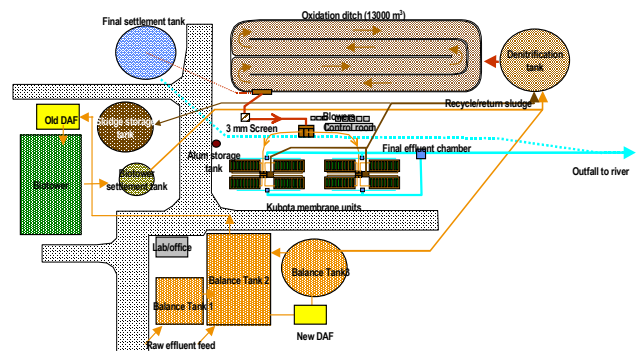


**Ballyragget, Ireland**

- Over 10 years operation
- Upgrade of existing industrial wastewater treatment plant
- Design to treat effluent from population equivalent of 266,000
- High effluent quality for discharge to salmonoid river
- 7,100 m<sup>3</sup>/d full flow to treatment
- Additional services were provided in the nature of design assistance, inspections during installation, assistance to start-up, commissioning and membrane cleaning
- Increase biological treatment capacity to allow factory expansion



View of the plant (above).  
Plant diagram (below).



**Snapshot**

Description	Value	Note
Current Status	Operational	Commissioned May 1999
Client	Avonmore Waterford Group (Glanbia)	Industrial Operations
Market Type	Industrial – Dairy	
Population Served	266,000	PE
Flow	7,100 m <sup>3</sup> /d	Full Flow to Treatment
Consent/Permit	100:10:15:2:10:2 COD:BOD:SS:NH3N:NO3N:TP	mg/L
Performance	16:3.5:6:0.1:8.4:0.8 COD:BOD:SS:NH3N:NO3N:TP	mg/L
Brief Description	Membrane bioreactor system used to upgrade existing industrial effluent treatment plant.	

## Process Description

The existing dairy effluent treatment plant in Kilkenny, Ireland has been upgraded by the installation of a Kubota submerged membrane plant.

The overall effluent treatment plant is designed to treat approximately 7,100m<sup>3</sup>/d. The MBR Technology® plant takes effluent from the existing oxidation ditch. The membrane replaced conventional settlement tanks. Physical barrier provided by the membranes allowed the MLSS and loading on the oxidation ditch to be increased.

The plant design incorporates 80 Kubota membrane treatment units within a modular arrangement of eight steel aeration tanks, operated in two groups of four tanks.

There are no buildings or tank covers and plant control is achieved by allowing the level to vary within the aeration tanks in proportion to the incoming flow. There is no odour.

### Design Data

Flow to full treatment:	7,100 m <sup>3</sup> /d
Average Flow Rate:	4,000 m <sup>3</sup> /d
BOD Load:	16,000 kgBOD/d
COD Load:	24,850 kgCOD/d
Total Ammonia Load:	185 kgN/d

### Plant Data

MLSS:	12,000-18,000mg/l
No of membrane units:	80 x 150
Membrane model:	ES150
Membrane surface area:	9,600 m <sup>2</sup>

### Project Status

Commissioned:	May 1999
Operated by:	Glanbia Plc