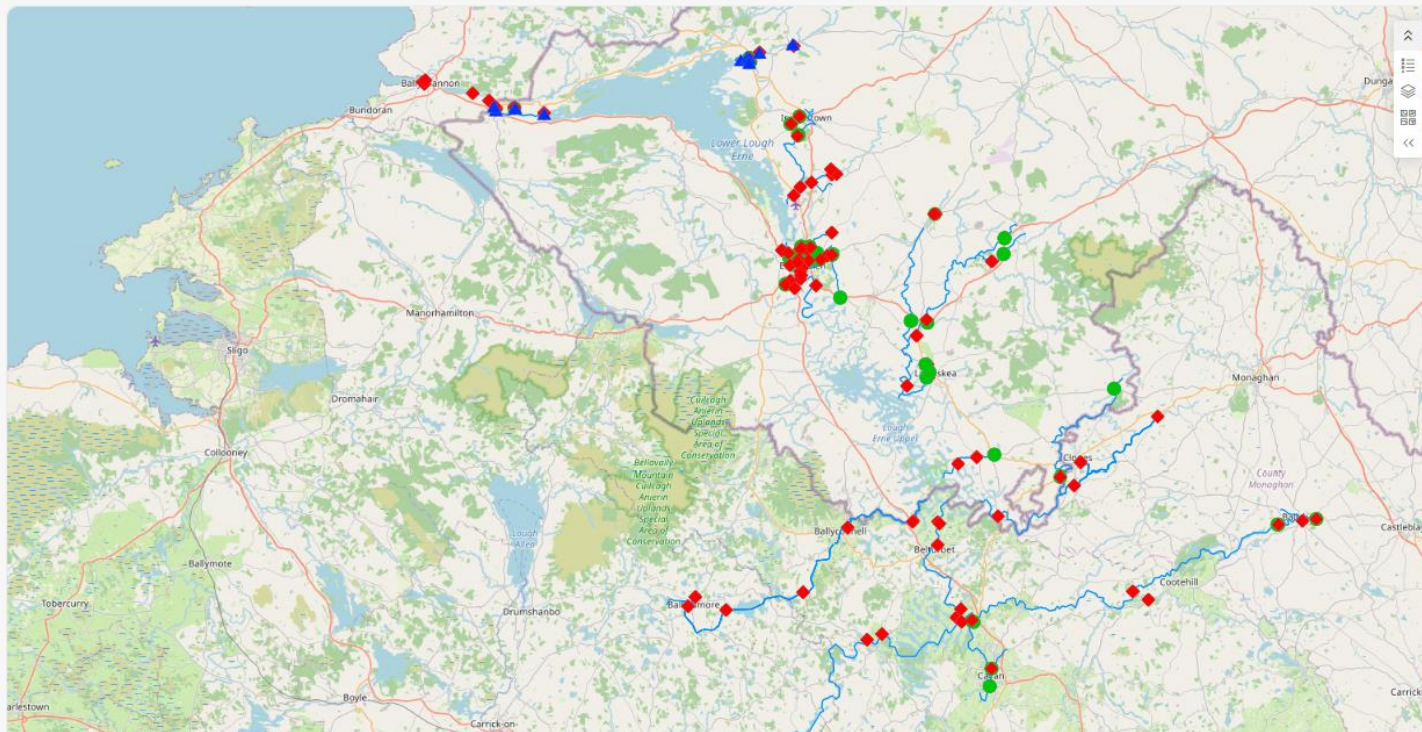
River Catchment
No category selected

Sample Date
No date selected

Site Name
No category selected

Search...

- 631 - U/S Ederney
04/06/2026, 06:42 am
- 621 - U/S Kesh Rd. WwPS
04/06/2026, 06:06 am
- 632 - D/S Ederney
04/06/2026, 05:53 am
- 622 - D/S Kesh Rd. WWPS
04/06/2026, 05:37 am
- 616 - U/S Mantlin Rd
04/06/2026, 04:45 am
- 625 - D/S Belleek DA
04/06/2026, 04:37 am
- 624 - D/S Belleek WwTW
04/06/2026, 04:08 am
- 617 - Letterboy Road
04/06/2026, 03:55 am
- 620 - Roscor Bridge Rd
04/06/2026, 03:12 am
- 618 - U/S Kesh
04/06/2026, 03:07 am
- 619 - D/S Kesh
04/06/2026, 02:43 am
- 550 - U/S Fivemiletown (S)
03/06/2026, 01:30 pm
- 553 - U/S Fivemiletown
03/06/2026, 01:10 pm
- 628 - U/S Discharge Ballyshannon
03/06/2026, 12:59 pm
- 629 - D/S Discharge Ballyshannon
03/06/2026, 12:52 pm
- 631 - U/S Ederney
03/06/2026, 12:44 pm
- 584 - Tamlaght Trib D/S WwTW
03/06/2026, 12:43 pm
- 632 - D/S Ederney
03/06/2026, 12:31 pm
- 630 - D/S Erne River
03/06/2026, 12:24 pm
- 616 - U/S Mantlin Rd
03/06/2026, 12:22 pm
- 559 - Belfast Road
03/06/2026, 12:11 pm
- 616 - U/S Mantlin Rd
03/06/2026, 12:09 pm



