



# An overview of the Shared Waters Enhancement & Loughs Legacy (SWELL) project



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This project has been supported by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body (SEUPB).

# IMPROVEMENT

This €35m EU-funded project aims to improve the quality of water in Carlingford Lough and Lough Foyle through the upgrade of wastewater assets on both sides of the border. The project's legacy will be the development of a unique ecosystem model that will support further improvements in these shared waters.

The funding available for this application falls under the Environment Priority Axis 2 – Environment: Objective 2.3 – Improve water quality in transitional waters.

## INTRODUCTION

The SWELL project represents a cross-border partnership comprising NI Water, Irish Water, Agri-Food & Biosciences Institute (AFBI), Loughs Agency and East Border Region, working collaboratively to improve water quality within the shared waters of Carlingford Lough and Lough Foyle.

The partnership will utilise best practice, innovation and knowledge sharing to effectively achieve the outputs and results of the INTERREG VA Programme. Through engineering excellence, strategic catchment investigation and modelling, SWELL will deliver sustainable upgrades to wastewater assets on both sides of the border and make a positive contribution towards 'Good Ecological Status' under the EU Water Framework Directive.

The SWELL project is being funded under the European Regional Development Fund (ERDF).

The ERDF contribution to this application is €29.8m (85%) with €5.25m (15%) being made available through match funding from the Department of Agriculture, Environment and Rural Affairs (DAERA) in Northern Ireland and the Department of Housing, Planning and Local Government (DHPLG) in Ireland.

### PROGRAMME OUTPUTS

#### OUTPUT INDICATOR 1:

10,000 additional population served by improved wastewater treatment.

#### OUTPUT INDICATOR 2:

Two sewerage network and wastewater treatment projects to improve water quality in shared transitional waters.

## WATER FRAMEWORK DIRECTIVE

The European Water Framework Directive (WFD) is a wide-ranging piece of legislation covering all water bodies. The main aim of the WFD is to raise the quality of all water bodies to 'Good Ecological Status' or better. This means that not only should the chemical water quality of our rivers, lakes and coastal areas be at good status, but also all

associated biological elements such as plants, invertebrates and fish.

If any one of these elements is deemed to be below 'Good Ecological Status' then that water body will be determined to have failed to meet its target.





## THE SHARED WATERS

# CARLINGFORD LOUGH

Carlingford Lough is a sea lough located between Counties Armagh and Down in Northern Ireland and County Louth in Ireland.

It is approximately 15km long and 3.7km at its widest point. It covers an area of 50km<sup>2</sup> with an associated drainage catchment of approximately 475km<sup>2</sup>. The Newry (or Clanrye) River is the main freshwater flow into the lough.

The diversity of coastal habitats and the species present in the habitats of Carlingford Lough have made it of international importance. Areas within the lough have been designated as protected sites. The main species cultivated are pacific oysters and blue mussels under aquaculture.

Carlingford Lough is used for a variety of water sports, recreational fishing and bird/nature watching. Land in the vicinity of the lough supports different types of forest, belts of pasture, natural grassland, moors, heath lands and agricultural areas.





## THE SHARED WATERS

## LOUGH FOYLE

Lough Foyle is a shallow estuarine sea lough located on the northern coast of Ireland, between County Donegal in Ireland and County Londonderry in Northern Ireland.

It is approximately 25km long and 12km at its widest point. It covers an area of 186km<sup>2</sup> with an associated drainage catchment of approximately 3,700km<sup>2</sup>. The lough receives a large quantity of freshwater from the rivers Foyle, Faughan and Roe.

Historical records show that native oysters *Ostrea edulis* have been harvested from Lough Foyle since the 18th century. Today commercial fishing takes place within Lough Foyle for whelks, green crabs, lobsters, herring, mackerel and native oyster. Traditional static pots

are used for shellfish capture and towed nets are employed for pelagic species.

Recreational boating and angling take place throughout Lough Foyle mainly during the summer period.





## STRATEGIC APPROACH

The water quality within a coastal water body is affected by hydrodynamic, chemical and biological processes. Since environmental pressures do not recognise international boundaries and borders, the only mechanism for delivering improved water quality in the shared waters is to consider each lough catchment as a single ecosystem, impacted by polluters on both sides of the border.

SWELL comprises two separate projects - one for the Carlingford Lough drainage catchment and the other for the Lough Foyle drainage catchment. Each project will consist of a number of key activities including catchment studies, ecosystem modelling and capital upgrades (or construction packages) to deliver improvements to wastewater assets in Ireland and Northern Ireland.



## CARLINGFORD LOUGH

### Wastewater Network and Treatment Upgrades

The SWELL project identified key areas that have the greatest potential to improve water quality within the Carlingford Lough and Lough Foyle catchments.

