European Community Directive
on the Conservation of Natural Habitats
and of Wild Fauna and Flora
(92/43/EEC)

Supporting documentation for the Third Report by the United Kingdom under
Article 17

on the implementation of the Directive
from January 2007 to December 2012
Conservation status assessment for

Habitat:

H1140 - Mudflats and sandflats not covered by seawater at low tide

IMPORTANT NOTE – PLEASE READ

- The country-level reporting information contained in this document is a contribution to
  the Article 17 UK report for the habitat/species concerned.
- It has been provided by Natural England and refers only to the state of the
  habitat/species in England - it does not constitute an assessment for the whole of the UK.
- The Article 17 UK Approach document provides details on how this information has
  been used and, combined with information supplied by other Statutory Nature Conservation
  Bodies
- The format of the document is closely aligned to that set out by the European
  Commission for Member State reporting – as a result, some of the fields are not applicable at
  a country-level and have deliberately been left blank – in addition, the content of most fields
  is constrained by the EC reporting categories.
Reporting format on the 'main results of the surveillance under Article 11’ for Annex I Habitats Types

0.2 Habitat code

1.1 Maps

1.1.1 Distribution map

1.1.2 Method used - map

Estimate based on partial data with some extrapolation and/or modelling

The 10km square data moderately represents the actual distribution of the habitat. As a default, when no other GI information to inform area of feature has been available, we have used the figures from the original Standard Data Forms, available on the JNCC website. We are aware that...
Mudflats and sandflats not covered by seawater at low tide

<table>
<thead>
<tr>
<th>1.1.3 Year or period</th>
<th>2007-2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1.4 Additional distribution map</td>
<td>False</td>
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<tr>
<td>1.1.5 Range map</td>
<td>Please refer to the UK report for this habitat.</td>
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<table>
<thead>
<tr>
<th>2.1 Biogeographical region or marine regions</th>
<th>MATL</th>
</tr>
</thead>
</table>


These are likely to be estimates and therefore contain a substantial degree of inaccuracy.


Isles of Scilly habitat and biotope mapping survey.ISSN 0967-876X Munro, C. and Nunny, R. 1998 No. 276 - English Nature Research Reports


Intertidal monitoring of flora and fauna in the Fal Estuary CBRU 1992 Report to the National Rivers Authority

Intertidal Biotope Map of Fal and Helford Spalding Associates (Environmental) Ltd. 2004


Intertidal Biotope Map of Fal and Helford Spalding Associates (Environmental) Ltd. 2004


Mudflats and sandflats not covered by seawater at low tide

The Sedimentary Shore Fauna of the Helford River at Helford Passage, Cornwall
Lange, M. 1994
Inlets in the western English Channel: area summaries - Helford River.
Inlets in the western English Channel: area summaries - Helford River.
Intertidal Biotope Map of Fal and Helford Spalding Associates (Environmental) Ltd. 2004
The Sedimentary Shore Fauna of the Helford River at Helford Passage, Cornwall
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Printed on 06/11/2013 16:23
Mudflats and sandflats not covered by seawater at low tide

Mudflats and sandflats not covered by seawater at low tide

ENGLAND

Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012

Printed on 06/11/2013 16:23

Page 7
Mudflats and sandflats not covered by seawater at low tide

Stock Assessment of the Littoral Mussel (Mytilus edulis) Beds on Fenham Flats (Holy Island). Report for Northumberland Inshore Fisheries and Conservation Authority  Green, J. 2012
Stock Assessment of the Littoral Mussel (Mytilus edulis) Beds on Fenham Flats (Holy Island). Report for Northumberland Inshore Fisheries and Conservation Authority  Green, J. 2011
Monitoring of the BNNC Sands and Mud Flats: Lindisfarne and Budle Bay Life Forms. Aquatic Environments 2003
What's in your backyard. Environment Agency 2012
Stock Assessment of the Littoral Mussel (Mytilus edulis) Beds on Fenham Flats (Holy Island). Report for Northumberland Inshore Fisheries and Conservation Authority  Green, J. 2012
Field observations of WFD Zostera and Macroalgae August 2012 Environment Agency and Natural England 2012
North West Region European Marine Sites condition monitoring of littoral features. Intertidal survey technical report. Ref:J3155 Centre for Marine and Coastal Studies (CMACS) 2011 Centre for Marine and Coastal Studies (CMACS)
North West Region European Marine Sites condition monitoring of littoral features. Intertidal survey technical report. Ref:J3155 Centre for Marine and Coastal Studies (CMACS) 2011 Centre for Marine and Coastal Studies (CMACS)
North West Region European Marine Sites condition monitoring of littoral features. Intertidal survey technical report. Ref:J3155 Centre for Marine and Coastal Studies (CMACS) 2011 Centre for Marine and Coastal Studies (CMACS)

