

AMORAS – ANTWERP MECHANICAL DEWATERING, RECYCLING AND APPLICATION OF SEDIMENTS

AN INNOVATIVE AND SUSTAINABLE SEDIMENT DISPOSAL SOLUTION FOR THE PORT OF ANTWERP

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Introduction: In the Port of Antwerp an amount of approximate 600,000 tonnes dry matter of harbour sediments needs to be dredged every year. Until the present day the sediments have been disposed of on several containment sites on land or in underwater disposal cells. Since the present disposal capacity is insufficient and no expansion is possible due to the lack of space, the Flemish Government in association with the Port of Antwerp have planned to construct an installation for mechanical dewatering of these sediments, using the dewatering technique with membrane filter presses.

The overall management goal of this project is to achieve a sustainable solution, weighing and balancing all the associated risks and benefits.

After 2 years of further development of the project, the authors present the present state of affairs on the process and the possibilities of reuse,.

Process: The design of the installation is based on 600,000 tonnes dry matter of sediments to be treated. The different treatment facilities are divided into several areas:

1. An acceptance area where sediments are received. This area is located near a dock in the Port of Antwerp and comprises an underwater acceptance cell, a sand separation unit and the necessary piping to transport the sediments to the dewatering installation.
2. The treatment installation is located at a distance of about 3.6 km from the acceptance area. *The place is called 'Bietenveld-Field of Beets'. It has a surface of about 15 ha.*
3. A disposal area where the dewatered material will be disposed of. This area is called *'Zandwinningsput-Pit for Sandwinning'. It has a surface of about 35 ha.*



Fig. 1: AMORAS

The treatment process can be described as follows:

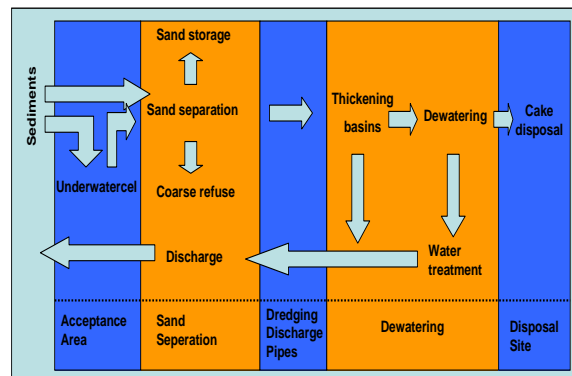


Fig. 2 treatment process

The construction work has started on 1 October 2008, the installation will be ready for operation after 24 months. For the start of operations, a term of 6 calendar months is envisaged. It is reasonable to expect that in the second half of 2011 the AMORAS-project will be ready to be put into operation. The contract has been set up for 15 years of operation.

Possible reuse of dewatered dredged material largely depends on the properties of the clay mineral content of the dredged material. The filter cakes obtained in the pilot study showed good soil mechanical properties and processability (see above). Hence, various applications are possible (expanded clay

grains, landscape dikes, isolation layers,...). Investigation has been started up.

Bearing in mind a succesful start-up, the following issues still need to be adresses after the first years of operation: what are the limiting factors still present? What are the main actions to pursue (research, market,...) and what are the recommendations for the next years?