

Portsmouth Harbour

Unit limits

Approximately 55km of shoreline including Ports Creek as far as the rail bridge, but excluding tidal locked docks or marinas and the minor islands. For shoreline management purposes the harbour ends at Old Portsmouth Point on the east side of the entrance, and at the northern tip of the Haslar peninsula on the west.

General characteristics

The margins of Portsmouth Harbour have been the site of extensive naval and port facilities, as well as urban development, for many centuries. Much of the present shoreline is defined by walls and other structures built to prevent erosion and flooding, or to provide docks. Large areas of the immediate backshore comprise reclaimed land. Former low lying wetlands have been drained and protected from flooding and erosion, while some former intertidal areas have been used as landfill sites. These areas are now used for port facilities, Navy properties, urban development, railways, road or public recreation. Only two areas of natural shore remain, the largest being the MoD property from Elson to Fleetlands along the west shore and the other being the southeast bank of the upper reaches of Fareham Lake.

Coastal process

The shoreline is influenced by waves generated within the harbour, by the tidal currents and by water levels. As these processes are low in energy relative to the open coast outside the harbour, then natural change along the shoreline generally takes place over long time periods, with the exception of occasional changes induced by severe storms. Greater and more rapid changes are caused by human activities such as reclamation or dredging of navigation channels.

- Geology*
- Underlying geology comprises easily eroded Tertiary strata, except in north where there is more resistant Upper Chalk
 - Surface deposits comprise:
 - Alluvium within the intertidal area and the low lying backshore areas
 - Reclaimed ground along most of the east shore
 - Easily eroded River Terrace deposits in most remaining areas, providing a feed of gravel to the upper foreshore before defences were built
- Wave climate*
- Depends on fetch length and nearshore bathymetry
 - 1.1m H_s waves are predicted for 1:50 years storms in areas exposed to the south or southwest, which is the direction of maximum wave attack
- Tidal regime*
- Shoreline currents are weak, except in the entrance channel
 - Maximum water levels are similar throughout the harbour

Table 1 Extreme water levels

Probability	1:1 year	1:10 years	1:50 years	1:200 years
Maximum water level (MoD)	2.46	2.78	2.90	3.05

- Saltmarshes*
- Limited areas of marshes off Wicor-Portchester frontage, including Pewit Island
 - *Spartina* marshes generally in slow recession, allowing greater wave attack on shoreline
- Sediment transport*
- Limited influx of sand through entrance channel
 - Fine sediment carried in suspension throughout harbour

- Deposition of muds in sheltered areas
- Some wave driven erosion and transport of muds and coarser sediment in areas exposed to larger waves
- Saltmarsh areas generally contracting and releasing sediment for redistribution

- Possible future change*
- 300 - 500mm sea level rise over 50 years
 - Increased wave energy
 - Increased tidal currents due to greater tidal volume

Existing defences

The Portsmouth Harbour shoreline comprises a mixture of erosion and flood defences, harbour walls, structures built to enclose land reclamation sites and some natural coastline. Some parts of the shoreline benefit from the natural protection offered by saltmarshes. Recent surveys indicate that substantial lengths of the existing defences are in need of maintenance or upgrading in order to provide a reasonable standard of service, taking account of future water levels and local wave conditions.

Existing defences, particularly on private frontages, have been built on a piecemeal basis, resulting in uneven standards and often an unattractive shoreline.

Areas of particular concern include several parts of the north shore from west of Wicor to Port Solent, Tipner Lake, the south bank of Ports Creek, Priddys Hard, and several very low defences along floodable areas of Haslar and Forton Lakes.

Natural environment

The northern half of the harbour, plus Forton and Haslar Lakes, part of Horsea Island and the Priddys Hard foreshore are within the Portsmouth Harbour SSSI (also SPA and Ramsar site), designated for a range of intertidal, brackish lagoon and terrestrial habitats, and for important wintering populations of waterfowl. Horsea Island is also designated as a CHS due to its historical interest. Shoreline management operations within these designated areas must give due consideration to environmental impacts and legislation, including the Habitats Directive.

Land use

Portsmouth Harbour is the main naval base for the UK. The MoD have major holdings around the harbour, some of which are being sold off for redevelopment. These include dockyards, storage facilities, administrative building ranges, training grounds and recreation facilities. Most of the rest of the harbour margin comprises residential, commercial or industrial developments. Large areas of open space and countryside are found along much of the north shore and all along the south shore of Ports Creek.

Human environment

The harbour margin is valued for its historic character, tourist attractions, recreation areas, small craft facilities and public access to the shoreline. There are numerous sites of historic/archaeological importance, particularly around Old Portsmouth and Portchester, and a number of Scheduled Monuments. Proposed developments for the Millennium are intended to enhance the existing interest in the harbour and shoreline.

