

# GEOWALL® technology as the key for unlocking the value of dredged sediments by reuse in civil structures and infrastructure

Siltation of rivers and lakes is a worldwide environmental and economic problem. In Europe, more than 200 million cubic metres of sediment has to be dredged and transported every year. The management of dredged sediment is an increasing issue for harbours and local authorities. Sediment from lakes, canals and rivers is continuously dredged to maintain the water depth, flow capacity and storage of water to prevent flooding. At this moment most of the dredged sediment is transported to depots as waste. A potential building material is therefore not used! Since at least 90% of the sediment in Europe is expected to be clean enough to be reused as main construction material in high value applications, a more sustainable future proof solution is required. GEOWALL® combines different state of the art stabilisation techniques to convert dredged sediment into durable and circular building elements to create almost any type of civil structure or even buildings.

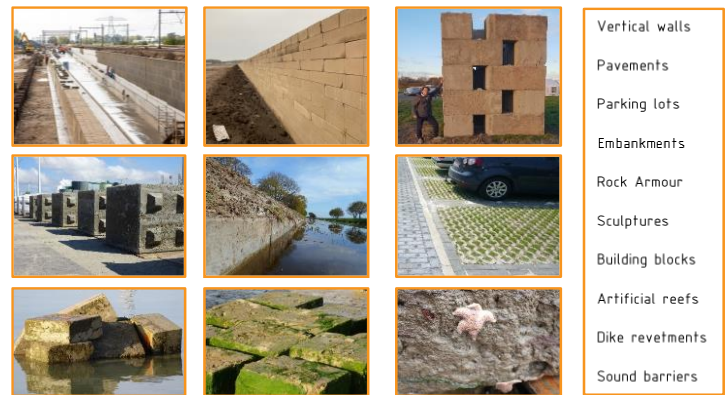


## GEOWALL® TECHNOLOGY

NETICS has developed a unique recycling solution where dredged sediments are reused in high quality solid building blocks. This innovation, patented by NETICS, is called GEOWALL® building elements. GEOWALL® technology is able to create almost any type building block directly from dredged sediment with ranging sizes, interlocking features and custom made surfaces.

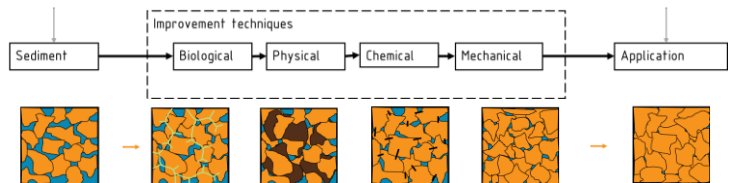
## APPLICATIONS

With these building blocks from dredged sediment almost any civil structure can be made, such as vertical walls, pavements, blocks for hydraulic structures and housing. The application of dredged sediment into building elements gives unique properties such as weight reduction, tensile strength, insulation, fire resistance and certain ecological/ natural esthetics.



## TRANSFORMATION OF DREDGED SEDIMENT

The applicability of the dredged sediment to create high-quality building elements depends on the composition of the material and unique properties like pH value, Atterberg limits, heterogeneity, organic matter, calcite levels, available minerals, etcetera. By collecting more than 100 types of sediment over the last two decades we were able to build an extensive model which predicts the most optimal way of sediment stabilisation. The innovative GEOWALL® tool incorporates a huge number of state of the art stabilisation methods. This is summarized into four different categories, namely physical, mechanical, chemical and biological stabilisation. Based on the requirements of the application unique combinations of stabilisation techniques are deployed to obtain the optimum production of GEOWALL®.



## DISCUSSION

Many other applications are feasible such as covering stones for flood barriers, rock armour for breakwaters, separation walls, vertical embankments and even buildings. Owners of the sediment as well as key customers use GEOWALL® building elements locally to make new structures. The new material is a sustainable alternative for raw materials like wood, concrete, steel and plastics. By connecting the dredging chain with the construction chain, a resource efficient circular economy is created. After use the building elements are crushed and transformed into new elements without production of any waste. The presentation will give insight into the science behind the GEOWALL® Technology, its proven applications and circularity within dredging and building market.

