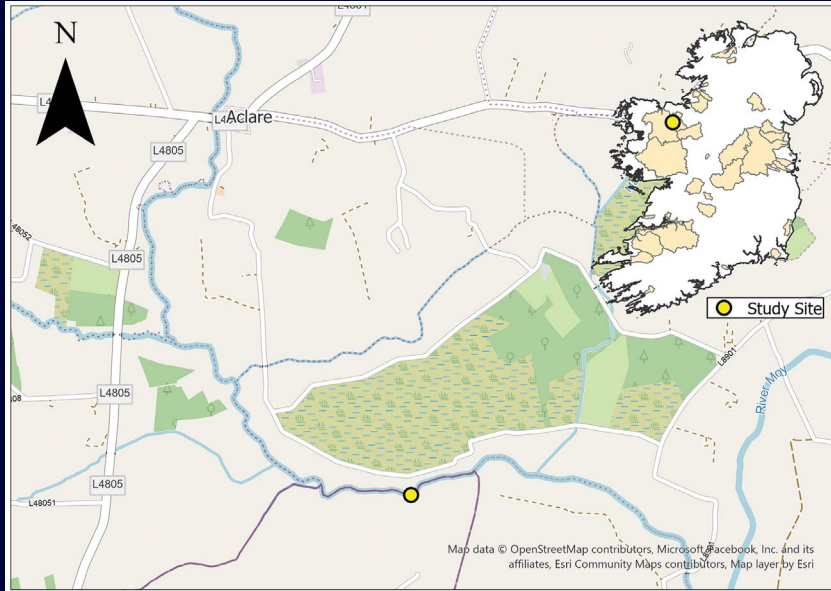




4. Soft Engineering: Eignagh River, Moy catchment



Location of Study Site on the Eignagh River where timber deflectors were installed.
Inset: location within OPW catchments.

Project Background

The Eignagh River is located near Aclare, Co. Sligo and is part of the Moy Catchment.

A section of arterially drained channel was selected for this project. The channel morphology (physical attributes of the river) was very uniform for flows, depths, and substrate.

The project included the installation of timber deflectors in the Eignagh River. The aim was that the deflectors would alter velocities (speed of water flow) and generate scour pools therefore diversifying habitat for fish. The woody material used was available on site, as it was already chopped down from the previous tree maintenance cycle carried out by personnel from the Office of Public Works.

Methodology

Timber deflectors were installed in the Eignagh River in July 2019, two of which were paired deflectors and one individual deflector. The ford located at this site influenced site selection and facilitated access of heavy machinery to complete the installation works.

In September 2022, a physical survey was completed at the survey site using a Carlson BRX7 GNSS receiver, which was used to collect point data with a high-resolution GPS signal. Bed elevation (metres) and velocities (metres/second) were recorded in a grid format to identify how the deflectors influenced each physical attribute.

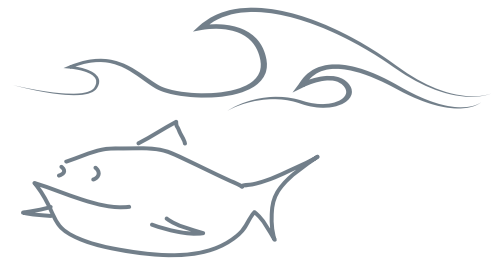


Photo of one completed pair of deflectors taken in July 2019 (left) and again in March 2023 (right).
All photos were taken in low water levels.

What was the result?

Contour plots were generated for visualisation purposes. It is evident from the plots that the woody structures influence bed levels and velocities.

The first plot shows bed level is higher at the edges (dark brown colour) behind the deflectors where substrate is deposited. Lower bed levels are evident between the structures where velocities are greatest and as a result deepening.

Velocities are greatest between the structures. The pink colour represents the higher velocities (0.192m/s – 0.155m/s) recorded at this site, whereas the blue represents slower flows (0.092m/s – 0.044m/s).

