1 INTRODUCTION

This Part describes the key elements of the framework used in the development of the strategy for coastal defence. Section 2 of this part identifies the subdivision of the coast into Management Units. The third section reviews the four generic strategic coastal defence options which are identified by MAFF and are considered for each Management Unit. The final section then presents the Shoreline Management Objectives, with which the strategic coastal defence option for a unit must seek to comply.

3 STRATEGIC COASTAL DEFENCE OPTIONS

There are four generic strategic coastal defence options which are identified by MAFF and have been considered in the development of the SMP. For this study, a series of specific and clear definitions for the four options have been established.

The definitions presented below have been devised to represent the generic options adopted by MAFF, tailored to this area. Whilst being similar in approach to other SMPs around the English coastline, adaptations are provided for this SMP that are intended to benefit the final outcome. Firstly, it is important that strategies are fully appreciative of the coastal processes operating on that frontage. Secondly, they must acknowledge the implications of future sea level rise and their longer term sustainability.

Defence options for this SMP will be based on strategies for both a specified longitudinal defence (ie. a defended "line") and, in circumstances that warrant such a definition, a lateral beach feature (ie. intertidal zone). In such situations, the general principle of "holding, advancing or retreating" is being advocated, not a responsibility to change or maintain the exact location of a "line". This approach aims to allow management implementation principles to be promoted thereby allowing coastal defence practitioners to work in tandem with natural processes to produce sustainable results in the future. They should not be misinterpreted as providing a definitive statement that built defence structures or natural features actually require physical movement landward or seaward of their present position. Actual procedures for achieving the strategy are not required as part of the SMP, though basic indications of appropriate actions have been provided.

The definitions are as follows :

(I) **Do-nothing** - *"carry out no coastal defence activity except for safety measures"*

(ii) **Retreat the existing line** - For clarity, two definitions are provided for this option depending on whether a length of coast is backed by low lying floodable land or by cliffed areas experiencing erosion.

Floodable Low Lying Land - *"by intervention to adopt a more landward defence position and take advantage of wider natural defence formation".*

Eroding Cliff Areas - *"by intervention to alter the natural rate of cliff retreat, or allow the cliffline to retreat to a pre-determined defence position"* - (Under this option, measures to reduce retreat rates should be considered either now or at a future date. Consequently, it may be the rate of retreat that will be managed, and not necessarily the final position).

(iii) **Hold the existing line** - *"by intervention, including maintenance, continue to defend the same position whether it be by maintaining the existing defence line or by enhancing its role as a coastal defence"* - (for example, through incorporating soft options in front, eg. beach nourishment or foreshore stabilisation schemes).

(iv) **Advance the existing line** - *" by intervention, to physically move the existing line of defence seaward".*

The advance option is not the same as naturally accreting coastlines as Man is not physically advancing the "line" nor is likely, in terms of coastal defence, to interfere with this process. Planning considerations to build on stable accreting shores would only be advisable following detailed assessment of future shoreline evolution.

The selection of a 'strategic coastal defence option' requires a sound understanding of the current shoreline processes in order to ensure it is appropriate and sustainable. However, in certain locations processes, and evolutionary trends in particular, are still not fully understood. In these areas long term adoption of one of the options is considered unwise, thus a short term strategy will be presented in conjunction with a period of structured monitoring, in order to provide a sound baseline for the selection of a preferred long term 'strategic coastal defence option' in future revisions of the SMP.

2 STUDY BOUNDARIES

2.1 Extent of the Study Area

One of the more difficult aspects when dealing with a naturally changing environment is the identification of physical boundaries. Examination of the ongoing processes and historic evolution can enable conclusions to be drawn and provide reasoned arguments as to where there are interactions between areas and where there are not.

There are some very prominent changes in orientation along the coastline which suggest a more substantial change in physical conditions, namely Lizard Point and Land's End. These indicate natural boundaries for the sub-cell and there is no evidence to support the movement of sediments around these points. These locations therefore form suitable boundaries for this SMP.

2.2 Sub-division into Areas

To facilitate easier reference to information and assessment of issues, the sub-cell coastline is usually divided into a number of lengths which are termed Coastal Areas (referred to as Areas). This subdivision follows an initial assessment of the likely processes such that the Areas represent coherent physical characteristics and are broadly based upon coastal processes.

However, the physical nature of this coastline is such that a further subdivision of the sub-cell into Areas is not required, as physical characteristics along this coastal frontage are sufficiently coherent. Therefore, the coastline from Lizard Point to Land's End is represented as one Area.

2.3 Sub-division into Units

2.3.1 Management Units

The purpose of providing Management Units is to define separate areas where different strategic options may be required. The MAFF definition of these is:

'a length of shoreline with coherent characteristics in terms both of natural coastal processes and land use.'

