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Strategic Environmental Assessment SEA 6: Conservation

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1 INTRODUCTION

An integral element of any environmental assessment for offshore oil and gas exploration, and for possible nearshore renewable energy proposals, involves a review of potential sites of conservational importance within the region of interest. For the purpose of SEA 6, this is especially important given the scale of the area (over 400 km from the tip of SW Wales to the Mull of Kintyre) (c.f. Figure 1.1); its division into five separate states/provinces, each with their own nature conservation authorities and some differences in nature conservation legislation; the fact that it includes a very considerable length of coastal zone and that a very large proportion of those coasts are designated as nature conservation sites.

The SEA 6 region displays a wide variety of coastal habitat types such as cliffs, rocky shores, sand beaches, sand dunes, mud flats, saltmarsh, lagoons and estuaries. Subtidal habitats include rocky reefs, horse mussel beds, eelgrass beds and sand banks. Some of these habitats are rare in a national and/or international context, and many support important numbers of seabird colonies, wintering waders and wildfowl, seals and cetaceans. The variety of coastal and offshore habitats is a function of many environmental factors, but two factors are of particular importance: the Irish Sea is the only enclosed SEA region, open to the Atlantic at its southern end but otherwise relatively sheltered; it is also subjected to a considerable variation in tidal movement, with both extremely large and extremely small tidal ranges represented.

This report identifies and locates coastal and nearshore sites within the SEA 6 area which are protected by international, national and local conservation designations as well as describing the sites and reasons for their protected status. The coastal conservation sites are listed according to whether they are of international, national or local importance. For internationally important sites, summary information describing the main features of the site is provided and there is also an assessment of the vulnerability of the site and any relevant management issues. The ordering of the national sites in this report does not imply any formal ranking, but is a relative judgement of their conservation importance. The conservation sites described in this section are listed in Table 1.1 and brief descriptions of the statutory and non-statutory mechanisms responsible for site protection are presented in Appendix 2. Statutory sites are legally protected whilst non-statutory sites rely on the planning process and other local agreements to confer protection.

Table 1.1 Coastal and nearshore conservation sites

Importance	Designation
International	Special Areas of Conservation (SAC) Special Protection Area (SPA) Ramsar Important Bird Area (IBA) Biosphere Reserve
National and local	Area of Special Protection (AoSP) Area of Special Scientific Interest (ASSI) Geological Conservation Review (GCR) site Local (Authority) Nature Reserve (LNR / LANR) Manx National Heritage (MNH) site Marine Consultation Area (MCA) Marine Nature Reserve (MNR) National Nature Reserve (NNR) National Trust / National Trust for Scotland site

Importance	Designation
	Royal Society for the Protection of Birds (RSPB) reserve Scottish Wildlife Trust (SWT) reserve Site of Special Scientific Interest (SSSI) Wildfowl and Wetlands Trust (WWT) reserve Wildlife Refuges Wildlife Trust reserves: Manx Wildlife Trust (MWT) Cumbria Wildlife Trust (WTCu) Cheshire Wildlife Trust (WTCh) North Wales Wildlife Trust (WTNW) West Wales Wildlife Trust (WTWW)
Landscape & other designations	Areas of High Landscape or Coastal Value Areas of Outstanding Natural Beauty (AONB) Environmentally Sensitive Area (ESA) Heritage Coast National Park National Scenic Area (NSA)

Much of the information utilized by this report including site descriptions, mapping information and species inventories, has come from the Joint Nature Conservation Committee (JNCC), and the nature conservation authorities of the five states/provinces (Countryside Council for Wales (CCW), English Nature (EN), Scottish Natural Heritage (SNH), the Environment and Heritage Service (EHS) in N.Ireland and the Department of Agriculture, Fisheries and Forestry (DAFF) in the Isle of Man) to whom we are grateful. Other sources of information include various non-governmental conservation organisations, such as the National Trust, the National Trust for Scotland, RSPB, the Wildlife Trusts and the Wildfowl and Wetlands Trust.

Some sites are designated primarily for the conservation of non coastal habitats and species but small areas of coastal habitats are included within the site boundaries. Although the percentage of the area which is coastal might be small, the site is normally included in the following inventory. The importance of the marine interface with the land designations is not always transparent in the formal site descriptions e.g. SSSIs, but the coastal location and therefore possible environmental interest for SEA 6 purposes implies the need for its inclusion, especially if the site is essentially an ecosystem. Nevertheless some of the purely terrestrial attributes of a site have been edited-out to emphasize the more relevant coastal aspect of the designation. Further information on each SEA 6 site can be obtained from the original source where indicated. Extensive habitat descriptions have also been condensed.

Additional information on the other uses of the area (for recreation, industry, fisheries, mariculture etc.) are given in other reports in the SEA 6 series (c.f. <http://www.offshore-sea.org.uk/site/index.php>).

Report layout

The main body of the report has been divided into nine sections:

Sections 2 to 6 describe the nature conservation designations of sites within the SEA 6 area of each of the five provinces:

- 2. West and North Wales – Milford Haven to the Dee Estuary
- 3. North West England – Dee Estuary to the Solway Firth
- 4. South West Scotland – Solway Firth to Mull of Kintyre

- 5. East Northern Ireland – Fair Head to Carlingford Lough
- 6. Isle of Man [Note: while IoM or its waters are not included in the SEA 6 area, it is included in this report as useful background information]

Within each of those five sections, the designated conservation sites are divided into *Sites of international importance*, *Sites of national importance* and *Landscape and other designations*. The *Sites of international importance* are described in greatest detail, with summaries of the main SAC, SPA, Ramsar, IBA and other features for which they were designated; and brief notes on vulnerability and management issues (taken from the relevant SAC, SPA and IBA information pages on the JNCC and Birdlife International websites).

Section 7 briefly describes the character and nature conservation emphasis of *Contiguous Areas* along the coasts that border the SEA 6 area. Section 8 briefly summarises species conservation within the SEA6 area. Section 9 describes ongoing coastal and marine nature conservation initiatives that are relevant to the SEA 6 area. Generic descriptions and some background to each of the conservation designation are given in Appendix 2.

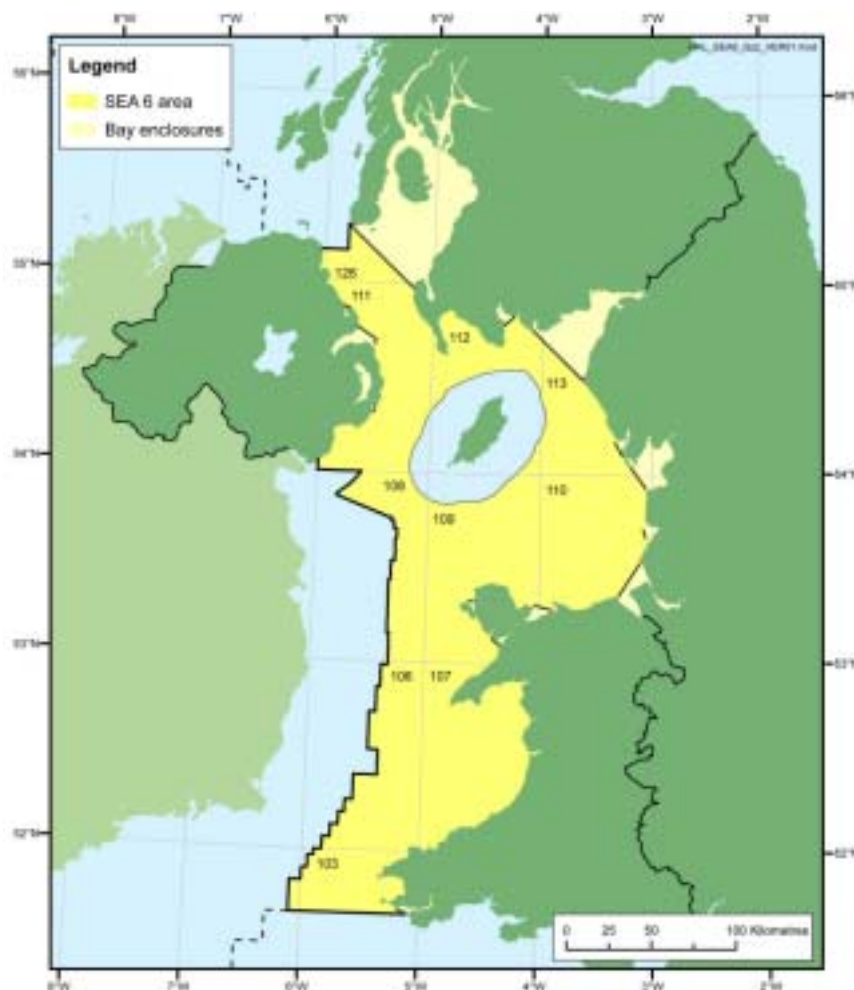


Figure 1.1 SEA 6 region and boundaries. To allow full consideration, the SEA 6 area is shown extending to the shoreline within bay enclosure lines (shaded paler yellow) although these areas would not form part of an offshore oil and gas licensing round. Please note also that this map includes a corrected scale bar, which for reasons related to mapping projections is not included in other maps in this report.

2 West and North Wales – Milford Haven to the Dee Estuary

The SEA 6 area encompasses the coast and offshore waters of west and north Wales, from just to the south of the mouth of Milford Haven (Angle Point) to the border with England in the Dee Estuary.

The west coast of Wales is characterised by contrasting topographic forms: the prominent rocky cliffs, headlands and sandy beaches of Pembrokeshire, the Llyn Peninsula and NW Anglesey and the low lying soft coasts of Cardigan Bay, Tremadog Bay and SW Anglesey, with a number of shallow bar-built estuaries. The variety of nearshore and coastal habitats is impressively large, due to the incredible variation in many environmental factors: wave exposure (extremely exposed to extremely sheltered), tidal currents (more than 6 knots between some islands), geology (incl. limestones, shales, sandstones, and igneous rocks), salinity, etc. etc. The relatively low population and limited industrial presence along this coast is also a very significant factor; effectively limiting the impact of human activities on the habitats and wildlife.

Given the above, it is no surprise that an extremely large proportion of the west Wales coast is considered to be of nature conservation importance. There are few areas of natural coast habitat that are not designated by international or national designations.

The north coast of Wales is much less varied, being primarily low and sedimentary with few rocky headlands; with the exception of north Anglesey and the Ormes Heads. Long sandy beaches, sand dunes, two shallow estuaries and shallow offshore sand banks are the primary features. The coast is also much influenced by a well developed tourist industry, the Mersey Estuary outflow and the presence of many industrial activities in Liverpool Bay and the nearby Merseyside area.

2.1 Sites of international importance

There are 37 designated sites of international importance along the west and north coasts of Wales, although most of them overlap considerably with at least one other site, so that there are effectively 19 areas to be described in this section. These conservation areas of international importance are described below and are located on the following map (Figure 2.1).

2.1.1 Dee Estuary SPA / Ramsar / IBA

Map Reference: Figure 2.1 Site 1

International designation	Area (ha)	EU/IBA code
The Dee Estuary SPA	13,085	UK9013011
The Dee Estuary Ramsar	13,085	UK11082
Dee Estuary IBA	16,688	UK086

The Dee Estuary is a cross border site, managed jointly by authorities in Wales and England.

Note: the Estuary is also proposed as an SAC (primarily for sandflat, mudflat and saltmarsh communities), but has not yet been included on the list of candidate sites (c.f. Section 9.2.1.2).

