Replacement of the bridge on the Moulin de la Rive road in Locquirec, France

Year of issue

2025

Summary

At Locquirec’s Moulin de la Rive, the old aqueduct and undersized culvert on the Lapic blocked fish migration and sediment transport and created a drop that proved impassable, despite the site being a priority action zone for eel and sea trout. Rescue electrofishing during works confirmed the barrier effect, with far fewer eels and trout upstream than downstream. The project replaced the structure with a 20 m precast frame bridge set 60 cm lower than the former invert, restored a more natural bed with stone and blocks, and added a concrete control wall at the inlet so that high flows can safely spill into the upstream wetland reedbed. The design also integrates a faunal shelf for mammals and bat roosting blocks under the deck, and it secured vulnerable sewer lines that lay near the channel bed. Implementation required careful coordination around numerous underground utilities and a tight spring window to avoid the summer tourism season, combined with strong, proactive communication with residents, surfers and local associations. Traffic on RD64 was diverted from 17 March, and the route reopened ahead of schedule on 30 April 2025. Funding came from Agence de l’Eau Loire-Bretagne, Région Bretagne and Morlaix Communauté. Early observations show fish passage working, otter prints upstream and downstream, macrophyte recovery and rapid revegetation of disturbed zones. The project contributes to WFD ecological continuity targets in a basin facing multiple pressures, including agricultural pollution, hydrocarbons from runoff and intensive anthropogenic footprint.

Photo Gallery








Location

48.687, -3.674

Sector

Forest

Installation Date

2025

Implementation status

Completed

Contact

Service Public de l’Eau An Dour

Overview

Location of the project

Moulin de la Rive, Locquirec, Finistère, on the river Lapic

Country

France

NUTS2 Code

Bretagne

Sponge measures implemented in the case study

Appropriate design of roads and stream crossings

Removal of dams and other longitudinal barriers

Objectives

Restore ecological continuity for eel and sea trout

Re-establish sediment transport

Reduce submersion risk at 30 and 100-year horizons while enabling flood expansion into the upstream reedbed

Protect vulnerable sanitation networks at the crossing

Involved partners

Authority type	Authority name	Authority role	Comments	Authority responsibility
Local water authority	An Dour (for Morlaix Communauté)	Initiation of the measure	Client, coordination, communication, works delivery	Responsible

Authority type	Authority name	Authority role	Comments	Authority responsibility
Architects / Engineers	Verdi Environnement	Determination of design details of the measure	Pre-project diagnosis	Supporting
—	ING Concept	Determination of design details of the measure	Design and works phases, technical details, public procurement.	Supporting
Architects / Engineers	Colas	Implementation	Works execution including installation of the 20 m frame.	Supporting
National water authority	DDTM	Other	Regulatory support and validation.	Supporting
Regional / sub-national water authority	DDTM	Other	Regulatory support and validation.	Supporting
Other	Fisheries stakeholders	Other	Fédération de pêche du Finistère; AAPPMA Morlaix. Technical inputs, fish rescue, continuity.	Supporting
Local water authority	Locquirec Municipality	Implementation	Institutional partner and communication.	Supporting
Other	Morlaix Communauté transports	Other	Bus detours and schedule adjustments	Supporting
NGO	Local associations.	Other	Surfing Playa; Surfing Locquirec; Les Amis du Moulin de la Rive; FORCE5; local conservation groups. Local stakeholders engaged via meetings and communications.	Supporting

Site Information

Climate Zone

Cool temperate moist

Precipitation

995.00 mm

Temperature (°C)

11.75 °C

Elevation range

0 - 10 m

Vegetation class

Reedbed and wetland upstream, macrophytes recolonising channel margins.

WFD Ecological status

Poor

WFD Chemical status

Unknown

Water quality status

Barrier to ecological continuity, agricultural pollution and siltation from vegetable production, hydrocarbon inputs from runoff on impervious surfaces, strong anthropogenic footprint at the crossing

Design and Implementation

Project scale

Micro

Project scale specifications

Single site intervention at one crossing on the Lapic

Project area

20 m long frame bridge.

Principles

Consensus-seeking design acceptable to local users

Lower-impact construction approach with sheet piles and limited earthworks to reduce nuisance

Frame set 60 cm lower than previous invert to restore grade

Inlet control wall to allow floodwater to spread onto the upstream reedbed

Faunal shelf under deck and bat roosting blocks

Channel bed recharge with stones and blocks for habitat diversity

Factor constraints

High density of underground utilities and need to maintain service

Sandy soils

Busy departmental road requiring detours and bus rescheduling

Financing

Total cost

430857.00 €

Total cost information

Project management mission (ING Concept/Verdi Environnement) = €26,529:

Geotechnical Study (Kornog Géotechnique) = €7,782;

Preparatory Work (Kerne Pruning: Felling/Girobroyage) = €17,562

Works (COLAS SA) = €366,087;

Communication (Sky Arts/Norwest Design/Le Friant advertising) = €12,897

Financing authorities

Authority name	Type of funding	Comments	Financing share
Agence de l’Eau Loire-Bretagne	Sub-national funds	—	50 %
Région Bretagne	Sub-national funds	—	20 %
Morlaix Communauté	Local funds	Co-financing and client via An Dour	30 %

Compensations

No

Policy and Governance

Policy description

Part of a territory contract with the Water Agency aiming at achieving good status on three degraded water bodies by 2030.

Land ownership

Road: Département. Adjacent parcels: multiple private owners. Delegated project management arrangement with the Département to An Dour.

