

183. Durme Valley River Restoration Plan. Maintenance dredging and reusing the sediment for nature restoration and improvement of safety against flooding.

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The Durme river is a branch of the Scheldt estuary. Nature is characterized by fresh water tidal marshes. Several controlled flood areas are located along the upstream part of the Durme. Navigation only occurs in the downstream part. The surrounding polders are drained through the Durme during low tide. Because of lack of a steady upstream discharge, since the cut off of the upstream catchment in the town of Lokeren, and a lack of regular maintenance dredging, siltation has compromised these nature, flood control, navigation and drainage functions.

The river restoration plan of the Durme aims at revitalizing the river functions as a part of the Sigma flood protection programme devised to protect the Scheldt estuary against storm surges. The Sigma plan defines the construction of controlled flood areas, reduced tidal areas and areas subject to depoldering, giving space back to the river and restoring wetland and tidal nature.

Several of these areas (Bunt, Klein Broek, Groot Broek) are located along the downstream branch of the Durme. In order to ensure the full functioning and to prevent further sedimentation at these areas, also the upstream part of the Durme river is restored. The need for constructive sediment to realize the Sigma plan, is a major driver to dredge the silted up Durme, and to also restore the other functions. The sediment of the Durme is of sufficient quality to be used as construction material for the dikes, which are required to protect the inland areas against flooding, when the flood areas are being activated during storm. Additional sand is required to restore and bring the remaining Durme dikes to Sigma height. This height is determined to provide the required safety against flooding, taking into account the expected sea level rise by 2100.

The Durme Valley River Restoration Plan defines a cross section, aiming at restoring the gravitational drainage of the surrounding polders and revitalizing the silted up tidal marshes. The scouring function and volume to maintain the river cross section during low tide is furthermore enhanced by the depoldering and controlled tidal action, and the restoration of the gravitational drainage of the polders, but is also supported by the construction of a pumping station at the cut off in Lokeren.

European funding was found to reactivate the upstream Potpolder IV, which has become defunct because of the siltation. The project is a pilot in the USAR project (Using Sediment as A Resource, Interreg 2 Seas). The finer nature and higher degree of pollution provides a greater challenge in the upstream part to reuse the Durme sediment as a building material. A special installation will be designed and used to separate the fine polluted sediment from the coarser material used for construction of the dikes. Also in this area two pumping stations have been designed to allow the drainage of the catchment of the watercourse crossing the controlled flood area.

In the meantime dredging works have been realized in the downstream section of the river, sediment stockpiles have been created to construct the dikes of the Sigma flood control areas situated in the downstream part. The pumping station in Lokeren has been constructed. The works on the upstream part are expected to start in 2018.

Other Sigma areas along the Scheldt have been completed, monitoring proves the beneficial effect on nature restoration. Recent storm surges allowed to test the activation of the controlled flood areas, effectively proving their role in flood protection. The Durme River Valley Restoration Plan is unique in providing and effectively realizing a restoration scheme of an entire river branch of 17 km, both revitalizing nature and flood protection function.

The presentation will focus on the different elements of the project, the steps in realization, the comparison between the situation before and after construction.