

R&D Technical Summary FD2110

Estuaries Research Programme (ERP) Phase 1 Uptake Project

Background to R&D project

In 1997 a scoping study was undertaken to establish a programme of research for developing techniques to predict long-term large-scale morphological change in estuaries. The study recommended a three-phase project, lasting between 9 and 12 years, with the aim of developing an integrated suite of estuary management tools. The scoping study led to the development of the UK Estuaries Research Programme Phase 1 (ERP Phase 1), a two-year programme of research into predicting estuary morphology and processes. The work was undertaken during 1999 and 2000 by a consortium of organisations consisting of consulting engineers, research laboratories and universities. The consortium was known as EMPHASYS (Estuary Morphology and Processes Holistic Assessment SYStem).

It was recognised that Phase 1 produced useful results that should be more widely used. The Estuaries Research Programme Phase 1 Uptake Project was designed to disseminate these outputs through a programme of workshops and to deliver several reports and other products to fulfil this uptake.

Results of R&D project

The research compiled a suite of methods and models to predict estuary morphology and related parameters, upgraded these methods and made recommendations regarding their applicability and accuracy. Six estuaries were selected to allow the methods and models to be tested against a common dataset. The estuaries were selected based on their data availability and their representation of the types of estuary found in the UK. Two east coast estuaries (Humber, Blackwater) were selected along with two south coast estuaries (Southampton Water, Tamar) and two west coast estuaries (Mersey, Ribble). The extensive datasets collected for each estuary were stored in a database developed in the project.

The dissemination has been supported by the integration of the generic principles of the estuary management process into two specifically designed demonstrations on the Blackwater and Mersey Estuaries. The Mersey Estuary demonstration describes the approaches to identify the response of the estuary to a hypothetical scenario of part removal of the training walls in Liverpool Bay. The construction of these training walls in the early 20th century led to large-scale morphological change and their part removal might be considered to do the same. The Blackwater Estuary demonstration summarises the elements of the managed realignment scheme at Abbots Hall. This realignment is novel in that the area being inundated is relatively large compared to the tidal area of the creek. A range of activities were undertaken to assess the extent and magnitude of the impact of the breaching on the adjacent physical regime.

R&D Outputs and their Use

The Estuaries Research Programme Phase 1 Uptake Project provided a mechanism for wider dissemination of the results of ERP Phase 1. It has done this through:

- Provision of detailed information on the approaches to predicting estuary morphological change at a series of five workshops across the UK. *Each workshop was structured to provide advice on how to specify a programme of studies to address estuary issues and how to interpret the results.*
- Publication of a set of Guidance Notes for Assessing Morphological Change in Estuaries. *This document provides best practice guidance to those with a management or decision-making role in*

- estuaries, on the choice of approach for assessing dynamic and morphological change.*
- Creation of an experimental software package on the estuary management process. *The software is designed to lead the user through a series of stages starting from an issue, through the topics affected by the issue to types of generic methods that could be used in the appraisal of the issue. The software is strictly a prototype intended to illustrate a thought process and not to be a comprehensive package to predictive method selection.*
 - Publication of Scientific Data Management by Project Consortia: Best Practice Guidelines. *The purpose of the document is to ensure that those individuals both commissioning the project as well as those actually undertaking the work have a reference for what is involved. To accomplish this, this guide presents principles for data management for each lifecycle state.*

This R&D Technical summary relates to R&D Project FD2110 and the following R&D outputs:

- **CD Rom** – Estuaries Database 2003 (www.oceannet.org)
- **R&D Technical report** - Guidance notes for assessing morphological change in estuaries, October 2002 (included on the CD Rom).
- **R&D Technical report** - Scientific data management by Project Consortia: Best practice guidelines, October 2002 (included on the CD Rom).
- **R&D Publication** - Workshop presentations
 - Long term estuary processes and morphological change
 - Best practice in estuary studies: Short term modelling
 - Best practice in estuary studies: Data requirements

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Defra Project Manager: Dan Fox, Halcrow Group Ltd, Ambassador Drive, Exeter Business Park, Honiton Road, Exeter EX1 3QN. email: FoxD@halcrow.com

Research Contractor: David Brew, Posford Haskoning, Rightwell House, Bretton, Peterborough, PE3 8DW. Tel: 01733 334455.

The above outputs may be downloaded from the Defra/EA R&D Programme website (<http://www.defra.gov.uk/enviro/fcd/research>), use the search tool located on the project information and publications page. Copies are held by all EA Regional Information Centres or they can be purchased, contact the The Environment Agency's National Customer Contact Centre by emailing enquiries@environment-agency.gov.uk or by telephoning 08708 506506.

From 2004 the database (on CD Rom) including the project reports are being distributed on behalf of Defra by the Marine Environmental Data (MED) Coordinator, acting under the umbrella of IACMST (Inter-Agency Committee on Marine Science and Technology). Visit www.oceannet.org for details about how to obtain a copy.

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