As described in Section 2.3.1, each Management Unit is effectively part of the overall Coastal Area. From the studies into coastal processes and environmental issues, Management Units have been defined, as follows:

Lizard Point to Kynance Cliff

Kynance Cliff to Predannack Head

Predannack Head to Pedngwinian

Pedngwinian to Porthleven

Porthleven to Rinsey Head

Rinsey Head to Hoe Point

Hoe Point to Cudden Point

Cudden Point to The Greeb

The Greeb to St Michael's Mount

St Michael's Mount to Penzance Harbour

Penzance Harbour to Newlyn Harbour

Newlyn Harbour to Carn-du

Carn-du to Gwennap Head

Gwennap Head to Land's End

2.3.2 Implementation Lengths

In order to achieve the coastal defence objectives for each Management Unit, it will often be necessary to implement a range of coastal defence options over discrete lengths. These Implementation Lengths are sub-divisions, mainly relating to local changes in land use, assets, or risk (ie flooding, erosion), and are defined as:

'a length of shoreline that requires a specific coastal defence option for the future to meet the overall strategic requirements of the Management Unit'

These Lengths are identified within the relevant Management Unit statements in Part 5.

2.4 Inland and Offshore Limits

Finally, the inland and offshore boundaries for the SMP have been established. Again, what is important is the extent to which coastal defence policies may affect an area or the extent to which human or natural activities and conditions may influence coastal defence decisions. In Cornwall this is theoretically difficult because the whole county has a strong dependence on its coastline and therefore more specific definition is necessary.

The first distinction can be made from the areas at risk, from either erosion or flooding. In the former case this is negligible for much of the coast. Nevertheless, it is important to at least record and map what is immediately adjacent to the shoreline even in these circumstances. It is also important to identify any activities which rely on the coast at that point, eg a tourist development set slightly inland which has access to the beach or a small community built up around a fishing harbour. Therefore the inland limit has been defined as those areas at risk or immediately adjacent to the shoreline plus those areas with interests directly relating to the shore. This is presented individually for each Management Unit.

The offshore limit should be set by the extent to which the seabed may be influential upon shoreline processes. This depends upon the relative exposure of different areas and the potential for a changing morphology (although this is not an issue of great significance around the Cornish coasts). A generally adopted limit, and one which is considered appropriate to Cornwall, is the -20m CD seabed contour. There is unlikely to be much if any change in the seabed characteristics beyond this nor significant sediment exchange between the areas offshore and inshore of this limit.

4 SHORELINE MANAGEMENT OBJECTIVES

Based upon the information gathered during the first phase of the Shoreline Management Plan, broad issues and objectives for the management of the shoreline were identified. Where these may directly influence coastal defence decision making and future planning they have been set as objectives. These have been identified as either **Core Objectives** or **Supporting Objectives**. The Core Objectives are those which any preferred strategy must comply with. The Supporting Objectives identify those other aspects of the shoreline environment which affect/are affected by coastal defence. These are the objectives which the strategies would seek to comply with. These objectives take into account the interests and requirements of both the natural and developed environments and will form the basis for appraisal and development of strategic coastal defence options within the Shoreline Management Plan.

It is important to recognise that the objectives of various bodies may conflict; the resolution of a Shoreline Management Plan requires by its nature a degree of consensus between interested parties and invariably differing objectives will be set by them. *Not all of the objectives will necessarily be achievable.*

Identified below are the core shoreline management objectives and strategy tests which apply throughout the length of coast covered by this SMP. These do not represent, *ad verbatum*, the objectives of specific organisations or authorities, but they do acknowledge the key aspects of relevance to each component within the framework of a non-statutory strategic plan for future coastal defences. These are used as the basis for the development of the locally specific Management Unit Objectives, based on the key local issues presented, in this Volume, for each Unit

CORE OBJECTIVES

1 Coastal Processes

1.1 Where there is a reduction of sediment inputs to the shoreline through coastal defence provision, this should not have detrimental impacts on beach levels.

1.2 Coastal defences should not interfere with sediment transport pathways, unless beneficial to the protection of assets and without adverse longshore impacts.

2 Coastal Defence

2.1 Strategic coastal defence options should be technically viable and sustainable, economically justifiable and environmentally acceptable.

2.2 Strategic coastal defence options should be compatible with the strategies for adjacent lengths of coast.

2.3 Where possible, coastal defence through natural features (ie beaches, saltmarsh and dunes) should be encouraged.

SUPPORTING OBJECTIVES

3 Natural Environment

3.1 Coastal defences should not cause the loss, reduction in area, or deterioration in quality, of important terrestrial or marine habitats and species, as identified in the Cornwall Biodiversity Action Plan.

3.2 Coastal defence provision should not interfere with coastal processes integral to the formation or existence of important habitats and species, such that it has adverse impacts on those habitats and species.

3.3 Coastal defence provision should not adversely affect areas of known geological significance unless physical circumstances do not permit reasonable alternative options.

4 Landscape

4.1 Coastal defences should not detract from the aesthetic quality of the coastline, especially those areas designated for landscape quality.

5 Archaeology

5.1 Coastal defence provision should not adversely affect areas of known, or potential, archaeological value.

6 Built Environment

6.1 The provision of coastal defences should be considered to protect developed areas identified as being at risk from coastal flooding or erosion.

6.2 Coastal defence provision should not produce increased risks of erosion or flooding to other developed areas.

7 Economy

7.1 Coastal defence provision should not adversely affect the economies of those using the coast, in industries such as fishing.

8 Tourism / Recreation

8.1 Coastal defence provision should not adversely effect the amenity value of identified tourist and recreational areas.