Target remarks

Restore ecological continuity and improve water quality at the crossing
Maintain service for transport and sanitation networks during works

Pressure remarks

Ecological barrier, agricultural pollution, hydrocarbons, intensive local footprint.

Part of a wider plan

Yes

Wider plan

Wider plan type	Wider plan focus	Name
Catchment-based	Water	Territory contract with Agence de l’Eau Loire-Bretagne

Public consultation

Yes

Consultation activities

Activity stage	Activity type	Key issues	Comments
Implementation phase	Intensive communication	Broadly supportive public after intensive communication	Professional videos and social media series, photo exhibition, educational panels
Screening phase	Information meetings with local groups, municipal presentation, public meeting	—	With about 80 participants

Has contractual arrangements

Yes

Contractual arrangements

Arrangement type	Name	Role
Institutional arrangement	Delegation of project management with the Département.	Department is the road owner. It delegated to An Dour the project owning for this site and for a limited time.

Impacts and Monitoring

Monitoring System

Monitoring parameters

Baseline biological indices IPR and I2M2 at state 0

Follow-ups planned at 2 and 5 years

Visual inspections of hydraulics and wetland expansion

Maintenance

Maintenance requirements

An Dour oversees for one year post-works, then the Département for road-related maintenance including debris and vegetation removal.

Impact Assessment Methodology

Biophysical impact assessment method

Qualitative observations to date; quantitative follow-ups planned through standard biological indices.

Socio-economic Impacts

Direct benefits

Positive site feedback on the amenity after works; RD64 reopened earlier than planned.

Biophysical impacts: Hydrology

Information on retained water

The undersized aqueduct–culvert and downstream drop have been removed. The new 20 m frame is set 60 cm lower to remove the hydraulic step and restore a continuous bed profile. An upstream regulating wall lets the Lapic pass up to about 3.2 m^3/s through the frame; beyond that threshold the upstream reedbed intentionally takes flow, activating storage and reducing downstream peaks. Visual checks confirm upstream floodplain activation during high water. The upstream end block also narrows the section under flood to protect nearby houses, as designed. Overall effect: reconnect baseflows, re-engage flood storage on the wetland, and make high flows safer for people and infrastructure.

Biophysical impacts: Biodiversity

Information on improved biodiversity

Fish rescue during works found 160 eels and 81 trout downstream versus 60 eels and 30 trout upstream, confirming the former barrier effect. Barrier removal and a lowered invert now restore longitudinal connectivity for eel and sea trout. Bed recharge with stones/blocks increases habitat heterogeneity. A concrete faunal shelf below the deck provides safe passage for semi-aquatic mammals; blocks fixed to the soffit offer bat roosting features. Early post-works signs include visual fish passage, otter footprints upstream and downstream, macrophyte recolonisation below the structure, and rapid re-greening of worked areas by reeds and sedges.

Biophysical impacts: Water & Soil Quality

Information on water quality overall

The works secured vulnerable sewer lines that lay at bed level to prevent rupture risks after the bed lowering, with protective encasement and replacement of sections to limit parasitic inflows. Local authorities report that after the project, Lapic water quality is expected to improve from “poor” to “moderate,” with a basin-wide sanitary action order in preparation to jointly address bacterial sources (collective, individual, and agricultural). These steps complement the crossing redesign by reducing accidental pollution risk and improving flushing of fine sediments.

Lessons Learned

Key lessons

Know your upstream wetlands and hydraulic control points to right-size the crossing and safely reactivate flood storage. Engage early and communicate a lot to keep acceptance high when closing a key road. Plan around utilities and protect sanitation lines when lowering the channel. Prefer a sober, low-nuisance construction approach to cut truck movements, noise and pollution. Build fauna and roosting features into the crossing rather than treating them as add-ons. Align the site project with basin-scale programmes and transport services so detours and public service continuity are managed from day one.

Barriers

Barrier type	Barrier role	Comments
Other	Main barrier	Tight programme and risk of delays
Other	Main barrier	Complex subsurface networks and sandy soils
Other	Main barrier	Social and economic constraints linked to road closure

Drivers

Driver type	Driver role	Comments
Balancing different objectives	Main driver	Significant ecological and risk-management stakes
Organisation committed to it	Main driver	Availability of subsidies and a territory contract framework

Success factors

Success factor type	Success factor role	Comments
Existing staff and consultant knowledge	Main factor	Competent MOE and contractors
Public participation	Main factor	Early and sustained multi-stakeholder engagement, including owners and local groups
Communication activities	Main factor	Intensive, anticipatory communication
Successful coordination between authorities	Main factor	Good coordination across technical, financial and local actors

Cost effectiveness

Qualitatively strong delivery with early reopening and reported lower works outturn than prevision in press coverage.

Transferability

Highly transferable as part of basin-wide continuity programmes, provided it is embedded in broader sponge strategy with agricultural partnerships and GI measures.

Sources

Sources

Travaux | Moulin de la Rive

De gros travaux vont libérer l’embouchure du Lapic, à Locquirec

EN IMAGES. À Locquirec, un chantier hors norme au Moulin de la Rive

À Locquirec, pour améliorer la qualité de l’eau du Lapic, le pont du Moulin de la Rive sera en chantier à partir de mars

À Locquirec, au Moulin de la Rive, le pont cadre est en place

« Le défi était important, il a largement été relevé » : après les travaux menés au Moulin de la Rive, à Locquirec, la qualité de l’eau du Lapic passera de médiocre à moyen

Finistère. Travaux : deux mois de déviation pour la RD-64 à Locquirec