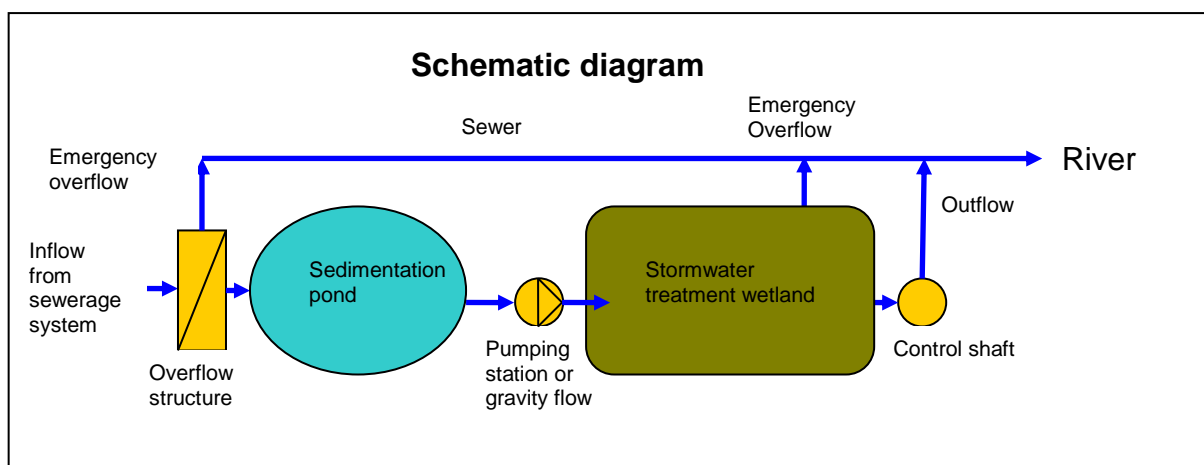




Treatment of surfacewater from roofs and roads in constructed wetlands

Stormwater treatment wetlands are appropriate for treating surfacewater runoff from streets because of the high filtration and adsorption rate by specified filter materials (e.g. heavy metal pollution).



1. Primary treatment in natural ponds with floating islands

First of all the inflowing stormwater has to be treated mechanically for example in natural ponds. The sedimentation of settleable materials prevents the clogging of the following constructed wetland. The dimension of the pond has to be adapted to the inflow peak flow and the connected paved area. An oil separator and a screen may be necessary to retend oil, grease and floating waste material.

2. Stormwater treatment wetland

The pretreated water is entering the constructed wetland by gravity flow or is being pumped if the low ground slope requires a pumping station. A trench distributes the water on the whole area of the wetland. The water will be purified while vertically percolating the filter system. The wetland has to be constructed with a water retention volume above the filter system, dimensioned on the specified stormwater conditions and the paved area. To prevent clogging, the water should not retend in the filter system longer than 2 days. The filter system has to be designed with a hydraulic permeability of 1,0 to $3,0 \times 10^{-5}$ m/s. So on an area of 1000 m² filtersurface there could be treated in maximum 10 to 30 l/s. In the whole year there should not be treated more than 40 – 50 m/a (m³/m² x a). On the bottom the water will be collected in draining pipes and discharged to a control shaft.

Schematic cross-section of stormwater treatment wetlands

Sedimentation and retention pond

Stormwater treatment wetland

