

science summary



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Scoping study: Updating the *Beach Management Manual*

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A new report recommends revising and expanding the *Beach Management Manual* originally published by CIRIA (Construction Industry Research and Information Association) in 1996. The new edition should aim to reach a wider audience of those involved in the routine maintenance and monitoring of beaches, as well as those carrying out major beach improvement schemes or managing coastal defences.

In the UK, over £370 million is spent on coastal defences every year, and this figure will need to double by the 2080s to meet the consequences of climate change and changing demographics. Sea levels are predicted to rise and increased storminess is predicted to cause greater problems in maintaining adequate defences against coastal flooding and erosion. Beaches will continue to play an important role as barriers to flooding and erosion, and their maintenance and/or improvement will thus take a substantial proportion of this expenditure.

Beach management in the UK has evolved in design and execution over the last ten years, aided by guidance from the CIRIA *Beach Management Manual*, first published in 1996. A scoping study carried out by HR Wallingford, in collaboration with Halcrow and CIRIA, has explored the need to update this manual to include the latest information on beach monitoring and maintenance, evaluation of the state and performance of a beach, and the design, procurement, execution and after-care of beach improvement schemes.

A new version of the manual could outline the results of recent research and summarise the experiences of a large number of beach management/recharge schemes carried out since 1996. For example, new information is available on the strategies, as well as the quantities and types of sediment needed to improve a beach.

Many beaches also play an important role in conservation and the enjoyment of tourists, holidaymakers and local residents. The optimum management of beaches as part of a coastal defence strategy also needs to address the potential impacts on humans and the natural environment.

Thus, the scoping study set out to:

- draw up a compendium of recent UK beach recharge/recycling schemes and identify the problems and successes associated with these;
- identify and consult with organisations, designers, funders, contractors, conservation bodies and others involved in beach management;
- review scientific literature, liaise with researchers and identify any further research needed;
- establish a work programme and budget to research, prepare and rewrite the manual.

A compendium of over 100 beach recharge/recycling schemes at some 80 locations in the UK was drawn up, with scheme 'owners' approached for information on their design, implementation and performance. A number of case histories were then selected as potentially suitable for inclusion in the proposed new manual. The study also reviewed research, scientific papers and reports produced over the last decade to ensure that new knowledge on beach management could be included in the guidance.

A wide consultation on all aspects of beach management was carried out through Internet postings, letters and emails, and through a workshop attended by delegates from across the industry. This consultation aimed to identify the strengths and weaknesses of the original manual and what would be required of a second edition. It also sought information on practices and experiences, particularly where problems were encountered and overcome.

The consultation exercise revealed that the present manual, whilst providing useful guidance to those designing major beach improvement schemes, was poorly used by those involved in routine beach management. The revised manual should therefore seek to reach a wider audience with a practical interest in beach management, whether on a regular basis or for major works, by covering all the different stages of beach management. The study also concluded that the emphasis of the new manual should be on the role of beaches in coastal defence.

The new manual should provide information on:

- the management of beaches and their attributes as natural habitats and/or recreational areas as well as coastal defences;
- procedures for assessing the state and performance of a beach, including trigger levels for action along with suitable responses;
- checklists, decision trees and procedures for carrying out monitoring and maintenance (these could be in appendices to be used in the field);
- guidance on beach improvement schemes, including designing, sourcing, budgeting, timing, safety and environmental considerations, decommissioning and case histories;
- problems with operating on beaches, for example, disruption to the public and the environment;
- public relations before, during and after major works, including signage and public access;
- legislation affecting beach management, such as the Water Framework Directive (WFD) and shoreline management plans (SMPs), as well as licences/consents needed (this could be in an appendix which could be regularly updated).

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It is recommended that the new manual be produced in a modular form, for example as a set of volumes rather than a single book, and as an e-publication. The host website could act as a portal for further information as it became available, such as changes in legislation, new sources of data and publication of new research results.

The report estimates that the research and publication costs of revising the manual would be in the region of £200,000. Given that the costs of beach recharge schemes in the UK are about £10 million per annum, if using the manual helped save one per cent of this cost, this would mean that, in five years time, the savings promoted by the manual would be twice its production cost.

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