

RESTORING ECOSYSTEM FUNCTIONS IN A HEAVILY DISTURBED ESTUARY

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Many estuaries suffer from human pressure. Intertidal areas have been claimed for urban, agricultural or industrial expansion; remaining habitat is often degraded by pollution or altered hydrodynamics. Loss of valuable habitat results in loss of associated goods and services.

When considering estuarine restoration, managed realignment is not always an option, due to site characteristics (e.g. low elevation) or safety considerations. We present a restoration technique that combines safety and ecology on a site with an elevation far below mean high water.

Lippenbroek is a flood control area with a controlled reduced tide (CRT). A well designed sluice system allows semi-diurnal water exchange between this study area and the estuary. Although the tidal amplitude was strongly reduced, the newly created marsh faces inundation characteristics of the macrotidal estuary. This setup offers opportunities to restore estuarine functioning in embanked areas.

We observed sedimentation-erosion patterns, vegetation cover and benthic colonisation comparable to natural marshes. Mass balance studies illustrate the potential functions of a CRT within the estuarine nutrient cycling. When implemented on a larger scale (1135ha for the Schelde Estuary) it will improve overall estuarine functioning.