A very large application of unstructured coastal models for infrastructure projects

O. Svenstrup Petersen[1] and I. Sehested-Hansen[2]

[1]DHI Water & Environment
Agern Alle 5
DK-2970 Hørsholm, Denmark
osp@dhigroup.com

[2]DHI Water & Environment
Agern Alle 5
DK-2970 Hørsholm, Denmark
ish@dhigroup.com

The use of unstructured models in marine planning has in recent year been increasing and is today part of many large infrastructure projects. The presentation will describe, what may be one of the most comprehensive coastal modeling applications today, of the MIKE 3/21 modeling framework in one a very large bridge projects, the Fehmern Belt, linking Denmark and Germany across the 20 km wide entrance to the Baltic Sea. The focus of the modeling is to ensure a proper description of both the long term impact of the bridge on the Baltic sea environment, and to provide detailed impacts and design conditions for the construction. The modeling comprise 2D and 3D long term modeling of the impacts of the bridge pylons on the Baltic sea ecology, assessment of impacts on the sand transport affecting the seabed and waves and currents for design. The presentation will briefly describe the MIKE 3/21 models involved and the concept for how the modeling is integrated into the planning decisions. Emphasis will be on how the unstructured models are used to link the detailed design of bridge pylons to the long term (30 years or more) development of the Baltic ecosystem.