The following tables outline the various packages of work in each catchment.



#### Newpoint Wastewater Pumping Station NI Water

Installation of a new screen on the incoming sewer and new overflow screens to reduce the impact of storm water spilling to the adjacent Newry River.



#### Warrenpoint Wastewater Treatment Works NI Water

Construction of a new treatment works to address potential loss of untreated wastewater to Carlingford Lough.

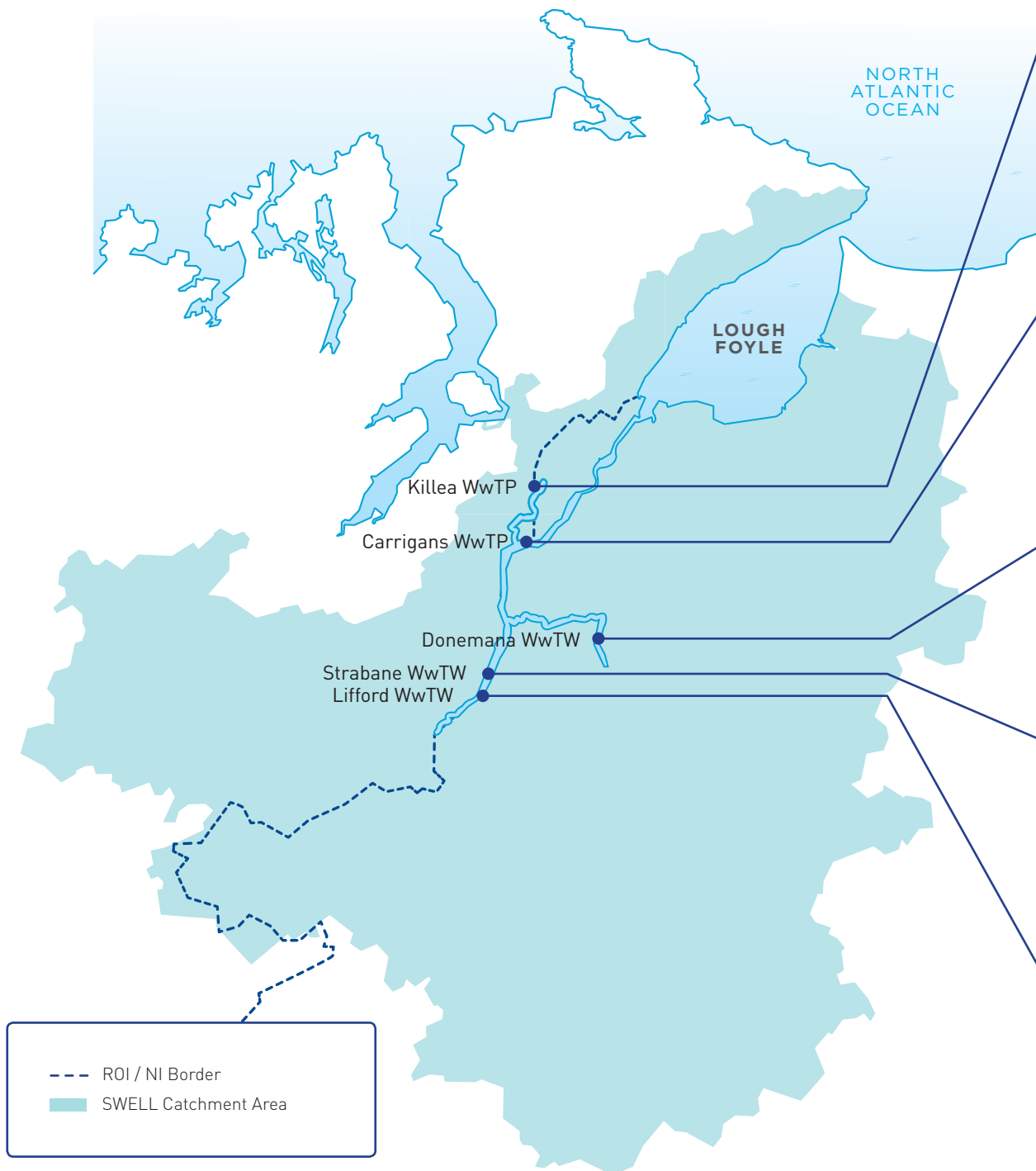


#### Omeath Network Improvements Irish Water

Upgrade capacity of the sewer network to transfer more wastewater to a new treatment plant that is currently being designed by Irish Water (separate to the SWELL project). This will involve surface water separation and redirection of storm flows.

# LOUGH FOYLE

## Wastewater Network and Treatment Upgrades



--- ROI / NI Border  
 ■ SWELL Catchment Area



### Killea Wastewater Treatment Plant Irish Water

Construction of a new wastewater treatment plant on the site of the existing plant as well as providing storm storage. This will reduce the risk of storm water flooding and protect the environment.



