

## The potential for Natural Water Retention Measures (NWRM) to improve water quality in agricultural catchments



- EPA-funded collaborative programme to address flooding & water quality issues
- Enhancement of natural hydrological & ecological processes
- Temporary flood storage for reduction of flow peaks
- Delivery of nutrient rich water to hyporheic zone



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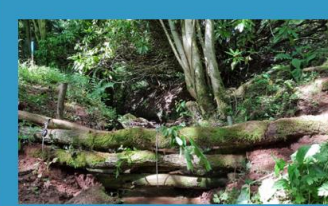
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## Natural Water Retention Measures in Practice

### Offline flood & sediment storage



### Instream structures



### Leaky dams

### Cross veins & low-weirs



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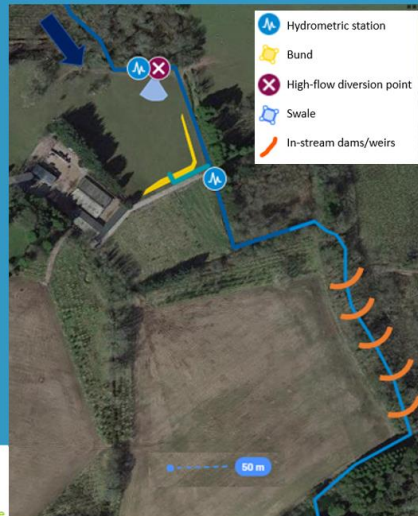
## Experimental site: Leades Farm, Co. Cork

### Nutrient attenuation

- Sediment traps
  - Capture particulates (high C & P load in agriculture areas)
  - Erosion control
- Instream hydraulic structures
  - Aerate water to encourage heterotrophic activity
  - Increase hyporheic exchange through downwelling
  - Attenuation of  $PO_4^{3-}$ ,  $NH_4^+$ , DOC

### Flood Mitigation Features

- Off-line flood retention bund
  - Attenuate flood peaks & confer erosion control
- In-stream leaky dams
  - Slowing high flows & trapping particulates



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## Thanks



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