Map data © OpenStreetMap contributors, CC-BY-SA

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Routine
 348
Sampling

Wet Weather
 240
Samples

No. Samples

No. Sites

River
 116
Gauging

U/S Ederney

1 of 475

Photo captured on
Comments: 631 03/06/2026



WEST Tracking JOIN

Sample Type

- Sampling - Routine
- Gauging
- Sampling - Wet Weather

WEST Project Rivers

What is being assessed in the model?



Water Framework Directive set parameters critical for protecting river ecology.

How will the findings be used going forward?

1. Regulatory Requirements
2. Ecological Health Indicators

3. Pollution Source Identification
4. Compliance and Management

WEST water quality modelling strategy

Evidence base for the identification of catchment pressures and ensure asset improvements delivered are proportionate to environmental needs and undertaken in a sustainable manner.

The ethos of the catchment modelling strategy will be to administer the polluter pays principle to derive capital and operational efficiencies to meet global water quality targets.





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Fish Assessment

Mark Magee

Tetra Tech, Water Environment

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Irish Water



Fish Assessment

Objective

A collaborative approach between NIW and UE will be undertaken to identify future areas of review based on catchment modelling strategy and areas in need of water quality improvements which will inform the fish assessment to be undertaken as part of the WEST Project.

1. Water Quality Monitoring Assessment
2. Catchment Modelling Review
3. Fish Habitat Surveys



Water Quality Monitoring Assessment



Assessment of the data collected under the extensive water quality monitoring programme will be reviewed by Tetra Tech and Paul Johnston Associates

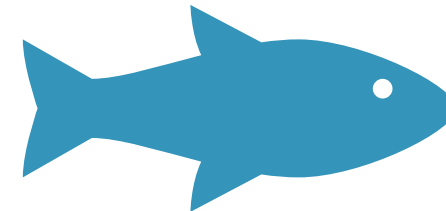


The condition of monitored rivers and the ability to support a sustainable fish population, particularly salmonids, will be determined by comparing the different parameters against the Environmental Quality Standards required for compliance with Water Framework

Catchment Modelling

- Review of outputs

- Undertaken in the context of the environmental quality standards and the potential impact on the receiving rivers
- Where the modelling indicates that the impact from NI Water and UE assets is significant and impacting on the biological elements of ecological status then these river reaches will be prioritised for fish habitat surveys.



Fish Habitat Surveys

- The Lough Melvin Action Plan, (Paul Johnston Associates, 2023) identified that an important factor in the management and conservation of the Melvin fish stocks will be establishing a detailed inventory of fish habitats in the inflowing rivers
- Inland Fisheries Ireland Survey - Lough Melvin Catchment Electrofishing Survey 2022-2023
- WEST Project will engage PJA to undertake Habitat Surveys in the Fermanagh inputting Tributaries
 - Roogagh River
 - Tullymore River

Lough Melvin Catchment Action Plan



pauljohnstonassociates
FISHERIES CONSULTANTS

September 2023



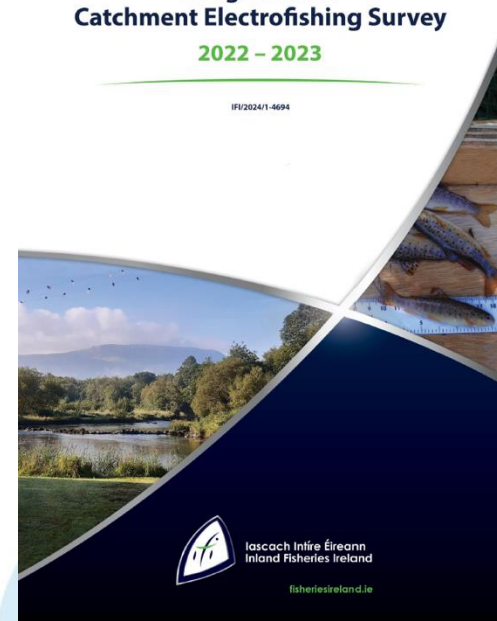
Funded by the Department of Rural and Community Development

This project received grant aid from Leitrim Local Community Development Committee under the Rural Development Programme (RDP) which is financed by the Irish Government under the Rural Development Programme Ireland 2014-2022 and by the European Agricultural Fund for Rural Development.

Europe Investing in Rural Areas

Lough Melvin Catchment Electrofishing Survey 2022 - 2023

IFI/2024/1-4694



Inisíoch Iníre Éireann
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