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EA 2012 Benthic Infauna Quality Index EA 2012 EA WFD monitoring

EA 2012 Benthic Infauna Quality Index EA 2012 EA WFD monitoring


Essex Estuaries European Marine Site English Nature's advice given under Regulation 33 (2) of the Conservation (Natural Habitats & C) regulations 1994 English Nature 2000 English Nature

Analysis of benthic samples collected in March 2008 from outer Blackwater estuary with biotopes maps and comparison with historical biotope assignments Worsfold, T., and Dyer, M. Unicomarine Ltd 2009

Natural England commissioned report


Kent and Essex Sea Fisheries Committee Annual cockle Fishery Management surveys carried out within the Kent and Essex Sea Fisheries District IFCA Kent and Essex 2012 IFCA


MESH UKSeaMap 2010 MESH 2010

Essex Estuaries European Marine Site English Nature's advice given under Regulation 33 (2) of the Conservation (Natural Habitats & C) regulations 1994 English Nature 2000 English Nature

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Mudflats and sandflats not covered by seawater at low tide

Environment Agency data from local intertidal benthic surveys. Invert species lists, 2006/07/08
Environment Agency 2006

Environment Agency data from local intertidal benthic surveys. Invert species lists, 2006/07/08
Environment Agency 2006

Environment Agency data from local intertidal benthic surveys. Sediment description, 2006/07/08
Environment Agency 2006

Environment Agency data from local intertidal benthic surveys. PSA data 2006/7/8
Environment Agency 2006

Harbasins, Habitat status of the Humber Estuary, UK. (IECS, 2008)
Krystal Hemingway et al 2008


Biological survey of the intertidal sediments of the Humber Estuary (ABP MER, 2010)
N Frost et al 2010

ABP MER report for NE

J H Allen 2007

Environment Agency data from local intertidal benthic surveys. Invert species lists, 2006/07/08
Environment Agency 2006

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Environment Agency data from local intertidal benthic surveys. Sediment description, 2006/07/08
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Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012

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Mudflats and sandflats not covered by seawater at low tide

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<th>Year</th>
<th>Title</th>
<th>Author(s)</th>
<th>Agency/Commissioner</th>
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<tr>
<td>1997</td>
<td>Report to English Nature</td>
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<td>Intertidal survey of Morecambe Bay and the Duddon Estuary</td>
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<td>North West Condition Assessment of Intertidal Mud and Sand Features</td>
<td>Smith, T., Thomson, S. 2012</td>
<td>NE commissioned monitoring report by IECS</td>
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<td>Roosecote Sands Eelgrass and Ephemeral Algae Survey</td>
<td>APEM 2007</td>
<td>EA and NE commissioned report</td>
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<td>Roosecote Sands Eelgrass and Ephemeral Algae Survey</td>
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<td>EA and NE commissioned report</td>
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<td>Mapping the intertidal habitat and species of selected marine Special Areas of Conservation: Morecambe Bay SAC</td>
<td>Posford Duvivier Environment 1997</td>
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<td></td>
<td>An Inventory of UK estuaries , Volume 2. South-west Britain</td>
<td>Buck, A.L. 1993</td>
<td>JNCC publication</td>
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<td>The Severn Estuary, cSAC. European Marine Site. NE/CCW</td>
<td>Natural England and CCW 2008</td>
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<td>The Biology and Conservation of the Fish Assemblage of the Severn Estuary. CCW Report CCW/SER/08/01</td>
<td>Bird, D. J. 2008</td>
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<td></td>
<td>Intertidal zonation of animals &amp; plants on rocky shores in BC &amp; SE - the northern shores.</td>
<td>Mettam, C. 1994</td>
<td>Biological Journal of the Linnean Soc. 51</td>
</tr>
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<td>Severn Estuary CHaMP Morphological Assessments part A: Regime Modelling.</td>
<td>ABP Marine Environmental Research Ltd 2007</td>
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<td>Severn Estuary CHaMP Morphological Assessments part H: Expert Geomorphological Assessment.</td>
<td>ABP Marine Environmental Research Ltd ABPMer 2007</td>
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Mudflats and sandflats not covered by seawater at low tide