Velocities through structures \uparrow
 Velocities behind structures \downarrow
 Bed elevation through structures \downarrow
 Bed elevation behind structures \uparrow

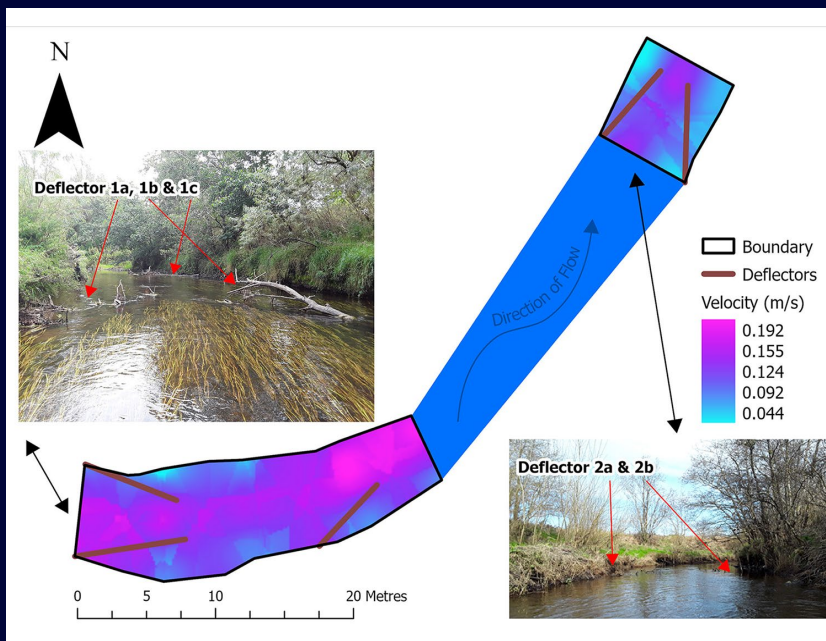
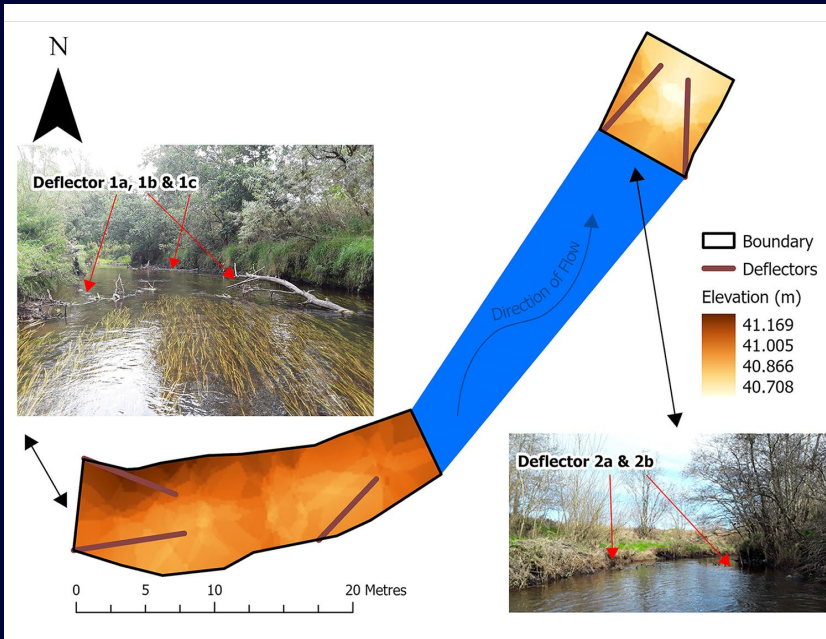
Deflectors improve:

- 1) flow conditions
- 2) substrate movement
- 3) refuge habitat
- 4) biodiversity

Deflectors create variable flow conditions, by narrowing flow paths, and in turn deepen mid-channel areas. They positively influence drained channels where flows are often homogenous. Flow diversity is important for migratory fish species which utilise diverse flows for different stages of their lifecycle. The trapping of material behind these structures provide habitat to support lamprey. Over time the exposed sediment will vegetate providing refuge habitat for other local wildlife improving biodiversity.

Future Monitoring Plans

- * re-survey the structures and assess their longevity
- * identify learnings for future applications of woody deflectors



Bed levels (top) and velocities (bottom) recorded throughout the study site in 2022, where deflectors were installed in the Eignagh River in 2019.



Further information:

Project website: <https://www.fisheriesireland.ie/what-we-do/research/environmental-drainage-maintenance-research-programme-edmrp>
 IFI publications: <https://www.fisheriesireland.ie/publications> search for EREP Annual Report 2019
 OPW Environmental Management: <https://www.gov.ie/en/policy-information/5fc871-environmental-activities/>