General site characteristics

The Dee Estuary is a large, funnel-shaped, sheltered estuary that supports extensive areas of intertidal sand-flats, mud-flats and saltmarsh and is one of the top five estuaries in the UK for wintering and passage waterfowl populations. The estuary is an accreting system and the extent of saltmarsh continues to expand. Where agricultural land-claim has not occurred, the saltmarshes grade into

transitional brackish and swamp vegetation on the upper shore. The site also includes the three sandstone islands of Hilbre with their important cliff vegetation and maritime heathland and grassland. During the winter, the intertidal flats and saltmarshes provide feeding and roosting sites for large populations of ducks and waders. In summer, the site supports breeding populations of two species of terns at levels of European importance. The site also includes an assemblage of nationally scarce plants. Main habitat types include:

Rocky shores	0.4 %
Sand / shingle shores (including dune systems)	0.1 %
Estuarine waters	14.5 %
Tidal flats	69.1 %
Salt marshes	15.7 %
Coastal brackish / saline lagoons	0.1 %
Saline / brackish lakes: seasonal / intermittent	0.3 %

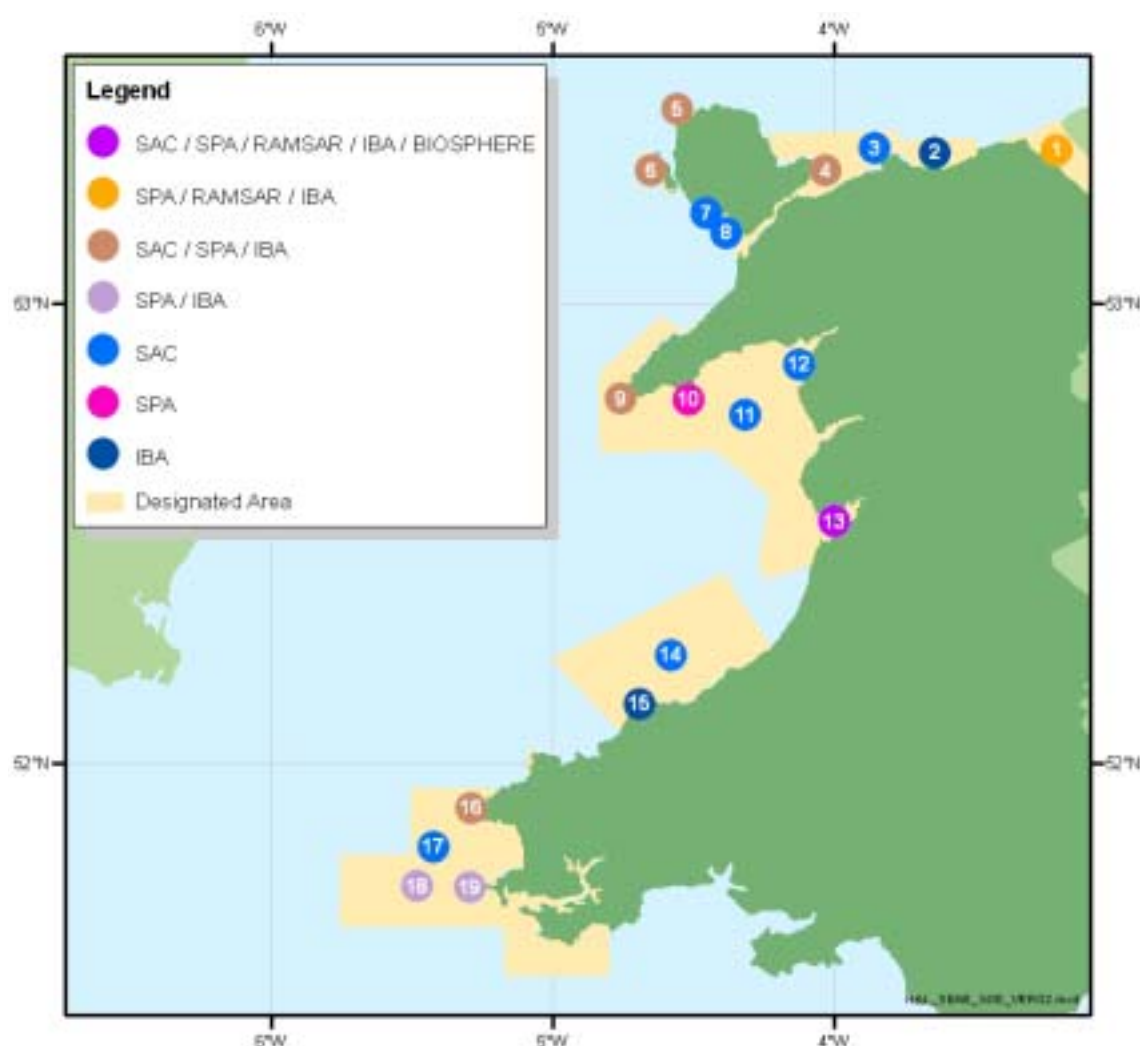


Figure 2.1 Marine and coastal areas of international importance along the west and north coasts of Wales. The numbers identify the text sections below which describe the conservation importance of the sites.

2.1.1.1 SPA features

The site fulfils SPA species qualification criteria for four Annex 1 species (During the breeding season: Common Tern *Sterna hirundo*, Little Tern *Sterna albifrons*; On passage: Sandwich Tern

Sterna sandvicensis; Over winter: Bar-tailed Godwit *Limosa lapponica*) and eleven Annex 2 species (On passage: Redshank *Tringa totanus*; Over winter: Black-tailed Godwit *Limosa limosa islandica*, Curlew *Numenius arquata*, Dunlin *Calidris alpina alpina*, Grey Plover *Pluvialis squatarola*, Knot *Calidris canutus*, Oystercatcher *Haematopus ostralegus*, Pintail *Anas acuta*, Redshank *Tringa totanus*, Shelduck *Tadorna tadorna*, Teal *Anas crecca*).

The area also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 130,408 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Black-tailed Godwit *Limosa limosa islandica*, Shelduck *Tadorna tadorna*, Teal *Anas crecca*, Pintail *Anas acuta*, Oystercatcher *Haematopus ostralegus*, Grey Plover *Pluvialis squatarola*, Bar-tailed Godwit *Limosa lapponica*, Dunlin *Calidris alpina alpina*, Sanderling *Calidris alba*, Curlew *Numenius arquata*, Redshank *Tringa totanus*, Cormorant *Phalacrocorax carbo*, Wigeon *Anas penelope*, Mallard *Anas platyrhynchos*, Lapwing *Vanellus vanellus*, Knot *Calidris canutus*.

2.1.1.2 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils three of the Ramsar criteria. In addition to the criteria based on waterbird numbers (same as SPA described above) it also fulfils a criteria based on representative areas of wetland types; by including extensive intertidal mud and sand flats (20 km by 9 km) with large expanses of saltmarsh towards the head of the estuary.

2.1.1.3 IBA features

The area fulfils nine IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also include Common Ringed Plover (*Charadrius hiaticula*) and Tundra Swan (*Cygnus columbianus*).

2.1.1.4 Vulnerability and management issues

Threats include sea-level change and associated coastal defence measures, disturbance from shooting and increased public access, pollution from industrial sources, sewage and tipping, infrastructure and industrial developments, and accretion of cord-grass *Spartina*.

The RSPB owns, leases or has management agreements for a total of 4,715 hectares. A Dee Estuary Strategy is in place. Measures have been taken to reduce vehicle access onto the foreshore at Point of Ayr. The Dee Estuary fishery is managed by the Environment Agency. They have amended bylaws to manage the cockle fishery in a more sustainable way and they temporarily closed the fishery in 2004. Overall the estuary would benefit from improvements to water quality. Discharges are subject to consents. Investments by water companies have been/are being undertaken to improve standards. Parts of the shoreline have been heavily industrialised and/or urbanised; this has led to a legacy of waste tips around the estuary and discharges into it. There have been some small-scale developments (e.g. port infrastructure at Mostyn) and there are on-going discussions regarding dredging.

2.1.1.5 Component designations at national and local level

SSSIs: Dee Estuary, Inner Marsh Farm, Shotton Lagoons & Reedbeds, Dee Estuary / Aber Afon Dyfrdwy, Gronant Dunes and Talacre Warren, Dee Cliffs, Heswall Dales, North Wirral Foreshore, Red Rocks.

LNR: Hilbre Islands

2.1.1.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2053>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK020.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2454&m=0>

Dee Estuary Strategy: <http://www.deeestuary.org.uk/>

2.1.2 North Wales Coast IBA

Map Reference: Figure 2.1 Site 2

International designation	Area (ha)	IBA code
North Wales Coast IBA	13,660	UK091

General site characteristics

An expanse of the Irish Sea coastline stretching from Little Orme's Head to Rhyl, and extending about 6 km seawards.

2.1.2.1 IBA features

The area fulfils five IBA criteria. The main bird population responsible for qualification is the Black Scoter (*Melanitta nigra*), which concentrates in large flocks on the water off this coast for periods of the year.

2.1.2.2 Vulnerability and management issues

Potential threats include offshore wind-turbine developments and exploration for gas and oil.

2.1.2.3 Component designations at national and local level

SSSIs: Little Orme's Head, Llanddules Beach, Rhyd y Foel Limestone

2.1.2.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2678&m=0>

2.1.3 Great Ormes Head SAC

Map Reference: Figure 2.1 Site 3

International designation	Area (ha)	EU code
Great Ormes Head SAC	302.63	UK0014788

General site characteristics

Main habitat types include:

Shingle. Sea cliffs. Islets	6%
Heath. Scrub. Maquis and garrigue. Phygrana	30%
Dry grassland. Steppes	39%
Humid grassland. Mesophile grassland	3%
Improved grassland	5%
Broad-leaved deciduous woodland	3%

Inland rocks. Screes. Sands. Permanent snow and ice	4%
Other land (including towns, villages, roads, waste places, mines, industrial sites)	10%

2.1.3.1 SAC features

The site includes three Annex 1 habitats. The qualifying features are listed below (*primary features):
Habitats

- European dry heaths* - the finest example of limestone heath in the UK
- Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*)* - one of the largest stands in the UK of *Festuca ovina* – *Carlina vulgaris* grassland.
- Vegetated sea cliffs of the Atlantic and Baltic coasts

2.1.3.2 Vulnerability and management issues

The plateau top of the Great Orme and its slopes are subject to high levels of grazing, which produces short cropped turf. On the steeper slopes there are areas which are undergrazed, due to difficult livestock access. Invasion by native and non-native shrub species is occurring in these areas. These problems are being addressed by a management plan agreed upon by CCW and the local authority.

Recreational pressure on the Great Orme is substantial, as it is immediately adjacent to Llandudno, a major tourist centre. The site is managed as a Country Park and Local Nature Reserve by the local authority in close consultation with CCW. A joint management plan has been agreed upon and is being implemented, which should ensure maintenance of the special features.

2.1.3.3 Component designations at national and local level

SSSI: Great Orme's Head

LNR: Great Orme's Head

2.1.3.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0014788>

2.1.4 Menai Strait and Conwy Bay SAC / SPA / IBA

Map Reference: Figure 2.1 Site 4

International designation	Area (ha)	EU/IBA code
Y Fenai a Bae Conwy/ Menai Strait and Conwy Bay SAC	26,483	UK0030202
Ynys Seiriol / Puffin Island SPA	31.2	UK9020285
Traeth Lafan / Lavan Sands, Conway Bay SPA	2,643	UK9013031
Traeth Lafan, Conway Bay IBA	2675	UK096

General site characteristics

Traeth Lafan is a large intertidal area of sand- and mud-flats lying at the eastern edge of the Menai Straits. The area has a range of exposures and a diversity of conditions, enhanced by freshwater streams that flow across the flats. The site is of importance for wintering waterbirds, especially Oystercatcher.

Ynys Seiriol / Puffin Island is a carboniferous limestone block rising to 55 m with steep cliffs on all sides. The island is of European importance for its breeding population of Cormorant.

Main habitat types include:

Marine areas. Sea inlets	80%
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	19%
Salt marshes. Salt pastures. Salt steppes	0.5%
Shingle. Sea cliffs. Islets	0.5%

2.1.4.1 SAC features

The site includes five Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- *Sandbanks which are slightly covered by sea water all the time** - including the Four Fathom Banks complex, which is a relatively rare type of subtidal sandbank in Wales
- *Mudflats and sandflats not covered by seawater at low tide** - including Traeth Lafan, the shores of the Menai Strait, and the Foryd estuary.
- *Reefs** - including the tidal rapids of the Menai Strait, and limestone reefs along the south-east Anglesey coast and around Puffin Island and the Great and Little Ormes.
- *Large shallow inlets and bays*
- *Submerged or partially submerged sea caves*

2.1.4.2 SPA features

Traeth Lafan fulfils SPA species qualification criteria for one Annex 2 species (Oystercatcher *Haematopus ostralegus*).

Puffin Island fulfils SPA species qualification criteria for one Annex 2 species (Cormorant *Phalacrocorax carbo*).

2.1.4.3 IBA features

The area fulfils two IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

2.1.4.4 Vulnerability and management issues

Although the level of commercial fishing (excluding shellfish) is relatively low, trawling occurs in some areas. The potential impacts of heavy bottom-fishing gear on the subtidal sandbank and shallow inlet and bay habitats will need to be assessed. There are relatively extensive mussel lays in the eastern end of the Menai Strait, and CCW is working with the fishing industry and the local fisheries regulator (the North Western & North Wales Sea Fisheries committee) to assess the potential impacts of this fishery on the features of the SAC.

There are many boat moorings present in the Menai Strait and a demand for additional facilities (moorings and marina developments) to accommodate more craft.

Disposal of dredged material may be contributing to increasing turbidity, which affects the distribution and composition of subtidal algal communities.

Shipping traffic through the Strait and into Liverpool Bay presents a potential pollution source.

On Traeth Lafan there have been concerns that the sporadic cockle suction-dredging may deplete oystercatchers' food source. CCW have developed a protocol with the North Wales Sea Fisheries Committee (NWSFC) to allow an assessment of applications for licences to harvest cockles. NWSFC will now only invite applications for licences if cockle stocks are considered to be relatively high.

Puffin Island is protected from most disturbance by its isolation and the policy of the landowner.

