

van Oyen Tomas

Flanders Hydraulics Research

Author(s): Tomas Van Oyen^{1,2}, Abdel Nnafie¹ & Bart De Maerschalk^{1,2}

Affiliation(s) :

¹ Flanders Hydraulics Research, Department of Mobility and Works, Belgium

² Ghent University, Dep. Of Civil Engineering, Belgium

Impact of anthropogenic measures on the Scheldt mouth morphodynamics

The Scheldt estuary is located at the border between The Netherlands and Belgium. The estuary has a profound economic value, providing e.g. maritime access to several ports in Belgium and The Netherlands. The Scheldt mouth consists of an extensive shallow region ("Vlakte van de Raan") which is flanked by two deeper shipping channels and several elongated tidal bars. The Vlakte van de Raan is considered of high ecological value and therefore designated Natura 2000 area. Over the past two centuries, the geometry and bathymetry of the Scheldt estuary have profoundly evolved. A significant part of these changes can be attributed to anthropogenic measures such as channel deepening and land reclamation. In this work, we investigate the influence of the estuarine anthropogenic measures on the morphodynamics of the Scheldt mouth area. To this end, we employ a depth-averaged numerical morphodynamic model to describe the hydrodynamics and resulting morphodynamic evolution. We find that especially the embankment of the Sloe tidal basin has profoundly impacted the location and orientation of the main channel entering the estuary; which, in turn might have influenced the location and orientation of the elongated tidal banks in the mouth region. Comparing the numerical modelling results with historical bathymetrical data appears to support our findings.

Keywords: morphodynamics, Scheldt mouth region