Briefing note

July 2014

R&D Update for Coastal Chairs – for information

This briefing note provides you with an update on our ongoing coastal research activities within the joint EA/Defra Flood and Coastal Erosion Risk Management Programme. It also takes a look at what academic coastal research initiatives we are involved in shaping.

On-going research for coastal management

Updating our freeboard guide

We are working with a project team led by Royal HaskoningDHV to update our existing guide for establishing freeboard allowances. A key objective for the new guide is to provide advice for freeboard allowances and coastal structures. The guide will be illustrated with case study examples that cover design, project appraisal as well as the provision of development planning advice.

The final product is due to be delivered in early autumn.

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How sensitive is our coast to sea level rise?

Work is underway on a project to look at how sensitive our coasts are to accelerated sea level rise over the next century. The project will produce 'Resession Sensitivity Indices (RSI)' (numbers that represent recession due to accelerated sea level rise) for locations around the coast of England and Wales. These RSI values can be added to historic recession rates and used within NCERM and elsewhere to improve how we represent recession on these parts of the coast.

Another aspect of this work looks at improving our knowledge of coastal catch up.

This work is being led by Royal HaskoningDHV. To date the team have identified the preferred method for deriving the RSI values and have tested it on four case study sites. Testing is currently being carried out on an additional case

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study in the North of England to explore shore response where sensitivity to historic sea level rise is the greatest. Phase 2 (National application) is due to start in October 2014.

Poole Harbour beach recharge

We are working to develop a partnership with New Forest District Council and the Borough of Poole to deliver a programme of monitoring and analysis. This is to support of an innovative approach to renourishment of Poole Bay.

The concept of this trial is to place locally dredged sediment in the nearshore and allow the prevailing waves and tidal currents to move the material toward and along the beach. The potential cost saving of such an approach could be large, and if proved to be successful and could be applicable to other areas along the coast.

This work is due to start in February 2015.

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Maintenance and rehabilitation of old waterfront walls

We are working in partnership with Ciria and others to update the existing Ciria publication “Old Waterfront Walls”. The update of the guide will reflect changes in practices and technologies over the past years. Work is well underway by the research contractor HR Wallingford and the guide is due to be completed by the end of this year.

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Vulnerability of assets to climate change

CH2M Hill have recently completed a scoping study for us that looks at the present state of knowledge and, from that, requirements to obtain a good understanding of the possible impacts of climate change and how they influence the processes that govern the vulnerability of FCERM assets. The study has made a number of recommendations that will form the basis for the next phase of work which is currently out to tender.

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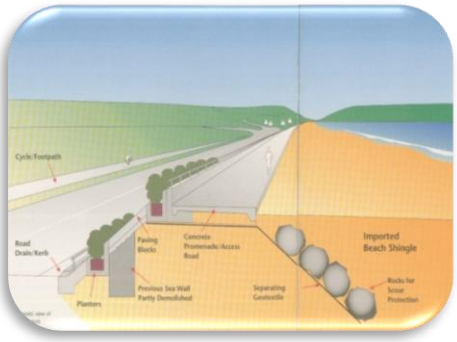

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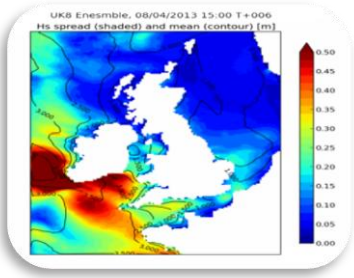
Beach Modelling – Lessons learnt from past scheme performance – now available

We have recently completed a project which looks at how beach modelling has been used in the design of coastal protection schemes and how actual beach behaviour compares to what was expected. From this learning a range of important considerations have been identified that should be taken into account when beach modelling is being considered or undertaken. These have been put together into a report 'Beach modelling: lessons learnt from past scheme performance' which is now published on the Environment Agency website here. A webinar recently took place introducing this work and the key learning from it. If you missed it you can listen to it again here.



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Develop, trial and demonstrate the benefits of a wave ensemble forecasting system

We are working with the Met Office to develop, trial and demonstrate the practical benefits of a wave ensemble forecasting system.

To date the project has shown that ensembles have a benefit in scientific terms. There is an outstanding need to test the wave ensembles within the Environment Agency National Flood Forecasting System. We are currently exploring ways of doing this.