2.1.4.5 Component designations at national and local level

SSSIs: Y Foryd, Traeth Lafan, Glannau Porthaethwy, Creigiau Rhiwledyn / Little Ormes Head, Aber Afon Conwy, Arfordir Gogleddol Penmon, Pen y Gogarth / Great Ormes Head, Glannau Penmon – Biwmares; Puffin Island - Ynys Seiriol

LNRs: Traeth Lafan, Foryd Bay

2.1.4.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0030202>

SPA descriptions: <http://www.jncc.gov.uk/default.aspx?page=2083>;

<http://www.jncc.gov.uk/default.aspx?page=2054>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2623&m=0>

2.1.5 Ynys Feurig, Cemlyn Bay and The Skerries SAC / SPA / IBA

Map Reference: Figure 2.1 Site 5

International designation	Area (ha)	EU/IBA code
Bae Cemlyn / Cemlyn Bay SAC	43.43	UK0030114
Ynys Feurig, Cemlyn Bay and The Skerries SPA	85.66	UK9013061
Ynys Feurig, Cemlyn Bay and The Skerries IBA	85.66	UK097

General site characteristics

Comprises three separate areas. Ynys Feurig lies on Anglesey's west coast close to Valley airfield, with Cemlyn Bay situated on the north coast about 20 km away. The Skerries lie 3 km off Carmel Head. Ynys Feurig consists of a series of low-lying islands extending about 1 km out to sea from a sandy shore. There is little vegetation, except on the highest outer islands. At Cemlyn Bay, a shingle storm beach forms a bar between a tidal lagoon and the open shore. The shingle habitats, together with saltmarsh developing around the lagoon and brackish pools further inland are an unusual combination of habitats. The Skerries are a group of sparsely vegetated islets, 17 ha in extent. They are protected by strong currents but are very exposed to strong westerly and northerly winds. The site is of importance for four species of breeding terns. The three separate areas (which form part of the SPA/IBA) are treated as a single site as a consequence of regular movement by birds between the component parts.

2.1.5.1 SAC features

The site includes two Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Coastal lagoons* - considered to be the best example of a saline coastal lagoon in Wales.
- Perennial vegetation of stony banks

2.1.5.2 SPA features

The site fulfils SPA species qualification criteria for four Annex 1 species (during the breeding season: Arctic Tern *Sterna paradisaea*, Common Tern *Sterna hirundo*, Roseate Tern *Sterna dougallii*, Sandwich Tern *Sterna sandvicensis*).

2.1.5.3 IBA features

The area fulfils four IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

2.1.5.4 Vulnerability and management issues

Recreational pressure at Cemlyn arises from the promotion of the coastal footpath which passes close to the colonies and requires 24 hour wardening to guide the public below the skyline. Other colonies suffer occasional disturbance from inadvertent public access, requiring constant wardening. Ground predators (stoat and fox) require regular control at Cemlyn Bay and Ynys Feurig. The Cemlyn site is owned by the National Trust and managed by North Wales Wildlife Trust for its breeding tern colony. Lagoon conditions are controlled by a sluice which determines salinity levels.

2.1.5.5 Component designations at national and local level

SSSIs: Cemlyn Bay; The Skerries; Ynys Feurig

2.1.5.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030114>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2055>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2636&m=0>

2.1.6 Holy Island Coast SAC / SPA / IBA

Map Reference: Figure 2.1 Site 6

International designation	Area (ha)	EU/IBA code
Glannau Ynys Gybi / Holy Island Coast SAC	464	UK0013046
Glannau Ynys Gybi / Holy Island Coast SPA	353	UK9013101
Glannau Ynys Gybi / Holy Island Coast IBA	352	UK089

General site characteristics

Consists of sea-cliffs with cliff-top heath and grassland. The cliffs are formed from geologically complex and greatly folded strata comprising grits and sandstones with interbedded shales. The cliffs rise to 120 m and the hinterland to 220 m on Holyhead Mountain. There are many small offshore stacks and islets. The maritime heath is dominated by Heather, Bell Heather and Western Gorse and is exposed to strong westerly winds. The site supports a resident population of Chough. Main habitat types include:

Shingle. Sea cliffs. Islets	25%
Inland water bodies (standing water, running water)	0.5%
Heath. Scrub. Maquis and garrigue. Phygrana	71%
Dry grassland. Steppes	1%
Inland rocks. Screes. Sands. Permanent snow and ice	2.5%

2.1.6.1 SAC features

The site includes three Annex 1 habitats. The qualifying features are listed below (*primary features):
Habitats

- Vegetated sea cliffs of the Atlantic and Baltic coasts* - hard rock acidic cliffs, supporting important examples of coastal cliff heathland vegetation.
- European dry heaths* - the most important site in north Wales for maritime forms of European dry heaths.
- Northern Atlantic wet heaths with *Erica tetralix*

2.1.6.2 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Chough *Pyrrhocorax pyrrhocorax*).

2.1.6.3 IBA features

The area fulfils two IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

2.1.6.4 Vulnerability and management issues

Pressure for recreational development remains a threat and visitor pressure requires constant management to counter soil erosion and the disturbance of wildlife. There is a mineral extraction permit on land held by the local authority which is not currently exercised, and pressure for further telecommunications development.

Spread of exotic plants from nearby colonies may cause future problems with cliff communities, and is being carefully monitored.

Vegetation succession on areas remote from the cliff top requires regular intervention by grazing, cutting or burning to mimic traditional management. Much of the area is managed by RSPB in accordance with a management plan or by private landowners under CCW management agreement or ESA agreements.

2.1.6.5 Component designations at national and local level

SSSIs: Glannau Rhoscolyn / Rhoscolyn Coast; Tre Wilmot; Glannau Ynys Gybi / Holy Island Coast

2.1.6.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013046>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2056>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2481&m=0>

2.1.7 Anglesey Coast: Saltmarsh SAC

Map Reference: Figure 2.1 Site 7

International designation	Area (ha)	EU/IBA code
Glannau Mon: Cors heli / Anglesey Coast: Saltmarsh SAC	1058	UK0020025

General site characteristics

Main habitat types include:

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	80%
Salt marshes. Salt pastures. Salt steppes	15%
Shingle. Sea cliffs. Islets	5%

2.1.7.1 SAC features

The site includes four Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- *Salicornia* and other annuals colonising mud and sand* - part of a complex of saltmarsh and dune habitats lying either side of the dune systems at Newborough Warren
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)* - form the bulk of the saltmarsh vegetation, but much of it is far from typical
- Estuaries
- Mudflats and sandflats not covered by seawater at low tide

2.1.7.2 Vulnerability and management issues

Drastic modification to the Cefni estuary in the early 19th century continues to cause rapid accretion of sediment, permitting invasion by *Spartina anglica* on the seaward edges of the saltmarsh. This is reduced by herbicide treatment but successional development of saltmarsh over much of the present mudflat area is inevitable. Some development of *Spartina anglica* on the Braint estuary is also likely.

2.1.7.3 Component designations at national and local level

SSSIs: Newborough Warren – Ynys Llanddwyn, Tywyn Aberffraw

NNR: Newborough Warren and Ynys Llanddwyn

2.1.7.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0020025>

2.1.8 Abermenai to Aberffraw Dunes SAC

Map Reference: Figure 2.1 Site 8

International designation	Area (ha)	EU/IBA code
Y Twyni o Abermenai i Aberffraw / Abermenai to Aberffraw Dunes SAC	1871.03	UK0020021

General site characteristics

Main habitat types include:

Coastal sand dunes. Sand beaches. Machair	55%
Shingle. Sea cliffs. Islets	2.9%
Inland water bodies (standing water, running water)	2.6%
Bogs. Marshes. Water fringed vegetation. Fens	0.3%
Heath. Scrub. Maquis and garrigue. Phygrana	1.4%
Coniferous woodland	37.8%

2.1.8.1 SAC features

The site includes six Annex 1 habitats and two Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Embryonic shifting dunes* - one of the most extensive examples of this habitat type in the UK.
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')* - one of the largest areas of lyme-grass *Leymus arenarius* shifting dune community in Wales
- Fixed dunes with herbaceous vegetation ('grey dunes')* - extensive areas of both fixed dune vegetation with red fescue *Festuca rubra* and lady's bedstraw *Galium verum* and semi-fixed dune grassland with marram *Ammophila arenaria* and red fescue.
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)* - substantial areas of slack vegetation dominated by creeping willow *Salix repens* ssp. *argentea*.
- Humid dune slacks* - large areas of open dune vegetation and many Humid dune slacks
- Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation

Species

- Petalwort *Petalophyllum ralfsii** - large population.
- Shore dock *Rumex rupestris** - at the far north-west of its geographical range.

2.1.8.2 Vulnerability and management issues

Dune stabilisation is leading to the gradual loss of early successional phases. The maintenance of dynamic geomorphological processes is constrained at Newborough by the conifer forest that occupies the same part of the site. The hydrological integrity of the site is also compromised by water-table reduction due to the conifer crop.

The spread of sea buckthorn *Hippophae rhamnoides* and pine seedlings from the forest threaten the dunes, and both are controlled by cutting and spraying. There is no ready solution to these problems without removal of part of the forest. Redesign of the forest is now under discussion with the Forestry Commission.

Abandonment of traditional grazing on Aberffraw common land could occur due to traffic hazards on unfenced roads, and the installation of cattle grids is under discussion with the owners.

The ecological requirements of shore dock *Rumex rupestris* are not well known, although shading and scrub development on its forest refuge appears to be a threat. This is being tackled by tree removal and pony grazing, resulting in an increase in the shore dock population.

2.1.8.3 Component designations at national and local level

SSSIs: Newborough Warren – Ynys Llanddwyn, Tywyn Aberffraw, Morfa Dinlle

NNR: Newborough Warren and Ynys Llanddwyn

2.1.8.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0020021>

2.1.9 Seacliffs of Lley, Aberdaron Coast and Bardsey Island SAC / SPA / IBA

Map Reference: Figure 2.1 Site 9

International designation	Area (ha)	EU/IBA code
Clogwyni Pen Llyn / Seacliffs of Lley SAC	1048	UK0030271
Glannau Aberdaron and Ynys Enlli / Aberdaron Coast and Bardsey Island SPA	505	UK9013121
Glannau Aberdaron and Ynys Enlli IBA	505	UK088

General site characteristics

The site consists of the island of Bardsey (Ynys Enlli) and part of the tip of the Llyn Peninsula, together with two smaller islands – the Gwylans. The coastline is rocky, with many crags, scree and low cliffs. The Aberdaron coast consists of a series of heather-covered hills rising to about 190 m, separated by valleys occupied by pastures. The Mountain on Ynys Enlli has similar heathland to the mainland. The site supports a resident population of Chough which depend on the diverse mix of habitats present and their low-intensity agricultural management. The site also holds a large breeding colony of Manx Shearwaters. Main habitat types include:

Marine areas. Sea inlets	5%
Coastal sand dunes. Sand beaches. Machair	13%
Shingle. Sea cliffs. Islets	70%
Heath. Scrub. Maquis and garrigue. Phygrana	10%
Broad-leaved deciduous woodland	2%

2.1.9.1 SAC features

The site includes one Annex 1 habitat. The qualifying features are listed below (*primary features):

Habitats

- Vegetated sea cliffs of the Atlantic and Baltic coasts* - two soft cliff sites; one on the south coast and one on the north coast.

2.1.9.2 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Chough *Pyrhocorax pyrrhocorax*) and one Annex 2 species (Manx Shearwaters *Puffinus p. puffinus*).

2.1.9.3 IBA features

The area fulfils five IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also Peregrine Falcon (*Falco peregrinus*).

2.1.9.4 Vulnerability and management issues

The site is physically relatively robust although activities in recent years have clearly demonstrated the vulnerability of habitats on both hard and soft cliffs to human pressure. Inappropriate agricultural management, including undergrazing, overgrazing and physical disturbance of habitat, continues to be a problem, which is addressed on some parts of the site through Management Agreements.

Heavy levels of sheep grazing physically damage burrows of Manx shearwater; management plans to reduce livestock numbers are being considered. Invasion of bracken into coastal grassland is reducing feeding areas; methods to control bracken invasion are being considered. Parts of the area experience heavy recreational pressure from walkers and their dogs which disturb feeding chough, although this is not thought to be significant at present.

2.1.9.5 Component designations at national and local level

SSSIs: Porth Dinllaen i Borth Pistyll, Mynydd Penarfynnydd, Glannau Aberdaron, Gallt y Bwlch, Ynys Enlli, Porth Ceiriad, Porth Neigwl ac Ynysoedd Sant Tudwal; Ynys Enlli - Bardsey Island; Ynysoedd y Gwylanod / Gwylan Islands
NNR: Ynys Enlli

2.1.9.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030271>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2058>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2481&m=0>

2.1.10 Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal SPA

Map Reference: Figure 2.1 Site 10

International designation	Area (ha)	EU/IBA code
Mynydd Cilan, Trwyn y Wylfa ac Ynysoedd Sant Tudwal SPA	372	UK9020282

General site characteristics

The SPA consists of a 10 km stretch of Atlantic vegetated sea-cliff and exposed sandy shore from Penrhyn Du in the east, to the eastern edge of Porth Neigwl in the west. These cliffs have adjacent habitats composed of unimproved permanent pasture, maritime grassland, semi-improved grassland, arable farmland, and coastal and maritime heath. Botanically, the maritime grassland and areas of western heath are of particular interest and also support a number of rare plants. The coastal habitats of the SPA support an important resident population of Chough, which depend on the diverse mix of habitats present and their low-intensity agricultural management.

