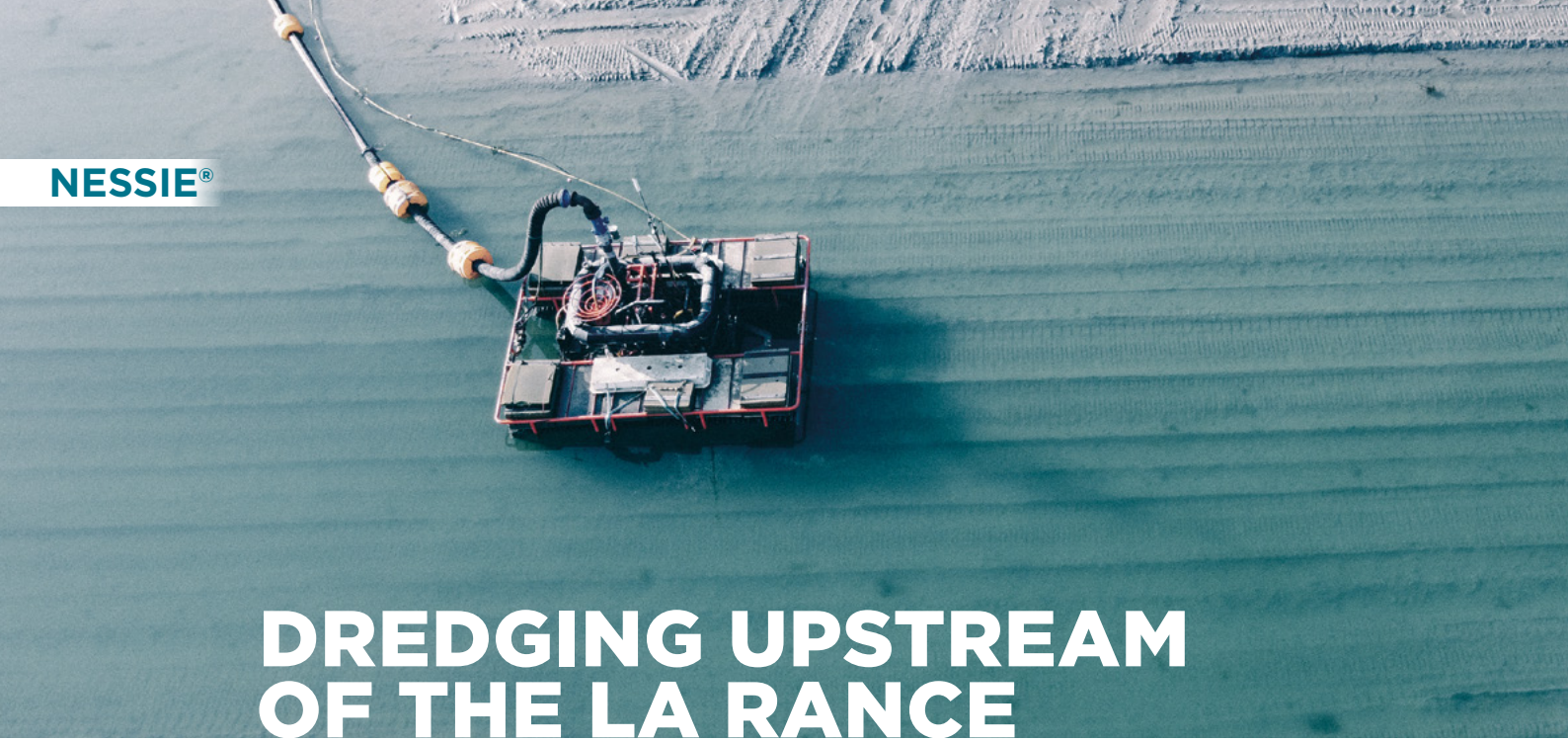
NESSIE®



DREDGING UPSTREAM OF THE LA RANCE TIDAL POWER PLANT

PROJECT TITLE
La Rance tidal power plant

CLIENT
The Public Territorial Basin Authority "Rance Frémur Baie de Beaussais"

LOCATION
La Richardais Harbour (35), France

YEAR OPERATION
2021

PROJECT OVERVIEW

The tidal power plant of La Rance, in Brittany, is regularly blamed for causing a silting phenomenon in the upstream bay, affecting its harbours and beaches.

In 2021, the Public Territorial Basin Authority "Rance Frémur Baie de Beaussais" carried out an experimental dredging operation in the harbour area of La Richardais, in order to test the deployment of the amphibious robot NESSIE®, developed by Watertracks.

The main objective was to reduce siltation in the navigation channel by extracting up to 20,000m^3 of sediment, discharged offshore through the plant, while minimizing environmental impact on this sensitive site (close to Natura 2000 areas, fishing, and mooring zones).

Remotely operated from the shore, NESSIE® enabled precise hydraulic dredging, with sediment pumped through a 1.2km pipeline. The discharge point, ballasted on the seabed in the main channel, promoted dispersion into the ebb current at falling tide, ensuring natural transport offshore.

The project was subject to strict monitoring: pre- and post-dredging bathymetric surveys on both extraction and discharge areas to validate the experimental process, turbidity control, assessment of impacts on wildlife and local activities, and compliance with a tight schedule (March–April 2021).

This experiment made it possible to assess the efficiency and robustness of this innovative technology.

TECHNICAL APPROACH & IMPLEMENTATION

For this project, Watertracks proposed an innovative and environmentally friendly dredging solution using the underwater robot NESSIE®, designed for precise sediment removal without the use of a floating dredger with diesel engines.

NESSIE® operated directly on the sediment bed, thus reducing visual and noise disturbances, while being remotely controlled from the shore. The system integrates advanced navigation, real-time monitoring of production and bathymetric changes, and can be equipped with adaptive tools for different types of sediment.

Equipped with to its hybrid GPS/RTK and acoustic navigation system, NESSIE® was able to operate with precision on the seabed of La Richardais harbour in total absence of visibility, adapting to tidal rhythms and water level variations, both day and night.

The generator used to supply the robot with electricity, located onshore and surrounded by a noise barrier made of hay bales, helped limit noise disturbance. Local residents expressed their appreciation for the absence of noise during the works.

"Watertracks' added value lies in its technological innovation, operational flexibility, and strong commitment to safety, environmental protection, and continuous improvement."

RESULTS & PERFORMANCE

- **20,000m³** of in-situ sediment discharged offshore.
- Work in saltwater.
- **Work day and night, 7/7,** at falling tide.
- **Zero** impact on migratory birds.
- **Zero** accidents.

WATERTRACKS

TEASER – Photos credit: Watertracks – 10/2025