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Natural England
A biological survey of the intertidal sediments of Lee-on-the-Solent to Itchen Estuary, Medina Estuary, North Solent, Thanet Coast and Thorness Bay Sites of Special Scientific Interest (SSSI) for the purpose of SSSI condition assessment Joyce, C., Teasdale, P. and Waller, C. 2009 Report to Natural England
Solent Intertidal Survey, August to September 2005 ERT (Marine Environmental Consultants) 2005 Report to English Nature
Solent Intertidal Survey, August to September 2005 ERT (Marine Environmental Consultants) 2005 Report to English Nature
Solent Intertidal Survey, August to September 2005 ERT (Marine Environmental Consultants) 2005 Report to English Nature
Solent Marine SAC Intertidal Survey Report CMACCS (Centre for Marine and Coastal Studies) 2012 Report to Natural England
A biological survey of the intertidal sediments of Lee-on-the-Solent to Itchen Estuary, Medina Estuary, North Solent, Thanet Coast and Thorness Bay Sites of Special Scientific Interest (SSSI) for the purpose of SSSI condition assessment Joyce, C., Teasdale, P. and Waller, C. 2009 Report to Natural England
A biological survey of the intertidal sediments of Brading Marshes to St Helen's Ledges, King's Quay Shore and Yar Estuary Sites of Special Scientific Interest (SSSI), Isle of Wight, for the purpose of SSSI condition assessment Joyce, C., Teasdale, P. and Waller, C. 2009 Report to Natural England
The Solent Coastal Habitat Management Plan CHaMP 2003 Management Plan for Solent
Solent Intertidal Survey, August to September 2005 ERT (Marine Environmental Consultants) 2005 Report to English Nature
An Inventory of UK estuaries: Southern Region Buck, A. L., 1997 Publication of the JNCC
Solent Bird Invertebrate Prey Availability Study EMU 2004 Report to English Nature
Investigation into the impact of macroalgae on intertidal macrobenthos in Southern Regions Estuary Rees-Jones, S., 2004 Habitats directive: Stage 3 review of consents
The impacts of Nutrients from Effluents: Macroalgal Mats Kilner, T., 2004 Habitats directive: Stage 3 review of consents
SE Strategic Regional Coastal Monitoring Programme: West Solent Channel Coastal Observatory 2004 Annual Report of SE SRCMP
SE Strategic Regional Coastal Monitoring Programme: West Solent Channel Coastal Observatory 2010 Annual Report of SE SRCMP
SE Strategic Regional Coastal Monitoring Programme: Selsey Bill to Southampton Channel Coastal Observatory 2011 Annual Report of
Mudflats and sandflats not covered by seawater at low tide
Reference Title Author Year Name of Publication Plymouth Sound and Estuaries cSAC Sediment Monitoring Trials 1998-1999
Murray, E. 2001 English Nature
Broad Scale Biological Mapping of Plymouth Sound and Estuaries 1997. 
Downie, A. J. & Gilland, P. M. 1997 Posford Duvivier
Environment report to English Nature.
Yealm Estuary Adritt, C. 1987 Biological Sciences student project.
Plymouth Polytechnic.
Plymouth Sound and Estuaries cSAC Sediment Monitoring Trials 1998-1999
Murray, E. 2001 English Nature
St. Johns Lake Correspondence Hocking, S. 2007 Correspondence to Natural England from Cornwall Wildlife Trust
Mapping of seagrass beds around the Isles of Scilly & Yealm estuary using aerial photographs Thompson, S. L. & Rowden, A. A. 1999 BSc Marine Biology dissertation.
Broad Scale Biological Mapping of Plymouth Sound and Estuaries 1997. 
Downie, A. J. & Gilland, P. M. 1997 Posford Duvivier
Environment report to English Nature.
Yealm Estuary Adritt, C. 1987 Biological Sciences student project. 
Plymouth Polytechnic.
Mudflats and sandflats not covered by seawater at low tide


Jennycliff and Batten Bay Intertidal Marine Wildlife Survey Camplin, M. 1996 Devon Wildlife Trust


Yealm Estuary Adritt, C. 1987 Biological Sciences student project. Plymouth Polytechnic.


