

## SITE VISIT 3 – Waterharmonica Aqualân Grou

### Organisation:

The Frisian waterauthority Wetterskip Fryslân



### Description of the site visit

Every year, Wetterskip Fryslân purifies hundred million cubic meters of wastewater (about 3 million trucks) in 28 wastewater treatment plants (WWTPs) in Fryslân. Wetterskip Fryslân's WWTP Grou is a medium size sewage treatment plant that purifies 4,000 m<sup>3</sup> of waste water daily. The wastewater comes mainly from households and some industries. The total waste water stream is equal to 30,000 households.

A Waterharmonica is a natural constructed wetland between well-treated waste water and surface water. In 2006 Wetterskip Fryslân utilized some of WWTP Grou's available land for the construction of a waterharmonica that came to be known "Aqualân Grou." At Grou, 25% of the effluent is being polished by the waterharmonica and research has been conducted in the period 2006 - 2013.



**Photo 1: Waterharmonica Aqualân Grou**

Aqualân Grou is one of the smallest waterharmonica's in the Netherlands and it consists of three compartments:

1. Daphnia ponds, which provide initial post-treatment of peak loads and reduce particles by sedimentation as well as filtration by small planktonic crustaceans called Daphnia
2. Reed ditches, which trap suspended solids and nutrient removal.

3. A fish reproduction biotope, which provides a suitable reproduction habitat for fish and provides higher oxygen levels before the treated wastewater flows into the surface water



**Photo 2: Daphnia and other zooplankton can filter the effluent**

#### **What is innovative about it?**

Aqualân Grou was one of the first Waterharmonica's in the Netherlands. It was developed as an innovative pilot with the aim of testing the feasibility and efficiency of the Waterharmonica concept. Between 2006 and 2013, Aqualân Grou had the following results:

- 98% removal of pathogens;
- additional nutrient removal (about 25%);
- reduction of peak loads of suspended matter,
- improve oxygen levels;
- ecologising the effluent;
- improve reproduction of fish
- reduce environmental risk by reduction of insecticides.

Aqualân Grou has shown that it is quite possible to improve the water system and to reduce the emissions from a sewage treatment plant. It has also demonstrated that a waterharmonica can also be very useful for education and recreation.

#### **Time/accessibility/other information:**

English-speaking employees of Wetterskip Fryslân will guide participants on a site tour. The site visit will show visitors the small WWTP of Grou and the waterharmonica Aqualân Grou. During your visit the results of the past 10 years will be shared. The maximum number of attendees is 50 people. The whole tour will take about 1,5 hour. Umbrellas are advised.