Ballyragget Effluent Treatment Plant (Glanbia) Extension

- **Additional 3 Tank membrane stream to compliment existing MBR plant**
- **Designed to process mixed liquor from existing oxidation ditch**
- **"Centipede" form coarse bubble diffuser with "Sludge purge" cleaning.**
- **3,000 m^3/d flow to full treatment @ a Flux rate of 0.62 m3/m2/d**
- **High quality discharge parameters to local water course**

Current Status:	Plant operational July 2006
Client:	Glanbia Ingredients, Republic of Ireland
Required Performance:	<10:<5:<0.6 BOD:SS:P(filt)
Brief Description:	New MBR plant designed to process 33% of total treatment requirements

EIMCO WATER TECHNOLOGIES

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Process Description

CIP and other treatable waste streams are treated on-site prior to discharge to the local water course. Prior to discharge the waste streams pass through the following unit operations;

- Inlet balancing and pH correction
- Dissolved Air Flotation
- Pre-treatment via High Rate Biofiltration
- 3 mm fine screening
- Additional biological treatment (denitrification / nitrification) via a 2 pass oxidation ditch configuration with in-line coagulant dosing for total phosphorous removal
- MBR clarification stage

Mixed liquors originating from the oxidation ditch gravitate to the existing MBR stream and New MBR stream from weirs within a flow split tank.

Proportionally a peak of 34.7 l/s (approximately 3000 m3/d) is fed to the new MBR plant with 69.7 l/s (5866 m3/d) being fed to the existing plant..

The new membrane treatment plant, composed of painted mild steel, is divided into 3 membrane clarification tanks. A common flow distribution tank (hydraulically linked) gravity feeds these new MBR tanks via connective pipe work. Each MBR tank is approximately 10.8m long, 4.1m wide and 4m high (with an effective top water level of 3.5m).

Each MBR clarification tank comprises 10 ES200 Kubota® flat plate configured membrane units, with coarse bubble "Centipede" type diffusers with sludge purge.

Aeration requirements are provided by 2 (Duty / Standby) Aerzen GM130L (DN300) Positive displacement "Delta" blower assemblies providing up to 98 m3/min (@ nominal 400 m.bar.g).

Permeate is collected by gravity through the membranes, with permeation being controlled via "Max-air" pneumatic "rack and pinion" valves fitted with Apex flow positioners. Return activated sludge gravitates to a sludge recirculation tank, via sludge flow control valves, (again "Max-air" pneumatic valves with similar positioners) where it is pumped back to the anoxic/denitrification tank prior to being reintroduced to the existing 2 pass oxidation ditch.

Following treatment in the MBR plant, the permeate is discharged direct to the local watercourse.

Design data

Population Equivalent	N/A
Peak Flow	3,000 m^3/d
Average Flow	2,250 m^3/d
Assumed BOD load	<562 kg/d
Assumed NH3-N load	<45 kg/d

Plant data

Each tank dimension .	10.8m x 4.1m x 4.0m
MBR membranes panels	3 x 10 x 200
MBR memb. surface area	4,800 m^2

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