Appendix A Landfill Disposal Costs
Technical note

Project          Portsea Island Coastal Strategy Study          Date           1 February 2007
Note             Landfill Disposal Costs                        Ref
Author           R Lancefield

This note is to explain the cost estimate for the disposal of all areas of landfill and potentially contaminated land within Flood Cells on Portsea Island.

Assumptions

The following assumptions have been made during the estimation of landfill disposal costs: -

1. Estimated Depth - all landfill areas are estimated to be 3m deep and areas of fill/potentially contaminated land at 1.5m deep. The estimated depths are based on our experience of similar sites. This assumption could be refined using trial pit/borehole logs if available from site investigation reports.

3. Assumptions have been made based on the percentage of inert/non-hazardous/hazardous waste based on the description of the landfill sites or potentially contaminated land.

4. The waste disposal costs are based upon recent quotations.

5. The nearest inert disposal site is assumed to be relatively local (i.e. within 15 miles) e.g. non hazardous waste at Ringwood in Hampshire. It is assumed that any hazardous waste would be disposed of at Purton, near Swindon in Wiltshire.


7. Areas of landfill and potentially contaminated land shown on Figure 1.2 are accurate.
<table>
<thead>
<tr>
<th>Site Name</th>
<th>Area (Ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.233</td>
</tr>
<tr>
<td>2</td>
<td>5.050</td>
</tr>
<tr>
<td>3</td>
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</tr>
<tr>
<td>4</td>
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<td>6</td>
<td>0.842</td>
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<td>7</td>
<td>0.694</td>
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<tr>
<td>8</td>
<td>5.265</td>
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<tr>
<td>9</td>
<td>11.427</td>
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<td>3.153</td>
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<td>11</td>
<td>0.507</td>
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<td>12</td>
<td>80.384</td>
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<td>14</td>
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<td>15</td>
<td>0.989</td>
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<td>16</td>
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<td>18</td>
<td>51.885</td>
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<td>20</td>
<td>36.132</td>
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<td>21</td>
<td>6.381</td>
</tr>
<tr>
<td>22</td>
<td>2.080</td>
</tr>
<tr>
<td>Baffin Fields, Tangier Road</td>
<td>20.596</td>
</tr>
<tr>
<td>Eastern Sewer Fort</td>
<td>1.704</td>
</tr>
<tr>
<td>Eastern Sewer, Kendall's Wharf</td>
<td>1.648</td>
</tr>
<tr>
<td>Eastney Lake</td>
<td>3.337</td>
</tr>
<tr>
<td>Glory Hole, Former MOD Landfill</td>
<td>1.287</td>
</tr>
<tr>
<td>Glory Hole, Fort Cumberland and Cumberland Flats</td>
<td>11.794</td>
</tr>
<tr>
<td>Great Salterns Estate</td>
<td>92.940</td>
</tr>
<tr>
<td>Gunwharf Quays, West Coast</td>
<td>31.919</td>
</tr>
<tr>
<td>Henderson Caravan Park/ Eastney Pumping Station</td>
<td>15.997</td>
</tr>
<tr>
<td>Milton Common Lake</td>
<td>40.445</td>
</tr>
<tr>
<td>Portsmouth College</td>
<td>8.944</td>
</tr>
<tr>
<td>Stamshaw Park</td>
<td>4.486</td>
</tr>
<tr>
<td>Tipner East Regeneration Site</td>
<td>11.010</td>
</tr>
<tr>
<td>Location</td>
<td>Distance</td>
</tr>
<tr>
<td>---------------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Tipner West</td>
<td>22.887</td>
</tr>
<tr>
<td>Tipner/ Stamshaw</td>
<td>25.251</td>
</tr>
<tr>
<td>Whale Island, West Portsea</td>
<td>36.008</td>
</tr>
<tr>
<td>400-402, Locksway Road Milton</td>
<td>2.408</td>
</tr>
<tr>
<td>Name</td>
<td>Comment</td>
</tr>
<tr>
<td>------</td>
<td>---------</td>
</tr>
<tr>
<td>Glory Hole: Former MOD Landfill</td>
<td>Former Naval landfill 1918-1980, uncontrolled tipping, shi</td>
</tr>
<tr>
<td>Glory Hole: Fort Cumberland Flats and Royal Naval area, shipbreaking and asbestos</td>
<td>117940</td>
</tr>
<tr>
<td>Eastern Sewer, Fort Cumberland</td>
<td>17040</td>
</tr>
<tr>
<td>Eastway Lake, East Coast</td>
<td>Early phases, ash and cinder, rag wood, sewage, later ph</td>
</tr>
<tr>
<td>Henderson Road Caravan site</td>
<td>coal ash cinder sewage incinerator waste</td>
</tr>
<tr>
<td>Milton Common Lake</td>
<td>clean natural/unknown, domestic, sewage, fly tipping, dor</td>
</tr>
<tr>
<td>Baffins Field, Tangier road</td>
<td>Land reclamation by infilling</td>
</tr>
<tr>
<td>Portsmouth College</td>
<td>reclaimed land using ash and cinder</td>
</tr>
<tr>
<td>Great salters Estate</td>
<td>domestic and ash</td>
</tr>
<tr>
<td>Eastern Sewer, Kendalls Wharf</td>
<td>domestic, MOD, ash</td>
</tr>
<tr>
<td>Tipner West</td>
<td>Munitions menu and landfill</td>
</tr>
<tr>
<td>Tipner East</td>
<td>MOD landfill, and dog landfill</td>
</tr>
<tr>
<td>Tipner Starmshaw</td>
<td>ash, clay, rubble, MOD, tar etc</td>
</tr>
<tr>
<td>Starmshaw Park</td>
<td>Inlined with rubbish, ash metals, sand and silt</td>
</tr>
<tr>
<td>Whale Island</td>
<td>pottery landfill, but military caravan</td>
</tr>
<tr>
<td>Gunwharf Quays</td>
<td>reclamation and military use</td>
</tr>
<tr>
<td>Lockeway Road</td>
<td>Inlined canal</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£568,142,492</strong></td>
</tr>
</tbody>
</table>
PORTSEA ISLAND COASTAL STRATEGY STUDY:
Figure 1.2: Contaminated Land and Landfill Sites

Legend

Flood Cell Boundaries

Areas of Potentially Contaminated Land

Areas of Known Landfill

Eastern Sewer, Kendall’s Wharf
Great Salters Estate

Whale Island, West Portsea

Tipner East Regeneration Site

Tipner West

Stamshaw

Stamshaw Park

Baffin Fields, Tangier Road

Gunwharf Quays, West coast

Henderson Road Caravan Site, Eastney

Eastern Sewer, Eastney Pumping Station

Eastern Sewer, Fort Cumberland

Glory Hole: Cumberland Flats Site

Glory Hole: Fort Cumberland, Finch, ferry and Gibraltar Roads

Glory Hole: Former MOD Landfill, Lumsden Road Site

Portsmouth College
Milton Common Lake

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Appendix B Citations and Objectives of International Conservation Sites
Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

Note for compilers:
1. The RIS should be completed in accordance with the attached Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

1. Name and address of the compiler of this form:
   
   Joint Nature Conservation Committee  
   Monkstone House  
   City Road  
   Peterborough  
   Cambridgeshire  
   PE1 1JY  
   UK  
   Telephone/Fax: +44 (0)1733 – 562 626 / +44 (0)1733 – 555 948  
   Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:
   Designated: 28 October 1987

3. Country:
   UK (England)

4. Name of the Ramsar site:
   Chichester and Langstone Harbours

5. Map of site included:
   Refer to Annex III of the Explanatory Notes and Guidelines, for detailed guidance on provision of suitable maps.
   a) hard copy (required for inclusion of site in the Ramsar List): yes ✓ -or- no
   b) digital (electronic) format (optional): Yes

6. Geographical coordinates (latitude/longitude):
   50 48 23 N  
   00 55 12 W

7. General location:
   Include in which part of the country and which large administrative region(s), and the location of the nearest large town.
   Nearest town/city: Portsmouth
   The site lies on the central south coast of mainland England, approximately 1 km east of Portsmouth.
   Administrative region: Hampshire; West Sussex

8. Elevation (average and/or max. & min.) (metres):
   Min. -2  
   Max. 4  
   Mean 0

9. Area (hectares): 5810.03
10. Overview:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive mud and sand flats exposed at low tide. The site is of particular significance for over-wintering wildfowl and waders and also a wide range of coastal and transitional habitats supporting important plant and animal communities.

11. Ramsar Criteria:
Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the Explanatory Notes and Guidelines for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1, 5, 6

12. Justification for the application of each Criterion listed in 11. above:
Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 1
Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes.

