



Isle of Wight Shoreline Management Plan 2

Appendix C: Baseline Process Understanding

December 2010

**Coastal Management;
Directorate of Economy & Environment, Isle of Wight Council**

Appendix C: Baseline Process Understanding

Contents

Executive Summary

Note regarding an Estuary Assessment in Isle of Wight SMP2

C1: Assessment of Shoreline Dynamics

Annex A: South East Strategic Regional Coastal Monitoring Programme

Annex B: Climate Change and Sea Level Rise

C2: Defence Appraisal

C3: Baseline Scenarios of Future Shoreline Change

No Active Intervention (NAI)

With Present Management (WPM)

Executive Summary

This document reviews coastal processes and coastal defences and provides baseline scenarios for future shoreline change. It draws together the outputs and conclusions from a range of key texts and studies and presents important baseline understanding which forms an integral part of the Shoreline Management Plan and underpins the technical development of policies.

A 'Behavioural Systems' approach has been employed, which involves the identification of the different elements that make up the coastal structure and developing an understanding of how these elements interact on temporal and spatial scales. An essential requirement of this approach is to consider the coast as a whole system of interrelated features and processes.

The document is structured as follows:

C1: Assessment of Shoreline Dynamics

This report provides the current understanding of the overall pattern of coastal behaviour, drawing from a number of high-level reports such as the SCOPAC Sediment Transport Study (2004), Futurecoast (2002), SMP1 (1997) and Coastal Defence Strategies.

C2: Defence Appraisal

This report provides an assessment of every coastal defence within the study area, including a description of each defence element, overall condition grade, residual life and related natural features. This appendix is supported by detailed records of the coastal defence assets of the Isle of Wight Council and the Environment Agency around the Isle of Wight coast and estuaries.

C3: Baseline Scenarios of Future Shoreline Change

The baseline scenarios take forward the data provided in Appendices C1 and C2 to predict the response of the coast to the failure or maintenance of coastal defences and it identifies erosion rates to determine the future shoreline position. Two scenarios are examined:

- No Active Intervention (NAI)
- With Present Management (WPM)

The Isle of Wight coastline is approximately 165 km in length and whilst it is complex and extremely varied, it is possible to identify some general characteristics and trends in terms of geomorphology and coastal processes. The north coast of the Isle of Wight is characterised by low lying coastal slopes with five estuaries draining north into the Solent. Future coastal risks in the north of the Island are likely to include tidal flood risk, particularly focusing around the Eastern and Western Yar estuaries. In contrast, the southern coast is characterised by steep coastal cliffs and landslides. A prominent feature of the south coast is the Undercliff landslide complex. The south coast is particularly vulnerable to storms waves from the Atlantic and some sections of the south coast are subject to rapid rates of erosion.

The assessment of coastal defences calculated that 36% of the Island's coast is defended, the majority by seawalls. Defences range in condition from 1 (very good) to 5 (very poor), with the majority of defences on the Island having a condition grade of 2 or 3. The report concludes that the Island has a legacy of aging defences and 92% of the defences are expected to fail within the first epoch (0-20 years).

Based on an appreciation of coastal process systems and the defence appraisal, the baseline scenarios provide an understanding of how the shoreline is likely to evolve in the future and the influence that coastal management is likely to have on that behaviour.

Note regarding an Estuary Assessment in Isle of Wight SMP2:

The Isle of Wight SMP2 includes full consideration of the five inlets and estuaries along the north shore of the Isle of Wight:

- Western Yar Estuary
- Newtown Estuary
- Medina Estuary
- Wootton Creek
- Bembridge Harbour

A change from SMP1 to SMP2 has been the inclusion of the Medina Estuary, upstream of the Cowes floating bridge, and further consideration of Wootton Creek.

This SMP does not contain a stand-alone estuary assessment, for the following reasons:

- The estuaries, although important and significant features of the Isle of Wight coast, are nevertheless relatively minor in scale in the national context. Therefore it was important to include full coverage of the IW coast in SMP2 in coordination with the Environment Agency's Catchment Flood Management Plan in an appropriate manner.
- During early discussions in late 2006 the Isle of Wight Coastal Manager and the Environment Agency IW CFMP Project Manager discussed and agreed effective boundaries between the SMP2 and the EA Catchment Flood Management Plan. The CFMP was subsequently prepared to these boundaries by 2008, concluding with the Summary Report published in December 2009. Therefore the SMP2 was required to match these boundaries to ensure there was not a gap in coverage of coastal and flood risk planning. Furthermore, the scale of the estuaries and inlets was appropriate for inclusion in SMP2. This rendered the additional potential SMP2 assessment to define the inclusion or exclusion of Estuaries unnecessary.
- Significant expertise on the Isle of Wight Estuaries was included in the CSG (Client Steering Group) throughout the development of SMP2, to ensure full representation, including assessment in the following Appendices C1, C2 and C3. This representation included: the Isle of Wight Estuaries Officer representing both the Western Yar Estuary and the Medina Estuary (The Isle of Wight Estuaries partnership brings together Cowes Harbour Commissioners, Natural England, the Environment Agency, the Isle of Wight Council and Yarmouth Harbour Commissioners), including significant research on the Medina Estuary by ABPmer. The National Trust represented their ownership and experience of Newtown Estuary. Wootton Creek has not been subject to management to the same degree as the Medina Estuary, therefore research is not available at the same detailed level, but the Creek was included in the North-East Coastal Defence Strategy and the Wootton Old Mill Pond in a Water Level Management Plan, providing valuable information on this area (supported by experience of the CSG in managing issues in the area). Regarding Bembridge Harbour, representatives on the SMP2 CSG from the Isle of Wight Council, the Environment Agency and Natural England were also part of the group developing the Eastern Yar Flood and Erosion Risk Management Strategy during the same time period, which included detailed examination of Bembridge Harbour and created a strong link to SMP2.

Therefore, it was felt that available expertise on the Estuaries was incorporated fully into the SMP2 process.