### Carrigans Wastewater Treatment Plant Irish Water

New pumping station and rising main to transfer wastewater from the existing septic tank at Carrigans to St. Johnston Wastewater Treatment Plant.



### Donemana Wastewater Treatment Works NI Water

Installation of a modern new treatment plant to cope with residential growth and produce higher quality discharge to the Burn Dennet River.



### Strabane Wastewater Treatment Works NI Water

Upgrade of existing treatment facility to include installation of a new inlet works, pumping station and fine screening facilities to protect the water environment.



### Lifford Wastewater Treatment Plant Irish Water

Building a new plant to provide secondary wastewater treatment for Lifford. Upgrading the sewer network to reduce the amount of overflow and improve water quality in the Foyle.



## WATER QUALITY IMPROVEMENTS

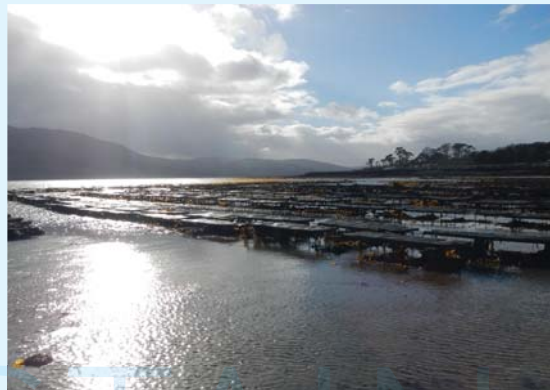
Compliance with the Water Framework Directive (WFD) requires an integrated approach to the sustainable management and protection of water resources across multiple sectors and national boundaries. SWELL adopts a cross-border management approach to ensure provision of the necessary water quality improvements within the shared waters.

The desired improvement to water quality will be implemented by means of increasing the quality and/or decreasing the quantity of wastewater discharging to receiving water bodies deemed to be impacting on the shared transitional waters. This 'end of pipe' pollutant load is the only mechanism by which the

project can be considered to have met its output indicators since many other external factors have an impact on achieving 'good' WFD status.

Although the Environmental Regulators have made significant progress on WFD implementation as part of the River Basin Management Plan process, many of the waterbodies within the Carlingford and Foyle catchments do not meet the requirements for 'Good Ecological Status'.

Significantly more work and investment is therefore required to tackle the complex issues and deliver the required water quality improvements with appropriate solutions.



## SUSTAINABLE CONSTRUCTION & INNOVATION

Sustainable practices are being incorporated into the design for all the SWELL wastewater asset upgrades. Such practices include for re-use of existing assets where possible; the use of materials with minimum embodied carbon; locally-sourced materials to reduce transport and promote the local economy and the efficient use of wastewater treatment technologies that have reduced energy requirements.