Ramsar criterion 5
Assemblages of international importance:

Species with peak counts in winter:

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in spring/autumn:
Ringed plover, *Charadrius hiaticula*, Europe/Northwest Africa
853 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)

Black-tailed godwit, *Limosa limosa islandica*, Iceland/W Europe
906 individuals, representing an average of 2.5% of the population (5 year peak mean 1998/9-2002/3)

Common redshank, *Tringa totanus totanus*,
2577 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:
Dark-bellied brent goose, *Branta bernicla bernicla*,
12987 individuals, representing an average of 6% of the population (5 year peak mean 1998/9-2002/3)

Common shelduck, *Tadorna tadorna*, NW Europe
1468 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

Grey plover, *Pluvialis squatarola*, E Atlantic/W Africa -wintering
3043 individuals, representing an average of 1.2% of the population (5 year peak mean
13. **Biogeography** (required when Criteria 1 and/or 3 and/or certain applications of Criterion 2 are applied to the designation):

Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) **biogeographic region:**
Atlantic

b) **biogeographic regionalisation scheme** (include reference citation):

14. **Physical features of the site:**

Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

<table>
<thead>
<tr>
<th>Soil &amp; geology</th>
<th>neutral, shingle, sand, mud, alluvium, nutrient-rich, sedimentary, clay, gravel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geomorphology and landscape</td>
<td>lowland, coastal, floodplain, shingle bar, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, islands, lagoon, pools</td>
</tr>
<tr>
<td>Nutrient status</td>
<td>eutrophic, mesotrophic</td>
</tr>
<tr>
<td>pH</td>
<td>circumneutral</td>
</tr>
<tr>
<td>Salinity</td>
<td>brackish / mixosaline, saline / euhaline</td>
</tr>
<tr>
<td>Soil</td>
<td>mainly mineral</td>
</tr>
<tr>
<td>Water permanence</td>
<td>usually permanent</td>
</tr>
<tr>
<td>Max. daily temperature</td>
<td>13.7°C</td>
</tr>
<tr>
<td>Min. daily temperature</td>
<td>7.7°C</td>
</tr>
<tr>
<td>Days of air frost</td>
<td>24.0</td>
</tr>
<tr>
<td>Rainfall</td>
<td>717.4 mm</td>
</tr>
<tr>
<td>Hrs. of sunshine</td>
<td>1902.9</td>
</tr>
</tbody>
</table>

**General description of the Physical Features:**

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water.
that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland. The basin contains a wide range of coastal habitats.

15. **Physical features of the catchment area:**
Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Chichester and Langstone Harbours are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland.

16. **Hydrological values:**
Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Shoreline stabilisation and dissipation of erosive forces, Sediment trapping, Maintenance of water quality (removal of nutrients)

17. **Wetland types**
Marine/coastal wetland

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>% Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Marine beds (e.g. sea grass beds)</td>
<td>1.7</td>
</tr>
<tr>
<td>E</td>
<td>Sand / shingle shores (including dune systems)</td>
<td>0.8</td>
</tr>
<tr>
<td>F</td>
<td>Estuarine waters</td>
<td>14.1</td>
</tr>
<tr>
<td>G</td>
<td>Tidal flats</td>
<td>46</td>
</tr>
<tr>
<td>H</td>
<td>Salt marshes</td>
<td>21.4</td>
</tr>
<tr>
<td>J</td>
<td>Coastal brackish / saline lagoons</td>
<td>0.01</td>
</tr>
<tr>
<td>M</td>
<td>Rivers / streams / creeks: permanent</td>
<td>0.02</td>
</tr>
<tr>
<td>Sp</td>
<td>Saline / brackish marshes: permanent</td>
<td>0.3</td>
</tr>
<tr>
<td>Tp</td>
<td>Freshwater marshes / pools: permanent</td>
<td>0.4</td>
</tr>
<tr>
<td>Ts</td>
<td>Freshwater marshes / pools: seasonal / intermittent</td>
<td>0.9</td>
</tr>
<tr>
<td>W</td>
<td>Shrub-dominated wetlands</td>
<td>0.07</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
<td>14.3</td>
</tr>
</tbody>
</table>

18. **General ecological features:**
Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

The site comprises two large, interconnected sheltered estuarine basins providing extensive intertidal mud and sand flats with eelgrass Zostera spp. beds, large areas of mixed saltmarsh and extensive cord-grass Spartina spp. swards in an advanced state of degeneration. Fringing habitats include shingle spits, saline, brackish and freshwater lagoons, coastal grazing marsh and deciduous woodland. The site supports important overwintering populations of migratory waterfowl.

19. **Noteworthy flora:**
Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

Nationally important species occurring on the site.

Higher plants. *Polypogon monspeliensis, Zostera angustifolia, Zostera marina, Zostera noltei*
20. Noteworthy fauna:
Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

Birds
Species currently occurring at levels of national importance:
Species regularly supported during the breeding season:
Mediterranean gull, *Larus melanocephalus*, Europe
    47 apparently occupied nests, representing an average of 43.5% of the GB population (Seabird 2000 Census)
Black-headed gull, *Larus ridibundus*, N & C Europe
    3180 apparently occupied nests, representing an average of 2.4% of the GB population (Seabird 2000 Census)
Common tern, *Sternula hirundo hirundo*, N & E Europe
    127 apparently occupied nests, representing an average of 1.2% of the GB population (Seabird 2000 Census)

Species with peak counts in spring/autumn:
Little egret, *Egretta garzetta*, West Mediterranean
    224 individuals, representing an average of 13.5% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian oystercatcher, *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering
    3403 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Whimbrel, *Numenius phaeopus*, Europe/Western Africa
    192 individuals, representing an average of 6.4% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)
Eurasian curlew, *Numenius arquata arquata*, N. a. arquata Europe (breeding)
    3108 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3)
Spotted redshank, *Tringa erythropus*, Europe/W Africa
    6 individuals, representing an average of 4.4% of the GB population (5 year peak mean 1998/9-2002/3)
Common greenshank, *Tringa nebularia*, Europe/W Africa
    215 individuals, representing an average of 36% of the GB population (5 year peak mean 1998/9-2002/3)
Ruddy turnstone, * Arenaria interpres interpres*, NE Canada, Greenland/W Europe & NW Africa
    569 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:
Little grebe, *Tachybaptus ruficollis ruficollis*, Europe to E Urals, NW Africa
    131 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)
Black-necked grebe, *Podiceps nigricollis nigricollis*, Europe, N Africa
    14 individuals, representing an average of 11.6% of the GB population (5 year peak mean 1998/9-2002/3)
Great bittern, *Botaurus stellaris stellaris*, W Europe, NW Africa
    1 individuals, representing an average of 1% of the GB population (5 year peak mean 1998/9-2002/3)
Eurasian teal, *Anas crecca*, NW Europe
    2226 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)
Red-breasted merganser, *Mergus serrator*, NW & C Europe
- 306 individuals, representing an average of 3.1% of the GB population (5 year peak mean 1998/9-2002/3)

Water rail, *Rallus aquaticus*, Europe
- 12 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)

Bar-tailed godwit, *Limosa lapponica lapponica*, W Palearctic
- 1189 individuals, representing an average of 1.9% of the GB population (5 year peak mean 1998/9-2002/3)

**Species Information**
- 17 British Red Data Book species and 84 nationally scarce species have been recorded from Chichester and Langstone Harbours Ramsar site.

### 21. Social and cultural values:
- e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc.
- Distinguish between historical/archaeological/religious significance and current socio-economic values.

- **Aesthetic**
- Aquatic vegetation (e.g. reeds, willows, seaweed)
- Archaeological/historical site
- Environmental education/interpretation
- Fisheries production
- Livestock grazing
- Non-consumptive recreation
- Scientific research
- Sport fishing
- Sport hunting
- Subsistence fishing
- Tourism
- Traditional cultural
- Transportation/navigation

### 22. Land tenure/ownership:

<table>
<thead>
<tr>
<th>Ownership category</th>
<th>On-site</th>
<th>Off-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-governmental organisation (NGO)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Local authority, municipality etc.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>National/Crown Estate</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Private</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Public/communal</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

### 23. Current land (including water) use:

<table>
<thead>
<tr>
<th>Activity</th>
<th>On-site</th>
<th>Off-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature conservation</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Tourism</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Recreation</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Current scientific research</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Cutting of vegetation (small-scale/subsistence)</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Fishing: commercial</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Fishing: recreational/sport</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Marine/saltwater aquaculture</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Gathering of shellfish</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>
24. Factors adversely affecting the site’s ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.

2. Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.

NA = Not Applicable because no factors have been reported.

<table>
<thead>
<tr>
<th>Adverse Factor Category</th>
<th>Reporting Category</th>
<th>Description of the problem (Newly reported Factors only)</th>
<th>On-Site</th>
<th>Off-Site</th>
<th>Major Impact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Erosion</td>
<td>2</td>
<td></td>
<td>+</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Eutrophication</td>
<td>1</td>
<td></td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution – domestic sewage</td>
<td>1</td>
<td></td>
<td></td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Erosion - Coastal Defence Strategies, regulation of private coastal defences, shoreline management plans are in place or are being developed.
Some larger-scale saltmarsh re-creation projects, beneficial usage of maintenance dredgings and managed
realignment scheme to offset losses to coastal squeeze have been proposed. CHaMPs identify potential areas suitable for managed realignment.

Is the site subject to adverse ecological change? YES

25. Conservation measures taken:
List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

<table>
<thead>
<tr>
<th>Conservation measure</th>
<th>On-site</th>
<th>Off-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site/ Area of Special Scientific Interest (SSSI/ASSI)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Special Protection Area (SPA)</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Land owned by a non-governmental organisation for nature conservation</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Management agreement</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Site management statement/plan implemented</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Area of Outstanding National Beauty (AONB)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Special Area of Conservation (SAC)</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

26. Conservation measures proposed but not yet implemented:
e.g. management plan in preparation; official proposal as a legally protected area, etc.
No information available

27. Current scientific research and facilities:
e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Contemporary.

Fauna.
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Ringing by Solent Shorebirds Study Group.

