

1.1 BROAD CHARACTER: NAVIGATION

1.1.3 CHARACTER TYPE: NAVIGATION HAZARD

REGIONAL PERSPECTIVE: EAST ANGLIA

INTRODUCTION: DEFINING/DISTINGUISHING ATTRIBUTES

The region has always been notorious for its navigation hazards. Offshore sandbanks lie parallel with the shoreline in the far north and south of the area. Hazards also include outcrops of cemented volcanic ash contained within the London Clay, areas of water turbulence, numerous wrecks and other maritime obstructions.

The offshore area has varying depth ranges, from drying areas up to c. 30-40 m deep. However, depths are not uniform and areas of deeper and shallower water exist throughout. The tidal range across the area is quite low at under 1m to 4m at Mean Spring Tide.

In the north of the area a volatile sandbank system overlies the buried valley of the River Yare including the Scroby Sands, Corton Sands and Holm Sands, Middle and South Cross Sands and Caister Shoal. As a result the navigation channels on the entry to Great Yarmouth are constantly changing. To the immediate south the smaller banks of Lowestoft, Newcome Sand and Barnard have historically complicated the entry to Lowestoft harbour leading to a succession of lighthouses in the area (see Navigation Activity).

Further south along the Suffolk coastline four small features run parallel to the shore between Dunwich and Aldeburgh; Dunwich and Sizewell Banks are constantly shifting, Aldeburgh Ridge and Aldeburgh Napes are slightly further east. Aldeburgh Ridge is marked by a light buoy, although incidents of grounding still occur, as recorded by the Aldeburgh lifeboat (<http://aldeburghlifeboat.org.uk>).

A series of treacherous navigational hazards are located in the approach to the Alde/Ore/Butley estuary. These include the parallel banks of Whiting Bank, Bawdsey Bank/Kettle Bottom and Shipwash which constrain the channels approaching the estuary (Hollesey Bay, Sledway, Shipway). In addition 'Flagstone', a small ridge of cemented volcanic ash within the London Clay, lies within this area, rising to 7-10 m deep. The depth over Bawdsey Bank is generally 5 - 10 m though a raised area in the centre of the feature can be shallow enough to dry. In addition two dangerous shipwrecks are located just off Bawdsey Bank. Over Shipwash depths decrease from 10 m to drying. This is compounded by an area of sandwaves to the north at the entrance to Shipway, up to 5.8 m high, found to be shoaling and migrating north-north-east at a rate of 20 m per year. A further area of sandwaves to the south, around South Ship Head and to the east of Shipwash are as much as 7 m high and migrating in the same direction at a rate of 40 m per year (UKHO 2006, TE2A). The danger of the area is illustrated by an incident in 1999 when a ferry travelling east of Shipwash was swamped by a wave which broke over the sandbank. One life was lost in the incident (www.marinelog.com)

1.1.3 CHARACTER TYPE: NAVIGATION HAZARD

Banks known as Cutler and the Knolls are located just to the south of this on the approach to the Deben estuary. Cutler sandbank is 2-5 m deep and is composed of an elongated train of sandwaves, making it hazardous for large vessels. The knolls are a series of small highly dynamic shingle banks which are located at the mouth of the Deben.

The entry to Harwich Haven and the ports of Harwich and Felixstowe is also constrained by a series of hazards. These are a combination of shoals (eg Cork Knolls, Platters, Cork Sand, Rough Shoals) and outcropping cemented volcanic ash contained in the London Clay (eg Felixstowe Ledge, Wadgate Ledge, Cork Ledge, Stone Banks and Naze Ledge). Many of the features are marked with buoys to aid navigation. An area known as Halliday Rock Flats which has a depth of 0 - 2 m is specifically used as a recreation area for power craft. Rough shoals still supports the Rough Shoals Tower, placed in WWII and now occupied as an independent state. This is also a navigation hazard in its own right.

To the east these features are backed by a large area of sandwaves known as the Sunk which is a large caution area. The Sunk is within an area of heavy shipping located at the top of the Harwich Deep Water Channel. The sandwaves are up to 7 m high and both symmetrical and asymmetrical in form (UKHO 2006 TE5A). These features are slowly migrating in a south-westerly direction.

The most substantial and significant series of hazards is located off the North Essex coast and comprises several pairings of sandbank and channel which form a series of treacherous navigational features and hazards in one of the major approaches to the Thames. Inshore a series of very small features include Priory Spit, Collier and Tripod. The major sandbanks are known as Gunfleet Sand, Sunk Sand/Sunk Head, Long Sand/Long Sand Head and Kentish Knock. These border the Wallet, East Swin, Black Deep and Knock Deep channels (see Navigation Feature). The possibility of grounding on either side of the East Swin is a well known hazard.

These banks are well known for their shipwrecking potential with water depths varying from 0 to 5.5 m. Recent surveys have shown that Long Sand is steadily migrating south-east whilst Long Sand Head is extending in a north-east direction in what may be interconnected processes (UKHO 2006 TE6A). Areas of the bank are covered with megaripples and sandwaves which can be hazardous for shipping.

