Broad Character: Navigation
Character Type: Maritime safety
National Perspective

INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

The Character Type Maritime Safety includes the following Sub-types:

- Daymark,
- Lighthouse;
- Buoyage;
- Safety area (offshore)
- Safety Services (including coastguard stations, coastguard cottages, and lifeboat stations amongst others).

HSC mapping is not to be used for navigation. It's mapping selects and depicts maritime safety features solely as part of its own assessment of historic seascape character.

'Maritime safety' includes areas containing features usually erected at important or dangerous points on or near the coast for the warning and guidance of mariners, and areas occupied by stuctures serving the safety needs of coastal or marine users of the sea. Some safety features can be sited well inland, such as church towers and spires used a navigational aids and more generalised place-finders.

A 'Daymark' refers to an unlit, highly visible and distinctive feature on the coast that can be used by mariners for navigation during daylight only (NMR Monument Type Thesaurus). Numerous features have been deployed as daymarks for sighting, navigation and survey. Some were specifically built as daymarks, often brightly painted to enhance their visibility; others include features such as churches, beacons, windmills, factory chimneys, primarily built and used for other purposes but serving, from a maritime perspective, to identify a known coastal location to aid navigation to varying degrees of precision. Lighthouse towers commonly also serve as daymarks, hence their white colour, and may continue to serve as such even if the light itself has been decommissioned as, for instance, at St Agnes Lighthouse, Isles of Scilly. In a less precise position-finding role, prominent hills and distinctive coastal headlands were often brought into play for a similar purpose along coastlines otherwise lacking in distinctive features or with confusingly repetitive coves and inlets.

A 'Lighthouse' is a tower or structure, with a powerful light or lights at the top, usually erected at an important or dangerous point on or near the sea-coast for the warning and guidance of mariners (http://thesaurus.english-heritage.org.uk/).

Buoyage refers to floating, fixed markers used to indicate to a navigator a sea area to approach or avoid (http://thesaurus.english-heritage.org.uk/). Single, or arrangements of, buoys, beacons and lights are often used to demarcate safely navigable entrances to estuaries and rivers, submerged hazards and foul areas.

A 'Safety area' refers to areas of the sea with advised or designated restrictions on navigation, or exclusion from permitted navigation altogether, to promote maritime safety. These areas may respond to a variety of dangers, for example: to facilitate safe passage around marine, coastal or estuarine hazards or between shipping lanes or they may be exclusion zones for safety reasons around offshore oil and gas installations or military practice areas.

'Safety services' refer to coastguard and lifeboat stations and National Coastwatch Institution (NCI) lookouts located at strategic points to monitor the coastline and, in the case of lifeboat stations, to launch search and rescue missions.

For obvious reasons the majority of features associated with this Type are typically found on or adjacent to the coast although daymarks may be well inland. Navigable entrances to estuaries and rivers, areas of submerged hazards and foul areas are often demarcated by tracks of posts, buoys, lights, beacons, bells and topmarks. In more stable areas, the sites of some navigation aids have a long history, being repeatedly represented on Admiralty charts and maps since their inception. On land, daymarks were commonly used in sighting, survey and navigation, also providing the triangulation basis for surveying maritime charts and coastal profiles.

Some areas of the sea are themselves characterised as 'safety areas', with advised or designated restrictions on navigation, or exclusion from permitted navigation. These may be designed to facilitate safe passage around coastal or estuarine hazards or between shipping lanes, or exclusion zones for safety reasons around offshore oil and gas installations, or military practice areas. Also important in maritime safety are the coastguard and lifeboat stations and lookouts dotted strategically along the coast.

The scale of features mapped within this Type will, as always, depend of the purpose and intended presentation scale of the HSC but where some have a character effect well beyond their physical size, smaller features may have been buffered to ensure their depiction.

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

Typical components of this Character Type include:

- marine navigation aids such as areas of buoys, beacons and lights;
- land-based navigation aids such as lighthouses, fog stations, daymarks (e.g. churches, beacons, windmills, chimneys, distinctive topography, distance marks and lights), topmarks, distance marks and lights.
- coastguard stations;
- lifeboat stations

Areas advised or designated as zones of restricted navigation or exclusion for safety reasons are also included.

The coast and sea have always brought opportunities to farm, harvest, trade, export and import, emigrate or immigrate. In conducting suich activities, mariners have always faced the challenges presented by the sea, not only those inherent such as storm conditions, obstacles and sandbanks, but also those posed by other people's activities, including from wrecked vessels or at times of war.

From the prehistoric into the medieval period, non-instrumental methods were generally used for navigation during sea voyages. Stars were used for course-steering and orientation; distances were estimated in terms of a standard day's sail; prevailing directions of winds and currents were understood and used, and the influence of the moon's phases on tides were known (McGrail 1998, 2001).