Environment.
Coastal Sediment (SCOPAC)
Water Quality/Eutrophication (EA/Southern Water).
Various research and educational establishments carry out ongoing research into a number of different aspects of the environment.

Flora.
*Spartina* survey (EN project).

Completed.

Environment.
Extensive research and survey into:
Tidal regimes.
Proposed:
Intertidal Habitat Monitoring (EN/EA project).
Sediment movement.
Flora and Fauna.
The distribution of all major plant and animal groups/communities.

28. Current conservation education:
e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.
Interpretation facilities and interpretative panels exist at strategic locations on the Harbour footpaths;
all nature reserve areas are covered by warden and ranger services with an educational remit. An
Education Officer is employed by the Chichester Harbour Conservancy to instruct both school parties
and adults in the cultural and nature conservation aspects of the harbour.

29. Current recreation and tourism:
State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.
Walking, including dog walking: all year.
Birdwatching: all year.
Angling and bait-digging: all year.
Swimming (in restricted areas) - mostly summer.
Sailing, windsurfing, canoeing, waterskiing.
Sept-Feb wildfowling.

30. Jurisdiction:
Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.

Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs,
European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay,
Bristol, BS1 6EB

31. Management authority:
Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the
wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for
the wetland.

Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House,
Northminster Road, Peterborough, PE1 1UA, UK

32. Bibliographical references:
Scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference
citation for the scheme.

Site-relevant references

(Coastal Directories Series.)

Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC & Buck, AL (eds.) (1998) Coasts and seas of the
United Kingdom. Region 8 Sussex: Rye Bay to Chichester Harbour. Joint Nature Conservation Committee,
Peterborough. (Coastal Directories Series.)

Peterborough

Peterborough

Peterborough (Research & Survey in Nature Conservation, No. 17)

Chichester Harbour Conservancy www.conservancy.co.uk

Clark, M & Gurnell, A (1987) The Solent estuary: environmental background. Southampton University, GeoData Unit,
Southampton

Covey, R (1998) Chapter 7. Eastern Channel (Folkestone to Durlston Head) (MNCR Sector 7). In: Benthic marine
Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)


www.jncc.gov.uk/UKSPA/default.htm


Please return to: **Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • email: ramsar@ramsar.org
8. Chichester and Langstone SPA and Ramsar Conservation objectives and favourable condition tables.

8.1 Chichester and Langstone Harbours SPA interest features

8.1.1 The conservation objective for the internationally important populations of the regularly occurring Annex 1 species

Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the regularly occurring Annex 1 species, in particular:

- Sand and shingle
- Shallow coastal waters

Numbers of bird species using these habitats are given in table 6a

8.1.2 The conservation objective for the internationally important populations of the regularly occurring migratory species

Subject to natural change, maintain in favourable condition the habitats for the internationally important populations of the regularly occurring migratory species, in particular:

- Shingle
- Saltmarsh
- Intertidal mudflats and sandflats
- Mixed sediment shores

Numbers of bird species using these habitats are given in table 6a

\(^9\)For a detailed description of how to recognise favourable condition see the attached table 7
8.1.3 The conservation objective for the internationally important assemblage of waterfowl

Subject to natural change, maintain in favourable condition the habitats for the internationally important assemblage of waterfowl, in particular:

- Shingle
- Saltmarsh
- Intertidal mudflats and sandflats
- Mixed sediment shores
- Shallow coastal waters

Numbers of bird species using these habitats are given in table 6a.

Note: These SPA conservation objectives focus on habitat condition in recognition that bird populations may change as a reflection of national or international trends or events. Annual counts for qualifying species will be used by English Nature, in the context of five year peak means, together with available information on UK population and distribution trends, to assess whether this SPA is continuing to make an appropriate contribution to the Favourable Conservation Status of these SPA's across Europe.

Table 6a Information on populations of bird species qualifying under the Birds Directive using those parts of the Chichester and Langstone Harbour SPAs lying within the Solent European marine site at the time the SPAs was classified

| Internationally important populations of regularly occurring Annex I species |
|-------------------------|---------------------------|
| Species                 | Breeding population       |
| Sandwich tern           | >1% of GB population      |
| Common tern             | >1% of GB population      |
| Little tern             | >1% of GB population      |

| Internationally important populations of regularly occurring migratory species |
|-------------------------|---------------------------|
| Species                 | Wintering population      |
| Grey Plover             | 3.9% of west European population |
| Sanderling              | 3.1% of west European population |
| Dunlin                  | 2.6% of west European population |
| Redshank                | 1.4% of west European population |
| Dark-bellied brent goose| 12% of west European population |
| Shelduck                | 4% of west European population |
| Teal                    | 1% of west European population |

10 For a detailed description of how to recognise favourable condition see the attached table 7.

60
<table>
<thead>
<tr>
<th>Internationally important assemblage of waterfowl</th>
</tr>
</thead>
<tbody>
<tr>
<td>Importance</td>
</tr>
<tr>
<td>Waterfowl Assemblage</td>
</tr>
</tbody>
</table>

| Nationally important populations of regularly occurring migratory species |
|-----------------------------|-------------|
| Species                   | Wintering population |
| Ringed plover              | >1% of GB population |
| Curlew                     | >1% of GB population |
| Bar-tailed godwit          | >1% of GB population |
| Turnstone                  | >1% of GB population |
| Wigeon                     | >1% of GB population |
| Pintail                    | >1% of GB population |
| Shoveler                   | >1% of GB population |
| Red-breasted merganser     | >1% of GB population |

8.2 Chichester and Langstone Harbour Ramsar conservation objectives

8.2.1 Criterion 1a: Conservation objective for internationally important wetland characteristic of the Atlantic biogeographical region

Subject to natural change, maintain the internationally important wetlands characteristic of the Atlantic biogeographical region in favourable condition\(^{11}\), in particular:

- Estuaries
- Saltmarshes
- Intertidal mudflats and sandflats

\(^{11}\) For a detailed description of how to recognise favourable condition see the attached table 8
8.2.2 Criterion 3a: Conservation objective for internationally important wetland regularly supporting 20,000 waterfowl

Subject to natural change, maintain the wetland regularly supporting 20,000 waterfowl in favourable condition\(^*\), in particular:

- Shingle
- Saltmarsh
- Intertidal mudflats and sandflats
- Mixed sediment shores
- Shallow coastal waters

Bird species and their numbers are given in table 6b

8.2.3 Criterion 3c: The conservation objective for wetland supporting 1% or more of the individuals in a population of one species or sub-species of waterfowl

Subject to natural change, maintain the wetland supporting 1% or more of the individuals in a population of waterfowl species in favourable condition\(^*\), in particular:

- Saltmarsh
- Intertidal mudflats and sandflats
- Mixed sediment shores
- Shingle
- Sand and shingle
- Shallow coastal waters

Bird species and their numbers are given in table 6b

Note: The Ramsar conservation objectives for criterion 3 interest focus on the condition of the habitats that support the bird populations. This is in recognition of changes in bird populations that may take place as a result of national or international trends or events. Annual counts for qualifying species will be used by English Nature in the context of five year peak means together with other available information on the national and international population and distribution trends to inform judgements regarding the management and protection of the site.

\(^*\)For a detailed description of how to recognise favourable condition see the attached table 8

62
Table 6b  Information on populations of bird species qualifying under the Ramsar Criteria 3a and 3c, using those parts of the Chichester and Langstone Harbour Ramsar site lying within the Solent European marine site at the time the Ramsar site was classified

<table>
<thead>
<tr>
<th>Importance</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wintering waterfowl assemblage</td>
<td>&gt; 20,000 waterfowl</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Wintering population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grey Plover</td>
<td>3.9% of the western European population</td>
</tr>
<tr>
<td>Sanderling</td>
<td>3.1% of GB population</td>
</tr>
<tr>
<td>Dark-bellied brent goose</td>
<td>12% of GB population</td>
</tr>
<tr>
<td>Dunlin</td>
<td>&gt;20,000 individuals (2.6% of GB population)</td>
</tr>
<tr>
<td>Redshank</td>
<td>1.4% of GB population</td>
</tr>
<tr>
<td>Shelduck</td>
<td>4% of GB population</td>
</tr>
<tr>
<td>Teal</td>
<td>1% of GB population</td>
</tr>
<tr>
<td>Sandwich tern</td>
<td>&gt;1% of GB population</td>
</tr>
<tr>
<td>Common tern</td>
<td>&gt;1% of GB population</td>
</tr>
<tr>
<td>Little tern</td>
<td>&gt;1% of GB population</td>
</tr>
</tbody>
</table>
GIS CALCULATION SHEET

| Project title: | Analysis of loss of intertidal habitat due to coastal squeeze |
| Project code: | WCPSST |
| Requested by: | Robert Harvey |
| Calculated by: | Amanda Duffin |
| Checked by: | |
| Date: | 05/04/2007 |
| Date: | 06/08/2007 |

Description

1. To establish the area of habitat within the elevation bands that will be subsumed by sea level rise over the next century, which is estimated to amount to 1017mm.