Plymouth Sound and Estuaries SAC of Eelgrass (Zostera marina) Beds. Irving, R. 2007 Sea-Scope Marine Environmental Consultants


Seasearch survey of Drake’s Island eelgrass Sharrock, S. 2012 Seasearch


WFD Survey Codes and Names
ESKWD0308B - Esk (E) WFD Benthic Sampling 2008
ESKWD0210B - Esk (E) WFD Benthic Sampling 2010
NMMP22507 & NMMP23507 - NMMP Hebburn Survey & NMMP Ferry Crossing Survey 2007
NMMP22508 & NMMP23508 - NMMP Hebburn Survey & NMMP Ferry Crossing Survey 2008
NMMP23510 - NMMP site 235 in 2010 Tyne Ferry Crossing CEMP
NMMP26607 & NMMP26608 - NMMP Low Southwick Survey & Sandy Point Survey 2007
NMMP26608 & NMMP27608 - NMMP Low Southwick Survey & Sandy Point Survey 2008
NMMP27610 - NMMP site 276 in 2010 Wear :Sandy Point CEMP
NENGB0792B - 1992 grab survey of Nene Estuary
CAMWD0408B - Camel WFD Benthic Sampling 2008
FOWGM0891B - 1991 intertidal core survey of Fowey Estuary
AVOGM0591B - 1991 intertidal core survey of Devon Avon Estuary
DARW10404B - Dart Estuary grab survey 2004
DARWD0407B - Dart WFD benthic survey 2007
DARWD0311B - Dart WFD Benthic Invertebrate Survey 2011
TEIGM0893B - 1993 intertidal core survey of Teign Estuary
AXEGM0393B - 1993 intertidal core survey of Axe Estuary
NMMP50508 - NMMP site 505 in 2008
SOUWD0511B - Southampton Water WFD Benthic Survey 2011
SOLWD0507B - Solent WFD benthic survey 2007
SOLWD0511B - Solent WFD Benthic Invertebrate Survey 2011
TMTWD0307B - Thames WFD benthic survey 2007
2.3 Range

2.3.1 Surface area

<table>
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<tr>
<th>Range</th>
<th>1799.65</th>
</tr>
</thead>
</table>

2.3.2 Method used

<table>
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<th>Range</th>
<th>Estimate based on partial data with some extrapolation and/or modelling</th>
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2.3.3 Short-term trend

<table>
<thead>
<tr>
<th>Period</th>
<th></th>
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2.3.4 Short-term trend

<table>
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<tr>
<th>Trend direction</th>
<th>unknown</th>
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2.3.5 Short-term trend

<table>
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<th>Magnitude</th>
<th>a) Minimum</th>
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<table>
<thead>
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<th></th>
<th>b) Maximum</th>
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2.3.6 Long-term trend

<table>
<thead>
<tr>
<th>Period</th>
<th></th>
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2.3.7 Long-term trend

<table>
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<th>Trend direction</th>
<th>unknown</th>
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</table>
### 2.3.8 Long-term trend

**Magnitude**

<table>
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<th>Optional</th>
<th>a) Minimum</th>
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<table>
<thead>
<tr>
<th>b) Maximum</th>
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### 2.3.9 Favourable reference range

<table>
<thead>
<tr>
<th>a) Value in km²</th>
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<tr>
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<table>
<thead>
<tr>
<th>b) Operator</th>
</tr>
</thead>
<tbody>
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<table>
<thead>
<tr>
<th>c) FRR is unknown</th>
<th>False</th>
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</table>

<table>
<thead>
<tr>
<th>d) Method used to set FRR</th>
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</thead>
<tbody>
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</tbody>
</table>

### 2.3.10 Reason for change

Is the difference between the reported value in 2.3.1 and the previous reporting round mainly due to:

<table>
<thead>
<tr>
<th>a) Genuine change?</th>
<th>False</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>b) Improved knowledge/more accurate data?</th>
<th>False</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>c) Use of different method (e.g. “Range tool”)</th>
<th>False</th>
</tr>
</thead>
</table>

### 2.4 Area covered by habitat

<table>
<thead>
<tr>
<th>2.4.1 Surface area</th>
<th>Value in km²</th>
<th>1799.65</th>
</tr>
</thead>
</table>
### 2.4.2 Year or period
- **Period:** 2007-2012