2.1.10.1 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Chough *Pyrrhocorax pyrrhocorax*)

2.1.10.2 Vulnerability and management issues

The choughs depend on the proximity of several sea cliff nesting sites to maritime heath, grassland and farmland feeding sites. The integrity of such feeding sites and their diverse invertebrate and plant assemblages depend on medium grazing pressures twinned with low intensity traditional farming methods that do not involve the use of agrochemicals. The cliff nesting sites are vulnerable to disturbance from climbers, a problem which seems to have been successfully overcome by means of a voluntary climbing ban between February and July, mediated by British Mountaineering Council.

2.1.10.3 Component designations at national and local level

SSSI: Porth Ceiriad ac Ynysoedd Sant Tudwal

2.1.10.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2080>

2.1.11 Llyn Peninsula and the Sarnau SAC

Map Reference: Figure 2.1 Site 11

International designation	Area (ha)	EU/IBA code
Pen Llyn a'r Sarnau/ Llyn Peninsula and the Sarnau SAC	146023.48	UK0013117

General site characteristics

Main habitat types include:

Marine areas. Sea inlets	92.6%
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	5.4%
Salt marshes. Salt pastures. Salt steppes	1.2%
Coastal sand dunes. Sand beaches. Machair	0.5%
Shingle. Sea cliffs. Islets	0.2%
Bogs. Marshes. Water fringed vegetation. Fens	0.1%

2.1.11.1 SAC features

The site includes eight Annex 1 habitats and three Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Sandbanks which are slightly covered by sea water all the time* - includes the sandbanks of Devil's Ridge, Bastram Shoal, the Tripods, and areas within and to the south of Tremadog Bay.
- Estuaries* - representative examples of bar-built estuaries in north-west Wales, including the Glaslyn/Dwyryd, Mawddach and Dyfi estuaries. Each has a continuous gradient between the clean sands near the mouth and the mud or muddy sands in the sheltered extremes of the estuaries
- Coastal lagoons* - Morfa Gwyllt, a small percolation lagoon in a shingle bar across the mouth of the Afon Dysynni - the only example of a percolation lagoon in Wales
- Large shallow inlets and bays* - seabed consists of a mosaic of different sediment types, which support a diverse mixture of plant and animal communities.
- Reefs* - a varied range of reef habitats, including an unusual series of submerged and intertidal glacial moraines (the Sarnau); horse mussel beds; and intertidal biogenic reefs formed by the honeycomb work *Sabellaria alveolata*
- Mudflats and sandflats not covered by seawater at low tide
- *Salicornia* and other annuals colonising mud and sand
- Atlantic salt meadows (*Glaucopuccinellietalia maritima*)
- Submerged or partially submerged sea caves

Species

- Bottlenose dolphin *Tursiops truncatus*
- Otter *Lutra lutra*
- Grey seal *Halichoerus grypus*

2.1.11.2 Vulnerability and management issues

The relevant authorities for the site have prepared a management plan and action plan addressing management issues relating to the reefs and estuaries. The additional site features are due to be incorporated into the plans by the end of 2004.

Construction, e.g. of slipways, coastal defense and marinas/harbours could cause disturbance to the estuarine, intertidal mudflat and sandflat, and reef habitats. There is an increasing demand for such facilities and/or upgrading existing facilities.

Certain reef communities are vulnerable to disturbance from specific fishing methods, in particular heavy bottom-fishing gear. CCW will liaise with the relevant Sea Fisheries Committee to identify ways of minimising impact on habitats

2.1.11.3 Component designations at national and local level

SSSI: Glannau Tonfanau i Friog, Dyfi, Borth – Clarach, Mynydd Tir y Cwmwd a'r Glannau at Garreg yr Imbill, Glanllynau a Glannau Pen-ychain i Gricieth, Morfa Dyffryn, Morfa Harlech, Ynys Enlli, Porth Ceiriad, Porth Neigwl ac Ynysoedd Sant Tudwal, Porth Towyn i Borth Wen, Tiroedd a Glannau rhwng Cricieth ac Afon Glaslyn, Wig Bach a'r Glannau i Borth Alwm, Porth Dinllaen i Borth Pistyll, Aber Mawddach/ Mawddach Estuary, Glannau Aberdaron, Broadwater
LNR: Lon Cob Bach

2.1.11.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013117>

2.1.12 Morfa Harlech a Morfa Dyffryn SAC

Map Reference: Figure 2.1 Site 12

International designation	Area (ha)	EU code
Morfa Harlech a Morfa Dyffryn SAC	1062.57	UK0030049

General site characteristics

Main habitat types include:

Salt marshes. Salt pastures. Salt steppes	30%
Coastal sand dunes. Sand beaches. Machair	66%
Heath. Scrub. Maquis and garrigue. Phygrana	1%
Humid grassland. Mesophile grassland	2%
Mixed woodland	1%

2.1.12.1 SAC features

The site includes four Annex 1 habitats and one Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Embryonic shifting dunes* - occur as long narrow zones mainly in the Morfa Harlech part of the complex.
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')* - extensive, being particularly well-developed at Morfa Dyffryn.
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)* - comparatively large areas of dunes with *Salix repens* ssp. *argentea* and Yorkshire-fog *Holcus lanatus*
- Humid dune slacks* - examples of three different humid dune slack communities have been recorded within the complex.

Species

- Petalwort *Petalophyllum ralfsii** - recorded in dune slacks in the two dune systems at this site

2.1.12.2 Vulnerability and management issues

The beaches adjacent to both dune systems are subject to heavy recreational pressure, particularly in the summer months. Access points through the dunes are actively managed to minimise anthropogenic dune destabilisation. Morfa Dyffryn is especially vulnerable as it is actively mobile and has a primary sand supply. Parts of both dunes have been managed as National Nature Reserves.

2.1.12.3 Component designations at national and local level

SSSIs: Morfa Dyffryn, Morfa Harlech

NNRs: Morfa Dyffryn, Morfa Harlech

2.1.12.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030049>

2.1.13 Dyfi Estuary & Cors Fochno SAC / SPA / Ramsar / IBA / Biosphere

Map Reference: Figure 2.1 Site 13

International designation	Area (ha)	EU/IBA code
Pen Llyn a'r Sarnau/ Llyn Peninsula and the Sarnau SAC	146,023	UK0013117
Cors Fochno SAC	653	UK0014791
Dyfi SPA	2,048	UK9020284
Cors Fochno and Dyfi Ramsar	2,492	UK14004
Cors Fochno and Dyfi IBA	3,775	UK085
Dyfi Biosphere Reserve		

General site characteristics

A bar-built estuarine complex, comprising the Dyfi estuary, two calcareous dune systems, and a large raised mire. The Dyfi is one of the best examples in north-west Europe of a small, drying, nutrient poor estuary, which has been relatively unaffected by industrial development. A wide range of estuarine habitats are present including rare transitions to peatland. Cors Fochno is of international importance being the type locality for estuarine raised mire and one of the largest active raised mires in the United Kingdom. The geomorphology, flora and invertebrate faunas are of national importance. The site is of importance as a traditional wintering area for Greenland White-fronted Goose *Anser albifrons flavirostris* – the most southerly regularly used area for this population in the UK. Main habitat types include:

Sand / shingle shores (including dune systems)	3.9%
Tidal flats	48.7%
Salt marshes	22%
Peatlands (including peat bogs swamps, fens)	25.4%

2.1.13.1 SAC features

The Dyfi is included within the Pen Llyn a'r Sarnau / Llyn Peninsula and the Sarnau SAC (c.f. Section 2.1.11 above). The particular Annex 1 habitats and two Annex 2 species of the SAC that are found within the Dyfi are Estuaries; Mudflats and sandflats not covered by seawater at low tide; *Salicornia* and other annuals colonising mud and sand; Atlantic salt meadows (*Glaucopuccinellietalia maritima*) and Otter *Lutra lutra*.

The Cors Fochno SAC includes three Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Active raised bogs* - supports the largest expanse of primary near-natural raised bog in an estuarine context within the UK.

- Degraded raised bogs still capable of natural regeneration* - substantial areas of degraded raised bog occur peripheral to the active raised bog
- Depressions on peat substrates of the *Rhynchosporion*

2.1.13.2 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Greenland White-fronted Goose *Anser albifrons flavirostris*).

2.1.13.3 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils one of the Ramsar criteria. It fulfils a criteria based on representative areas of wetland types; by containing the largest estuarine raised mire, and third largest 'active' raised mire in Britain.

2.1.13.4 IBA features

The area fulfils one IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

2.1.13.5 Biosphere Reserve features

Cors Fochno and the Dyfi was proposed to UNESCO's Man and the Biosphere (MAB) programme by the then Nature Conservancy Council, and was designated in 1976. It is considered to fulfil all three complementary functions of Biosphere Reserves and there is currently a proposal to extend it (c.f. Section A2.1.4). It is divided into 2 core zones, 3 intermediate zones and 1 transition zone; each with slightly different management.

2.1.13.6 Vulnerability and management issues

Estuary and marsh: Disturbance by leisure activities including wildfowling, and also low-flying aircraft, may be significant to feeding and roosting geese. CCW and the RSPB lease the sporting rights over the majority of the site. The sporting rights are let to local wildfowling clubs within the NNR where there is a voluntary ban on shooting the geese. There are also sanctuary areas where no shooting takes place within the eastern half of the estuary. The SPA is wardened by CCW and the RSPB and disturbance from leisure activities is monitored. Appropriate grazing of the saltmarsh and grassland is important to maintain feeding areas.

Cors Fochno: A significant proportion of the degraded mire is protected from seawater incursion by artificial structures and is therefore vulnerable to flooding. Vulnerability of the intact mire has been significantly reduced in recent decades by land acquisition and designation, such that a broad 'buffer zone' of modified mire is now under conservation management. The maintenance of peripheral drains is the main threat to successful rehabilitation. Monitoring of the hydrology and the mire vegetation indicates a positive response to ditch-blocking works commenced in 1981. Further remedial actions are being addressed, as set out in the management plan.

2.1.13.7 Component designations at national and local level

SSSI: Dyfi

NNR: Dyfi

2.1.13.8 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0013117>;

<http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0014791>.

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2082>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2450&m=0>

Biosphere description: <http://www.ecodyfi.org.uk/biosphereproject/>

2.1.14 Cardigan Bay SAC

Map Reference: Figure 2.1 Site 14

International designation	Area (ha)	EU/IBA code
Cardigan Bay/ Bae Ceredigion SAC	95860.36	UK0012712

General site characteristics

Main habitat types include:

Marine areas. Sea inlets	99.5%
Coastal sand dunes. Sand beaches. Machair	0.01%
Shingle. Sea cliffs. Islets	0.39%
Inland water bodies (standing water, running water)	0.01%
Heath. Scrub. Maquis and garrigue. Phygrana	0.07%
Broad-leaved deciduous woodland	0.02%

2.1.14.1 SAC features

The site includes three Annex 1 habitats and four Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Sandbanks which are slightly covered by sea water all the time – colonised by a wide range of species including razor shells
- Reefs – particularly the extensive intertidal biogenic reefs made by the honeycomb work *Sabellaria alveolata*
- Submerged or partially submerged sea caves - particularly the intertidal cave on Cardigan Island, the walls and floors of which are colonised by many specialised communities

Species

- Bottlenose dolphin *Tursiops truncatus** - estimated to consist of around 125 individuals.
- Sea lamprey *Petromyzon marinus*
- River lamprey *Lampetra fluviatilis*
- Grey seal *Halichoerus grypus*

2.1.14.2 Vulnerability and management issues

Bottlenose dolphins, porpoise and seals are potentially vulnerable to disturbance from seismic survey for oil and gas, and ecotourism and sea-based recreational activities. CCW is liaising with Ceredigion County Council and other interested parties to try and ensure sustainable tourism by improving codes of conduct and improving awareness.

There are concerns about the potential for an increase in marine mammal entanglement in fishing nets and marine debris, the reduction or prey species and damage caused to seabed habitats by mobile fishing gear. The site's relevant authorities are considering these issues in the development of a management plan.

Dolphins, porpoises and seals are vulnerable to military testing or ordnance that occurs within the site. CCW and the DERA are jointly developing a means to detect the presence of marine mammals in areas of risk prior to tests.

There are many small harbour-dredging projects in the bay, which may potentially affect seabed habitats and marine mammals.

2.1.14.3 Component designations at national and local level

SSSIs: Aberarth – Carreg Wylan; Afon Teifi

2.1.14.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0012712>

Cardigan Bay SAC website: <http://www.cardiganbaysac.org.uk/>

2.1.15 Cardigan Island IBA

Map Reference: Figure 2.1 Site 15

International designation	Area (ha)	IBA code
Cardigan Island IBA	20.8	UK083

General site characteristics

A small rocky island just to the north of the Cardigan estuary

2.1.15.1 IBA features

The area fulfils four IBA criteria. The bird population responsible for qualification is Lesser Black-backed Gull (*Larus fuscus*).

