

IIB: SOUTHAMPTON WATER



North Southampton Water from Cruise liner terminal – massive scale industrial waterside uses with the container port and Marchwood waste transfer station – New Forest on the skyline.



Saltmarsh between Fawley and Hythe – © Robin Soames.



Eroded front cliff of saltmarsh. Shell bank or chernier left. © Ian West



Large container vessel – shepherded by tug.



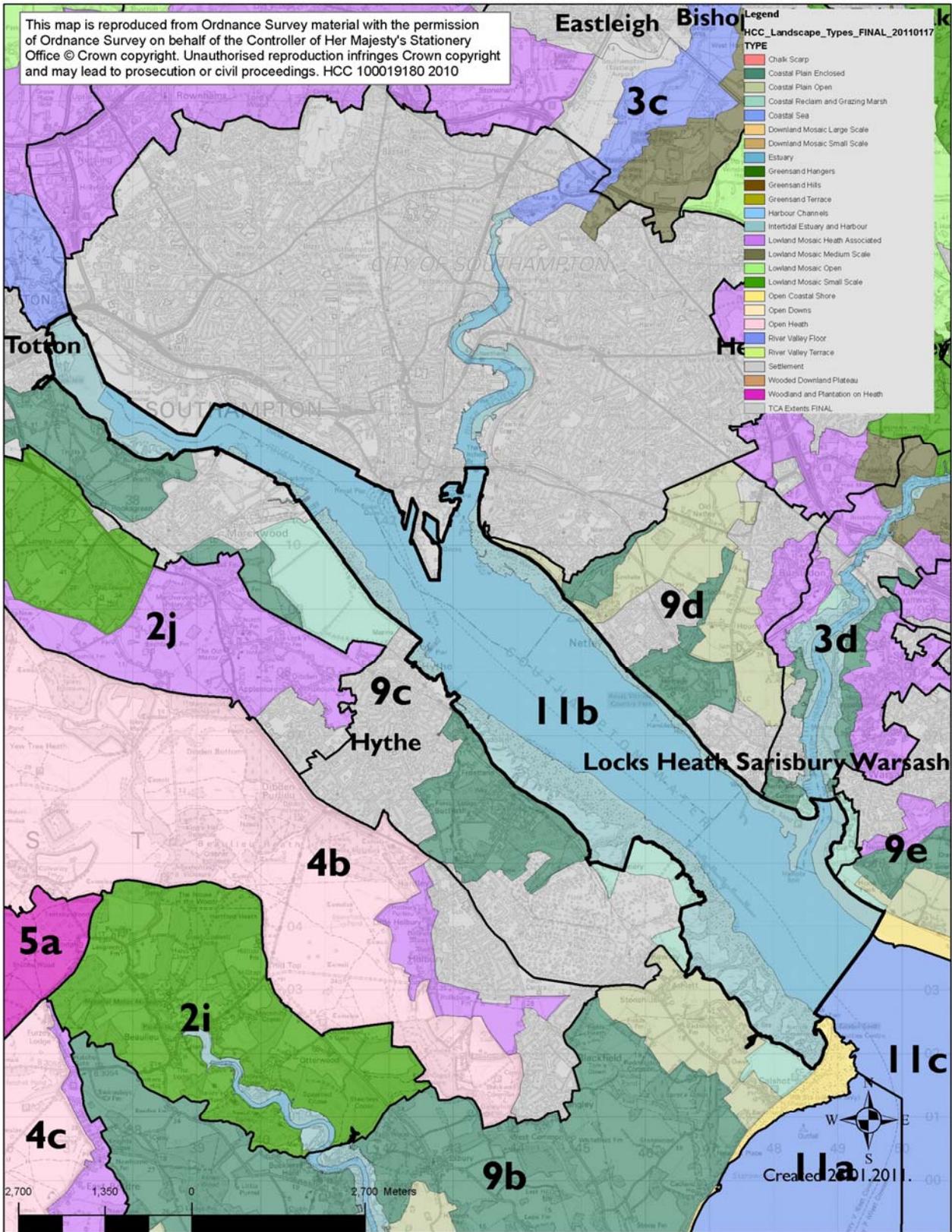
Cluster of cylindrical tanks and pier off at the oil terminal off Hamble point.



Fawley refinery oil terminal – extends well into the estuary.



Ferries at Hythe Quay.