### 2.4.3 Method used
#### Area covered by habitat
- **Estimate:** Based on partial data with some extrapolation and/or modelling

### 2.4.4 Short-term trend
#### Period
- **Period:** 2007-2012

### 2.4.5 Short-term trend
#### Trend direction
- **Direction:** Unknown

### 2.4.6 Short-term trend
#### Magnitude
- **a) Minimum:**
- **b) Maximum:**
- **c) Confidence interval:**

### 2.4.7 Short-term trend
#### Method used
- **Absent data**

### 2.4.8 Long-term trend
#### Period

### 2.4.9 Long-term trend
#### Trend direction
- **Direction:** Unknown

### 2.4.10 Long-term trend
#### Magnitude
- **Optional**
- **a) Minimum:**
- **b) Maximum:**
- **c) Confidence interval:**
<table>
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<tr>
<th>2.4.11 Long-term trend Method used</th>
<th>Absent data</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>2.4.12 Favourable reference area</th>
<th>a) Value in km²</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>b) Operator</td>
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<tr>
<td></td>
<td>c) FRA is unknown</td>
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<th>a) Genuine change?</th>
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<tr>
<td></td>
<td>b) Improved knowledge/ more accurate data?</td>
<td>False</td>
</tr>
<tr>
<td></td>
<td>c) Use of different method (e.g. “Range tool”)</td>
<td>False</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>2.5 Main pressures</th>
<th>a) Pressure</th>
<th>b) Ranking</th>
<th>c) Pollution qualifier</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>H</td>
<td></td>
</tr>
<tr>
<td>F02: Fishing and harvesting aquatic resources</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G01: Outdoor sports and leisure activities, recreational activities</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H01: Pollution to surface waters (limnic &amp; terrestrial, marine &amp; brackish)</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>J02: human induced changes in hydraulic conditions</td>
<td>H</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M02: Changes in biotic conditions</td>
<td>M</td>
<td></td>
<td></td>
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</tbody>
</table>
2.5.1 Method used – pressures

mainly based on expert judgement and other data

Each site lead was asked to identify the top 2 pressures and the top 2 threats for each sub feature/feature within their SACs. Ranking of threats and pressure was achieved by calculating the count of each threat or pressure for all sites. These counts were then ranked and assigned High, Medium or Low status, depending on the number of counts each pressure/threat received. This method was used as it was the most inclusive method to make sure pressure and threats from all separate sites were considered.

For further information please see Natural England's methods paper.

2.6. Main threats

<table>
<thead>
<tr>
<th>a) Threats</th>
<th>b) Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>H = high importance</td>
<td></td>
</tr>
<tr>
<td>M = medium importance</td>
<td></td>
</tr>
<tr>
<td>L = low importance</td>
<td></td>
</tr>
</tbody>
</table>

| Threats | H01: Pollution to surface waters (limnic & terrestrial, marine & brackish) | H |
| F02: Fishing and harvesting aquatic resources | H |
| H03: Marine water pollution | H |
| K03: Interspecific faunal relations | H |
| M01: Changes in abiotic conditions | H |
| C03: Renewable abiotic energy use | M |
| I01: invasive non-native species | M |

2.6.1 Method used – threats

expert opinion

Each site lead was asked to identify the top 2 pressures and the top 2 threats for each sub feature/feature within their SACs. Ranking of threats and pressure was achieved by calculating the count of each threat or pressure for all sites. These counts were then ranked and assigned High, Medium or Low status, depending on the number of counts each pressure/threat received.
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For further information please see Natural England’s methods paper.

<table>
<thead>
<tr>
<th>2.7 Complementary information</th>
</tr>
</thead>
</table>
| **2.7.1 Typical species**  
(as used in the assessment of Structure and function) | |
| **2.7.2 Typical species – method used** | |
| **2.7.3 Justification of % thresholds for trends** | |
| **2.7.4 Structure and functions - Methods used** | Estimate based on partial data with some extrapolation and/or modelling |

1. **For all features**
   Figures given are only of relevance to the area of the feature assessed within Natural England’s remit and any remaining area for this feature has not been accounted for. For example in cross border SACs we have only assessed the portion of the feature in English waters and not within the whole site.

