

Managing dirty farmyard water



Detailed
Reports



4-page
Summary



NbS
Intervention
Excel Sheet

Farms potentially produce large volumes of dirty water (e.g. farmyard runoff, silage effluent, dairy parlour washings). It has minimal value as fertiliser but is a source of pollution, so poses considerable management difficulties for farmers.

Traditional Method: Dirty farm water is collected, stored, then spread on land.

Integrated Constructed Wetlands (ICW): Contaminants settle out, are absorbed by plants and adhere to or are trapped within the roots and soil.

Design and delivery

- 2002
- Decision to build ICW after site visits to dirty water treatment facilities.
- Summer 2024
- ICW constructed by stripping the soil, forming banks, compacting the clay base, installing pipes, and reinstating 150 mm of topsoil.
- Autumn 2024
- Reed, bullrush, sedge, and flag iris plant species were planted, using seed of as local a provenance as commercially available.
- Winter 2025
- Once plants were established, dirty water was fed to the system.

- 2005-2015
- Regular monitoring for research and NIEA monitoring for discharge consent.
- Since 2015
- No further work, continued annual NIEA monitoring at outflows.

At a glance

- 5 surface flow wetlands over 1.25 ha on an extensively grazed field
- designed for dirty water runoff from ~0.66 ha with a 70 day retention time

- Biological Oxygen Demand
Suspended Solids
Phosphorus
Ammonium nitrogen
- Greenmount Campus, CAFRE, Antrim
- Design: Consulting Engineers
Construction: Belfry Construction
Monitoring: AFBI, CAFRE, QUB
NIEA Discharge Consent: 40 mg/l BOD & 60 mg/l SS to receiving watercourse, Sixmilewater.

ICWs treating farm effluent must seek consent and comply with its conditions.

Points to consider

- Pond liners are expensive if required where soil type is free draining (CAFRE's ICW did not need a liner due to the clay base).
- Suspended solids settle out in the first pond. For the ICW to continue working, this sediment needs to be removed. The pond design, shape, and layout should enable easy cleaning. At CAFRE, reed growth in the first pond makes this difficult.
- In 2013, new roofed silage pits and a dairy unit with rainwater harvesting reduced the volume of dirty water. The full 1.25 ha ICW is no longer needed. Decommissioning options for the drier ponds are being explored.



*The Rivers Trust compiled this case study but was not involved in its delivery.