Software (including extensions, scripts, etc)

ArcView 3.2, ArcView 9.2, Spatial Analysis extensions

Project file locations

M:\Projects\Coastal\WCPSST\GIS\Contamination\Landfillsites\Finalsqueeze

GIS data layers

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal_Squeeze_v5.xls</td>
<td>Spreadsheet with the results for each flood unit in each century and the calculated difference</td>
<td></td>
</tr>
<tr>
<td>Portsea DTM</td>
<td>Digital terrain model for Portsea island generated from LiDAR data</td>
<td>Channelcoast.org</td>
</tr>
<tr>
<td>Seawall.shp</td>
<td>Polyline shapefile showing Position of seawall digitized from 1:10k OS maps and adjusted against aerial photographs</td>
<td></td>
</tr>
<tr>
<td>subunits_extended.shp</td>
<td>Polygon shapefile showing Flood units for Portsea Island and extended out to sea as far as the mean low water spring tide, or centre of channel with main land.</td>
<td></td>
</tr>
<tr>
<td>outerlevel.shp</td>
<td>Polygon of outer extent taken from MLWS tide in aerial photos</td>
<td></td>
</tr>
</tbody>
</table>

ii) Other data:

MHWS 1.97
MHWN 1.07
MLWN -0.83
MLWS -1.93

Sea level rise over the next century estimated to be 1.017m.

Required: To determine the change in area in each elevation band for each flood unit. The required elevation bands are:

Sea wall to MHWS
MHWS (or sea wall if lower) to MHWN
MHWN (or sea wall if lower) to MLWN
MLWN (or sea wall if lower) to MLWS
**Method:**

1) Using Raster calculator in spatial analyst, derive new grids from the Portsea DTM using the following operators for present day (2007):

- PortseaDtm <= MHWS & PortseaDtm >= MWN
- PortseaDtm <= MLWS & PortseaDtm >= MLWN
- PortseaDtm <= MHWN & PortseaDtm >= MLWS
- PortseaDtm >= MHWS

2) The relevant regions in the grids produced above are converted to shapefile, and the areas not within the required elevation parameters are deleted.

3) For each elevation (4 in all) the derived shapefiles are clipped using the seawall polygon removing all areas that intersect landward of the seawall. The remaining areas are then clipped to the outerlevel (MLWS tide) removing all the areas that intersect, to leave only the areas in the elevation bands which are on the seaward side of the seawall before the MLWS tidal level.

4) The four elevation files are checked for overlaying polygons within the four elevations (there should be none as they should be concentric areas emanating out from the seawall), and checked against the underlying DTM coloured by the same elevation parameters.

5) The subunits are then overlayed and using the identification tool in Xtools in Arcview 3, the elevation shape files are then cookie cut into subunits and given the unit id and calculated areas in metres.

6) The areas in metres are then summed according to the subunits and divided by 10,000 to give the area in hectares.

7) The sea-level rise of 1.017m is added to each of the levels given in section ii and steps 1 to 6 above repeated to find the areas in the elevation bands for the next century.

8) The areas between the elevation bands for present day are subtracted from the areas between elevation bands for the next century to give the area changes resulting from sea level rise.
Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

Note for compilers:

1. The RIS should be completed in accordance with the attached Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands. Compilers are strongly advised to read this guidance before filling in the RIS.

2. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

1. Name and address of the compiler of this form:

   Joint Nature Conservation Committee
   Monkstone House
   City Road
   Peterborough
   Cambridgeshire
   PE1 1JY
   UK
   Telephone/Fax: +44 (0)1733 562 626 / +44 (0)1733 555 948
   Email: RIS@JNCC.gov.uk

2. Date this sheet was completed/updated:

   Designated: 28 February 1995

3. Country:

   UK (England)

4. Name of the Ramsar site:

   Portsmouth Harbour

5. Map of site included:

   Refer to Annex III of the Explanatory Notes and Guidelines, for detailed guidance on provision of suitable maps.

   a) hard copy (required for inclusion of site in the Ramsar List): yes ✓ -or- no

   b) digital (electronic) format (optional): Yes

6. Geographical coordinates (latitude/longitude):

   50 49 41 N 01 07 32 W

7. General location:

   Include in which part of the country and which large administrative region(s), and the location of the nearest large town.

   Nearest town/city: Portsmouth

   Portsmouth Harbour lies on the central south coast of mainland England, to the west of Portsmouth City.

   Administrative region: Hampshire

8. Elevation (average and/or max. & min.) (metres):

   Min.  -1
   Max.  1
   Mean  0

9. Area (hectares): 1248.77
10. Overview:
Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. The mudflats support large beds of narrow-leaved and dwarf eelgrass, extensive green alga and sea lettuce. The harbour has only a narrow connection to the sea via the Solent, and receives comparatively little freshwater, thus giving it an unusual hydrology. The site supports internationally important numbers of wintering dark-bellied brent geese and nationally important numbers of grey plover, dunlin and black-tailed godwit.

11. Ramsar Criteria:
Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the Explanatory Notes and Guidelines for the Criteria and guidelines for their application (adopted by Resolution VII.11).

3, 6

12. Justification for the application of each Criterion listed in 11. above:
Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 3
The intertidal mudflat areas possess extensive beds of eelgrass *Zostera angustifolia* and *Zostera noltei* which support the grazing dark-bellied brent geese populations. The mud-snail *Hydrobia ulvae* is found at extremely high densities, which helps to support the wading bird interest of the site. Common cord-grass *Spartina anglica* dominates large areas of the saltmarsh and there are also extensive areas of green algae *Enteromorpha* spp. and sea lettuce *Ulva lactuca*. More locally the saltmarsh is dominated by sea purslane *Halimione portulacoides* which gradates to more varied communities at the higher shore levels. The site also includes a number of saline lagoons hosting nationally important species.

Ramsar criterion 6 – species/populations occurring at levels of international importance.

Qualifying Species/populations (as identified at designation):
Species with peak counts in winter:
Dark-bellied brent goose, *Branta bernicla bernicla*, 
2105 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3)

Contemporary data and information on waterbird trends at this site and their regional (sub-national) and national contexts can be found in the Wetland Bird Survey report, which is updated annually. See www.bto.org/survey/webs/webs-alerts-index.htm.
See Sections 19/20 for details of noteworthy species

13. Biogeography (required when Criteria 1 and/or 3 and/or certain applications of Criterion 2 are applied to the designation):
Name the relevant biogeographic region that includes the Ramsar site, and identify the biogeographic regionalisation system that has been applied.

a) biogeographic region:
Atlantic

b) biogeographic regionalisation scheme (include reference citation):
14. Physical features of the site:
Describe, as appropriate, the geology, geomorphology; origins - natural or artificial; hydrology; soil type; water quality; water depth, water permanence; fluctuations in water level; tidal variations; downstream area; general climate, etc.

<table>
<thead>
<tr>
<th>Soil &amp; geology</th>
<th>acidic, neutral, mud, alluvium, nutrient-rich, sedimentary, gravel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geomorphology and landscape</td>
<td>lowland, island, coastal, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), enclosed coast (including embayment), estuary, islands, lagoon</td>
</tr>
<tr>
<td>Nutrient status</td>
<td>eutrophic, mesotrophic</td>
</tr>
<tr>
<td>pH</td>
<td>circumneutral</td>
</tr>
<tr>
<td>Salinity</td>
<td>saline / euhaline</td>
</tr>
<tr>
<td>Soil</td>
<td>mainly mineral</td>
</tr>
<tr>
<td>Water permanence</td>
<td>usually permanent</td>
</tr>
</tbody>
</table>

General description of the Physical Features:
Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. Portsmouth Harbour has only a narrow connection to the sea via the Solent, and receives comparatively little fresh water, thus giving it an unusual hydrology.

15. Physical features of the catchment area:
Describe the surface area, general geology and geomorphological features, general soil types, general land use, and climate (including climate type).

Portsmouth Harbour is a large industrialised estuary and includes one of the four largest expanses of mudflats and tidal creeks on the south coast of Britain. Portsmouth Harbour has only a narrow connection to the sea via the Solent, and receives comparatively little fresh water, thus giving it an unusual hydrology.

16. Hydrological values:
Describe the functions and values of the wetland in groundwater recharge, flood control, sediment trapping, shoreline stabilization, etc.

Shoreline stabilisation and dissipation of erosive forces

17. Wetland types
Marine/coastal wetland

<table>
<thead>
<tr>
<th>Code</th>
<th>Name</th>
<th>% Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Marine beds (e.g. sea grass beds)</td>
<td>4.8</td>
</tr>
<tr>
<td>E</td>
<td>Sand / shingle shores (including dune systems)</td>
<td>0.08</td>
</tr>
<tr>
<td>F</td>
<td>Estuarine waters</td>
<td>21.2</td>
</tr>
<tr>
<td>G</td>
<td>Tidal flats</td>
<td>59.3</td>
</tr>
<tr>
<td>H</td>
<td>Salt marshes</td>
<td>14</td>
</tr>
<tr>
<td>J</td>
<td>Coastal brackish / saline lagoons</td>
<td>0.3</td>
</tr>
</tbody>
</table>
18. General ecological features:
Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

Portsmouth Harbour comprises a large, sheltered estuarine basins supporting extensive intertidal mudflats with Zostera beds and significant areas of mainly Spartina saltmarsh. The site also includes small, isolated shingle islands supporting scrub and broad-leaved woodland and two saline lagoon habitats. The site supports important overwintering populations of migratory waterfowl. A number of off-site areas of grassland are particularly important feeding sites for overwintering dark-bellied brent geese and as roosting areas for waders.