SOUTHAMPTON WATER



1.0 Location and Boundaries

1.1 Redbridge and the Itchen bridge are strong visual boundaries to the north. The shore to the east and west extends to the area below mean high water mark and includes the areas of cordgrass saltmarsh. The southern boundary reaches just north of Calshot spit.



1.2 **Component County**
Landscape Types:
Estuary.

1.3 **Composition of Borough/District LCAs:**
None

1.4 Associations with JCAs, Natural Areas and Englands Historic Seascapes

JCA 131: New Forest

NA109: Solent and Poole Bay

EHS: Southampton Port, Southampton Water Western Approaches and Southampton Water Eastern Approaches (part)

2.0 Key Characteristics

- A predominantly straight deep water estuary with a dog leg at the confluence with the river Itchen and Southampton docks.
- Supporting Europe's largest oil refinery and long history of world wide trade, including glamorous ocean liner industry.
- Great variety in shoreline character including: heavily industrial section at the head of the estuary; refinery development; large expanses of intertidal saltmarsh and mudflats; woodland and historic parkland
- Sheltered from predominant south-westerly winds, with very busy shipping, including commercial huge container vessels, tankers and ferries, highspeed vessels, hovercraft testing area and recreational sailing.
- Unique double high water.
- Internationally important for marine and coastal biodiversity with SPA and SAC designations.
- Part of the former Pleistocene Solent river and wooded river valley – with peat deposits and fossilised trees in places.
- Commercially important area for hard shell clam fishing and nursery area associated with the Fawley outfall for bass.
- The relatively sheltered waters made the character area an attractive area for early-mid 20th century uses such as flying boats /sea planes and the British power boat industry which have subsequently died out.
- Long history of reclamation through embankments and hardening of the shore – particularly for the development of the port of Southampton.

3.0 Physical Characteristics and Uses

- 3.1 Bedrock of Tertiary deposits including Barton sands and clays to the west and Bracklesham beds to the east. Above this are the periglacial gravel beds of drowned river systems from the Pleistocene (2m to 11,500 yrs ago). The Itchen and Test were conjoined to form a Solent river valley during this period, which extended in a south easterly direction to the east of the Isle of Wight. The gravels were deposited in a series of river terraces. The later soft organic rich estuarine deposits of the Holocene period (post last glaciation – c 11,500 years ago) contains peat deposits, tree remains and bivalves and is of very variable thickness. The deep geology has potential for energy in the form of geothermal power.
- 3.2 Southampton water is a straight deep water estuary with a slight dog leg north of Dibden. The main channel is maintained to an average depth of 12.6m and is 200m wide. The southern section south east of Fawley is steeply shelving on the west side. The eastern side is less steep sided. North of Fawley the channel sides are less steep again. The area of greatest coastal erosion on the east side occurs mid way between the River Hamble and River Itchen. There is longshore drift both north and south from this point towards these two river mouths. Sediment transfer from the Solent up into Southampton water occurs. The mudflats have generally declined in height, with less sediment being brought down from the rivers into the Solent, and whilst some of the salt marshes increased during the 20th century with colonisation by *Spartina* marsh grass, this process has now ceased with the dieback of the *Spartina* grasses⁴¹. Wave action is generally stronger further south and die back of cord grass in the last 50 years has meant greatest retreat of saltmarsh in areas south of Fawley.
- 3.3 The estuary is very well sheltered from most wind directions – although a heavy chop develops in south east winds greater than force 4⁷⁷. The tidal characteristics are unique here, in that at Spring tides there is a ‘double high water’ which is slightly lower and about 2 hours after the first high water. The tidal regime of the Solent and particularly Southampton water is one of the most complex in the world. The double high tide results in a prolonged high tide and ebb currents are particularly strong. The tidal range at spring tides is 4m. At mean low water the area covered by water is reduced by about 40%.
- 3.4 Southampton water is a very busy area for navigation, supporting local ferries to ocean going liners. Container vessels ply the length of this deep water channel to the container port. This is one of Britain’s major ports and is the second largest container port in the Country. Petrochemical tankers ply the area to Fawley and just north of Hamble point. At Fawley there are two main commercial operations: an oil refinery and a power station. On the east side at Hamble points is the BP oil fuel storage and distribution terminal. The ports are solely used by huge tankers which berth alongside long piers and wharves which reach well into the estuary and characterise this part of character area. There are several marinas, including Hythe and Town Quay ocean village. The density of moorings increases up the river Hamble and above Itchen bridge, and the water is seasonally very busy with recreational craft. Angling areas of moderate use are located around Netley and Hook park. The estuary is an important area for Salmon and Trout migrating to and from the chalk streams of the Itchen and Test –there is no commercial netting of these fish in the estuary. The higher water temperature around the Fawley

outfall and upper reaches of Southampton water are important Bass nursery areas. The extreme south of the character area is the start of a substantial oyster producing area around the mouth of the estuary.