The naval dock yards, port facilities and associated industries are critical to the economy and character of the area.

The harbour encompasses a commercial native oyster fishery and includes other fisheries interests such as designation as a bass nursery area.

Planning policies

There are a number of areas set aside for development along the harbour margins, including the former MoD properties. These are as follows:

1. Land for Housing; the allocated sites are:
 - Lower Quay area and the former Wicor School site (Fareham Borough)
 - Priddy's Hard and Mumby Road (Gosport Borough)
 - Port Solent and parts of Paulsgrove (Portsmouth City)
2. Land for Industry, Business and Services; the allocated sites are:

- Priddy's Hard, around the Bus Station, Westfield Road, north of Mumby Road, Brockhurst Industrial Estate, Rowner Road, Grange Road (Gosport Borough)
3. Land for Major Development, the allocated sites are
- Tipner, including business uses, housing (200 dwellings), relocation of the Greyhound Stadium, car parking, a new public slipway and adjacent boat park, public access and landscaping to the foreshore, land reclamation (2.3 ha) and infrastructure (Portsmouth City)
 - Gunwharf, including Portsmouth Harbour Station and Hard Interchange. This would involve public access to the waterfront, tourism and leisure users, small shops, housing, business uses, public transport facilities and infrastructure (Portsmouth City).
4. The Millennium Project - "The Renaissance of Portsmouth Harbour". The main elements of this project are:
- the expansion of the Historic Dockyard
 - two harbour side promenades - one 2000 metres long on the Portsmouth side, the other 3000 metres long in Gosport, which will link existing heritage sites and new attractions and increase public access to the waterfront
 - a Harbour Tower, about 150 metres high, set in the Harbour off Gunwharf and illuminated water display features on either side of the navigation channel
 - the redevelopment of the Gunwharf site to include new public spaces linked directly to the City Centre by a landscaped boulevard
 - continuing the heritage theme in Gosport with the development of the Priddy's Hard Heritage Area and the enhancement and expansion of the RN Submarine Museum
 - linking the Harbour communities with a network of waterbus services, thereby opening up fresh opportunities for tourism development.

Statutory policy documents - Hampshire County Structure Plan, Deposit Draft

- Hampshire Minerals and Waste Local Plan, Deposit Draft
- Gosport Borough Local Plan
- Fareham Borough Local Plan
- Portsmouth City Local Plan

Non-statutory harbour policy - Portsmouth Harbour Management Plan, Consultation Draft

Strategic defence options

Many of the existing defences around the harbour are in a poor state of repair or do not provide an adequate standard of defence under existing or future sea conditions. Lack of maintenance will result in a failure of many defences in the short or medium term. As most of these defences protect urban developments or high value recreational areas then private and public losses would be substantial.

As discussed in the introductory section of this document, the harbour shoreline has been classified by management types according to potential for flooding or erosion, the existing defences and the existing land use.

The frontages referred to by each type are presented on the accompanying map. The preferred option for each length of frontage is in line with the statements in Chapter 4 and summarized in Table 2 below, except for three sites. Three sites requiring alternative approaches are indicated on the map and are discussed individually below. The text also provides preliminary guidance for setting boundaries relevant to the scheme strategy studies that will follow the adoption of the SMP.

Table 2 Preferred options for management types

Type	Description	Preferred option
1	No risk, or minor risk of flooding/erosion Undeveloped area No existing protection	Non-intervention
2	No risk Developed or sensitive area No existing protection	Non-intervention
3	Erosion risk, no flooding	Maintain standards along the

	Undeveloped area Existing protection	existing line of defence
4	Erosion risk, no flooding Developed or sensitive area Existing protection	Maintain standards along the existing line of defence
5	Flooding risk (possible erosion) Undeveloped area Existing protection	Maintain or upgrade standards along the existing line of defence
6	Flooding risk (possible erosion) Developed or sensitive area Existing protection	Maintain or upgrade standards along the existing line of defence
7	Shoreline formed by structure designed for purpose other than defence	Maintain or upgrade standards along the existing line of defence (review when structure becomes redundant)

From the Haslar Peninsula along the Gosport frontage to Elson almost all of the shoreline is defined by walls, revetments, jetties and other structures in varying condition. The backshore is either fully developed or provides valuable public open space for recreation. Many of the existing defences are inadequate or in a poor state and should be maintained and upgraded to provide appropriate flood and erosion protection in the future. Tiered defences may be an appropriate means of upgrading the defence standards within Haslar and Forton Lakes and around the ferry terminal to avoid potential environmental damage resulting from encroachment onto the foreshore.

North from Elson to Fleetlands the shoreline is in a natural state, with the exception of MoD jetty facilities at Foxbury Point and within Frater Lake. There are no significant risks of flooding or erosion and the frontage should be allowed to evolve naturally.