2. **Inside SACs**
   All marine habitat features within SACs have been assessed at the attribute level for all sub-features by individual site leads. This process made use of all available data and used a combination of the targets within ‘favourable condition tables’ within existing Regulation 33 / 35 documents and Common standards Monitoring Guidance. Individual attribute level information was aggregated centrally using a series of ‘decision rules’ with the resulting feature assessments checked by the site leads.
   Assumptions applied through this process:
   Where Regulation 33 / 35 documents did not include site specific favourable condition tables e.g. due to additional features being added through the process of moderation, assessments were undertaken using the generic attributes and suitable targets set out within relevant Common Standards Monitoring Guidance. This effectively assumes that these generic attributes describe the key ecological attributes of feature condition at each site sufficiently well to enable them to form a sound basis for feature assessment.

   The method of aggregating sub-feature attribute and ‘feature wide’ attributes to produce site based condition of individual Annex I features
assumes the following:
a. General feature attributes identified in the Regulation 33 package favourable condition table apply across each and every individual sub-feature identified for assessment.
b. Where spatial extent data are unavailable for each sub-feature being assessed, the area assigned to each sub-feature is an equal portion of the area identified for the feature (e.g. if there are four sub-features the sub-feature area will be 25% of the total). Where the extent of one or more sub-features within a feature has been quantified, the remaining unallocated area has been shared equally across the remaining sub-features.
b.c. Where data are only available to assess a proportion of the attributes for a feature or sub feature assessments have still been undertaken where at least 50% of the attributes have been able to be assessed. If less than 50% of the attributes were not assessed the whole sub-feature was classed as not-assessed. This introduces a significant assumption that the minority of attributes for which it has not been possible to make an assessment would not overturn the assessment made based on the majority of attributes in any given area. The most obvious example of how this could be incorrect is where a ‘not assessed’ attribute is in reality unfavourable which following the rational outlined above would lead to the area being declared unfavourable where it may otherwise be considered favourable if this is the conclusion for all assessed attributes.
c.d. Individual attributes were assessed on a proportion basis within defined percentage ranges: 0-5, 6-25, 26-100 provided on the reporting form. In order to arrive at the overall proportion of a sub feature in each reporting category the proportion of favourable / not assessed was determined by ‘averaging’ across the remaining attributes. However, to ensure that unfavourable areas were not downsized through this averaging the largest proportion unfavourable for any attribute was always carried through into the final assessment. For example if 10ha of seagrass was unfavourable then this amount would not be rescaled.
d.e. Within this weighting process the maximum of each range was used as the basis for the averaging process as this process was considered to more closely reflect the ‘most probable’ overall condition than using the range mid points, however this is an assumption that is likely to have a minor effect on the overall proportions of features being assigned to each reporting category. Where a local site lead had chosen two ranges, each being 26-100 then this weighting was altered to more accurately reflect the 50:50 ratio that was implied.
e.f. A similar process was used when sub-feature assessment outputs and ‘feature wide attribute assessments’ were combined to produce overall feature assessments. In this process these two groups of attributes (sub feature and feature wide) were given equal weightings. This has the effect of giving single attributes in either category greater ‘weight’ in the determining the overall assessments where they are one of only a few attributes in either of these groups. Again this is an assumption which is likely to have a minor effect on the overall proportions of features being assigned to each reporting category. These proportions were also checked by the individual site leads before submission.

Information for Annex 1 features inside SSSIs that do not underpin a SAC, have been taken from the ENSIS database. This is the central repository for NE’s SSSI monitoring and condition assessment data. SSSIs are divided in to area based units and the condition is assessed across the whole of a unit. We have assumed that by filtering the database for relevant habitats at the
broad habitat and secondary feature level, the condition of Annex 1 features will be captured. We have assumed that where the ENSIS data was filtered for littoral sediment at the broad and detailed level, the unit contains Annex 1 equivalent habitat. It has been assumed that the unit feature has been surveyed using the relevant CSM approach for the Annex 1 habitat.

Reporting on the actual area of Annex 1 habitat within SSSIs was not feasible due to the way SSSI units are delineated. Any unit may contain several habitats and the area of the relevant habitat within each unit is not mapped separately to other habitats. Therefore the unit area does not reflect the area of the habitat and in reporting by unit area, a habitat may be vastly over reported and may not align with area submitted to the JNCC in the annex 1 feature maps and in the database tool. Therefore, categories for the condition by area have been derived by calculating each condition category by unit area and then re-proportioning according to area for the national resource, as reported to JNCC in the annex 1 feature maps and the reporting tool.

