Restoration of Durrow floodplain alluvial woodland, Ireland

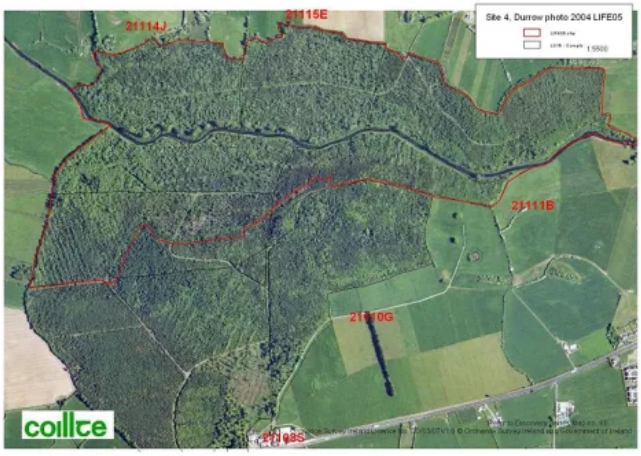
Year of issue

2025

Summary

This site was one of nine included in the LIFE05 project to restore priority woodland habitats in Ireland. The Durrow site lies on the floodplain of the River Erkina and had been affected by planting of non-native conifers and associated drainage. A network of shallow ditches across the site was reducing the retention time of floodwaters; to counter this, c.350 ditch-dams were installed (installation 2009, LIFE05/NAT/IRL/000182). Since then, Durrow has been confirmed as part of the River Barrow & River Nore SAC (002162), where alluvial forests (91E0*) are a qualifying interest; assessments also record calcareous “petrifying springs” (7220*) within the alluvial woodland along the Erkina floodplain, and describe Durrow as one of the largest remaining alluvial woodlands in Ireland. At catchment scale, EPA WFD characterisation shows the downstream waterbody ERKINA_050 declined from Good to Moderate status with elevated phosphate and agriculture as a significant pressure, framing ongoing risks to riparian habitats. Nationally, Coillte’s LIFE05 programme restored >550 ha of priority native woodlands across nine Natura 2000 sites (including Durrow). Locally, the Durrow Biodiversity Action Plan 2023–2028 highlights the Erkina, the Nore and associated woodlands within the SAC.

Photo Gallery



Location

52.8518, -7.412983

Project

NWRM

National ID

Ireland_02

Sector

Hydromorphology

Installation Date

2006–2009

Implementation status

Completed

Overview

Location of the project

The site is located on the floodplain of the River Erkina, which is a tributary of the River Nore, in southeast Ireland.

Country

Ireland

NUTS2 Code

Southern and Eastern

Sponge measures implemented in the case study

Floodplain restoration and management

Check dams

Objectives

Restore 95 ha of Annex I alluvial woodland.
Block 350+ drains to raise water table.
Remove non-native species across the site.
Promote regeneration of native wet woodland vegetation.

Involved partners

Authority type	Authority name	Authority role	Comments	Authority responsibility

Forest owners	Coillte Teoranta [The Irish Forestry Board]	Implementation	Coillte is the commercial company responsible for Irish forestry. They were responsible for the initiation and implementation of this project, based on improvements they wished to make to forests on their own land.	Responsible
Nature park	National Parks and Wildlife Service (NPWS)	Implementation	Co-implementer; provided conservation expertise, monitoring, and habitat assessment.	Responsible
Other	EU LIFE-Nature	Financing	Main financial backer; funded restoration under EU Habitats Directive goals.	Supporting
NGO	Woodlands of Ireland	Determination of design details of the measure	Contributed ecological input and promoted traditional woodland management practices.	Supporting
Private property owners	Local stakeholders/community	Other	Participated in awareness-raising and informal monitoring.	Supporting

Site Information

Climate Zone

Cool temperate moist

Precipitation

1000.00 mm

Temperature (°C)

10.00 °C

Elevation range

87 m

Slope range

0-1%

Vegetation class

Riparian alluvial woodland dominated by native wetland species (e.g., alder, willow).

WFD Ecological status

Moderate

WFD Chemical status

Unknown

Water quality status

In sub-catchment Nore_SC_050, water body ERKINA_050 declined to Moderate status with elevated phosphate; likely pressures are agriculture and hydromorphology from drainage district works.

Design and Implementation

Project scale

Micro

Project scale specifications

The Durrow project restored 95 hectares within a larger 550.8-hectare national LIFE programme. It focused on one Natura 2000 site, indicating a site-level but impactful intervention.

Project area

95

Project area specifications

Entire area subject to hydrological and vegetative intervention (e.g., damming, planting, invasive removal).