From Fleetlands to the upper reach of Fareham Lake the shoreline comprises walls, revetments and jetties in a range of conditions. These defences protect industrial, residential and recreational areas from flooding and erosion, although along some lengths the protection is inadequate and needs upgrading. In particular the new developments around Lower Quay may need improved defences against future flood levels; tiered defences may be appropriate for this frontage.

A natural shoreline extends around the upper waters of Fareham Lake and around the golf course on the south east shore. At present there is no need to provide additional defences along this frontage, but the shoreline should be monitored to ensure that this situation does not change in the future.

The shoreline extending from the south side of the golf course to the western margin of Portchester is defended by a variety of revetments, walls and earth embankments in varying states of disrepair. Management operations are required to improve the existing situation. Maintaining the existing line is appropriate for much of the frontage, but several lengths are sites for possible realignment. These are discussed below as Sites 1 and 2.

The remaining shoreline from Portchester around to Old Portsmouth, including Ports Creek, comprises high value residential, industrial, recreational or MoD land, protected from flooding or erosion by a variety of defences many of which are inadequate even under present conditions. Although some defences are in a reasonable state, almost all will need upgrading along their existing line or through construction of tiered defences to provide an appropriate level of defence in the future. Within this frontage there is a short length along the south shore of Tipner Lake where the shoreline will be advanced by a reclamation scheme in accordance with the Portsmouth City Local Plan. This frontage is noted below as Site 3.

Sites for alternative management policies

Site 1 The public recreation area to the west of Wicor along Fareham Lake is subject to slow erosion following the partial collapse of the defences. As the immediate backshore is an area of reclaimed land of limited recreation value, then maintenance of the existing line is only justifiable if the ground is contaminated. Assuming that the landfill is inert then a gradual realignment by periodically regrading the eroding face should be undertaken. The existing footpath along the shoreline would need to be diverted to landward. New intertidal area created as a result of this gradual realignment

could be important in providing compensatory habitat for similar intertidal areas that may be damaged by shoreline management operations within SPA/SAC around the Solent.

- Site 2 Low lying land between Wicor and Portchester is subject to occasional flooding. The existing embankment is severely eroded and no longer provides protection to the land, the shoreline footpath or adjacent residential areas. As the backshore land is only used for rough grazing then expenditure on maintaining or upgrading the existing embankment as a flood defence may not be justified. Establishing a new embankment to landward would ensure adequate long term protection of adjacent residential areas and the released area would develop as upper saltmarsh/transitional habitat providing natural protection against future erosion. The existing footpath along the shoreline would need to be diverted to landward. The new saltmarsh/transitional habitat created as a result of this retreat could be important in providing compensatory habitat for similar intertidal areas damaged by shoreline management operations within SPA/SAC around the harbour.
- Site 3 Portsmouth City Local Plan has made provision for the south shore of Tipner Lake to be redeveloped for housing and recreation facilities. Plans include reclamation of a further 2.3ha of the foreshore.

Scheme strategy studies within Portsmouth Harbour will not need to cover extended areas except in a limited number of situations. Lack of maintenance along open coast Unit 10 could eventually result in a breach of the Haslar peninsula, with impacts in Haslar Lake that should be considered. The flood risk area around Forton Lake is continuous, so a strategy is required for the whole shoreline to allow implementation of an integrated defence. Similarly the defences west of Portchester protect a continuous floodable area, so cooperation between public and private frontagers will be necessary to achieve a satisfactory strategy. The north and east shores of Portsea Island enclose a very extensive flood risk area; this area is referred to in the Langstone Harbour plan. Finally, Old Portsmouth is liable to flood damage both from the open coast (Unit 9) and from within the harbour, and requires an integrated defence strategy.

Management operations

Maintenance and upgrading of existing defences along the present shoreline will be required around most of the harbour. Designs should take account of the factors discussed in Chapter 4 of the introductory section, and particularly the obligations set out by the Habitats Directive. Frontages that are currently undefended should be protected from any future backshore development to ensure that there is no future need to interfere with the natural transition from sea to land. All frontages will require ongoing monitoring to ensure that the management policies and operations continue to provide an appropriate standard of service.

In view of likely environmental restrictions on operations impacting on the intertidal areas, shoreline managers should consider tiered defences where ever upgrading is required and the backshore situation is favourable. This approach would typically involve maintenance or downgrading of the existing defences, together with construction of a set back wall or embankment to control flooding under extreme future conditions. The area between the two defence lines would be subject to occasional flooding, but would still be useable for promenades, low value recreation areas, minor roads etc.

There are opportunities for implementing novel defences off the Wicor-Portchester, Paulsgrove and Horsea Island shorelines. Saltmarsh enhancement or the construction of islands may be appropriate, providing shoreline protection from wave attack and possible environmental benefits.