There is evidence for the use of sounding leads to gauge sea-floor depths from around 2nd century BC in the Mediterranean (*ibid.*). The use of magnetic compasses is known from medieval times (around 12th century) and sandglasses were used from around 13th century. Navigational instruments improved in the 15th century with the development of astrolabes, quadrants and cross-staffs in southern Europe. These devices measured the altitude (angle in the sky) of the sun and stars, which made it possible to calculate latitude, a crucial step for transoceanic navigation. There was no accurate means of determining longitude until Johns Harrison's perfection of the chronometer in c.1736 (Sobel and Andrews 1998).So prior to the 1600s, seamen used their experience and knowledge for sea voyages and safety at sea, known as Environmental Navigation (McGrail 1998, 2001; Parker 2001).

Determining and following a course relied in part on the recognition of coastal features, such as headland shapes, church spires, and other landmarks. It was preferred to approach a destination in daylight so hazards could be recognised in good time. At night, of course, such features could often not be seen, so in some places rudimentary lighthouses were erected. In England the earliest example, within Dover Castle, dates to the Roman period. By the medieval period, at least thirteen lighthouses are thought to have existed in medieval England, some lights maintained by religious bodies (one renowned example being on St Michael's Mount, Cornwall) while others were funded by local shipping tolls (Friel 2003: 85-6),. During this time, buoys and poles were also used to mark sea channels, so mariners could avoid shallow water, although very little is known about this. Evidence for seamarks becomes clearer in the 16th century with the appearance of buoyed channels laid and maintained by organizations such as Trinity House of Deptford. Founded in 1514, Trinity House survives today as the body responsible for lighthouses and other navigation features in England and Wales (http://www.trinityhouse.co.uk/) following an Act of Parliament in 1836 which gave the organisation compulsory powers to levy out private individuals who owned lighthouses.

Eddystone Lighthouse, built by Henry Winstanley, was first English lighthouse to be built on a rock at sea; located 28 miles off Plymouth, it was completed in 1698 but was washed away during the Great Storm of November 1703, along with Winstanley himself (Hart-Davis and Troscianko 2002). Lightvessels (ships which serve as lighthouses in areas lacking suitable sites for lighthouse construction) were historically employed in the 18th and 19th century particularly around the east coast and the treacherous approach to the Thames. Most are now obsolete but some survive, as over the Seven Stones reef near the Isles of Scilly.

Sea-charts were first developed in 13th century Italy, but were probably not used in northern Europe until the 16th century. The earliest known English sea-chart dates from the 1530s. Sea-charts are practical and visual tools to enable safe navigation. Historically, they were also used for colonial policy, serving as a guide for exploration and material conquest (Mrozowski 1999: 154). Maps and charts were manifestations of how the world was perceived and experienced, offering an analogue for the acquisition, management and reinforcement of knowledge and power (Bender 1999: 32; Colwell-Chanthaphonh and Hill 2004). Modern charts, whose compilation in the UK is the responsibility of the UK Hydrographic Office (UKHO), are regularly updated both in their representation of the landscape for maritime purposes and in their portrayal of maritime safety features around the coasts and seas.

Lifeboats were originally run independently by maritime communities who would rescue those who got into trouble at sea. In 1824, the National Institution for the Preservation of Life from Shipwreck was formed. The change of name to the RNLI took place in 1854, which is still being used today. The RNLI took over the running of the lifeboats across the country although a single independent lifeboat still exists at Caister in Norfolk.

Today, the Maritime and Coastguard Agency (MCA) provides a response and co-ordination service for maritime search and rescue (SAR), counter pollution and salvage. The SAR role is undertaken by HM Coastguard, which is responsible for the initiation and co-ordination of civil maritime SAR. This includes the mobilisation, organisation and tasking of adequate resources to respond to people either in distress at sea, or in inland waters, or to people at risk of injury or death on the cliffs and shoreline of the UK. As part of its response, HM Coastguard provides Coastguard Rescue Teams for cliff and shoreline search and rescue purposes (MCA 2008).

VALUES AND PERCEPTIONS

Maritime safety features inevitably have a strong integration with our landscape and seascape perceptions. As a part of the coastline or shoreline, to fulfil their roles they generally have to be readily recognisable and distinctive, with strong contribution to the present landscape/seascape.

Lighthouses, beacons, and daymarks are iconic markers of place for many people viewing them both from land and sea. They bridge the perceptual boundaries between land and sea. The strength of emotional feeling many attach to them is clear in the many responses sometimes provoked by the proposed decommissioning of lighthouses, from those fearing the loss of a feature they see as a vital element in their perceptions of a particular part of the coast, an example being the reaction to suggestions in 2010 that Godrevy Lighthouse in Cornwall might cease operation.

Safety installations that employ sound, such as fog horns and bells, have an immediate effect alerting mariners about the dangers ahead but similarly have a landward dimension too, their often haunting sound sometimes carrying far inland.