2.1.15.2 Vulnerability and management issues

No serious threats are known at the site

2.1.15.3 Component designations at national and local level

None

2.1.15.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2649&m=0>

2.1.16 Ramsey, St David's Peninsula and Strumble Head SAC / SPA / IBA

Map Reference: Figure 2.1 Site 16

International designation	Area (ha)	EU/IBA code
St David's / Ty Ddewi SAC	935.47	UK0013045
Ramsey and St David's Peninsula Coast SPA	845.63	UK9014062
Pembrokeshire Cliffs IBA	1,178	UK092

General site characteristics

The site comprises the island of Ramsey and an adjacent length of cliff and coastal habitats running around the peninsula of St David's. The huge and often greatly indented cliffs support a wide range of typical maritime vegetation communities, ranging from rock-crevice communities on the most exposed cliff faces to maritime grassland, heath and scrub on shallower slopes and in the hinterland. These coastal habitats support an important resident population of Chough *Pyrrhocorax pyrrhocorax*. Main habitat types include:

Marine areas. Sea inlets	12%
Coastal sand dunes. Sand beaches. Machair	1%
Shingle. Sea cliffs. Islets	86%
Bogs. Marshes. Water fringed vegetation. Fens	1%

2.1.16.1 SAC features

The site includes two Annex 1 habitats and one Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Vegetated sea cliffs of the Atlantic and Baltic coasts* - the most extensive examples of the typical west coast transition on acidic rocks
- European dry heaths* - occurs as part of a mosaic of maritime grassland, wind-pruned blackthorn *Prunus spinosa* scrub, and gorse *Ulex europaeus* scrub.

Species

- Floating water-plantain *Luronium natans** - present in two large pools (and one small pool) on Ramsey Island.

2.1.16.2 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Chough *Pyrrhocorax pyrrhocorax*).

2.1.16.3 IBA features

The site fulfils three IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also Peregrine Falcon (*Falco peregrinus*) and Razorbill (*Alca torda*).

2.1.16.4 Vulnerability and management issues

The vegetation is slowly changing due to the cessation in some areas of traditional coastal slope grazing; scrub and bracken have spread at the expense of more maritime communities. The lack of grazing increases the risk of damage from accidental summer fires. Agricultural improvement is also a threat. This is being addressed by management agreements over parts of the site, by the ESA scheme and by the re-introduction of traditional grazing by the National Trust. On Ramsey Island, grazing by sheep and rabbits continues in accordance with the management plan. Rabbit Viral Haemorrhagic Disease is a recent problem.

Continued well being of chough and peregrine depends upon the adequate provision of feeding and breeding habitat and absence of serious disturbance from humans. CCW and partner organisations are implementing 'A Chough Conservation Strategy for Pembrokeshire'.

The site is subject to recreational pressures, particularly from tourists along the coastal path, but these are not yet causing significant deleterious change to the vegetation. On Ramsey, visitor numbers are strictly limited.

2.1.16.5 Component designations at national and local level

SSSIs: Strumble Head – Llechdafad Cliffs; Ramsey; St David's Peninsula Coast

NNR: Ramsey Island

2.1.16.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0013045>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2063>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SiteHTMLDetails.asp&sid=2573&m=0>

2.1.17 Pembrokeshire Marine SAC

Map Reference: Figure 2.1 Site 17

International designation	Area (ha)	EU/IBA code
Pembrokeshire Marine / Sir Benfro Forol SAC	138069.45	UK0013116

General site characteristics

Main habitat types include:

Marine areas. Sea inlets	96%
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	3.8%
Salt marshes. Salt pastures. Salt steppes	0.2%

2.1.17.1 SAC features

The site includes eight Annex 1 habitats and seven Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Estuaries* - includes the Daugleddau, a large ria estuary. Associated with the wide range of environmental conditions, there is a wide diversity of communities and species. Of particular interest are the variety of species rich sediment communities, and tide-swept sponge communities and the wide intertidal mudflats of the upper estuary creeks.
- Large shallow inlets and bays* - includes Milford Haven, one of the best examples of a ria in the UK, and the wide, shallow, predominantly sandy embayment of St Brides Bay.
- Reefs* - extensive areas of intertidal and subtidal rocky reefs. The highly variable rocky seabed topography, together with the indented coastline and extreme tidal range, cause strong tidal streams, particularly around headlands, through sounds and in tidal inlets. The shallower and south-west-facing rocky reefs are exposed to severe wave action, while many others are extremely wave-sheltered. Many of the reefs extend onto the shore and provide examples of both the most exposed and the most sheltered intertidal rock communities in southern Britain. Reef habitat diversity is increased by caves, tunnels and surge gullies in both subtidal and intertidal zones.
- Sandbanks which are slightly covered by sea water all the time
- Mudflats and sandflats not covered by seawater at low tide
- Coastal lagoons
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- Submerged or partially submerged sea caves

Species

- Grey seal *Halichoerus grypus** - the largest breeding colony on the west coast south of the Solway Firth, representing over 2% of annual UK pup production.
- Shore dock *Rumex rupestris* * - no details available
- Sea lamprey *Petromyzon marinus*
- River lamprey *Lampetra fluviatilis*
- Allis shad *Alosa alosa*
- Twaite shad *Alosa fallax*
- Otter *Lutra lutra*

2.1.17.2 Vulnerability and management issues

Water quality issues such as those associated with dredge-spoil disposal are kept under review through liaison with the Environment Agency, DEFRA and Milford Haven Port Authority.

Pollution originating from the transport or exploration/production of oil and gas are of concern. Management of shipping using Milford Haven following the *Sea Empress* oil-spill in 1996 has improved and will be kept under review by the Port Authority. More information on the effects of the *Sea Empress* oil spill are available in Edwards and Sime (1998) and at <http://www.archive.official-documents.co.uk/document/seeec/impact/seeec-1.htm>.

Marine communities are vulnerable to damage by certain fishing methods. South Wales Sea Fisheries Committee bylaws control activities within Skomer Marine Nature Reserve. Other environmental requirements of management of fisheries are addressed through liaison with the SWSFC. Visitor pressures, including gathering of firewood and kindling, could affect intertidal features. Education and access issues should be addressed through the National Park and local authority.

2.1.17.3 Component designations at national and local level

SSSIs: Skomer Island and Middleholm; Stackpole Quay Trewent Point; Freshwater East Cliffs to Skrinkle Haven; Castlemartin Cliffs and Dunes; Broomhill Burrows; Grassholm/ Ynys Gwales; Milford Haven Waterway; Skokholm; The Offshore Islets of Pembrokeshire/ Ynysoedd Glannau Penfro; Stackpole; Arfordir Penrhyn Angle/ Angle Peninsula Coast; Arfordir Abereiddi/ Abereiddi Coast; Dale and South Marloes Coast; De Porth Sain Fraid/ St Bride's Bay South; St David's Peninsula Coast; Ramsey/ Ynys Dewi; Arfordir Niwgwl – Aberbach/ Newgale to Little Haven Coast
MNR: Skomer

2.1.17.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC description: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013116>

Pembrokeshire Marine SAC website: <http://www.pembrokeshiremarinesac.org.uk/>

2.1.18 Grassholm SPA / IBA

Map Reference: Figure 2.1 Site 18

International designation	Area (ha)	EU/IBA code
Grassholm SPA	10.7	UK9014041
Grassholm IBA	10.7	UK090

General site characteristics

Grassholm is a rather low, flat-topped basalt island with limited terrestrial vegetation owing to the effects of large numbers of breeding seabirds, together with the influence of salt spray and wind exposure. Grassholm is of major importance as a breeding site for Gannet *Morus bassanus*. The seabirds feed outside the SPA in nearby waters, as well as more distantly elsewhere in the Irish Sea.

2.1.18.1 SPA features

The site fulfils SPA species qualification criteria for one Annex 2 species (during the breeding season: Gannet *Morus bassanus*).

2.1.18.2 IBA features

The area fulfils six IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

2.1.18.3 Vulnerability and management issues

The gannet population on this island is vulnerable to pollution at sea, either directly by contact or indirectly via food sources. Certain changes in fishing methods if introduced into this area will also affect the birds' food source and cause direct mortality.

2.1.18.4 Component designations at national and local level

SSSI: Grassholm

NNR: Grassholm Island

2.1.18.5 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2060>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2485&m=0>

2.1.19 Skokholm and Skomer Islands SPA / IBA

Map Reference: Figure 2.1 Site 19

International designation	Area (ha)	EU/IBA code
Skokholm and Skomer SPA	427.71	UK9014051
Skokholm and Skomer IBA	427	UK094

General site characteristics

The three islands of Skomer, Skokholm and Middleholm are bounded by cliffs that reach 70 m on Skomer. The plateau vegetation is much affected by salt spray, rabbit grazing and nutrient enrichment from seabirds. The islands have mixed grassland and maritime heath vegetation in varying proportions. The coastal habitats of the SPA support an important resident population of Chough *Pyrrhocorax pyrrhocorax*. The islands also support a large number of breeding seabirds, especially petrels, gulls and auks. Especially notable is the high proportion (over half) of the world population of Manx Shearwater *Puffinus puffinus* that nest here. The nesting seabirds using the site feed outside the SPA in surrounding marine areas, as well as more distantly.

2.1.19.1 SPA features

The site fulfils SPA species qualification criteria for three Annex 1 species (during the breeding season: Chough *Pyrhocorax pyrrhocorax*, Short-eared Owl *Asio flammeus*, Storm Petrel *Hydrobates pelagicus*) and three Annex 2 species (during the breeding season: Lesser Black-backed Gull *Larus fuscus*, Manx Shearwater *Puffinus puffinus*, Puffin *Fratercula arctica*).

The area qualifies as a seabird assemblage of international importance by regularly supporting at least 20,000 seabirds. During the breeding season, the area regularly supports 67,278 individual seabirds (Count period ongoing) including: Razorbill *Alca torda*, Guillemot *Uria aalge*, Kittiwake *Rissa tridactyla*, Puffin *Fratercula arctica*, Lesser Black-backed Gull *Larus fuscus*, Manx Shearwater *Puffinus puffinus*, Storm Petrel *Hydrobates pelagicus*.

2.1.19.2 IBA features

The area fulfils eleven IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

2.1.19.3 Vulnerability and management issues

The bird populations on these islands are vulnerable to pollution at sea, either directly by contact or indirectly via food sources. Certain changes in fishing methods will also affect the birds' food source and cause direct mortality. Skomer Island is subject to intensive seasonal recreational pressures. Management of the islands visitors by the Dyfed Wildlife Trust has prevented any significant disturbance, and the Marine Nature Reserve minimises disturbance from the sea around Skomer through a code of conduct and by having a wardening presence. Colonisation of the islands by mammalian predators such as mink and rats are of special concern. Management plans are in place to control the threats if they increase or arise.

2.1.19.4 Component designations at national and local level

SSSIs: Skokholm; Skomer Island; Middleholm

NNR: Skomer Island

2.1.19.5 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2061>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2594&m=0>

2.2 Sites of national importance

There are a large number of sites of national and local importance along the west and north coasts of Wales including Sites of Special Scientific Interest, National Nature Reserves, Local Nature Reserves and various landscape designations and non-statutory reserves. These sites are described in this section. SSSIs have been marked on separate maps (Figure 2.2a & b) for clarity. Figure 2.3 shows the location and reference numbers of other nationally and locally important sites.

2.2.1 Sites of Special Scientific Interest (SSSI)

For the definition of Site of Special Scientific Interest, see Appendix 2. Figures 2.2a and 2.2b show the locations of the 99 SSSIs that are designated along the west and north coasts of Wales. Table 2.1 provides their names, Ordnance Survey grid references (approx. centre of each site), area in hectares and conservation interest. The conservation interest features for each site are based on the descriptions

given in the SSSI citations available on the CCW website (or provided by CCW for a few sites that have only recently been designated). In the interests of brevity they have been summarised into just four categories: *Intertidal habitats* (between mean low water and mean high water), *Coastal habitats* (above mean high water - incl. saltmarsh, sand dunes, sea cliffs, vegetated shingle, coastal grassland / heath / woodland etc.), *Birds* (incl. wetland birds, and seabirds) and *Geology* (incl. features that are of geomorphological significance in addition to the normal definition of a geological site).