Basis of design

Designed for seasonal water retention, not extreme storm events. Aimed to mimic natural floodplain dynamics, not meet specific engineered storm thresholds. The measures are designed to restore the alluvial woodland habitat by holding water on the floodplain for longer.

Design capacity

The measures are designed to hold back water and increase water levels in the alluvial woodland, increasing retention time on the floodplain. There is no specific design capacity.

Principles

Restoration followed EU Habitats Directive guidance, aiming to re-establish natural hydrology and native species composition in a degraded alluvial forest. The approach prioritized ecological integrity, minimal intervention where possible, and natural regeneration. Public awareness and long-term sustainability were integral to the design.

Constraints

Providing the desire/intention is to restore habitat upstream and there are no areas local to the drainage that should not be put at risk of higher water levels, there are no constraints to this type of measure.

Favourable preconditions

These measures could be applied anywhere that woodland or other habitat has been drained, although the details of the approach will vary depending on the soil type (in this case, alluvial deposits). Existing semi-natural topography, low gradient, flood-prone landscape, and remnant native vegetation enabled successful hydrological restoration.

Financing

Total cost

2595000.00 €

Costs investment information

The total LIFE project cost was 2.284 million euros, which was spread across 9 sites. No information has been obtained about the distribution between sites or the costs specifically attributable to the relevant hydrological measures.

Costs land acquisition information

No land aquisition was needed.

Costs operation maintenance information

Ongoing monitoring and maintenance was planned in an "After LIFE Conservation Plan"

Costs disposal decommissioning information

Not relevant as it is a permanent restoration.

Financing authorities

Authority name	Type of funding	Comments	Financing share
European Union	EU-funds: LIFE+	EU-LIFE05	50 %

Authority name	Type of funding	Comments	Financing share
Coillte	Private funds	—	50 %

Compensations

Non

Compensation remarks

No compensation was required, as the land was already owned or managed by Coillte (state forestry company).

Policy and Governance

Policy description

The main driver for the work was deterioration of priority habitat, due to planting of non-native conifers and drainage. The drainage meant that floodwaters were not being retained on the floodplain.

Land ownership

Coillte Teoranta (the Irish Forestry Board) owns the Durrow alluvial woodland and implemented the works.

Policy targets

Improved Biodiversity

Target remarks

Reinstate natural hydrology. Improve floodplain biodiversity, enhance water retention, reduce flood risk, and increase public awareness. Restoration was designed around ecological and hydrological targets aligned with EU conservation obligations, while also producing co-benefits for water management.

Policy pressure

Directive	Relevant pressure
WFD identified pressure	Hydromorphological degradation
WFD identified pressure	Poor ecological status
Floods Directive identified pressure	Increased runoff due to drainage
Other EU	Habitats Directive: Unfavourable conservation status of Annex I habitats.

Pressure remarks

Related WFD pressures include hydromorphological alterations and nutrient pressures from past land use.

Policy impact

Directive	Relevant impact
WFD identified pressure	Supports good ecological status via wetland restoration.
Floods Directive identified pressure	Helps mitigate localized flood risk by restoring flood retention functions.
Other EU	Habitats Directive: Contributes to Favourable Conservation Status of 91E0 habitat.

Impact remarks

Though biodiversity-focused, the project has tangible water regulation and flood prevention impacts aligned with EU water policy goals. The project directly mitigates habitat loss and altered floodplain dynamics through nature-based solutions.

Requirement directive remarks

The project meets cross-directive goals through a synergistic, site-based nature restoration strategy.

Policy challenges requirements

Managing invasive species; long-term habitat management and public engagement.

Part of a wider plan

Oui

Wider plan

Wider plan type	Wider plan focus	Name	Comments
—	Environment & Biodiversity	LIFE project LIFE05 NAT/IRL/000182	The title of the LIFE project was "Restoring priority woodland habitats in Ireland". It covered 9 sites, with the Natural Water Retention Measure installations at one site (Durrow).
National	Environment & Biodiversity	National Biodiversity Plan (Ireland)	Durrow aligns with national targets for woodland recovery.

Public consultation

Oui

Consultation activities

Activity stage	Activity type	Comments

Implementation phase	Interpretation boards	Two interpretation boards at Durrow
Screening phase	Project website	Set up at project commencement and updated through the project and with final deliverables
Implementation phase	Production of project brochures	Introductory brochure produced early in the project, with a final results brochure on completion. Hard copies printed for dissemination locally and internationally
Implementation phase	Annual "woodland walk"	Held annual during the project duration at three demonstration sites (although Durrow was not one of them)
Screening phase	Public consultation meetings	In total eight events in year 1, 20 in year 2, 14 in year 3 and seven in year 4
Implementation phase	End of project conference	—

Has contractual arrangements

Non

Impacts and Monitoring

Monitoring System

Monitoring parameters

Water level monitoring in dipwells. Vegetation monitoring by quadrat surveys and aerial imagery. No monitoring in adjacent river.

