Broad Character: Cultural Topography

Character Type: Cultural Topography (marine)

Regional Perspective: Southern England

Compiled by Seazone Solutions Ltd / M A Ltd, January 2011, after comment from D Hooley, English Heritage

INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

This Character Type includes the following Sub-types:

- Coarse sediment plains
- Fine sediment plains
- Mud plains
- Mixed sediment plains
- Sand banks with sand waves
- Exposed Bedrock

The seafloor sediments of the Southern England marine region are generally thin, and dominated by gravel deposits of generally less than one metre (Hamblin et al., 1992). There are few sandy sediments within this area and those which do exist are generally found in the more sheltered areas such as Poole and Christchurch Bays and the Solent (MA Ltd, 2007). Patches of mud plains and areas of exposed bedrock are also present, together with sand banks with sand waves.

There is great potential for the survival of prehistoric landscape components in the deposits of the region. Sediments of the Solent and its tributaries indicate that south coast river systems were corridors for human migration and favoured habitats for early human populations (Momber 2004, Wenban-Smith 2002, Wessex Archaeology 2007a). The potential of these marine deposits is confirmed by finds from their contemporary expressions on land: the earliest hominin fossils from the British Isles were recovered from a Pleistocene raised beach at Boxgrove, West Sussex (www.ucl.ac.uk/boxgrove).

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

The dominant character of sea bed (sea-floor and sub seafloor) in the Southern England region is bedrock (James et al, 2010), covered with a thin layer of unconsolidated sediment. The seafloor sediments of the Southern England region are dominated by gravel deposits, which are generally less than one metre thick (Hamblin et al., 1992). The less dominant sandy sediments are generally found in areas such as Poole Bay and Christchurch Bay which are fairly sheltered (MA Ltd, 2007). Others are found in the east of a sea bed 'valley' formation called the 'Northern Palaeovalley' which continues onto an adjacent sea bed platform bordering the Selsey to West Sussex coast (James et al, 2010) and was formed by river systems at times of glacial maxima when the now-submerged sea bed was exposed as dry land.

Mud plains are extensive in the inner Poole Bay and Christchurch Bay area (in conjunction with the sandy sediments), Chichester Harbour, off the east and north-east of the Isle of Wight and the extreme north-east corner of the Selsey-West Sussex sea bed platform mentioned above. Some of these occurrences are likely to reflect sheltered areas in bays and behind headlands where mud can settle on the sea bed. A number of patches of mud also occur in the palaeochannel foreshadowing the line of the Solent (James et al, 2010).

Large-scale sandbanks and ridges and smaller sand waves have been formed by the reworking of sea-floor sediments by currents that have been generated by tides and sea waves (BGS 2002). The dominance of rock and thin sediment plus the areas of coarse sediment means that the Southern England region has a limited extent of major sandy bedforms although sand streaks, sand patches, sand ribbons and megaripple do occur (James et al, 2010). Examples include the Dolphin Sand and Dolphin Bank in Poole and Christchurch Bay (James et al, 2010), Shingles Bank at the western entrance to the Solent which is attached onshore to the gravel based Hurst Spit, and Horsetail Bank, also at the entrance to the Solent.

The Southern England marine region has high potential for surviving prehistoric archaeological deposits within their contemporary topographic settings, with well-preserved river valleys infilled with sediments, for example the 'Northern Palaeovalley', and palaeochannels extending seaward from the River Arun and along the line of the Solent (MA Ltd, 2007). The region's submerged topography also represents the offshore extension of the Hampshire Basin drainage system which Wymer describes as containing more Palaeolithic sites than anywhere else in the country (Wymer 1999).

VALUES AND PERCEPTIONS

This Character Type has been receiving increased attention by archaeologists due to the potential of well preserved archaeological remains that could contribute to the understanding of past communities' use of the landscape. It is also an area where increasing archaeological and geomorphological landscape and seascape perceptions have been developing in complement, with extensive sea floor mapping in recent years. Its Pleistocene gravel sediments are also viewed, and exploited, as a rich source of marine aggregates for the construction industry. Ecologically, this Character Type is also highly valued for its biodiversity, both by those wishing to conserve it and by those seeking to extract from it by fishing and potting.

This Character Type can be viewed as potentially hazardous by those piloting ships and boats due to the potential of grounding their vessels. However, the indented coastlines produced by this Character Type can provide sheltered, calm conditions for sailors to moor or anchor.

RESEARCH, AMENITY AND EDUCATION

Within this Character Type, some survey, excavation and analysis of the well-preserved archaeological remains has been undertaken, providing valuable information about past human activities. Examples include the 'Submerged Palaeo-Arun River Project' (funded through English Heritage's distribution of ALSF funds) (Gupta et al, 2004) and the investigations at the Mesolithic site of Bouldnor cliff (Momber, 2004). These examples illustrate just some of the range of historic features that can survive within this Character Type and the historic potential of today's landscape/seascape in the Southern England region.

Diving fieldwork at Bouldnor Cliff (© Hampshire & Wight Trust for Maritime Archaeology)

The English Heritage-Aggregates Levy Sustainability Fund (ALSF) 'Enhancing Our Understanding: Navigational Hazards' project used the UK's extensive hydrographic archives, including charts, sailing directions and pilotage notes, and modern seabed geology mapping to identify and map 'Areas of Maritime Archaeological Potential' (AMAP), areas where high potential for shipwreck losses coincide with areas of high preservation potential (Merritt et al 2007). This project provided the foundations for the development of a quantitative system for assessing the archaeological potential for shipwreck material in the marine environment according to different sediment types.

Collaborative projects between industry and the heritage sector through the analysis of further geophysical data along with sediment characteristics and dynamics will help clarify issues regarding archaeological potential and its preservation in the marine environment.

The amenity value and public awareness of this Character Type could be further explored through, for example, interactive CDs and web resources, including those drawing on HSC. There is also ample opportunity, as England's coastal access provision is developed, for educational initiatives through presentations, posters and online resources, to raise public awareness about the inter-relationships between the cultural and natural environment in marine contexts.

CONDITION AND FORCES FOR CHANGE

The historic cultural character of this Character Type in the Southern England region is under pressure from offshore development including wind farms and aggregate extraction. The direct and indirect physical effects of these activities, including the movement of water and sediments, may have an intrusive impact on the archaeological potential of this Character Type. This will be an aspect for consideration in the Environmental Impact Assessment (EIA), relating to any such proposed developments.

Geophysical surveys (and in some cases core sampling and diver inspections) are often a requirement for offshore developments (including wind farms and aggregates extraction). These surveys can also potentially increase the understanding of the historic environment of an area, and enable the creation of detailed palaeoenvironmental and palaeogeographic

reconstructions. This information can inform future historic seascape characterisation of the areas concerned as well as feeding into the local and national historic environment records.

RARITY AND VULNERABILITY

Known and documented historic cultural aspects within this Character Type are currently rare, especially where time-depth is recorded (e.g. Bouldnor Cliff submerged landscape, off the Isle of Wight), but this reflects the relatively limited extent of research to date rather than the potential of the Character Type across its huge area.

In terms of vulnerability, this Character Type has always been subject to change from natural environmental processes such as erosion, sea level rise and global warming and cooling: its Pleistocene development is testimony to that. It is also currently under pressure from human activities such as intrusive fishing activities such as trawling and various forms of offshore development such as offshore wind farms and aggregate extraction. These developments will be subject to the marine planning system through the Marine Plans as the Marine and Coastal Access Act 2009 is implemented, and the individual expressions of such developments will be subject to Environmental Impact Assessment (EIA).

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