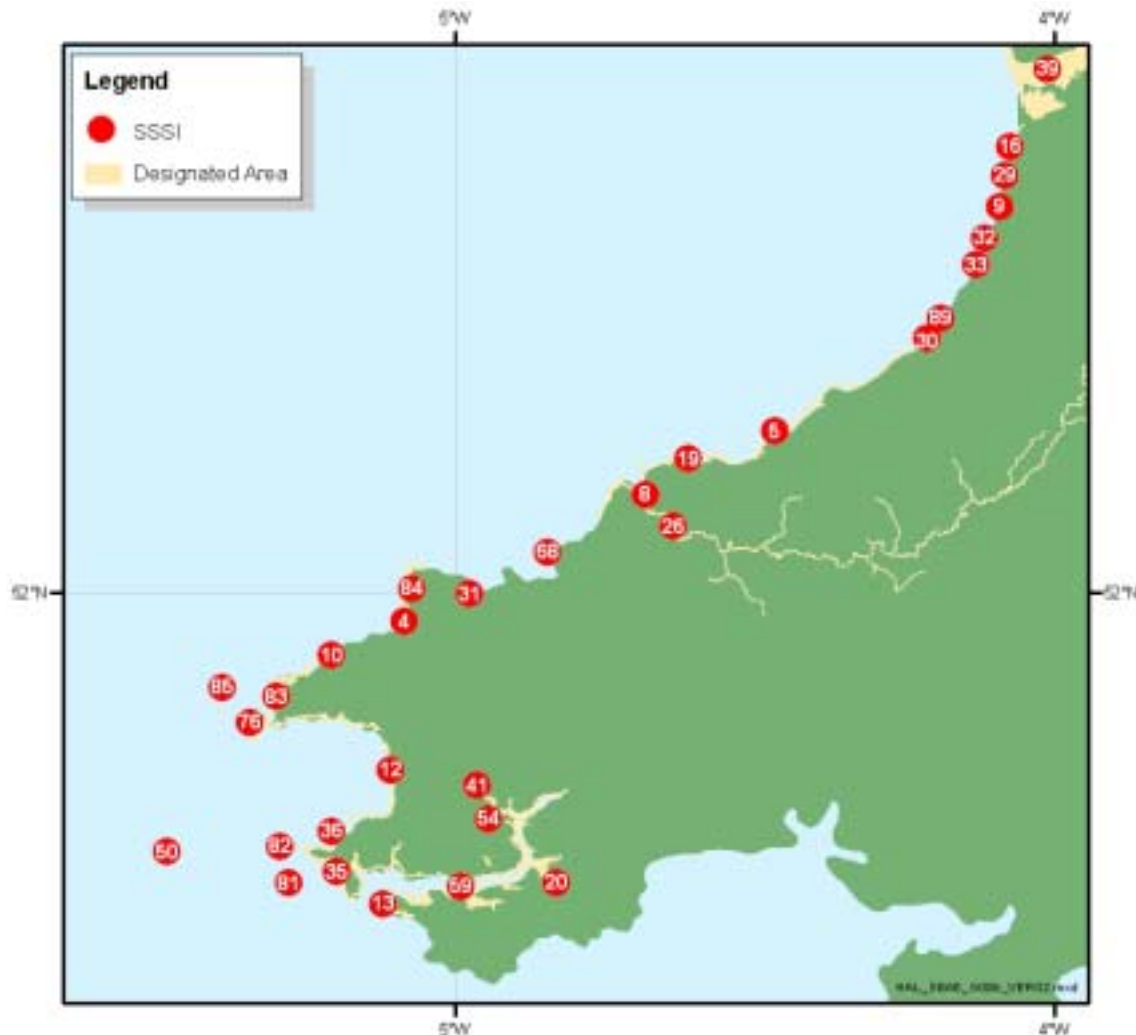


Figure 2.2a Coastal Sites of Special Scientific Importance (SSSIs) along the south west coast of Wales. Names and descriptions of the numbered sites are given in Table 2.1.

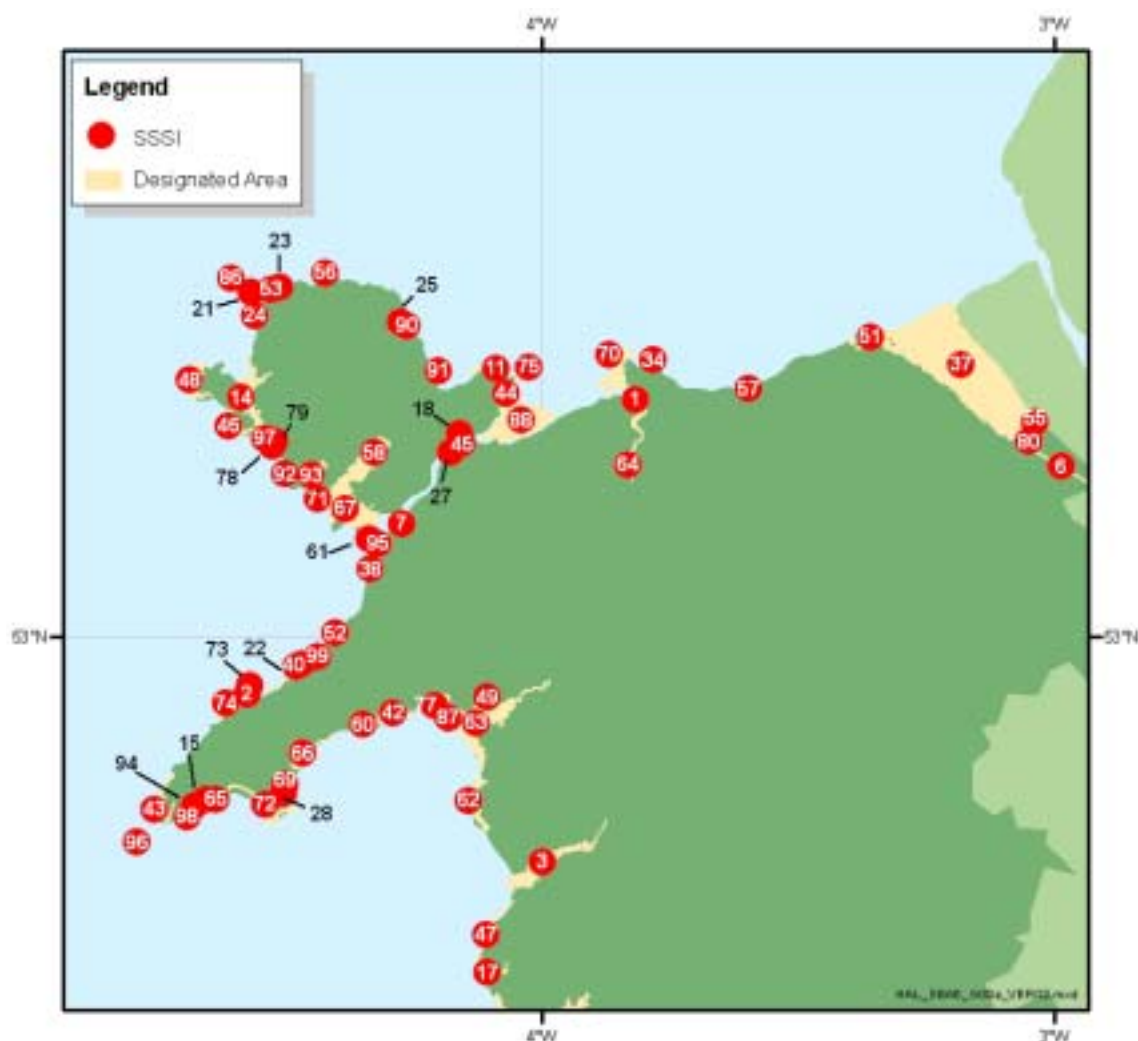


Figure 2.2b Coastal Sites of Special Scientific Interest (SSSIs) along the north west and north coasts of Wales. Names and descriptions of the numbered sites are given in Table 2.1.

Table 2.1 Coastal Sites of Special Scientific Interest (SSSIs) along the west and north coasts of Wales. Locations of the numbered sites are given in Figures 2.2a and b.

No.	Site name	Grid Ref.	Hectares	Interest
1	Aber Afon Conwy	SH 7887 7737	1301.65	Intertidal habitats, Coastal habitats
2	Aber Geirch	SH 2698 4033	18.48	Coastal habitats
3	Aber Mawddach/Mawddach Estuary	SH 6688 1775	1348.52	Intertidal habitats, Coastal habitats, Birds
4	Aber Mawr	SM 8821 3462	4.12	Geology
5	Aberarth - Careg Wylan	SN 3139 5485	998.05	Intertidal habitats, Coastal habitats, Birds, Geology
6	Afon Dyfrdwy - River Dee	SJ 3410 6754	1489.72	Coastal habitats, Birds, Geology
7	Afon Seiont	SH 4796 6208	6.28	Geology
8	Afon Teifi	SN 5152 5083	772.76	Intertidal habitats, Coastal habitats, Birds, Geology
9	Allt Wen a Traeth Tanybwllch	SN 5780 7972	36.36	Coastal habitats, Geology
10	Arfordir Abereiddi	SM 7965 3109	63.74	Intertidal habitats, Geology
11	Arfordir Gogleddol Penmon	SH 5777 8173	103.17	Coastal habitats, Birds
12	Arfordir Niwgrwl - Aber Bach	SM 8591 1762	205.25	Intertidal habitats, Geology
13	Arfordir Penrhyn Angle / Angle Peninsula Coast	SM 8435 0221	133.54	Intertidal habitats, Coastal habitats, Birds, Geology

No.	Site name	Grid Ref.	Hectares	Interest
14	Beddmanarch-Cymyran	SH 2877 8109	889.12	Intertidal habitats, Coastal habitats, Birds
15	Benallt Mine and Nant y Gadwen	SH 2107 2663	11.98	Geology
16	Borth - Clarach	SN 5918 8645	86.12	Intertidal habitats, Birds, Geology
17	Broadwater	SH 5800 0286	262.67	Intertidal habitats, Coastal habitats, Birds
18	Cadnant Dingle	SH 5587 7351	18.88	Coastal habitats
19	Caeau Crug Bychan, Ty Gwyn a Lleyn Ysgaw	SN 2145 5202	20.14	Coastal habitats, Birds
20	Carew Castle	SN 0446 0380	11.50	Coastal habitats, Birds
21	Carmel Head	SH 2934 9283	8.83	Geology
22	Carreg y Llam	SH 3347 4370	13.68	Intertidal habitats, Birds
23	Cemlyn Bay	SH 3312 9349	43.43	Coastal habitats, Birds
24	Clegir Mawr	SH 2981 8975	9.35	Coastal habitats
25	Coed y Gell and Morfa Dulas	SH 4856 8834	19.39	Coastal habitats
26	Coedydd a Chorsydd Aber Teifi	SN 1944 4436	45.93	Intertidal habitats, Coastal habitats, Birds
27	Coedydd Afon Menai	SH 5464 7107	22.48	Coastal habitats
28	Cors Llyferin	SH 3123 2710	32.94	Coastal habitats
29	Craigylfulfran & Clarach	SN 5854 8328	24.70	Geology
30	Creigiau Aberarth-Morfa	SN 4906 6498	19.26	Geology
31	Creigiau Abergwaun (Fishguard Cliffs)	SM 9583 3750	7.13	Geology
32	Creigiau Cwm-Cerw a Ffos-Las (Morfa Bychan)	SN 5605 7622	31.90	Geology
33	Creigiau Pen y Graig	SN 5494 7314	22.47	Intertidal habitats, Coastal habitats, Birds
34	Criegiau Rhiwledyn / Little Ormes Head	SH 8126 8245	32.76	Coastal habitats, Birds
35	Dale and South Marloes Coast	SM 7920 0609	297.65	Intertidal habitats, Coastal habitats, Birds, Geology
36	De Porth Sain Ffraid / St Bride's Bay South	SM 7883 1085	134.46	Intertidal habitats, Coastal habitats, Geology
37	Dee Estuary / Aber Afon Dyfrdwy	SJ 2141 7904	13726.59	Intertidal habitats, Coastal habitats, Birds
38	Dinas Dinlle	SH 4363 5617	26.59	Geology
39	Dyfi	SN 6439 9468	3793.70	Intertidal habitats, Coastal habitats, Birds, Geology
40	Gallt-Y-Bwlch	SH 3426 4399	18.00	Coastal habitats
41	Gas Works Lane Section (Haverfordwest)	SM 9580 1539	0.35	Geology
42	Glanllynau a Glannau Pen-Ychain i Gricieth	SH 4378 3653	143.19	Intertidal habitats, Geology
43	Glannau Aberdaron	SH 1516 2711	303.48	Intertidal habitats, Coastal habitats, Birds, Geology
44	Glannau Penmon - Biwmares	SH 6211 7867	171.52	Intertidal habitats, Geology
45	Glannau Porthaethwy	SH 5613 7218	67.64	Intertidal habitats, Birds
46	Glannau Rhoscolyn	SH 2572 7556	147.27	Intertidal habitats, Coastal habitats, Birds, Geology
47	Glannau Tonfanau i Friog	SH 5726 0766	169.73	Intertidal habitats, Coastal habitats, Birds, Geology
48	Glannau Ynys Gybi: Holy Island Coast	SH 2089 8172	401.01	Intertidal habitats, Coastal habitats, Birds, Geology
49	Glaslyn Marshes	SH 5844 3889	180.61	Coastal habitats, Birds
50	Grassholm / Ynys Gwales	SM 5981 0930	10.77	Intertidal habitats, Coastal habitats, Birds
51	Gronant Dunes and Talacre Warren	SJ 0960 8488	518.48	Coastal habitats, Birds
52	Gwydir Bay	SH 3878 4795	54.18	Geology
53	Henborth	SH 3205 9311	10.95	Geology
54	Hook Wood	SM 9702 1151	11.99	Coastal habitats
55	Inner Marsh Farm	SJ 3076 7334	22.44	Coastal habitats, Birds
56	Llanbadrig - Dinas Gynfor	SH 3913 9508	27.70	Geology
57	Llanddulas Beach	SH 9359 7839	12.84	Coastal habitats

