Book review

COASTAL DEFENCE: A NON-TECHNICAL GUIDE

Robin G. McInnes. Cross Publishing, Chale, Isle of Wight, 2003.
£15.00 + p.&p., 80 pp.

Most countries have experienced at some time a major natural disaster on such a scale that it has aroused public opinion and activated politicians into accepting national responsibility for repairing the damage and for taking measures to try to prevent a similar event happening again. Such an event in this country was the North Sea storm surge in January–February 1953 in which a combination of freak winds and a high tide raised the sea to such a level that it breached flood defences in Lincolnshire, Norfolk, Suffolk, Essex and Kent and flooded farmland and a number of coastal towns. More than 24 000 houses were flooded and 300 people lost their lives. Although in the past there have been a number of failures of the coastal defences from the Humber to the Thames, the storm surge of 1953 has been described as the worst national peacetime disaster to hit the UK. It led to the construction of the Thames Barrier to protect London from a similar event, the setting up of the Storm Tide Warning Service to give improved flood warnings to reduce the risk to life from tidal floods, and the setting in place of political initiatives to ensure that in future our sea defences are adequate to contain a similar event. The same storm in 1953 hit the Netherlands and caused even more damage and killed 3000 people. The Dutch response was to embark on their extensive construction programme to build the shoreline flood protection works known as the Delta Plan.

The coastline of the British Isles is still under attack from the elements and in some parts of the country the gradual erosion of the coast is threatening property and farmland. To establish an effective and sustainable programme for the management of the coastline needs an appreciation of the problems of coastal erosion and accretion and the participation of all organisations and individuals. Productive participation can best be achieved if all involved are adequately well informed. The purpose of this book is to help the layperson understand the causes and extent of the environmental problems both at present and in the foreseeable future, the choice of solutions available to protect the nation's coastline and estuaries and the roles and responsibilities of the relevant organisations involved.

The length of our national coastline is 17 457 km, which is more the twice the length of the coastline of Italy, but a large part of this is in Scotland where the problems of coastal erosion are less severe because some of the Scottish coastline is still

rising from the sea as a result of the withdrawal of the ice cap. The scope of this book is limited to England and Wales and especially to south-east England where much of the coastline is sinking with respect to the sea level.

The main organisations which have an interest and an involvement in the protection and enhancement of the coastal environment are the Department for Environment, Food and Rural Affairs (DEFRA) which takes the lead on flood management, including coast protection, sea defences and other functions, and also leads on the implementation of the EU Recommendation on integrated management of coastal zones, and the local authorities, who are often themselves major coastal landowners. Local authorities have a leading role in coastal zone management, climate change response and strategic coastal monitoring. Other organisations with an interest in coastal defence are English Nature, the Environment Agency, English Heritage, the National Trust, the Countryside Agency, the Wildlife Trusts and the RSPB.

For practical reasons of cooperation, consultation and communication on matters of coastal protection the coastal local authorities in England and Wales have combined into 17 regional Coastal Groups. The Coastal Group for central southern England is called the Standing Conference on Problems Associated with the Coastline (SCOPAC) and was founded in 1986 to represent the interests of a number of local authorities in the 400 km stretch of coastline from Lyme Regis in Dorset to Shoreham by Sea in West Sussex.

Robin McInnes is the chairman of SCOPAC Officers' Working Group based at Newport in the Isle of Wight and he gives readers a comprehensive presentation of the political structures responsible for coastal defence, the legal framework and the methods of financing flood defences and the technical problems and potential solutions which can be used.

Mr McInnes is also a geologist and he starts by explaining how the mechanisms of coastal erosion and accretion operate and sets out the current thinking with respect to coastal defence. Much of our coastline is in a continual state of movement; for instance erosion of material from a cliff face at one point is carried by the sea to become accretion at another point, and to keep the technical problems within practical bounds the coastline is divided into a number of 'sediment cells', usually from one headland to another within which the overall movement of material is assumed to be contained. The major

cell for the southern central area covered by SCOPAC extends from Portland Bill to Selsey Bill.

One point of practical interest especially to property owners, is the extent to which it is possible or economic to stabilise the coastline using traditional fixed coastal defences such as groynes and concrete walls in order to protect buildings threatened with collapse or farmland at the risk of flooding. The author has included a generous number of illustrations to demonstrate that during the past 150 years or so the coastline of both beaches and cliffs has significantly altered. Going back further in time, nearly 30 medieval villages along the Holderness coast north of the Humber which were listed in the Domesday Book in 1086 have now been drowned as the coastline has advanced 2 km inshore. And nearly half the Roman fortress at Reculver which was originally on the coast is now submerged. On the other hand, littoral accretion has stranded the ancient Cinque Port of Rye inland and reduced access to the port of Sandwich. The problem of an advancing shoreline will become more acute as a consequence of global warming and with the possibility of a steady and continuing rise in sea level the traditional sea defences—such as a concrete wall in populated areas to support a seaside promenade or timber groynes to contain the littoral drift of shingle and sand—may no longer be the right answer.

DEFRA's approach to stabilising the coastline and providing adequate coastal defence is a model of engineering sustainability. Their policy represents an acceptance of the fact that the coastline is continually changing as a result of natural events, quite apart from the potential problems arising from a

change in climate, and that rather than build a continuous wall of concrete around the country it is sometimes better to work more closely with nature and accept the effects of the natural forces of change.

In making decisions about the suitability of coastal defence works, DEFRA recognises the following generic policies available to shoreline managers.

- (a) Hold the present line. This may require new works to be built to maintain or improve the standard of protection provided by the existing defences along the present alignment. This approach will be especially appropriate where it is necessary to protect buildings or other developments near the shoreline.
- (b) Advance the present coastline. This is a suitable option where it is intended to reclaim land from the sea.
- (c) Retreat from the present line. Building a new line for coastal defence on the landward side of the present alignment.
- (d) No active intervention.

This book will help all those involved with coastal defence to understand how these principles can be applied in practical cases and the potential benefits to be achieved. The text is clearly presented and is well supported by the photographs and drawings. The book undertakes to be a non-technical guide to coastal defence and it succeeds in that objective very well.

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