Beach modelling: Lessons learnt from past scheme performance

Project Summary SC110004/S

This project identifies a range of important considerations derived from lessons learned from 11 past schemes around the coast of England and Wales. These should be taken into account when beach modelling is being considered or undertaken. The guidance is targeted at those who are planning to develop a beach scheme who may not have detailed technical knowledge of beach modelling approaches.

Beach recharge and management account annually for several million pounds of the UK's coastal flood defence capital and maintenance expenditure. Decisions on development of such schemes are often informed by beach modelling (including numerical, physical and empirical approaches). It is therefore vital that the lessons learned from past experience are taken into account in this process. This will help to maximise value for money through more appropriate application of beach modelling tools and use of the outputs they generate.

The research produced several findings on the performance of beach schemes, including the following common themes.

- Often what is built is not what was originally modelled, so the beach inevitably responds differently from that predicted.
- Actual beach nourishment material is often a different grading to that modelled, so the beach behaves differently from that predicted.
- A difference in wave climate is a major contributor to any difference between actual and predicted beach performance. Good representation of wave climate and accurate wave modelling are critical components of the beach modelling process

Despite these points, beach models are rarely re-applied with fresh information to examine known changes in characteristics. This might be done either at the point of implementation or later during ongoing management to reassess predicted performance and/or modify the beach management activities to make improvements to that beach management regime. The report provides guidance on how to better deal with these issues on the development of those schemes in the future.

Other conclusions include:

- The physics of beach models are generally sound. It is the interpretation and application of those models together with the data used in them where attention needs to be focussed.
- Outputs of beach models are important to help design and manage beach schemes, but they alone do not provide the definitive answers. These models are tools to be applied and interpreted with expert coastal engineering knowledge and experience.

These points are also addressed by the guidance.

This summary relates to information from project SC110004, reported in detail in the following output(s):

Report: SC110004/R
Title: Beach modelling: Lessons learnt from past scheme performance

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