19. Noteworthy flora:
Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

Nationally important species occurring on the site.

Higher Plants.
Zostera noltei, Zostera angustifolia, Zostera marina, Inula crithmoides

20. Noteworthy fauna:
Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g. which species/communities are unique, rare, endangered or biogeographically important, etc., including count data. Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.

Birds
Species currently occurring at levels of national importance:
Species with peak counts in spring/autumn:
Little egret, Egretta garzetta, West Mediterranean
47 individuals, representing an average of 2.8% of the GB population (5 year peak mean 1998/9-2002/3)
Black-tailed godwit, Limosa limosa islandica, Iceland/W Europe
343 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information
Nationally important species occurring on the site:
Lagoon sand shrimp Gammarus insensibilis (nationally scarce)
Starlet sea anemone Nematostella vectensis (RDB vulnerable)

21. Social and cultural values:
e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Archaeological/historical site
Environmental education/interpretation
Fisheries production
Non-consumptive recreation
Scientific research
Sport fishing
Subsistence fishing
Tourism
Traditional cultural
Transportation/navigation
22. Land tenure/ownership:

<table>
<thead>
<tr>
<th>Ownership category</th>
<th>On-site</th>
<th>Off-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-governmental organisation (NGO)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Local authority, municipality etc.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>National/Crown Estate</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Private</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Public/communal</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Other</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

23. Current land (including water) use:

<table>
<thead>
<tr>
<th>Activity</th>
<th>On-site</th>
<th>Off-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nature conservation</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Tourism</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Recreation</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Current scientific research</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Fishing: (unspecified)</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Fishing: commercial</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Fishing: recreational/sport</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Gathering of shellfish</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Bait collection</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Industry</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Sewage treatment/disposal</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Harbour/port</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Flood control</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Mineral exploration (excl. hydrocarbons)</td>
<td></td>
<td>+</td>
</tr>
<tr>
<td>Oil/gas exploration</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Transport route</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Urban development</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Military activities</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

24. Factors adversely affecting the site’s ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.

2. Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.

NA = Not Applicable because no factors have been reported.

<table>
<thead>
<tr>
<th>Adverse Factor Category</th>
<th>Reporting Category</th>
<th>Description of the problem (Newly reported Factors only)</th>
<th>On-Site</th>
<th>Off-Site</th>
<th>Major Impact?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eutrophication</td>
<td>1</td>
<td></td>
<td>+</td>
<td></td>
<td>+</td>
</tr>
</tbody>
</table>
For category 2 factors only.
What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?
Coastal engineering, e.g. construction of sea defences for coastal protection - Shoreline management plan should identify areas to offset losses from coastal squeeze when in place.

<table>
<thead>
<tr>
<th>Unspecified development: urban use</th>
<th>1</th>
<th>Disturbance and land-take pressures (on and off-site) from urban and industrial development.</th>
<th>+</th>
<th>+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal engineering, e.g. construction of sea defences for coastal protection</td>
<td>2</td>
<td>Coastal squeeze arising from coastal defences</td>
<td>+</td>
<td>+</td>
</tr>
</tbody>
</table>

Is the site subject to adverse ecological change?  YES

25. **Conservation measures taken:**
List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

<table>
<thead>
<tr>
<th>Conservation measure</th>
<th>On-site</th>
<th>Off-site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Site/Area of Special Scientific Interest (SSSI/ASSI)</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Special Protection Area (SPA)</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Land owned by a non-governmental organisation for nature conservation</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Management agreement</td>
<td>+</td>
<td></td>
</tr>
<tr>
<td>Site management statement/plan implemented</td>
<td>+</td>
<td></td>
</tr>
</tbody>
</table>

26. **Conservation measures proposed but not yet implemented:**
e.g. management plan in preparation; official proposal as a legally protected area, etc.
No information available

27. **Current scientific research and facilities:**
e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

**Contemporary.**

**Fauna.**
Numbers of migratory and wintering wildfowl and waders are monitored annually as part of the national Wetland Birds Survey (WeBS) organised by the British Trust for Ornithology, Wildfowl & Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee.
Bird Ringing by Solent Shorebirds Study Group.

**Environment.**
Coastal Sediment (SCOPAC)
Various research and educational establishments carry out ongoing research into a number of different aspects of the environment.
Proposed:
Intertidal Habitat Monitoring (EN/EA project)I

**Completed.**
Fauna.
Benthic surveys of Haslar, Forton & Tipner Lakes
Lagoon survey - Cocket Pond, Alver Lake
Site-specific Environmental Assessments eg Priddys Hard, Cold Harbour, Tipner, Continental Ferry Port.

28. Current conservation education:
e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.
Little at present, however there is scope for interpretation through implementation of the Harbour Plan, and Gosport and Portsmouth Millennium projects.

29. Current recreation and tourism:
State if the wetland is used for recreation/tourism; indicate type(s) and their frequency/intensity.

Activities, Facilities provided and Seasonality.
Land-based recreation:
Walking including dog-walking - All year.
Bait-digging - All year - mainly winter
Birdwatching - Autumn-Spring.
Water-based recreation:
Sailing, power-boating, windsurfing, canoeing - Mainly Spring-Autumn

30. Jurisdiction:
Include territorial, e.g. state/region, and functional/sectoral, e.g. Dept. of Agriculture/Dept. of Environment, etc.
Head, Natura 2000 and Ramsar Team, Department for Environment, Food and Rural Affairs, European Wildlife Division, Zone 1/07, Temple Quay House, 2 The Square, Temple Quay, Bristol, BS1 6EB

31. Management authority:
Provide the name and address of the local office(s) of the agency(ies) or organisation(s) directly responsible for managing the wetland. Wherever possible provide also the title and/or name of the person or persons in this office with responsibility for the wetland.
Site Designations Manager, English Nature, Sites and Surveillance Team, Northminster House, Northminster Road, Peterborough, PE1 1UA, UK

32. Bibliographical references:
Scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference citation for the scheme.

Site-relevant references


Clark, M & Gurnell, A (1987) The Solent estuary: environmental background. Southampton University, GeoData Unit, Southampton


www.jncc.gov.uk/UKSPA/default.htm


Please return to: Ramsar Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland

Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • email: ramsar@ramsar.org

9.1 Portsmouth Harbour SPA interest features

9.1.1 The conservation objective for the nationally and internationally important populations of the regularly occurring migratory species

Subject to natural change, maintain in favourable condition the habitats for the nationally and internationally important populations of the regularly occurring migratory species, in particular:

- Salt marsh
- Intertidal mudflats and sandflats
- Shallow coastal waters

Numbers of bird species using these habitats are given in table 9a

Note: These SPA conservation objectives focus on habitats condition in recognition that marine environments may change as a reflection of national or international temperature events. Annual counts for qualifying species will be used by derogation Nature in the context of the year’s means, together with available information on UK population and distribution trends, to assess whether this SPA is continuing to make an appropriate contribution to the favourable conservation status of these SPA’s across Europe.

For a detailed description of how to recognise favourable condition see the attached table 9a.
Table 9a  Information on populations of bird species qualifying under the Birds Directive using those parts of the Portsmouth Harbour SPA lying within the Solent European marine site at the time the SPAs was classified.

<table>
<thead>
<tr>
<th>Internationally important populations of regularly occurring migratory species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
</tr>
<tr>
<td>Dark-bellied brent goose</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Nationally important populations of regularly occurring migratory species</th>
</tr>
</thead>
<tbody>
<tr>
<td>Species</td>
</tr>
<tr>
<td>Red-throated diveret</td>
</tr>
<tr>
<td>Black-tailed godwit</td>
</tr>
<tr>
<td>Common tern</td>
</tr>
</tbody>
</table>

9.2 Portsmouth Harbour Ramsar conservation objectives

9.2.1 Criterion 1a: Conservation objective for internationally important wetland characteristic of the Atlantic biogeographical region

Subject to natural change, maintain the internationally important wetland characteristic of the Atlantic biogeographical region as favourable condition, in particular:

- Estuaries
- Saltmarsh
- Intertidal mudflats and sandflats

9.2.2 Criterion 2b: Conservation objective for internationally important wetland of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna

Subject to natural change, maintain the wetland supporting genetically and ecologically diverse flora and fauna in favourable condition, in particular:

- Saltmarsh
- Conglomerate sands
- Intertidal mudflats and sandflats

Examples are given in table 1b.

1) For a detailed description of how to recognise a favourable condition see the attached Table 11.
9.2.3 **Criterion 3c: The conservation objective for wetland supporting 1% or more of the individuals in a population of one species or subspecies of waterfowl**

Subject to natural change, maintain the wetland supporting 1% or more of the individuals in a population of waterfowl in a favorable condition in particular.

- Salmarsh
- Shallow coastal inland
- Intertidal mudflats and saltmarsh

Bird species and their numbers are given in Table 9b.