Lagoons in England have been mapped very precisely. The condition of the underlying SSSI unit to each individual lagoon (where the notified habitat is relevant) has been attributed to the area of the lagoon. Where the underlying unit to the mapped lagoon is not notified for a relevant habitat, the lagoon is reported as ‘not assessed’. Once each lagoon was attributed a condition, the areas for each condition category were summed for reporting.

In accordance with the JNCC CSM guidance, where the Annex 1 habitat in SSSIs outside of SACs forms only a very small proportion of the overall resource, the unit condition has not been reported on. This is the case for rocky reef (H1170) and estuaries (H1140).

3.4. Outside sites
The Water Framework Directive (WFD) Infaunal Quality Index (IQI) tool has been used to assess the condition of Annex I habitats that occur outside of SACs and SSSIs. The IQI is the metric used to assess benthic infauna communities for Good Ecological Status for the WFD. The IQI cannot replace the benthic invertebrate-orientated attributes used for assessing the condition of Annex I features. However, the nature of the tool means that it takes account of changes in the following benthic attributes sound in favourable condition tables:

- Sediment character (PSA and salinity data is included in the IQI tool for each sample)
- Range and distribution of subtidal sediment communities
- Nutrient enrichment, macroalgal mats

Whilst not directly comparable, the WFD classification is used as a proxy for condition, with:

- Good and high status indicating favourable condition, and
- Moderate, poor and bad indicating unfavourable condition.

The Environment Agency holds a large amount of WFD benthic invertebrate data, already converted to IQI classifications, from Annex I habitats outside of SACs. They also have converted most Natural England subtidal and intertidal sediment surveys into IQI classifications for use in WFD assessment. Therefore, benthic data from post-2006 Natural England and...
Environment Agency sediment surveys can be used to feed into the IQI for the following Annex I habitats found both inside and outside of SACs:
- Intertidal mud and sandflats
- Large shallow inlets and bays
- Estuaries
- Subtidal sandbanks

How the IQI is calculated for Annex I habitats?
- A GIS layer of all the IQI data points used in the 2012 WFD classifications was provided by the EA. Each data point is an individual benthic sample (collected between 2006 and 2011) that has been converted to an IQI status using the metric. Note that some NE intertidal and subtidal sediment surveys may not be in this data set because...
  a. The data hasn't been given to the Environment Agency
  b. The sample method used is not compatible with the IQI tool (e.g. box cores).
  c. The IQI only applies to surveys within 1nm (the extent of the WFD).
- JNCC shapefiles of the Estuaries, Subtidal Sandbanks and Large Shallow Inlets & Bays Annex I habitats were overlaid over the IQI layer. For each Annex I habitat, intersecting IQI data points were selected and converted to a separate layer, resulting in 3 layers of IQI data points within polygons of each Annex I habitat. As an example, Plymouth Sound SAC had different data points which overlay each of the Annex I habitat (Fig 3).
- For each set of IQI data point overlying a Annex I polygon, an average IQI was calculated for each year of data available, enabling observations of temporal change. Caution should be observed for surveys with few samples in averaged across the entire SAC. The ‘Overall’ status is used by the EA for the Water Framework Directive, rather than statuses for individual surveys.

A proxy condition is assigned based on the WFD score – Favourable or Unfavourable. A confidence in its condition can also be assigned, calculated using the Environment Agency’s VISCOUS tool. This takes the standard error of the data points at a site, and quantifies the uncertainty of the status assessment. The closer a confidence score is to 50% or less highlights which classifications should be treated with an increasing element of caution.

4.5. Data mapping
General comments:
- As a default, when no other GI information to inform area of feature has been available, we have used the figures from the original Standard Data Forms, available on the JNCC website. We are aware that these are likely to be estimates and therefore contain a substantial degree of inaccuracy.

For further information please see Natural England’s methods paper.

### 2.7.5 Other relevant information

Future prospects assessment method
The following is the guidance provided to local site leads to enable them to make a prediction on the future prospect for each sub feature/feature within their SAC. The conclusions drawn from this have been summarised in...
the notes field on the CSM form also submitted.