Maintenance

Maintenance requirements

Ongoing control of invasive species and maintenance of dams/fences.

Impact Assessment Methodology

Performance impact assessment method

Edge of Field/Plot

Performance impact estimation information

Dipwells were installed at the start of the project, which were used to inform the requirements for measures, as a result of which coffer dams were installed on ditches. Dipwell monitoring was continued after installation. Photographic documentation is also used.

Biophysical impact assessment method

Water table monitoring and vegetation plots.

Socio-economic Impacts

Direct benefits information

Enhanced flood mitigation downstream.

Ancillary benefits information

Creation of employment through site works (damming, tree removal).
Increased eco-tourism and education via trails and interpretive signage.

Biophysical impacts: Hydrology

Hydrological effects

Restoration of seasonal inundation patterns; raised water tables; stabilized floodplain hydrology.

Information on retained water

Water is retained through blocked drains and re-wetted soils; quantified volumes not provided.

Information on runoff reduction

Qualitative reduction in runoff due to water retention by floodplain and rehydrated soils.

Information on Restoring hydraulic connection

Ditch-blocking reconnected floodplain to river hydrology, enhancing lateral water movement across site.

Information on reducing flood risks quantity

Reduced via water retention on-site, delayed runoff, and restored floodplain buffering.

Biophysical impacts: Biodiversity

Improved biodiversity

Oui

Information on improved biodiversity

Along with other measures in the project (removing non-native species), damming the ditches allows the alluvial woodland habitat to be restored.

Significant habitat restoration of Annex I alluvial woodland.
Native wet woodland species (e.g. alder, willow) recolonized.
Enhanced bird, insect, and understory flora diversity.
Specific species/community indexes not given, but high biodiversity gains confirmed through vegetation surveys.

Biophysical impacts: Others

Ecosystem impact climate regulation

No specific impact

Increased evapotranspiration information

Likely increased due to more vegetation cover and soil wetness, but no quantified value.

Other biophysical impacts

Enhanced microclimate regulation and re-establishment of natural successional processes in riparian zones.

Lessons Learned

Key lessons

Main lessons taken from this site (and the project as a whole included):
- Pre-implementation monitoring was crucial to determine appropriate actions, such as installing over 350 dams to restore hydrology.
- Public engagement ensured community understanding and support for the measures.
- Stakeholder attitudes and communication activities were significant success factors.

Drivers

Driver type	Driver role	Comments
Organisation committed to it	Main driver	The project took place as a result of Coillte's commitment to restoring priority habitats

Success factors

Success factor type	Success factor role	Comments

Communication activities	Main factor	These included signs, guided walks, and outreach for schools and visitors. They were key to local understanding.
Financing possibilities	Main factor	Made possible by access to LIFE Nature and matching national funds.
Attitude of relevant stakeholders	Main factor	Coillte collaborated actively with government agencies and NGOs.
Attitude of decision makers	Main factor	Proactive. The Forest Service supported the project and provided monitoring via the National Forest Inventory.
Existing institutional framework	Secondary factor	Clear and functional partnership among Coillte, NPWS, Forest Service, and Woodlands of Ireland.

Cost effectiveness

Not quantified, but restoration goals were exceeded, suggesting high effectiveness.

Flexibility / Adaptability

The type and location of dam structures were adjusted based on site-specific data (hydrology, topography, vegetation). Flexibility was also shown in species selection, favouring alder, willow, ash, or birch depending on micro-site water conditions.

Transferability

The project is highly transferable to other sites with degraded alluvial forests due to drainage or forestry intensification, hydromorphic or organic soils, possible hydrological connectivity with nearby rivers or floodplains.

Factors that complicate transfer : Dependence on EU funding (e.g. LIFE), not always available elsewhere. Land use change (e.g. abandoning intensive forestry) may be harder to justify or negotiate on private lands than public land ownership here with Coillte.

Basin characteristics influence

Local hydrology and former drainage systems significantly affect water retention outcomes.

Sources

Sources

LIFE 3.0 - Restoring Priority Woodland Habitats in Ireland

Coillte Woodland Restoration in Ireland

Native Riparian Woodlands – A Guide to Identification, Design, Establishment and Management