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Managing the risks associated with the Withdrawal of maintenance

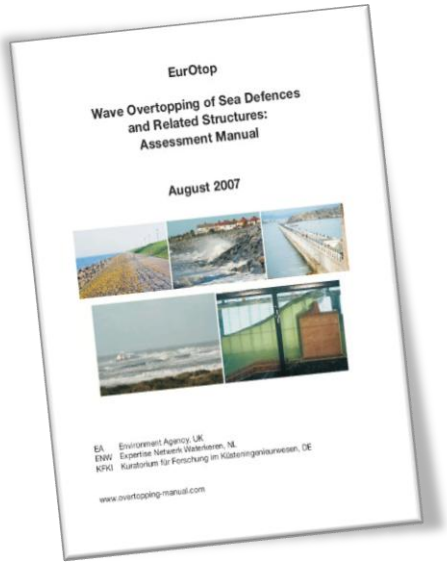
Managers with responsibilities for the coast and rivers are facing significant challenges with withdrawing safely from defence systems which they are no longer maintaining. Challenges arise due to a lack of understanding about how the abandoned defence and associated infrastructure will deteriorate over time, and consequently the health and safety risks they may be creating.

There is currently no guidance to explain the risks associated with abandoning an asset. The continuing lack of knowledge is preventing the delivery of policy intents and the realisation of environmental benefits of withdrawal.

This work will improve our understanding of what happens (deterioration, costs and impacts) when we no longer maintain FCRM assets and use this knowledge to develop guidance to enable delivery of safe withdrawal from the assets.

The specification for this work has just been finalised and it will be going out to tender shortly.

An update to EurOtop



Wave overtopping rates are a key requirement for all coastal flood risk assessments. The EurOtop Manual and Calculation Tools are world-leading, and broadly applicable. However it is arguable that the current guide is biased towards simple structure types, particularly embankments or vertical walls. The tools are therefore weaker for complex structures, particularly multi-element seawalls.

The aim of this research is therefore to update the manual and supporting tools through the incorporation of more empirical data to improve the applicability of the manual across a broader range of coastal asset type.

Work is due to start on this project soon.

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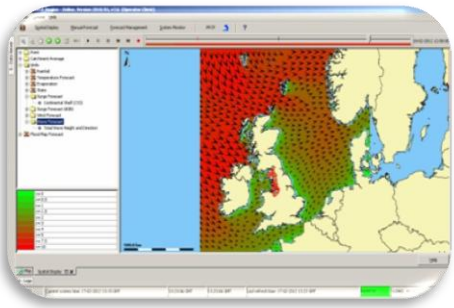

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Investigating coastal flood forecasting

The key objective of this research project is to develop techniques and tools to help us understand and assess the performance of our coastal flood forecasting models against common criteria in order to inform investment needs.

The outcome will show us where investment needs to take place (local or national models) and if the aspirations of real time flood inundation mapping are practical and affordable for coastal risk areas given the baseline we will have established.

This work is currently out to tender.

Academic research initiates we are supporting

We are actively involved in a number of academic research projects which seek to improve the way we manage flood and erosion risk on our coasts. One of our roles in these projects is to ensure that the research outputs have practical applicability to coastal research stakeholders.

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Integrating COASTal Sediment Systems (iCoasst)

Consortium lead: University of Southampton (Prof Robert Nicholls)
Lead funder - NERC
Programme - 2012 - 2016
Aim -To provide the next generation of modelling tools to help quantify how our coastline will evolve over the long term in response to our management activities and due to climate change. These new tools will be open source and available to the practitioner community

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The EU RISC-KIT project (Resilience Increasing Strategies for Coasts - toolKIT)

Consortium lead: Deltares (Dr. Ap van Dongeren)
UK partners: University of Cambridge (Dr Tom Spencer and Dr Anna McIvor)
and Flood Hazard Research Centre (Middlesex University)
Lead funder – European Commission

Programme – 2013 - 2017
Aim - The project aims to create methods, tools and management approaches that can help reduce risk and increase resilience to major coastal flooding events. One of the key outputs is a toolkit for coastal managers and decision-makers, which will be open source and freely available. The UK case study for the work focuses on the North Norfolk coast.

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Foreshore Assessment Using Space Technology (FAST) project

Consortium lead: Deltares
UK partners: University of Cambridge (Dr Iris Moeller)
Lead funder – European Commission
Programme – 2014 - 2018
Aim - The project aims to develop a new web-based service that provides coastal practitioners with information on foreshore characteristics, for a particular location, and the flood and coastal erosion risk mitigation properties associated with these.

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