4.0 Experiential/Perceptual Characteristics

4.1 There are many landmarks from Southampton Water, including the silvery dome of the vast Marchwood waste transfer station, the cranes of the container port, the Isle of Wight ferry terminal at Town Quay, the chimney stacks of Fawley and cylindrical storage tanks of the fuel depots south of Netley. This is in contrast to the architectural interest of Netley Abbey and Castle and Royal Victoria Country Park on the wooded eastern shore. The New Forest and Isle of Wight (to the west and south respectively) lend a sense of enclosure and a natural horizon line to the heavy industry in the foreground.

4.2 The estuary is extremely busy all year round, but particularly in summer with more recreational craft on the water. There are numerous deep water moorings and wharves, and the straightness of the channel is of considerable benefit for large vessel manoeuvrability. There is a hovercraft testing area off Netley, and a commercial high speed craft route to the north of the main channel. The Hythe Pier to Marchwood sea mounting area is identified as foul ground (due to clump sinkers with wire attachments) as is the Gymp shoal, but there are few natural navigation hazards.

4.3 The amount of commercial sea going traffic on this stretch of water and associated industrial and port activities make this a busy seascape. Even so, parts of the coast (especially south of Hythe but excluding Fawley) have qualities of remoteness and wildness. Seasonal variation in the numbers of watercraft means that the estuary can be a tranquil area, especially in winter. This is a sheltered piece of water which contrasts with the more open waters of the Solent, and it affords refuge in heavy and stormy weather.

5.0 Biodiversity Character

5.1 Parts of Southampton Water are internationally designated. The Solent and Southampton Water SPA and RAMSAR site covers the southern and northern fringes of the character area. The Solent Maritime SAC covers a similar area but is more focused on the southern edges of the LCA and the mouth of the Hamble. The international designations are also underlain by SSSIs. These designations cover several areas of estuarine, intertidal and coastal habitats including extensive estuarine flats, often with intertidal areas supporting eelgrass and green algae, sand and shingle spits, and natural shoreline transitions which together support internationally important numbers of wintering waterfowl, important breeding gull and tern populations and an assemblage of rare invertebrates and plants.

5.2 A range of habitats occur within this character area, from fully marine habitats to intertidal and coastal habitats. The boundary to this LCA is defined by the mean high water mark, but visually and ecologically the transition between the land based character areas and this marine character area is often a gradual rather than an abrupt boundary. The western shoreline supports a range of marshes and mudflats. Calshott marshes (near the mouth of the estuary) comprises extensive salt marshes and mudflats supporting cord grass beds. These habitats support species

which provide food sources to wildfowl and waders. Further north Dibden Bay supports further extensive saltmarsh and mudflats. Saltmarshes continue in a thin strip along the coast before giving way to unique, extensive and ungrazed sea poa marshland at Bury marshes with American cord grass association. There is a further significant area of saltmarsh at the head of Southampton Waters. Eling marsh supports puccinellia, creeping bent and red fescue and represents a grazed saltmarsh, habitat. The eastern coast of Southampton Water varies in character. It contains a steeply beached habitat with gravels overlying muds and silts supporting a variety of species, including lugworms, ragworms, cockles and sea anemones.

5.3 Southampton water was the first UK area for North American cordgrass *Spartina alternifolia*, introduced in 1836. The hybridised cross with the native variety produced extremely invasive forms; *S.anglica* and *S. townsendii*. The estuary shore was rapidly transformed with the establishment of hummocky cordgrass which built up by sediment accretion 2m above the original mudflat level. The area of cordgrass has suffered substantial contraction, first from degenerative disease in the 1930s, and later due to front cliff erosion from wave scouring and enlargement of creeks between the hummocks. The greatest area of retreat has been south of Fawley, where the natural coastal processes are strongest, and also in areas of reclamation such as Dibden and Southampton docks. The sediment erosion in the estuary has left behind banks of shells (cherniers). South of Fawley at Ashlet is one of the very few areas along the Solent where there is grazing of the intertidal saltmarsh.