Further offshore, **four narrower features also add to the dangers of this area.** These include the Outer and Inner Gabbard, 36.5 km and 46.5 km from the coast in the Felixstowe area. Depth over the Inner Gabbard is reduced to 5-15 m, and 2-20 m on the Outer Gabbard. The Galloper is located c. 50 km offshore and the depth over the bank decreases to as little as 2 m. 'North Falls' incorporates the areas known as Four Mile Knolls or North Falls Head and North Falls Tail with depths of 5-20 m over the feature.

There are several areas of water turbulence associated with these features which are avoided by shipping. These are located across the sandbanks flanking Great Yarmouth including Scroby Sands and Caister Shoal. Further south water turbulence is found off Aldeburgh Napes, Whiting Bank, Bawdsey Bank and the head of Shipwash, the Inner Gabbard and Long Sand. The latter acts as a break between the Dover tide to the south and the North Sea tide to the north east. As a result water levels can be different on either side of the bank at any time (D'Olier 2002). As a consequence of the treacherous character of the seascape in the region there

are over 2000 wrecks in the area. These range in date from at least 1320 (the wreck of *La Trinite*) to 2005 (the *Persistent Whisper*). However most of the dated vessels (c. 700) are 20th century in date. Wrecks notably cluster around the shoreline, the sandbanks off Great Yarmouth and in the south of the area around Harwich and into the Orwell estuary. Around 600 of the known wrecks are considered dangerous.

The vessels range from small fishing vessels to WWII destroyers and submarines, as well as aircraft (Sturt et al 2009, 52). Their origins and routes also vary from local fishing voyages to international traders. Coastal voyages are represented by vessels such as the *Friargate* which was carrying 225 tons of Loam from London to Middlesborough and the *Sheaf Field* which hit a German laid mine while carrying coal from the Tyne to London. International traders include the *Ingstad* which was carrying coal from the Tyne, bound for Nantes, the *Terukuni Maru*, travelling from Tokyo to London and the *Stad Maastricht*, from London to the USA. A series of Thames Barges were also deliberately scuppered by the National Rivers Authority in Hamford Water to protect Horsey Island from coastal erosion.



Scuppered wrecks in Hamford Water

The Dunwich Bank wreck (see below), with a 100m exclusion zone around it, is designated under the Protection of Wrecks Act 1973 due to its historical and archaeological importance.

Other man-made obstructions which can be navigational hazards include the remains of the Sunk Head Maunsell Tower which was blown up to avoid occupation (see 'Military Defence and Fortification').

HISTORICAL PROCESSES; COMPONENTS, FEATURES AND VARIABILITY

Sandbanks have acted as significant navigation hazards in this area for centuries. These were formed through various different natural processes which still affect their morphology. Most are the product of reworking of fluvially deposited sediments, erosion of cliffs and exposure of Lower London Clays. It has been postulated that Gunfleet Sands for instance was formed as a headland or banner bank when the Naze headland extended much further eastwards (D'Olier 2002).

The features have not always had their current form and have altered in relation to different factors. These include sediment deposition, for example Barnard Shoal may take sediment from Benacre Ness or vice versa. The Knolls in the mouth of the Deben are highly dynamic features which are generally accreting. In 1868 Dunwich and Sizewell Banks were clearly distinct from one another; by 1949 they had merged. In contrast a number of these features appear to have been stable for up to 350 years including Whiting Bank and Bawdsey Bank and the minor banks such as Aldeburgh Napes.

Our knowledge and understanding of the natural hazards in the area will also have varied over time, although local mariners will have been more aware than others. In terms of historical records 'Ganfletsand' was named in an official document in 1320 and was named for the Gan Fleet, the old name for the Holland Brook which divided Great Holland and Little Holland (Jarvis 1990). Navigation hazards were more frequently charted after the 1800s as the Hydrographic Office was established as a sub-department of the Admiralty in 1795 and issued its first officially published Admiralty chart in November 1800 (<http://www.nationalarchives.gov.uk/records/research-guides/admiralty-charts.htm>). These charts were continually updated and corrected as obsolete charts were regarded as dangerous, presenting a potential navigational hazard (ibid). The admiralty chart of 1855 shows Long Sand, Whiting Bank, Kentish Knock, Bawdsey Bank, North Falls, the Inner and Outer Gabbard and the Galloper.

In recent years the sandbanks have been used for other purposes including for anchoring pirate radio stations and placement of sea defences such as the Rough Shoals and Sunk Towers.

The proximity of navigational features and strong currents in the area has often resulted in the loss of vessels. It is certain that this area was being traversed in the Roman period and probably before this. The ever-changing hazards have therefore claimed ships of all dates, although the earliest known example in this area is the wreck of La Trinite, an English or Scottish cargo vessel which stranded on the Gunfleet Sand in 1320.

As the region was an important trading and fishing centre in the medieval period it is likely that a number of medieval vessels lie beneath the waves, although few have been identified. The majority of known wrecks are post medieval in date. The recorded losses on sandbanks illustrate the variety of transport that has used the adjacent channels. Many were known to be involved in coastal trading between London, East Anglia and the North as well as internationally, showing that the area was important for different routes.

