# 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

Non

## 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

Oui

### Wider plan

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

### Public consultation

Oui

### 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

Oui

### 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