**Note** The Ramsar conservation objective for criterion 2b is to focus on the condition of the habitats that support at least 1% of international or national importance in the status of the species. The status of the species is defined by national and international population of the sites. The Ramsar conservation objective for criterion 3c is to focus on the habitats that support the local population. This is a recognition of the importance of Ramsar sites in European wetland regions and a consequence of national or international trends or events. Annual counts on the site, as well as data from other natural or international populations, will be used by English Nature to monitor the status of the site, together with other management information on wetland and water management practices to inform judgements regarding the management and protection of the site.

**Table 9b: Information on populations of bird species qualifying under the Ramsar Criterion 3c and Red Data Book Species under Ramsar Criterion 2b, using these parts of the Portsmouth Harbour Ramsar site lying within the Solent European marine site at the time the Ramsar site was classified**

| **Criterion 2b: Internationally important wetlands of special value for maintaining the genetic and ecological diversity of a region because of the quality and peculiarities of its flora and fauna** |
|---|---|
| **Berries: Rhus integrifolia and R. parviflora** |  |
| **Marsh-redshank Tringa stagnatilis** |  |
| **Grass: Carex Pendulina** |  |
| **Greylag goose Anser anser** |  |
| **Sea eagle Haliaeetus albicilla** |  |
| **Sea purslane Cakile maritima** |  |

| **Criterion 3c: Internationally important wetlands supporting 1% or more of the individuals in a population of one species or subspecies of waterfowl** |
|---|---|
| **Species** | **5yr peak mean from 1991/92 - 1995/96** |
| **Berries: Red-breasted goose Colymbus ferrugineus** | 2,289 (mean; number of Northwest European population) |
| **Wilson’s phalarope Phalaropus tricolor** | 60% (mean) |
| **Green pintail Anas crecca** | 75% (over 7% of British population) |
| **Common merganser Mergus merganser** | 65% (over 1% of British population) |
Table 10 Favourable Condition Table for Portsmouth Harbour SPA interest features. Background to the favourable condition table for reference is on p 24 NB - Many of the attributes will be able to be monitored at the same time or during the same survey. The frequency of sampling for many attributes may need to be greater during the first reporting cycle in order to characterise the site and establish the baseline. Where relevant, National Vegetation Classification codes (NVCs) and marine biotope codes are provided and then referenced in Appendices XI and XII.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Sub-feature</th>
<th>Attribute</th>
<th>Measure</th>
<th>Target</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internationally important regularly occurring migratory species (according to the citation, this also includes the nationally important regularly occurring migratory species)</td>
<td>All sub-features</td>
<td>Disturbance</td>
<td>Reduction or displacement of birds measured periodically (frequency to be determined).</td>
<td>No significant reduction in numbers or displacement of wintering birds from an established baseline, subject to natural change.</td>
<td>Significant disturbance attributable to human activities can result in reduced food intake and/or increased energy expenditure. Five year peak mean information on populations will be used as the basis for assessing whether disturbance is damaging.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Absence of obstructions to view lines</td>
<td>Openness of terrain unrestricted by obstructions measured periodically (frequency to be determined).</td>
<td>No increase in obstructions to existing bird view lines from an established baseline.</td>
<td>Black-tailed godwit and dunlin require views greater than 200 m and brent geese require views greater than 500 m to allow early detection of predators when feeding and roosting.</td>
</tr>
<tr>
<td></td>
<td>Saltmarsh</td>
<td>Extent and distribution of habitat</td>
<td>Area (ha) measured once during reporting cycle.</td>
<td>No decrease in extent from an established baseline, subject to natural change.</td>
<td>Important for feeding and roosting waterfowl. The extent and distribution of this sub-feature are important to the structure and function of the interest feature.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Vegetation characteristics</td>
<td>Range of vegetation heights measured periodically (frequency to be determined).</td>
<td>Sward height and density throughout areas used for roosting should not deviate significantly from an established baseline, subject to natural change.</td>
<td>Roosting waders such as ringed plover and black-tailed godwit and dunlin require vegetation of less than 10 cm in height. Dark-bellied brent geese generally require sward heights less than 10 cm through areas used for feeding.</td>
</tr>
</tbody>
</table>
| | Food availability | Presence and abundance of suitable prey species and suitable saltmarsh food plants, measured periodically (frequency to be determined). | Presence and abundance of prey species and saltmarsh food plants should not deviate significantly from an established baseline, subject to natural change. |</td>
<table>
<thead>
<tr>
<th>Feature</th>
<th>Sub-feature</th>
<th>Attribute</th>
<th>Measure</th>
<th>Target</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internationally important regularly occurring migratory species</td>
<td>Intertidal mudflats and sandflats</td>
<td>Extent and distribution of habitat</td>
<td>Area (ha) measured once during reporting cycle.</td>
<td>No decrease in extent from an established baseline, subject to natural change.</td>
<td>Important for feeding and roosting waterfowl. The extent and distribution of this sub-feature are important to the structure and function of the interest feature.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Food availability</td>
<td>Presence and abundance of suitable prey species and eelgrass beds, measured periodically (frequency to be determined).</td>
<td>Presence and abundance of prey species and eelgrass should not deviate significantly from an established baseline, subject to natural change.</td>
<td>Eelgrass Zostera spp. is an important food plant for dark-bellied brent geese. Black-tailed godwit and dunlin will feed on invertebrates such as annelid worms within the intertidal mudflat and sandflat communities.</td>
</tr>
<tr>
<td></td>
<td>Shallow coastal waters</td>
<td>Food availability</td>
<td>Presence and abundance of suitable prey species, measured periodically (frequency to be determined).</td>
<td>Presence and abundance of prey species should not deviate significantly from an established baseline, subject to natural change.</td>
<td>Red-breasted merganser which only qualify for the internationally important assemblage feed in shallow coastal waters on small fish such as gobies, flatfish and herring fry, as well as shrimps and annelid worms.</td>
</tr>
</tbody>
</table>
Portsmouth Harbour is located on the central south coast of England. It is a large industrialised estuary and includes one of the four largest expanses of mud-flats and tidal creeks on the south coast of Britain. The mud-flats support large beds of Narrow-leaved Eelgrass *Zostera angustifolia* and Dwarf Eelgrass *Z. noltii*, extensive green algae beds, mainly *Enteromorpha* species, and Sea Lettuce *Ulva lactuca*. Portsmouth Harbour has only a narrow connection to the sea via the Solent, and receives comparatively little fresh water, thus giving it an unusual hydrology. The site supports important numbers of wintering Dark-bellied Brent Goose *Branta b. bernicla*, which feed also in surrounding agricultural areas away from the SPA.

**Qualifying species**
For individual species accounts visit the [Species Accounts section](#)
This site qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

**Over winter;**

Dark-bellied Brent Goose *Branta bernicla bernicla*, 2,847 individuals representing at least 0.9% of the wintering Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6)

---

**Note:**

*Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.*

Note that sites selected for waterbird species on the basis of their occurrence in the breeding, passage or winter periods also provide legal protection for these species when they occur at other times of the year.
7. Solent and Southampton Water SPA and Ramsar Conservation objectives and favourable condition tables.

7.1 The Solent and Southampton Water SPA interest features

7.1.1 The conservation objective for the internationally important populations of the regularly occurring Annex 1 species

Subject to natural change, maintain in favourable condition\(^8\) the habitats for the internationally important populations of the regularly occurring Annex 1 species, in particular:

- Sand and shingle
- Saltmarsh
- Intertidal mudflats and sandflats
- Shallow coastal waters

Numbers of bird species using these habitats are given in table 3a.

7.1.2 The conservation objective for the internationally important populations of the regularly occurring migratory species

Subject to natural change, maintain in favourable condition\(^8\) the habitats for the internationally important populations of the regularly occurring migratory species, in particular:

- Saltmarsh
- Intertidal mudflats and sandflats
- Boulder and cobble shores
- Mixed sediment shores

Numbers of bird species using these habitats are given in table 3a.

\(^8\) For a detailed description of how to recognise favourable condition see the attached table 4
7.2.2 Criterion 2a: Conservation objectives for internationally important wetland hosting an assemblage of rare, vulnerable or endangered species

Subject to natural change, maintain the wetland hosting an assemblage of rare, vulnerable or endangered species in favourable condition\(^2\), in particular:

- Saline lagoons
- Saltmarsh
- Cordgrass swards (*Spartina* spp.)

Names of species using these habitats is given in table 3b.

7.2.3 Criterion 3a: Conservation objective for internationally important wetland regularly supporting 20,000 waterfowl species.

Subject to natural change, maintain the wetland regularly supporting 20,000 waterfowl species in favourable condition\(^2\), in particular:

- Saltmarshes
- Intertidal mudflats and sandflats
- Boulder and cobble shores
- Mixed sediment shores

Bird species and their numbers are given in table 3b.
7.2.4 Criterion 3c: Conservation objective for internationally important wetland regularly supporting 1% or more of the individuals in a population of one species or sub-species of waterfowl

Subject to natural change, maintain the wetland regularly supporting 1% or more of the individuals in a population of waterfowl species in favourable condition\(^{6}\) in particular:

- Saltmarshes
- Sand and shingle
- Shallow coastal waters
- Intertidal mudflats and sandflats
- Boulder and cobble shores
- Mixed sediment shores

Bird species and their numbers are given in table 3b.