5.4 The Estuary population of *Zostera* or eelgrass has been severely reduced since a degenerative disease took hold in the 1930s. Subsequent loss of *Spartina* has meant that the mudflats are relatively unstable here compared with other more sheltered areas, and populations have not recovered. This has affected numbers of wildfowl which depend on this food source.

6.0 Historic Character

6.1 Archaeology

6.1.1 The Solent was a river valley during the Mesolithic. Rising sea levels inundated it west of the Isle of Wight. As a consequence there are old landscapes on the seabed where people hunted and gathered in the Palaeolithic and early Mesolithic periods. The Roman port of Bitterne was located well above today's mean high water mark when sea levels were higher.

6.2 Historic Landscape

6.2.1 Southampton was established in the C.10th as a port for the wool and wine trades, and was later appointed to be the exclusive market for metal export. The C.15th saw a high point in prosperity for Southampton, stimulated from trade in Mediterranean luxury goods. Religious houses fostered trading activity at this time in a variety of havens such as Quarr (near Ryde). Southampton port has a long trading history, together with Portsmouth as the Solent's major ports. Southampton had significantly more port traffic before 1500 than Portsmouth. Over the following centuries the area became known as the 'gateway to the world', increasing its commercial trade and passenger status. Iconic ocean-going liners such

as the Titanic, Queen Elizabeth II and Queen Mary II set sail from Southampton. The docks were concentrated above the confluence with the Itchen.

- 6.2.2 The petrochemical industry arrived in 1921 and remained relatively low key until 1949. Over the subsequent two decades it developed into one of the largest refineries in Europe. It has its own (oil fired) power generation plant with a distinctive 200m chimney stack. Cooling water outfalls here into Southampton water which raises the water temperature.
- 6.2.3 The area's former intertidal areas have gradually been lost, particularly to support development of oil refineries. The first major reclamation of intertidal areas was the Old Docks between 1833-1911. The site is now occupied by Ocean Village. It is estimated that 55% of the intertidal area of Southampton Water has been lost since the early 19th century⁷⁸.
- 6.2.4 Reclamation had been going on at a smaller scale through embankment of mud flats centuries before the industrial revolution, particularly between 1600 and 1900. The reclaimed areas were associated with grazing and saltworks such as at Fawley, Hamble and Newtown salterns
- 6.2.5 Oyster cultivation was not as significant here as in the harbours further east. However the estuary is particularly significant for commercial clam fishing. In 1925 the North American hardshell clam was introduced – a larger version of the native clam. The densest beds are to be found in the Solent and the Test estuary to in the north of the character area. Although some of these beds were destroyed by the construction of the container port, numbers have again increased. The warmer waters associated with the upper parts of the character area and the warm water outfalls from Fawley allow the clams to spawn naturally – although these clams are thought to have adapted from their North American counterparts to spawn at lower temperatures. Dredging for clam has more impact than for oyster as the animals burrow into the seabed. The higher temperatures make it a preferred area for bass nurseries, particularly in the southern parts of the character area.
- 6.2.6 Southampton water was an important area for the sea plane industry during the 1920s and 1930s. Strips of relatively sheltered water like this estuary could accommodate landing and take off of these large commercial and naval sea vessels before land-based runways were more common. Calshot, just outside the character area, was the home of the Sunderland sea plane. The sheltered estuary was also home for the British power boat industry – based at Hythe, which flourished at this time.

6.3 **Built Environment**

- 6.3.1 There are two major bridges which form strong visual northern boundaries to the character area: the Itchen bridge and Redbridge. They span high above the water.
- 6.3.2 Several sections of mudflats and saltmarsh, which would have historically been part of this character area, have been lost to built development in the form of docks and marinas. The most significant areas are Southampton Docks (two phases 1927-34 and 1970-85), Fawley oil refinery and Hythe marina development (1980s). The

petrochemical loading wharf at Fawley is huge, approximately 1250m long. When tankers are lined up this is a particularly impressive site. Other commercial quays include town quay and Hythe pier with its 600m long rail link.

- 6.3.3. There is a tunnel from Fawley to the Chilling shore which is part of the pipe supply infrastructure for the petrochemical works.

