

Master Plan Coastal Safety: work in progress

Van Quickelborne Elias^{*1}

**Presenting author: elias.vanquickelborne@mow.vlaanderen.be*

¹ MDK, Afdeling Kust, Vrijhavenstraat 3, 8400 Oostende, Belgium

Already over three years ago, on June 10th 2011, the Flemish government approved its Master Plan Coastal Safety. It was a milestone that led to numerous investments scattered over the entire coastal stretch. The Coastal division came up with solutions and alternatives to reduce the flood risk and to protect us against a 1.000 year storm event up to 2050, taking into account current and predicted hydraulic conditions and thus also climate change. The plan combined so called hard and soft measures to improve the safety level along our coast while the environmental impacts, social and cost benefits and – above all – consultations with other stakeholders, were anything but overlooked.

Besides hard measures in and around residential areas and harbours, nourishments in particular are still the primary action taken by the Coastal division to strengthen the sandy part of the coastline. Existing extraction zones were not appropriate and could not cope with the increasing demand of such a huge amount of sediments with the most appropriate characteristics. Following a preliminary investigation in the area of the Hinder Banks, i.e. a zone with massive tidal sandbanks known for their coarse grained surface sediments and based on the integration of seismic and vibrocore data, 4 new extraction areas were delimited allowing public and private parties to extract as from 2011. This indeed significantly broadened the options for the government regarding grain size availability and hopper sailing distance.

The true start of the Master Plan Coastal Safety took place in October 2011 in the community of Koksijde with a small beach nourishment and subsequently projects in De Panne and a medium size nourishment in Wenduine. Wenduine 2012 was also the first nourishment with sand originated from the Hinder banks. It also confirmed the previously obtained scientific outcome and the results of the field research with respect to the extracted sediment characteristics.

However it was until autumn 2013 and spring 2014 when the extraction volume for beach nourishments truly peaked. Westende, Middelkerke, Raversijde, Mariakerke, Oostende, Bredene, Wenduine, Blankenberge and Knokke-Heist all were tackled partly accelerated by a severe storm event December 5th & 6th 2013.

That storm was in the first place a test for the readiness of the public authorities. With historic water-levels and luckily changing wind and storm conditions, the damage to the primary sea defence i.e. the beach and dunes was notable and in need of fast repairs though the nourishment works from the past have proved that they were absolutely necessary to withstand the storm.

Between September 2013 and June 2014 a total of over 4 Million m³ sand (excl. extractions through beneficial use of sediments f.i. nourishment works combined with dredging works in non-controlled areas) was extracted, putting the dredging industry in Flanders in higher gear.

Sustainability of those replenishments could indeed be questioned. Maintenance is however inherent to nourishments and all kinds of soft protection measures to protect us against the quirks of nature. The Coastal Division is therefore exploring the usefulness of for instance foreshore nourishments. Early results of a pilot foreshore nourishment in Mariakerke show that those can be particularly cost-effective due to beneficial use of sediments and higher dredging efficiency.

Also, there will be strived for a sustainable management of the exploitation zones through spreading or rotation with an accompanying and extensive monitoring program on both the extraction areas and the beaches.

Meanwhile cranes and bulls are still shaping our beaches, dunes, seawalls and harbours while other realized projects along our coastline are already part of the image of the coast today and one can only see the past on dated aerial images.