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## TURN THE TIDE: SCIENTIFIC RESEARCH TOWARDS AN INTEGRATED PLAN FOR THE UPPER-SEASCHELDT

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### ABSTRACT

During the last 150 years the Scheldt estuary has seen many changes either to claim land for urban or agricultural development or to improve the navigability. From the 1950's onwards the most important changes to the character of the estuary could be attributed to infrastructural works such as dike construction and deepening. Even though cause-effect relationships are difficult to determine it is largely accepted that, besides reclamations, the main contribution to the loss of habitat can be attributed to the increase in tidal amplitude. In various studies the relationship between tidal amplification and large scale engineering works, including deepening, (downstream) sand extraction, embankments and straightening works, has been pointed out. It is clear that anthropogenic changes to the system can have serious consequences to the state of the estuary and that future works need to be prepared in a conscious and sustainable manner in order to avoid further tidal amplification.

Within the framework of the project "Integrated Plan Upper-Seascheldt" commissioned by the Seascheldt division of the Waterwegen & Zeekanaal NV, it is investigated how navigability can be improved (to class Va) without negative effects to nature and safety against flooding. It is the goal of this integrated study to look for synergy in order to mitigate negative impacts of the proposed measures or even to improve the functioning of the system. In the last 10 years already various environmental measures like de-poldering are being implemented under the SIGMA-Plan.

This paper will discuss the evolution of the Seascheldt in relation to historical anthropogenic changes. It will focus on the observed changes in water level, bathymetry, habitats (salt marshes) and sediment concentrations. In addition, the paper will outline the project plan to investigate whether de-poldering projects and other solutions or strategies can be identified that may 'turn the tide'. This study involves applied scientific research to improve knowledge on (ecological) functioning of the Scheldt Estuary by means of a chain of model developments by the project partners (INBO, UA and FHR).

*Keywords: Seascheldt, sediment, habitats, ecology, accessibility*