EVALUATION

7.0 FORCES FOR CHANGE

1. Recreation pressures: trends in yachting and cruise liner industry.
2. Climate change, in particular sea level rise and increase in frequency of storms - large waves, changes to water temperatures and stronger tidal currents and adaptation responses.
3. Enlargement of container port facilities and shoreline development.
4. Fishing trends.
5. Introduction of alien species from continental shipping.
6. Long term economic viability of supply of petrochemicals and tankers.

KEY QUALITIES AND EFFECTS OF FORCES

7.1

A busy deep water estuary supporting diverse shipping including oil tankers (southern part), container vessels, cruise ships and ferries (upper parts), recreational sailing boats (throughout). Its relatively warm water supports shell fishing and fish spawning.

FORCES FOR CHANGE:

CONSEQUENCES

1.2.4

Threats:

Achieving the right balance between commercial shipping, recreational sailing pressures and nature conservation interests.
 Further increase in commercial and large vessel shipping likely to increase potential erosion from ship wash and probability of toxic contamination from e.g. accidental / deliberate discharge of lubricants. Also non physical- disturbance such as noise and visual presence.
 Continuing to attract recreational and racing yachting.
 Impacts of climate change and casual introduction of alien species on existing shell fish and fish species stocks.

Opportunities:

Continuation of a diverse shipping character and the economic benefits that this brings to the area, without compromising the ambience to yachting / ocean liners using the estuary as a result of increasing the proportion of commercial shipping.
 Enforcement of byelaws and implementation of fishing policies to safeguard damage to the sea bed archaeology (Sea Fisheries Committee).

7.2

Intertidal saltmarsh, mudflats and entrance to the Hamble estuary are of international importance for biodiversity, particularly on the western shores. A diverse range of species are supported, particularly on sublittoral sands and gravels away from strong tides and low salinity. the saline muddy gravels areas are a UK BAP priority habitat.

FORCES FOR CHANGE:	CONSEQUENCES
All	<p>Threats: The draft Solent European marine sites management scheme identifies an inventory of human activities in around these designated sites – most are relevant for this character area, in particular port expansion. The Solent Forum habitat information packs identify threats to the sublittoral sands and gravels and muddy gravels habitats. In particular, threats identified in this character area include physical disturbance, nutrient enrichment and introduction of alien species. Inability to locate compensatory habitat from sea level rise and competition with economic and social land uses (e.g. farmland and recreation). Coastal squeeze is an issue adjoining the character area and potentially reducing the intertidal habitat area. The Solent Dynamic Coast Project (SDCP) identifies the western shore to be more vulnerable than the east.</p> <p>Opportunities: Support 'Seasearch' marine surveys which investigate marine habitats in the Solent. Investigate ways of working with partners to identify, map and design opportunities for habitat creation through managed realignment of the shore, particularly focussing on areas identified with potential coastal squeeze in the in line with the objectives of the SDCP and North Solent Shoreline Management Plan (SMP).</p>

7.3

Nationally important for its recent historical connections since the early C. 20th, with glamorous industries such ocean cruise liners, recreational yachting and flying boats.

FORCES FOR CHANGE:	CONSEQUENCES
1.5	<p>Threats: Losing connections with port's prestigious history through loss of historic portside buildings. The port continues to be important for the cruise liner and yachting industries but these depend on continuing demand from a relatively wealthy sector of the economy.</p> <p>Opportunities: For more vulnerable non listed buildings, consider retaining the historic form and appearance when redevelopment/conversions are proposed for historic portside buildings. Support economic and tourism strategies which relate to local cruise liner and yachting heritage. Support aims of the Hampshire and Wight Trust for Maritime Archaeology and projects such as Archaeology and Coastal Change (funded by the Standing Conference on Problems Associated with the Coastline (SCOPAC)), to promote further survey and greater understanding of the area's archaeology.</p>

7.4

Varied backdrop, but still retains predominantly natural waterside edge and wooded hinterland when seen from the water – with numerous historic visual landmarks.

FORCES FOR CHANGE:

CONSEQUENCES

3

Threats:

Losing the visibility and visual dominance of historic landmarks from the water to visually competing surrounding development.
Increase in waterside development which would change the balance between the perceived wooded / natural shoreline character and development.
Development inland which would compromise the natural backdrop to this part of the Solent.
The creation of unsightly sea defences, and realignment/change in natural shoreline appearance through maintenance with unsuitable materials.

Opportunities:

Support SMP and coastal defence strategies and aim to influence design, material choice and alignment of defences.
Look into opportunities to work with the local community on identifying popular and valued views and landmarks in this part of the Solent and important visual receptor sites.