Some maritime safety sites are less obvious to those not involved in maritime activity. These are the church spires and towers, factory chimneys, tall towers, communications masts and the like, which were not built or primarily used for maritime safety but which serve, from the maritime perspective captured by HSC, as daymarks or generalised place-finders. The same applies to the cultural adoption for the same purpose of distinctive headlands and cliffs which may be otherwise little-modified.

Lighthouses have also been a source of inspiration and subject matter for many artists and writers, for example James F Cobb's 1920 adventure novel 'The Watchers on the Longships: A Tale of Cornwall in the last Century' and Virginia Woolf's 'To the Lighthouse' (1927) inspired by Godrevy Lighthouse and summer holidays in Cornwall.

RESEARCH, AMENITY AND EDUCATION

Considerable documentary evidence exists regarding this Character Type, both in archaeological and historical studies and on historic and modern charts. Further research using landscape-based approaches may enhance our understanding of past perceptions of the sea and coastline and their dangers, as with current Dutch work using early map reference points to ascertain the locations of now-drained estuarine channels where numerous wrecks were recorded.

The use of landmarks and navigation aids facilitated the development of surveying techniques and the drafting of maritime charts and coast profiles. Further research can identify features still archaeologically extant but now lost to knowledge.

Plotting the location and understanding the development of coastguard stations along the coast would give valuable information about the development of hazards and preventative methods for coastal trades of all types (Val Baker *et al* 2007).

Lighthouses are often used as amenity resources, open to the public. Further educational initiatives could be developed to enable a better understanding of the development of maritime safety in England.

This Character Type lends itself well to local, regional and national case studies appropriate for the Secondary National Curriculum especially geography which looks at how places and landscapes are understood and how people, their perceptions and their environment interact.

CONDITION AND FORCES FOR CHANGE

Although navigation aids, particularly those at sea, are often replaced and renewed, their mooring sites may still hold evidence of successive use and re-use. This is exemplified in the use of fixings, piles and other materials to anchor these features to the seabed.

Terrestrial markers are increasingly becoming disused, since these traditional methods are being replaced with radio, satellite navigation, digital marine charts and seismic technologies. This is true also of lighthouses, with debates ongoing about their relevance since we are currently living in a society that is using Global Positioning Systems (GPS) for most navigation. Arguments that lighthouses no longer justify their costs of maintenance are countered by those that want to retain them as a fail-safe should GPS systems fail.

RARITY AND VULNERABILITY

Many navigational aids are sited in locations vulnerable to coastal erosion processes, not only from the sea but extreme weather conditions too. Suck risks apply to substantial structures including lighthouses too, several of which are at risk from erosion, particularly in the East Anglian region where Happisburgh and Orfordness lighthouses are under medium term threat.

Maritime safety structures are vulnerable too from technological advances: electronic and digital systems offering comprehensive position-finding and chart data readily available to most marine users and making redundant many well-spaced material fixtures which rely on visibility for their operation. Coupled with that obsolescence, pressures on public finances are forcing the increasing centralisation of safety services and closure of some smaller coastguard stations.

PUBLISHED SOURCES

Bender B. 1999. Subverting the Western Gaze: Mapping Alternative Worlds. In *The Archaeology and Anthropology of Landscape. Shaping your Landscape*, ed. P Ucko, R Layton, pp. 31-45. London: Routledge

Colwell-Chanthaphonh C, Hill J. 2004. Mapping History: Cartography and the Construction of the San Pedro Valley. *History and Anthropology* 15: 175-200

Friel I. 2003. *Maritime History of Britain and Ireland*. London: The British Museum Press

Hart-Davis A, and Troscianko, E. 2002. Henry Winstanley and the Eddystone Lighthouse, London: Sutton Publishing

MCA. 2008. *Search and Rescue Framework for the United Kingdom of Great Britain and Northern Ireland*. Southampton: MCA

McGrail S. 1998. *Ancient Boats in North West Europe*. London

McGrail S. 2001. *Boats of the World*. Oxford: Oxford University Press

Mrozowski S. 1999. Colonization and the Commodification of Nature. *International Journal of Historical Archaeology* 3: 153-66

Parker, A. J., 2001, Maritime Landscapes. In Muir, R. (ed.), Landscapes. Windgather Press

Sobel D, and Andrews W J H, 1998. The Illustrated Longitude, London: Fourth Estate

Tapper B, Johns C. 2008. *England's Historic Seascapes. Consolidating the National Method. Final Report*, Historic Environment Service Cornwall County Council on behalf of English Heritage, Cornwall

Val Baker M, Tapper B, Johns C, Herring P. 2007. *England's Historic Seascapes: Scarborough to Hartlepool and Adjacent Marine Types*, Historic Environment Service Cornwall County Council on behalf of English Heritage, Cornwall

WEBSITES

http://www.trinityhouse.co.uk/

http://www.rnli.org.uk/