\(^{6}\) For a detailed description of how to recognise favourable condition see the attached table 5

Note: The Ramsar conservation objectives for criterion 2 interest focus on the condition of the habitats that support or host species of international importance. Information on the status of the species in terms of national and international population and distribution trends will be used to inform judgements made with regards to the management and protection of the sites.

The Ramsar conservation objectives for criterion 3 interest focus on the condition of the habitats that support the bird populations. This is in recognition of changes in bird populations that may take place as a consequence of national or international trends or events. Annual counts for qualifying species will be used by English Nature in the context of five year peak means together with other available information on the national and international population and distribution trends to inform judgements regarding the management and protection of the site.

Table 3b Information on populations of bird species qualifying under the Ramsar Criteria 3a and 3c and Red Data Book Species under Ramsar Criterion 2a, using those parts of the Solent and Southampton Water Ramsar site lying within the Solent European marine site at the time the Ramsar site was classified

<table>
<thead>
<tr>
<th>Criterion 2a: Internationally important wetland hosting an assemblage of rare, vulnerable or endangered species</th>
</tr>
</thead>
<tbody>
<tr>
<td>British Red Data Book plants</td>
</tr>
<tr>
<td><em>Eleocharis parvula</em> - the dwarf spike-rush</td>
</tr>
<tr>
<td><em>Lamprothamnium papulosum</em> - foxtail stonewort</td>
</tr>
<tr>
<td><em>Spartina alterniflora</em> - smooth cordgrass</td>
</tr>
<tr>
<td>British Red Data Book invertebrates</td>
</tr>
<tr>
<td><em>Paracyclus aeneus</em> - water beetle</td>
</tr>
<tr>
<td>Importance</td>
</tr>
<tr>
<td>-----------------------------</td>
</tr>
<tr>
<td>Wintering waterfowl assemblage</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>5 yr peak mean from 1992/93 - 1996/97</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dark-bellied brent goose</td>
<td>7506 individuals</td>
</tr>
<tr>
<td>Teal</td>
<td>4400 individuals</td>
</tr>
<tr>
<td>Ringed plover</td>
<td>552 individuals</td>
</tr>
<tr>
<td>Black-tailed godwit</td>
<td>1125 individuals</td>
</tr>
<tr>
<td>Sandwich tern</td>
<td>231 pairs</td>
</tr>
<tr>
<td>Common tern</td>
<td>267 pairs</td>
</tr>
<tr>
<td>Little tern</td>
<td>49 pairs</td>
</tr>
<tr>
<td>Roseate tern</td>
<td>2 pairs</td>
</tr>
</tbody>
</table>
Solent and Isle of Wight Lagoons

Site details

Country

England

City of Portsmouth; Hampshire; Isle of Wight

Unitary Authority

Grid Ref*

SZ608977

Latitude

50 46 30 N

Longitude

01 08 13 W

SAC EU code

UK0017073

Status

Designated Special Area of Conservation (SAC)

Area (ha)

36.24

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (91.7%)
Salt marshes. Salt pastures. Salt steppes (8.3%)

Boundary map and associated biodiversity information on the NBN Gateway.

Natura 2000 data form for this site as submitted to Europe (PDF format, size 30kb).

Interactive map from MAGIC (Multi-Agency Geographic Information for the Countryside).
Annex I habitats that are a primary reason for selection of this site

1150 Coastal lagoons  * Priority feature

The Solent on the south coast of England encompasses a series of Coastal lagoons, including percolation, isolated and sluiced lagoons. The site includes a number of lagoons in the marshes in the Keyhaven – Pennington area, at Farlington Marshes in Chichester Harbour, behind the seawall at Bembridge Harbour and at Gilkicker, near Gosport. The lagoons show a range of salinities and substrates, ranging from soft mud to muddy sand with a high proportion of shingle, which support a diverse fauna including large populations of three notable species: the nationally rare foxtail stonewort Lamprothamnium papulosum, the nationally scarce lagoon sand shrimp Gammarus insensibilis, and the nationally scarce starlet sea anemone Nematostella vectensis. The lagoons in Keyhaven – Pennington Marshes are part of a network of ditches and ponds within the saltmarsh behind a sea-wall. Farlington Marshes is an isolated lagoon in marsh pasture that, although separated from the sea by a sea-wall, receives sea water during spring tides. The lagoon holds a well-developed low-medium salinity insect-dominated fauna. Gilkicker Lagoon is a sluiced lagoon with marked seasonal salinity fluctuation and supports a high species diversity. The lagoons at Bembridge Harbour have formed in a depression behind the sea-wall and sea water enters by percolation. Species diversity in these lagoons is high and the fauna includes very high densities of N. vectensis.

Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

Not applicable.

Annex II species that are a primary reason for selection of this site

Not applicable.

Annex II species present as a qualifying feature, but not a primary reason for site selection

Not applicable.

Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.
4. Solent Maritime eSAC Conservation objectives

Under Regulation 33(2)(a) of the Conservation (Natural Habitats &c.) Regulations 1994, English Nature has a duty to advise other relevant authorities as to the conservation objectives for the European marine site. The conservation objectives for the Solent European marine site interest features are provided below and should be read in the context of other advice given in this package, particularly:

- the attached maps showing the extent of the sub-features;
- summary information on the interest of each of the features; and
- the favourable condition table, providing information on how to recognise favourable condition for the interest feature and which will act as a basis for the development of a monitoring programme.

4.1 The conservation objective for estuaries

Subject to natural change, maintain the Estuaries in favourable condition8, in particular:

- Saltmarsh communities
- Intertidal mudflat & sandflat communities
- Intertidal mixed sediment communities
- Subtidal sediment communities

4.2 The conservation objective for annual vegetation of drift lines

Subject to natural change, maintain the Annual vegetation of drift lines in favourable condition8.

4.3 The conservation objective for Atlantic salt meadows (Glaucos-Puccinellietalia)

Subject to natural change, maintain the Atlantic salt meadows (Glaucos-Puccinellietalia) in favourable condition8, in particular:

- Low marsh communities
- Mid-marsh communities
- Upper marsh communities
- Transitional high marsh communities

8 For a detailed definition of how to recognise favourable condition see attached table 2
4.4 The conservation objective for *Salicornia* and other annuals colonising mud and sand

Subject to natural change, maintain the *Salicornia* and other annuals colonising mud and sand in favourable condition¹, in particular:

- Annual *Salicornia* saltmarsh communities (SM8)
- *Suaeda maritima* saltmarsh communities (SM9)

4.5 The conservation objective for cordgrass swards (*Spartinion*)

Subject to natural change, maintain the cordgrass swards (*Spartinion*) in favourable condition¹, in particular:

- Small cordgrass (*Spartina maritima*) communities
- Smooth cordgrass (*Spartina alterniflora*) communities
- Townsend's cordgrass (*Spartina x townsendii*) communities

4.6 The conservation objective for mudflats and sandflats not covered by seawater at low tide

Subject to natural change, maintain the mudflats and sandflats not covered by seawater at low tide in favourable condition¹, in particular:

- Intertidal mud communities
- Intertidal muddy sand communities
- Intertidal sand communities
- Intertidal mixed sediment communities

²For a detailed definition of how to recognise favourable condition see the attached table 2
4.7 The conservation objective for sandbanks slightly covered by seawater all the time

Subject to natural change, maintain the sandbanks slightly covered by seawater all the time in favourable condition\(^8\), in particular:

- Subtidal gravelly sand and sand
- Subtidal muddy sand
- Subtidal eelgrass *Zostera marina* beds

\(^8\)For a detailed description of how to recognise favourable condition see the attached table 2
Solent Maritime

Site details
Country: England
City of Portsmouth;
City of Southampton;
Hampshire; Isle of Wight; West Sussex

Unitary Authority: City of Portsmouth;
City of Southampton;
Hampshire; Isle of Wight; West Sussex

Grid Ref*: SU756003
Latitude: 50 47 47 N
Longitude: 00 55 40 W
SAC EU code: UK0030059
Status: Designated Special Area of Conservation (SAC)
Area (ha): 11325.09

* This is the approximate central point of the SAC. In the case of large, linear or composite sites, this may not represent the location where a feature occurs within the SAC.

General site character
Marine areas. Sea inlets (14%)
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (59%)
Salt marshes. Salt pastures. Salt steppes (23%)
Coastal sand dunes. Sand beaches. Machair (0.5%)
Shingle. Sea cliffs. Islets (3%)
Broad-leaved deciduous woodland (0.5%)

Boundary map and associated biodiversity information on the NBN Gateway.

Natura 2000 data form for this site as submitted to Europe (PDF format, size 30kb).

Interactive map from MAGIC (Multi-Agency Geographic Information for the Countryside).