No.	Site name	Grid Ref.	Hectares	Interest
58	Malltraeth Marsh/Cors Ddyga	SH 4460 7140	1358.34	Coastal habitats, Birds
59	Milford Haven Waterway	SM 9927 0922	2189.82	Intertidal habitats, Coastal habitats, Birds, Geology
60	Morfa Abererch	SH 4199 3577	98.83	Coastal habitats
61	Morfa Dinlle	SH 4374 5969	245.05	Coastal habitats, Birds, Geology
62	Morfa Dyffryn	SH 5646 2543	749.85	Intertidal habitats, Coastal habitats, Birds, Geology
63	Morfa Harlech	SH 5449 3494	2217.75	Intertidal habitats, Coastal habitats, Birds, Geology
64	Morfa Uchaf, Dyffryn Conwy	SH 7766 6887	193.72	Coastal habitats, Birds
65	Mynydd Penarfynnydd	SH 2243 2666	161.02	Coastal habitats, Birds, Geology
66	Mynydd Tir y Cwmwd A'r Glannau At Garreg Yr Imbill	SH 3394 3228	163.05	Intertidal habitats, Coastal habitats, Geology
67	Newborough Warren - Ynys Llanddwyn	SH 4141 6502	2319.40	Coastal habitats, Birds, Geology
68	Newport Cliffs	SN 0499 4194	48.11	Coastal habitats, Birds
69	Pen Benar	SH 3157 2833	0.84	Geology
70	Pen y Gogarth / Great Ormes Head	SH 7556 8337	330.58	Intertidal habitats, Coastal habitats, Birds, Geology
71	Penrhynoedd Llangadwaladr	SH 3708 6608	176.43	Coastal habitats, Birds
72	Porth Ceiriad, Porth Neigwl Ac Ynysoedd Sant Tudwal	SH 2885 2576	558.71	Intertidal habitats, Coastal habitats, Birds, Geology
73	Porth Dinllaen i Borth Pistyll	SH 2739 4140	128.27	Intertidal habitats, Coastal habitats, Geology
74	Porth Towyn i Borth Wen	SH 2408 3924	73.60	Intertidal habitats
75	Puffin Island - Ynys Seiriol	SH 6509 8193	31.33	Coastal habitats, Birds
76	Ramsey / Ynys Dewi	SM 7005 2380	277.34	Intertidal habitats, Coastal habitats, Birds, Geology
77	Rhiw-For-Fawr	SH 5147 3805	15.20	Geology
78	Rhosneigr	SH 3172 7336	3.47	Geology
79	Rhosneigr Reefs	SH 3143 7267	49.20	Intertidal habitats
80	Shotton Lagoons and Reedbeds	SJ 2987 7088	11.90	Coastal habitats, Birds
81	Skokholm	SM 7365 0505	107.75	Intertidal habitats, Coastal habitats, Birds
82	Skomer Island and Middleholm	SM 7281 0931	315.60	Intertidal habitats, Coastal habitats, Birds, Geology
83	St. David's Peninsula Coast	SM 7161 2377	684.56	Coastal habitats, Geology
84	Strumble Head - Llechdafad Cliffs	SM 8927 3840	204.18	Coastal habitats, Birds, Geology
85	The Offshore Islets Of Pembrokeshire	SM 6704 2805	21.68	Intertidal habitats, Coastal habitats, Birds
86	The Skerries	SH 2684 9486	17.07	Intertidal habitats, Coastal habitats, Birds
87	Tiroedd a Glannau Rhwng Cricieth Ac Afon Glaslyn	SH 5254 3724	577.61	Intertidal habitats, Coastal habitats, Geology
88	Traeth Lafan	SH 6386 7507	2691.22	Intertidal habitats, Birds
89	Traeth Llanon	SN 5075 6719	27.10	Geology
90	Traeth Lligwy	SH 4946 8778	26.97	Geology
91	Trwyn Dwlban	SH 5325 8183	15.05	Geology
92	Ty Croes	SH 3290 6898	28.20	Coastal habitats
93	Tywyn Aberffraw	SH 3670 6885	368.35	Coastal habitats, Geology
94	Wig Bach A'r Glannau i Borth Alwm	SH 1943 2587	43.45	Intertidal habitats, Geology
95	Y Foryd	SH 4480 5949	282.93	Intertidal habitats, Coastal habitats, Birds
96	Ynys Enlli	SH 1172 2136	206.38	Coastal habitats, Birds
97	Ynys Feurig	SH 3053 7374	25.38	Coastal habitats, Birds
98	Ynysoedd y Gwylanod, Gwylan Islands	SH 1840 2452	4.87	Coastal habitats, Birds
99	Yr Eifl	SH 3632 4493	422.69	Coastal habitats, Birds

Sources of information

CCW Web site: <http://www.cw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

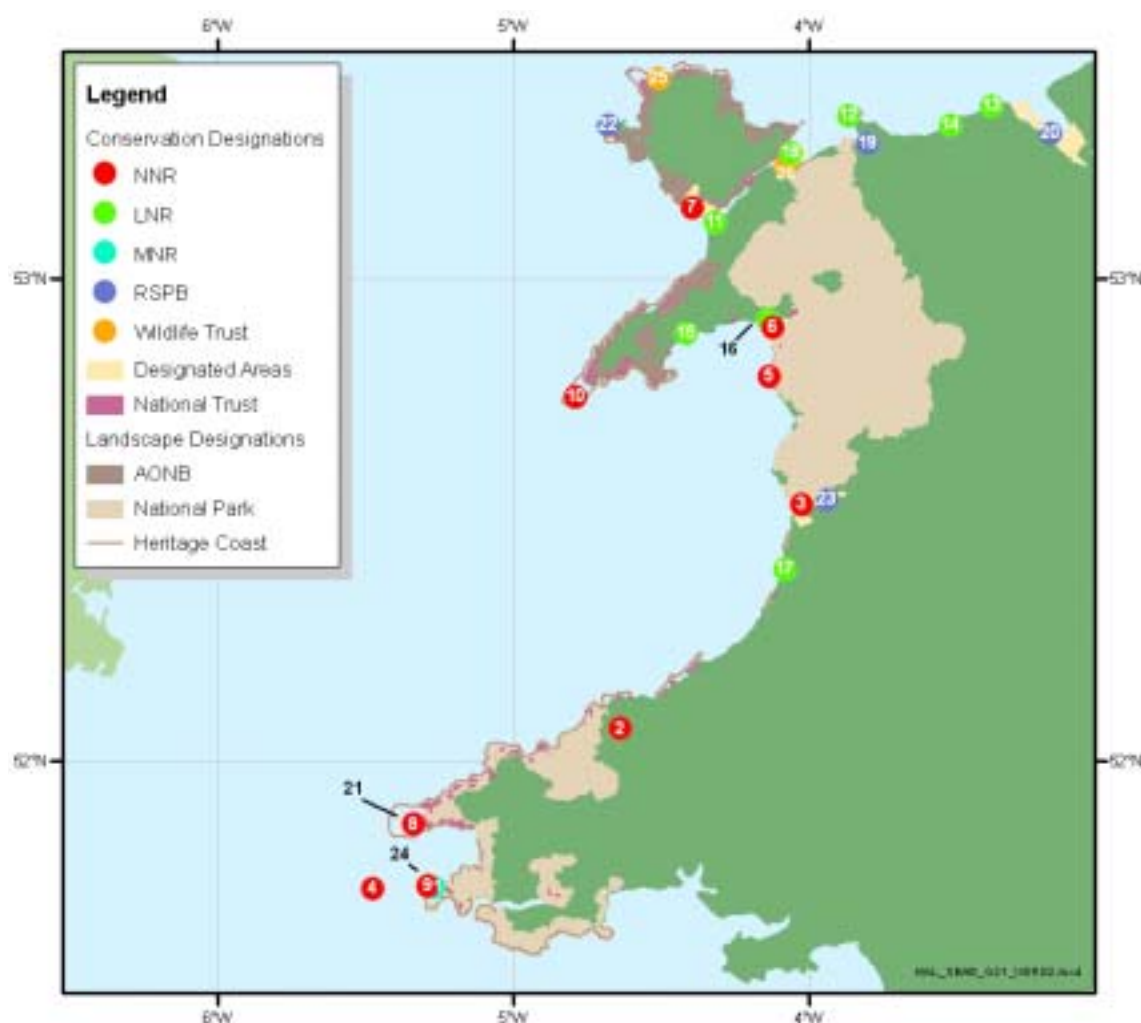


Figure 2.3 Other National/Local designated sites along the west and north coasts of Wales. Names and descriptions of the numbered sites are given in the relevant sections below.

2.2.2 Marine Nature Reserve (MNR)

Map Reference: Figure 2.3

Skomer is the only Marine Nature Reserve in Wales and one of only two in Great Britain. The underwater scenery includes vertical walls, reefs, boulder areas, surge gulleys and the tidally exposed channel of Jack Sound. The north coast is relatively sheltered and there is a seagrass bed in North Haven. A moderately large grey seal population is present and many pups are born in the autumn.

No.	Site name	Grid Ref.	Hectares	Interest
1	Skomer	SM 743 089	1318.55	Subtidal and intertidal habitats and species

Sources of information

CCW Web site: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

2.2.3 National Nature Reserves (NNR)

Map Reference: Figure 2.3

No.	Site name	Grid Ref.	Hectares	Interest
2	Coedmor	SN 191 441	32.23	Ancient oak woodland
3	Dyfi	SN 624 947	2278.11	Sand and mud flats, saltmarsh, sand dunes, raised bog and other coastal habitats, wetland birds
4	Grassholm Island	SM 598 093	10.70	Gannets
5	Morfa Dyffryn	SH 561 244	200.14	Sand dunes
6	Morfa Harlech	SH 570 357	878.50	Sand dunes, sand beach, saltmarsh
7	Newborough Warren and Ynys Llanddwyn	SH 396 633	1559.53	Sand dunes, saltmarsh, wetland birds, geology
8	Ramsey Island	SM 700 238	289.62	Seacliffs, clifftop habitats, seabirds, grey seals, chough
9	Skomer Island	SM 728 093	316.71	Seacliffs, clifftop habitats, seabirds, grey seals, chough
10	Ynys Enlli	SH 117 213	179.21	Seacliffs, clifftop habitats, seabirds, grey seals, chough

Sources of information

CCW Web site: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

2.2.4 Local Nature Reserve (LNR)

Map Reference: Figure 2.3

No.	Site name	Grid Ref.	Hectares	Interest
11	Foryd Bay	SH 446 599	266.83	Sand and mud flats, saltmarsh, wetland birds
12	Great Orme's Head	SH 756 833	185.60	Seacliffs, clifftop habitats, seabirds
13	Gronant Dunes	SJ 080 846	187.51	Sand dunes, terns
14	Kinmel Dunes	SH 985 804	6.73	Sand dunes
15	Lon Cob Bach	SH 373 347	11.36	Mudflats, saltmarsh, coastal swamp
16	Pen y Banc	SH 560 373	20.21	??
17	Pendinas	SN 583 800	40.50	Coastal heath, vegetated shingle ridge
18	Traeth Lafan	SH 624 750	2218.67	Sand and mud flats, saltmarsh, wetland birds

Sources of information

CCW Web site: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

2.2.5 RSPB Reserves

Map Reference: Figure 2.3

No.	Site name	Grid Ref.	Hectares	Interest
19	Conwy	SH 798 769	45.97	Waders and wildfowl, pools close to estuary
20	Point Of Air, Dee Estuary	SJ 210 781	5664.26	Waders and wildfowl, saltmarsh
21	Ramsey Island	SM 700 238	289.62	Seabird cliffs, coastal heath, chough
22	South Stack Cliffs	SH 215 828	295.12	Seabird cliffs (particularly auks and fulmars)
23	Ynys-Hir	SN 683 958	494.50	Waders and wildfowl, coastal grassland

Sources of information

RSPB web site: <http://www.rspb.org.uk/reserves/>

2.2.6 Wildlife Trusts – West Wales (WTWW) & North Wales (WTNW)

Map Reference: Figure 2.3

No.	Site name	Grid Ref.	Hectares	Interest
24	Skomer (WTWW)	SM 729 093	316.7	Seabird cliffs and coastal vegetation
26	Spinnies, Aber Ogwen (WTNW)	SH 612 721	3.5	Brackish lagoon, estuary and coastal grassland
25	Cemlyn lagoon (WTNW)	SH 331 929	25	Brackish lagoon and shingle ridges

Sources of information

<http://www.wildlifetrusts.org/index.php?section=places:reserves>

2.2.7 National Trust

The National Trust owns and manages considerable areas of the coast in Wales. Within the SEA 6 region of Wales the Trust has 73 properties that lie on or close to the coast. These areas are marked on Figure 2.3, but there are too many to individually number or tabulate.

Sources of information

Digital GIS map files provided by the National Trust

National Trust website: http://www.nationaltrust.org.uk/main/placestovisit/search_area.html

2.2.8 Geological Conservation Review (GCR) Sites

GCR sites have not been mapped in this report. Note: these sites include areas of geological and geomorphological interest; the latter being generally more vulnerable to impacts from developments. See Appendix 2 for an explanation of the designation.