One of the most famous wrecks in the area was the Deutschland which ran aground on Kentish Knock carrying immigrants to America in 1875. The ship foundered during a blizzard and most of the passengers and crew died of exposure before help arrived.



Hulk off Orfordness

The North Sea in this area has also claimed a number of military ships, either through battle at sea or those lost during transportation, or from mines. The Ipswich Journal of January 16th 1742 records that “Yesterday morning his Majesty’s Sloop the Otter, Capt Gordon, was lost on Sizewell Bank, the captain and 36 others were drowned, only 18 escaped.” (<http://www.foxearth.org.uk/1740-1745IpswichJournal.html>). Other wrecks of note include the Colchester, a 4th rate fighting ship lost on Kentish Knock in 1744 and HMS Arethusa (built 1912) lost on the Cutler Bank in 1916. She was the name ship of her class of light cruisers and was the flotilla leader for the Harwich destroyers. She fought at the battles of Heligoland Bight (1914) and Dogger Bank (1915) before she struck a mine in 1916 and drifted ashore (<http://en.wikipedia.org/>).

The only protected wreck in the area is the Dunwich Bank wreck discovered in 1993, the exact identity of which is unknown. It is believed to be a 16th or 17th century armed merchant vessel or possibly a rare example of an early military transport vessel. It currently survives as a scatter of bronze and iron guns and iron concretions either fully exposed or partially buried, centred on a small mound, and another discreet group nearby. This site is unique in being the only known site in the UK with bronze guns still in situ, suggesting that no contemporary salvage took place. A cannon recovered from the site is thought to be of a type produced by Remigy de Halut of the Spanish Netherlands between 1536 and 1556, whose name is also visible on two of the guns that remain on the seabed, both dated to 1554. So whilst post-dating 1554, the possible longevity of the weapons gives a date for the wreck of within 100 years of 1556 (<http://www.english-heritage.org.uk/daysout/maritime-heritage/map/dunwick-bank/>).

VALUES AND PERCEPTIONS

Navigation hazards are often prominent in the consciousness of coastal communities as a result of the loss of lives they can cause. In this region the area around Harwich Haven is particularly notorious and Nelson is reputed to have said that in terms of navigation the Thames estuary is one of the worst areas around the UK, being as “tricky as a tiger” (Bowskill 1998, 159). The reputation of Gunfleet Sand alone is illustrated by a poem, ‘L’Envoi’, written by Rudyard Kipling.

The fact that all the sandbanks in the area are named and the names well-known locally illustrates their significance in people’s perceptions. These features are also known for other reasons including the presence of battles such as Kentish Knock, named after the sandbank. More recently the area was famous for the pirate radios which broadcast from outside territorial waters in the 1960s-1980s; Kentish Knock was the first home of Radio Caroline.

Shipwrecks also provoke strong feeling among the maritime community and within the general public. The enormous loss of life after the tragedy of the *Deutschland* led to the stationing of a lifeboat at Harwich in 1876 (Jarvis 1990, 53). The incident is recorded in a poem by Gerard Manley Hopkins, written in the year of the disaster.

RESEARCH, AMENITY AND EDUCATION

The shipwreck assemblage within the region has considerable research potential due to its range of dates and types. Those wrecks for which we have details can tell us the origins and routes taken and, in the case of well-preserved vessels, the details of shipbuilding. Overall this would enhance our understanding of the region’s maritime links in the UK and abroad.

Wrecks are also valuable for a number of other reasons. For example they have ecological value, effectively creating an artificial reef for more unusual ecosystems which can be studied. In the same way wrecks can be a useful resource for fishermen. In this region lobster potting in particular is known to take place on wreck sites offshore. For many of the same reasons wrecks attract divers who are keen to view wildlife as well as things of historical interest.

CONDITION AND FORCES FOR CHANGE

The navigation hazards of the East Anglian region are in variable condition. Due to natural processes sandbanks are often in constant flux anyway. This may be aggravated in the future by climate change resulting indirectly from human activity, in particular sea level rise and increased storminess. In addition this dynamism is also affected more directly by human activities such as harbour and channel dredging and increased development in the coastal zone.

The condition of the wrecks also varies depending on location, age and material. These may also be affected by increasing storminess and changes in the sedimentary regime. Wrecks are also significantly affected by trawling which can destroy structures and spread material.

Offshore development can be detrimental or destructive to shipwrecks, however work carried out in advance of development can locate previously unknown wrecks through survey or lead to protection of certain sites. Survey as, for example, carried out in conjunction with the Protection of Wrecks Act 1973, can also give us updates on the condition of wrecks.

RARITY AND VULNERABILITY

Sand banks are often dynamic, as outlined above, and can have a significant effect on the eroding coastline. Sandbanks can act as barriers from waves and can be sediment sources or sinks. As climate changes all these processes are subject to change in response.

From a heritage specialist's perspective the wreck resource of the region is very significant yet constantly at risk of erosion, disintegration and destruction. Some of the wrecks are incredibly rare survivals of their type and this is recognised by the protection afforded to the Dunwich Bank wreck. As a Protected Wreck it is regularly surveyed and its condition reported, building up a continuously updated record using the new information recovered.

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