Annex I habitats that are a primary reason for selection of this site

1130 Estuaries
The Solent encompasses a major estuarine system on the south coast of England with four coastal plain estuaries (Yar, Medina, King’s Quay Shore, Hamble) and four bar-built estuaries (Newtown Harbour, Beaulieu, Langstone Harbour, Chichester Harbour). The site is the only one in the series to contain more than one physiographic sub-type of estuary and is the only cluster site. The Solent and its inlets are unique in Britain and Europe for their hydrographic regime of four tides each day, and for the complexity of the marine and estuarine habitats present within the area. Sediment habitats within the estuaries include extensive estuarine flats, often with intertidal areas supporting eelgrass *Zostera* spp. and green algae, sand and shingle spits, and natural shoreline transitions. The mudflats range from low and variable salinity in the upper reaches of the estuaries to very sheltered almost fully marine muds in Chichester and Langstone Harbours. Unusual features include the presence of very rare sponges in the Yar estuary and a sandy ‘reef’ of the polychaete *Sabellaria spinulosa* on the steep eastern side of the entrance to Chichester Harbour.

1320 Spartina swards (*Spartinio maritimae*)
Solent Maritime is the only site for smooth cord-grass *Spartina alterniflora* in the UK and is one of only two sites where significant amounts of small cord-grass *S. maritima* are found. It is also one of the few remaining sites for Townsend’s cord-grass *S. x townsendii* and holds extensive areas of common cord-grass *Spartina anglica*, all four taxa thus occurring here in close proximity. It has additional historical and scientific interest as the site where *S. alterniflora* was first recorded in the UK (1829) and where *S. x townsendii* and, later, *S. anglica* first occurred.

1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
The Solent contains the second-largest aggregation of Atlantic salt meadows in south and south-west England. Solent Maritime is a composite site composed of a large number of separate areas of saltmarsh. In contrast to the Severn estuary, the salt meadows at this site are notable as being representative of the ungrazed type and support a different range of communities dominated by sea-purslane *Atriplex portulacoides*, common sea-lavender *Limonium vulgare* and thrift *Armeria maritima*. As a whole the site is less truncated by man-made features than other parts of the south coast and shows rare and unusual transitions to freshwater reedswamp and...
alluvial woodland as well as coastal grassland. Typical Atlantic salt meadow is still widespread in this site, despite a long history of colonisation by cord-grass Spartina spp.

**Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site**

1110 Sandbanks which are slightly covered by sea water all the time
1140 Mudflats and sandflats not covered by seawater at low tide
1150 Coastal lagoons  * Priority feature
1210 Annual vegetation of drift lines
1220 Perennial vegetation of stony banks
1310 Salicornia and other annuals colonising mud and sand
2120 Shifting dunes along the shoreline with Ammophila arenaria (‘white dunes’)

**Annex II species that are a primary reason for selection of this site**

Not applicable.

**Annex II species present as a qualifying feature, but not a primary reason for site selection**

1016 Desmoulin’s whorl snail  Vertigo mouinsiana

Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.
Chichester and Langstone Harbours

Chichester and Langstone Harbours are located on the south coast of England in Hampshire and West Sussex. They are large, sheltered estuarine basins comprising extensive sand- and mud-flats exposed at low tide. The two harbours are joined by a stretch of water that separates Hayling Island from the mainland. Tidal channels drain the basin and penetrate far inland. The mud-flats are rich in invertebrates and also support extensive beds of algae, especially *Enteromorpha* species, and eelgrasses *Zostera* spp. The basin contains a wide range of coastal habitats supporting important plant and animal communities. The site is of particular significance for waterbirds, especially in migration periods and in winter. It also supports important colonies of breeding terns.

**Qualifying species**
For individual species accounts visit the [Species Accounts section](#)

This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

**During the breeding season:**

Little Tern *Sterna albifrons*, 100 pairs representing up to 4.2% of the breeding population in Great Britain (5 year mean, 1992-1996)

Sandwich Tern *Sterna sandvicensis*, 158 pairs representing up to 1.1% of the breeding population in Great Britain (1998)

**On passage:**

Little Egret *Egretta garzetta*, 137 individuals representing up to 17.1% of the population in Great Britain (Count as at 1998)

**Over winter:**

Bar-tailed Godwit *Limosa lapponica*, 1,692 individuals representing up to 3.2% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6)

Little Egret *Egretta garzetta*, 100 individuals representing up to 20.0% of the wintering population in Great Britain (Count as at 1998)

This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

**On passage:**

Ringed Plover *Charadrius hiaticula*, 2,471 individuals representing up to 4.9% of the Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)

**Over winter:**

Black-tailed Godwit *Limosa limosa islandica*, 1,003 individuals representing up to 1.4% of the wintering Iceland - breeding population (5 year peak mean 1991/2 - 1995/6)

Dark-bellied Brent Goose *Branta bernicla bernicla*, 17,119 individuals representing up to 5.7% of the wintering Western Siberia/Western Europe population (5 year peak mean 1991/2 - 1995/6)

Dunlin *Calidris alpina alpina*, 44,294 individuals representing up to 3.2% of the wintering Northern Siberia/Europe/Western Africa population (5 year peak mean 1991/2 - 1995/6)

Grey Plover *Pluvialis squatarola*, 3,825 individuals representing up to 2.5% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)

Redshank *Tringa totanus*, 1,788 individuals representing up to 1.2% of the wintering Eastern Atlantic - wintering population (5 year peak mean 1991/2 - 1995/6)
Ringed Plover *Charadrius hiaticula*, 846 individuals representing up to 1.7% of the wintering Europe/Northern Africa - wintering population (5 year peak mean 1991/2 - 1995/6)

**Assemblage qualification: A wetland of international importance.**

The area qualifies under **Article 4.2** of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl


**Note:**

*Many designated sites are on private land: the listing of a site in these pages does not imply any right of public access.*

Note that sites selected for waterbird species on the basis of their occurrence in the breeding, passage or winter periods also provide legal protection for these species when they occur at other times of the year.
Appendix C  Methodology for analysing intertidal habitat losses
Analysis of loss of intertidal habitat due to coastal squeeze

Project title: Analysis of loss of intertidal habitat due to coastal squeeze
Requested by: Robert Harvey
Calculated by: Amanda Duffin
Checked by: 

Project code: WCPSTS
Date: 05/04/2007
Date: 06/08/2007

Description

1. To establish the area of habitat within the elevation bands that will be subsumed by sea level rise over the next century, which is estimated to amount to 1017mm.

Software (including extensions, scripts, etc)

ArcView 3.2, ArcView 9.2, Spatial Analysis extensions

Project file locations

M:\Projects\Coastal\WCPSTS\GIS\Contamination\Landfillsites\Finalsqueeze

GIS data layers

<table>
<thead>
<tr>
<th>File Name</th>
<th>Description</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal_Squeeze_v5.xls</td>
<td>Spreadsheet with the results for each flood unit in each century and the calculated difference</td>
<td></td>
</tr>
<tr>
<td>Portsea DTM</td>
<td>Digital terrain model for Portsea island generated from LiDAR data</td>
<td>Channelcoast.org</td>
</tr>
<tr>
<td>Seawall.shp</td>
<td>Polylne shapefile showing Position of seawall digitized from 1:10k OS maps And adjusted against aerial photographs</td>
<td></td>
</tr>
<tr>
<td>subunits_extended.shp</td>
<td>Polygon shapefile showing Flood units for Portsea Island and extended out to sea as far as the mean low water spring tide, or centre of channel with main land</td>
<td></td>
</tr>
<tr>
<td>outerlevel.shp</td>
<td>Polygon of outer extent taken from MLWS tide in aerial photos</td>
<td></td>
</tr>
</tbody>
</table>

ii) Other data:

MHWS 1.97
MHWN 1.07
MLWN -0.83
MLWS -1.93

Sea level rise over the next century estimated to be 1.017m.

Required: To determine the change in area in each elevation band for each flood unit. The required elevation bands are:

Sea wall to MHWS
MHWS (or sea wall if lower) to MHWN
MHWN (or sea wall if lower) to MLWN
MLWN (or sea wall if lower) to MLWS
Method:

1) Using Raster calculator in spatial analyst, derive new grids from the Portsea DTM using the following operators for present day (2007):

   PortseaDtm <= MHWS & PortseaDtm >= MWHN
   PortseaDtm <= MLWS & PortseaDtm >= MLWN
   PortseaDtm <= MHWN & PortseaDtm >= MLWS
   PortseaDtm >= MHWS

2) The relevant regions in the grids produced above are converted to shapefile, and the areas not within the required elevation parameters are deleted.

3) For each elevation (4 in all) the derived shapefiles are clipped using the seawall polygon removing all areas that intersect ie landward of the seawall. The remaining areas are then clipped to the outerlevel (MLWS tide) removing all the areas that intersect, to leave only the areas in the elevation bands which are on the seaward side of the seawall before the MLWS tidal level.

4) The four elevation files are checked for overlaying polygons within the four elevations (there should be none as they should be concentric areas emanating out from the seawall), and checked against the underlying DTM coloured by the same elevation parameters.

5) The subunits are then overlayed and using the identification tool in Xtools in Arcview 3, the elevation shape files are then cookie cut into subunits and given the unit id and calculated areas in metres.

6) The areas in metres are then summed according to the subunits and divided by 10,000 to give the area in hectares

7) The sea-level rise of 1.017m is added to each of the levels given in section ii and steps 1 to 6 above repeated to find the areas in the elevation bands for the next century.

8) The areas between the elevation bands for present day are subtracted from the areas between elevation bands for the next century to give the area changes resulting from sea level rise.