Please select from the drop down menu – what are the likely future prospects for the condition of this feature/ sub feature?
Options are: Favourable; Unfavourable - Recovering, No change, Declining; Part destroyed; Destroyed; or Unknown.
Favourable – No pressures currently causing harm to this sub feature/ feature and can't identify any potential threats, therefore assumption is that the feature/ sub feature will remain in favourable condition.
Unfavourable recovering – Sub feature/ feature assessed as currently unfavourable, however you are reasonably confident that management is in place to address the pressure that has been causing the damage, therefore, reasonable to assume that the condition may have improved in a trend towards favourable condition.
Unfavourable no change – Sub feature/feature assessed as currently unfavourable, the pressures currently occurring and the potential threats to the sub feature indicate that the condition is unlikely to neither improve nor deteriorate.
Unfavourable declining – Sub feature/ feature assessed as currently unfavourable, the current pressures and future threats identified indicate that the condition of the sub feature is likely to deteriorate as no management has been put in place.
Partially destroyed/destructed – This sub feature or feature may be at risk from a proposed development that has been granted planning permission, therefore it may be reasonable to conclude that this sub feature may be partially destroyed/destructed.
Unknown - Should be reserved for situations where there is no information upon which one can reasonably make an assessment of current condition due to sub features being not assessed and /or identify any potential pressures and threats.

Rationale for future prospects assessment
It is crucial to record your rationale for this future prospect in order that the reason for the judgment can be subsequently understood. E.g. Planning application has been granted for a development that has identified a loss of extent to a particular feature / sub feature, therefore high confidence that a proportion of this habitat will be destroyed.

Confidence in future prospects assessment
Please select from drop down menu – Please highlight your confidence in your future prospects assessment. If your confidence in the future prospect of this feature or sub feature is based on evidence – please make sure you add this to the evidence base form for this feature/sub feature.

For further information please see Natural England’s methods paper.

2.8 Conclusions  
(assessment of conservation status at end of reporting period)

Please refer to the United Kingdom assessment for this habitat.
3. Natura 2000 coverage & conservation measures - Annex I habitat types

### 3.1 Area covered by habitat

#### 3.1.1 Surface area

| a) Minimum | 1603.19 |
| b) Maximum | 1603.19 |

#### 3.1.2 Method used

Estimate based on partial data with some extrapolation and/or modelling

#### 3.1.3 Trend of surface area within the network

unknown

### 3.2 Conservation measures

Conservation measures taken (i.e. already being implemented) within the reporting period and provided information about their importance, location and evaluation.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Type</th>
<th>Ranking</th>
<th>Location</th>
<th>Broad evaluation of the measure</th>
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</thead>
<tbody>
<tr>
<td>4.1: Restoring/Improving water quality</td>
<td>Y</td>
<td>M</td>
<td>Y</td>
<td>Y</td>
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</tbody>
</table>

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Third Report by the United Kingdom under Article 17 on the implementation of the Directive from January 2007 to December 2012

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<table>
<thead>
<tr>
<th>6.1: Establish protected areas/sites</th>
<th>Y</th>
<th>H</th>
<th>Y</th>
<th>Y</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>7.3: Regulation/Management of fishery in marine and brackish systems</td>
<td>Y</td>
<td>Y</td>
<td>M</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>9.2: Regulating/managing exploitation of natural resources on sea</td>
<td>Y</td>
<td>H</td>
<td>Y</td>
<td>Y</td>
<td></td>
</tr>
</tbody>
</table>

9.2 Regulating/managing exploitation of natural resources on sea - The Marine Management Organisation and the IFCA’s licence the exploitation of resources on sea. Natural England provide advice on such applications to ensure the Habitat Regulations, the Wildlife and Countryside Act and NERC Act duties are adequately considered. Mitigation measures are advised to ensure that there is no significant effect on the features of interest.

6.1 Establish protected areas/sites - A large proportion of the habitat is located within protected areas that have been specifically designated to protect the habitat. The Habitat Regulations ensure that the designated habitats are maintained and where necessary enhanced to ensure the feature in the sites are making an appropriate contribution to achieving FCS.

7.3 Regulation/management of fishery in marine and brackish waters - For example, in the Solent Maritime SAC a voluntary code of conduct is managed by Southern IFCA to prevent towed gear within eelgrass beds. Two breaches of this code will initiate the production of a statutory closure to these beds for towed gear.

4.1 Restoring/improving water quality - For example, within the Solent Maritime SAC and its surrounding area is covered by a diffuse water pollution plan (EA and NE). This is linked to WFD requirements.