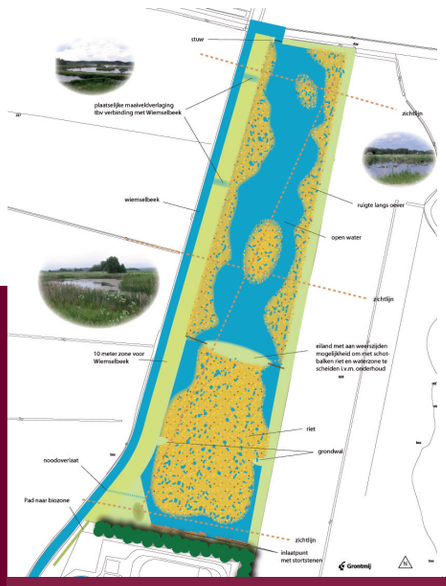
urbanwatercycle

PROJECT PART-FINANCED BY THE EUROPEAN UNION

Eco-friendly effluent



In Ootmarsum a so called "biozone" (or ecological activation zone) will be realized, in order to turn treated wastewater from the waste water treatment plant (WWTP) into water with more ecological characteristics. The water from the biozone will be released by two watercourses into Ottershagen, a future marshy area. Therefore the ecological features of the activation zone are synchronised with those of Ottershagen.
The system will have the features of a marsh, with both shallow and relatively deep areas. The deeper areas will provide a habitat for water plants; in the shallow areas, there will be marsh plants. The system will provide a habitat for fishes, birds, amphibians, and insects. The biozone will also contribute to achieving the target situation set out in the Framework Directive on Water for the watercourses downstream.

The concentrations of the water entering the biozone are expected to be relatively low: the waste water has already been purified to a great extent by treatment in a membrane bioreactor or post-treatment of traditional treated wastewater in the sand filter. This means that the eco-system will be rich - but not too rich - in nutrients (N-total 4 mg/l; P-total 0.15 mg/l). The effluent does hardly contain any active sludge.

No specific strict requirements have been formulated for the physical-chemical quality of the water leaving the ecological activation system. This is because the target values for WWTP are expected to be relatively good as compared to the current quality of the watersystem into which it is discharged.

Some characteristics:

-The biozone consists of a natural, ecological, and landscape system in which the sterile effluent is converted to such an extent that (from the ecological point of view) it is comparible with the receiving water system Ottershagen.
-It's not required for the system to remove nutrients because of the expected quality of the effluent from the WWTP.
-The ecological zone is not only intended to provide added value at a local level but also for the development of the regional ecological system, and it will have an educational and public relations function.
-The maximum design flow rate is 650 m3/hour, the minimum is 0 m3/hour.
-It is assumed that the effluent will be ecologically activated when vital links in the aquatic ecosystem have found a place in the system. The water retention period within the system will influence the development of it. Based on literature and expert judgement, a retention period of four days is chosen.
-A certain level of variation in water levels is desirable in the ecological activation system in order to be able to process different water flows.
-An area of 2.9 hectares is available to create the biozone.

Reeds will form an important component of the biozone, and they should not be subject to annual cutting. An adapted management system will be applied during the start-up phase. The maintenance situations will be worked out.
A monitoring plan is made, in order to be able to follow the development of the system, and to investigate the effects that the system has on the ecological state and water quality.