## LEGACY MODEL

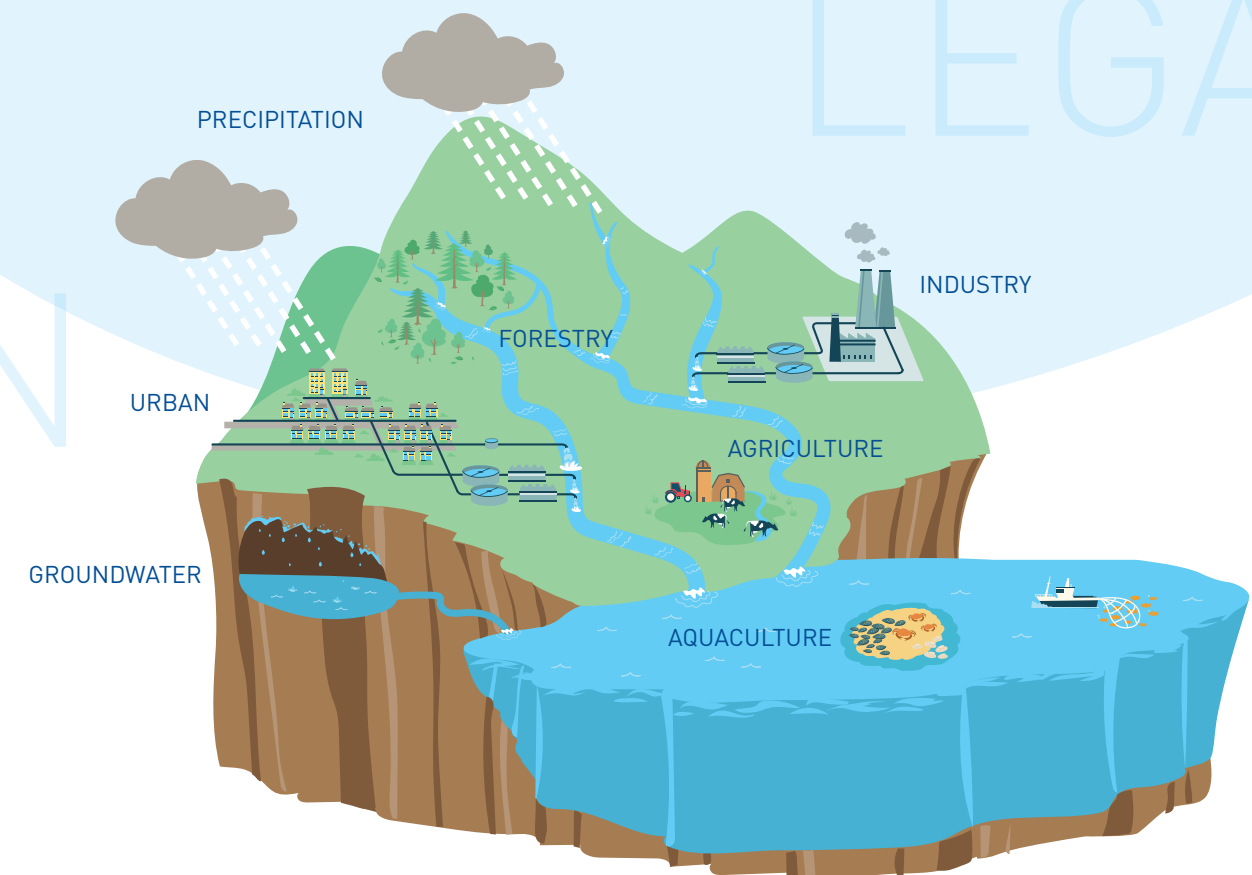
The SWELL project includes for an ambitious modelling strategy that seeks to develop an ecosystem 'legacy' model for both the Lough Foyle and Carlingford Lough drainage catchments. This ecosystem modelling approach with built-in source apportionment, represents a first-time integration of urban drainage, river, coastal and ecology models on a large scale catchment-wide basis.

Through extensive catchment investigations and the use of innovative modelling techniques, the SWELL ecosystem models can be used to track the pathways of nutrients and contaminants from wastewater, industrial or agricultural sources to determine their impact on the marine environment within both sea loughs.

The models will be used by the water utilities to facilitate water quality compliance assessments with respect to the EU Water Framework Directive and will inform

sustainable asset planning through the apportionment of bacterial and nutrient loading contributions from wastewater and diffuse agricultural sources. On completion of the capital wastewater asset upgrades being undertaken as part of the SWELL project, the models can validate that the required INTERREG VA programme outputs and results indicators have been achieved.

On completion of the SWELL project, the ecosystem models will be held in public ownership to provide a sustainable legacy tool for cross-border use by water utilities, environmental regulators and other stakeholders. Ultimately, these legacy models will provide a useful platform for future engagement and the progression of an evidence-based decision-making approach to legislative compliance that builds on the skills, relationships and investment planning techniques developed by the SWELL project.



## SWELL PARTNERS



### Northern Ireland Water NI Water

Northern Ireland Water is a Government-Owned Company (GoCo), set up in April 2007 to provide water and sewerage services in Northern Ireland. That involves the supply of 560 million litres of clean water a day for almost 1.8 million people as well as treating 320 million litres of wastewater a day.

NI Water is lead partner in the SWELL project. NI Water will deliver the programme of capital upgrades in Northern Ireland and working closely with project partners, will ensure the project is delivered in the most effective, efficient, sustainable and strategic way possible.



### Irish Water

Irish Water is Ireland's national water utility responsible for providing water and wastewater services throughout Ireland. From coast to coast, Irish Water ensures delivery of the highest quality drinking water to customers' taps every day and ensures that wastewater is properly treated and safely returned to the environment. Irish Water is working closely on a cross-border basis with the SWELL partners to improve water quality in our shared waters by delivering upgrades to the wastewater network in Ireland and supporting the delivery of a legacy model.



### Agri-Food and Biosciences Institute AFBI

AFBI is a leading provider of scientific research and will undertake specialist scientific investigation and complex modelling for the SWELL project.



### Loughs Agency

A North-South co-operation body, Loughs Agency's role is to promote the development of the loughs with respect to aquaculture, fishery and marine issues. Together AFBI and Loughs Agency will provide resources for undertaking the catchment studies and associated analysis to include the 'legacy' ecosystem model.



### East Border Region EBR

EBR have extensive experience of working on cross-border, EU-funded projects and will play a very specific role in the SWELL project with responsibility for ensuring all partners comply with all INTERREG rules and procedures, thus reducing the risk to the Lead Partner.

## PROJECT TIMELINE







#### MATCH FUNDERS



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