GCR sites	
Aber Mawr to Porth Lleuog (SM695234)	Musselwick Bay (SM849124)
Aberarth - Morfa (SN485645)	Musselwick Sands (SM787092)
Abereiddie (SM797305)	Mwnt (SN194519)
Abergwaun (Fishguard Old Harbour) (SM956377)	Mynydd Penarfynydd (SH214259)
Abermawr (SM833346)	Nant Aberderfel (SH285395)
Afon Seiont (SH483617)	Nant y Gadwen (SH211267)
Albion Sands & Gateholm Island (SM771074)	Newborough Warren (SH410630)
Allt-Wen (SN575793)	Nolton Haven Coast (SM861173)
Barmouth Hillside (SH615162)	North Clarach (SN585843)
Benallt (SH212266)	Ogof Ddu (Rhiw-for-fawr) (SH515380)
Braich y Pwll to Parwyd (SH135258)	Ogof Gynfor Coast (Llanbadrig Area) (SH375947)
Broad Haven - Settling Nose (SM861140)	Ogof Gynfor (SH378948)
Bwlch Mine (SH788795)	Ogof Hen and Road Uchaf (SM705250)
Cadnant Cutting (SH776778)	Pen Benar (SH313283)
Cae'r Sais (SH268772)	Pen Caer (SM887391)
Carmel Head (SH308930)	Penrhyn Bodeilas (SH318422)
Carmel Head (SH293928)	Penrhyn Nefyn foreshore section (SH290408)
Castell Coch to Trwyn Castell (SM775303)	Poppit (SN146489)
Clarach (SN588838)	Porth Ceiriad (SH315249)
Craig y Fulfran (Cormorant Rock) (SN583830)	Porth Ceiriad (SH305247)
Craig y Fulfran (SN581830)	Porth Clais (SM741237)
Cwm Tudu (SN359579)	Porth Neigwl (SH287258)
Deer Park (SM756091)	Porth Neigwl (SH270274)
Deganwy Quarries (SH786791)	Porth Oer (SH167300)
Dinas & Esgyrn Bottom (SN010399)	Porth y rhaw (SM783243)
Dinas Dinlle (SH437562)	Porth -y-Mor (SH492884)

GCR sites	
Druidston Haven (SM861172)	Pwlluog (Whitesands Bay) (SM730276)
Druidston (SM862172)	Red Wharf Bay (SH532820)
Dwrhyd Pit (SM791247)	Rhoscolyn (SH260763)
Flagstaff Quarry (SH636807)	Rhosneigr (SH317734)
Glanllynau (SH459373)	Skomer Island (SM722088)
Great Opencast, Parys Mountain (SH443903)	Solfach (SM803240)
Great Orme (SH768833)	Solva Harbour (SM801241)
Gwydir Bay (SH389479)	South Stack (SH203823)
Hen Borth (SH321931)	St Ann's Head (SM805029)
Little Castle Head (SM855065)	St David's Head (SM740280)
Little Orme (SH817828)	St David's Peninsula (SM723245)
Llanbedrog (SH337307)	St Non's and Caerfai Bay (SM752242)
Llanddwyn Island (SH390630)	Tandinas Quarry (SH584820)
Llanon (SN509673)	The Gynfor outliers (SH378948)
Lleiniog (SH619787)	Traeth Penbryn (SH289521)
Lligwy Bay (SH494878)	Trwyn Carreg-y-tir (SH288240)
Lligwy Bay (SH500871)	Trwyn Dwlban (SH532817)
Marloes Sands to Albion Sands (SM771075)	Trwyncynddeiriog (SM746239)
Marloes (SM778074)	Trwyn-llech-y-doll (SH301237)
Marloes (SM788070)	Trwyn-y-Gorlech to Yr-Eifl Quarries (SH348455)
Marquis of Anglesey's Column (SH535715)	Twyn Aberffraw (SH362685)
Mill Haven (SM817125)	West Angle Bay (North) (SM852034)
Morannedd (SH507381)	West Angle Bay (SM853031)
Morfa Bychan (SN561763)	Wig (SH186257)
Morfa Ddu (SH432902)	Y Garth (SH595393)
Morfa Dyffryn (SH557271)	Ynyslas & Borth (SN630912)
Morfa Harlech (SH565340)	Ynyslas (SN605919)
Mountain Cottage Quarry (SH230347)	

Sources of information

JNCC website (GCR pages): <http://www.jncc.gov.uk/page-2947>

2.3 Landscape and other designations

2.3.1 Areas of Outstanding Natural Beauty (AONB)

There are two large AONBs in the SEA 6 region of Wales: Llyn AONB and Ynys Môn / Anglesey AONB. Their extent is shown in Figure 2.3 (but they are not individually numbered).

Sources of information

CCW Web site: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

2.3.2 Heritage Coast

There are 12 sections of Heritage Coast in the SEA 6 region of Wales: Coast Aberffraw Bay, Ceredigion Coast, Dinas Head, Great Orme, Holyhead Mountain, Llyn Coast, Marloes and Dale, North Anglesey Coast, South Pembrokeshire, St.Brides Bay, St.David's Peninsula, St.Dogmaels and Moylgrove. Their extent is shown in Figure 2.3 (but sections are not individually numbered).

Sources of information

CCW Web site: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

2.3.3 National Park

There are two National Parks in the SEA 6 region of Wales: Pembrokeshire Coast National Park and Snowdonia National Park. Their extent is shown in Figure 2.3 (but they are not individually numbered).

Sources of information

CCW Web site: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

2.3.4 Environmentally Sensitive Areas (ESA)

Three large areas of land, which include coastal zones, have been designated as ESAs in west and north Wales - Preseli (incl. north Pembrokeshire and south Ceredigion), Llyn Peninsula, Ynys Mon (Anglesey). They are not mapped in this report as their primary reason for designation is to do with environmental management of agricultural areas in inland areas.

Sources of information

Barne, J.H., Robson, C.F., Kaznowska, S.S., & Doody, J.P., eds. 1995. Coasts and seas of the United Kingdom. Region 12 Wales: Margam to Little Orme. Peterborough, Joint Nature Conservation Committee.

3 North West England – Dee Estuary to the Solway Firth

The SEA 6 area encompasses the coast and offshore waters of north west England, from the border with Wales in the Dee Estuary to the border with Scotland in the Solway Firth.

Much of the coast of north west England is low-lying and includes several prominent estuaries, many with international importance for nature conservation. These have extensive areas of saltmarsh and sand/mud flats, together with other associated habitats including sand dunes, as on the Sefton coast. Sea cliffs and rocky coast are not common, with the main exception of St. Bees Head in Cumbria. Most of the coast is relatively sheltered, compared with southwestern parts of the SEA 6 region, and tidal currents are relatively slow. These and other environmental factors give rise to a limited variety of habitats, but allow the development of large sheltered sedimentary habitats with high productivity, and support exceptional populations of waders and wildfowl.

The estuaries in the south of the region are also important for industry and are surrounded by major infrastructure developments. These areas include the city of Liverpool and the extensive industry and port facilities on the Wirral and the industry at the head of the Dee. With the resorts of Southport and Blackpool, this is one of the most built up stretches of coast anywhere in Great Britain. The north is, by contrast, much more rural, with the hinterland mostly in agricultural use; although the west coast of Cumbria was once very important for its well developed coal fields. The nuclear industrial complex at Sellafield is also a notable feature of this coast. All of the major ports on this coast have dredged approaches.

The majority of the nature conservation designations along this coast are therefore focussed on wader and wildfowl populations and their feeding grounds (particularly during winter) and on a variety of well developed saltmarsh, sand dune and vegetated shingle habitats. St Bees Head is also of regional importance for its seabird colonies and the seabed of the Solway Firth is designated for sandbank and estuary habitats.

3.1 Sites of international importance

There are 22 designated sites of international importance along the north west coast of England, although most of them overlap considerably with at least one other site, so that there are effectively 8 areas to be described in this section. These areas are described below and are located on the following map (Figure 3.1).

3.1.1 Solway Firth SAC / SPA / Ramsar / IBA

Map Reference: Figure 3.1 Site 1

The Solway Firth is a cross border site, managed jointly by authorities in Scotland and England.

International designation	Area (ha)	EU/IBA code
Solway Firth SAC	43,688	UK0013025
Upper Solway Flats & Marshes SPA	43,637	UK9005012
Upper Solway Flats & Marshes Ramsar	43,637	UK11079
Upper Solway Flats & Marshes IBA	45,479	UK261
Caerlaverock Biosphere Reserve	5469	-

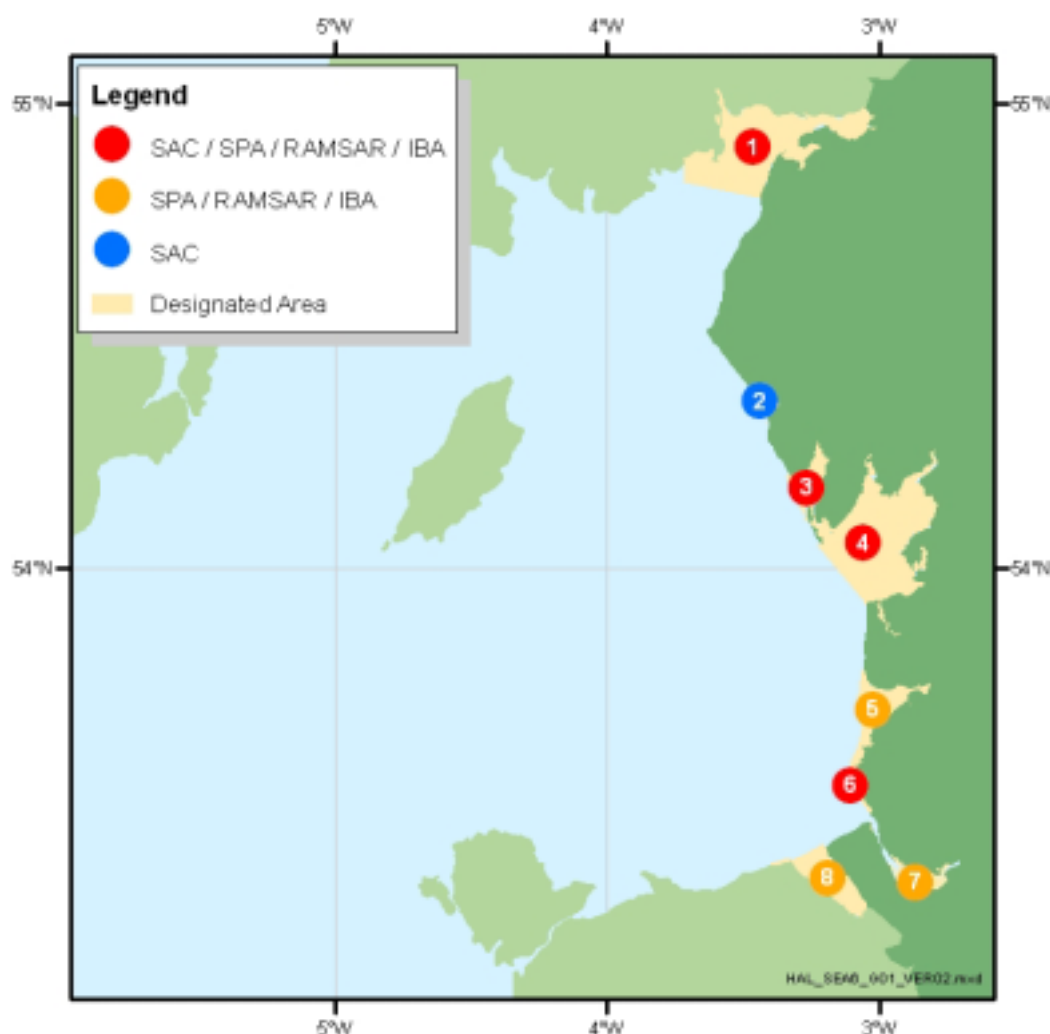


Figure 3.1 Marine and coastal areas of international importance along the north west coast of England. The numbers identify the text sections below which describe the conservation importance of the sites.

General site characteristics

The Upper Solway Flats and Marshes SPA lies on the west coast on the border between England and Scotland. The flats and marshes of the Upper Solway form one of the largest continuous areas of intertidal habitat in Britain. The geomorphology and vegetation of the estuarine saltmarshes or meres are of international importance, with broad transitions to mature 'upper-marsh' being particularly well represented. The existence of these well developed marshes and sand banks is due to the funnelling effect of the estuary which produces extremely large tides (second only to the Severn Estuary).

The whole estuarine complex is of importance for wintering wildfowl (ducks, geese and swans) and waders, and is a vital link in a chain of west coast UK estuaries used by migrating waterbirds. The system is a dynamic one, with shifting channels undergoing phases of erosion and accretion. Main habitat types include:

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	93%
Salt marshes. Salt pastures. Salt steppes	6%
Inland water bodies (standing water, running water)	1%

3.1.1.1 SAC features

The site includes eight Annex 1 habitats and two Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Sandbanks which are slightly covered by sea water all the time* - comprise mainly gravelly and clean sands, owing in part to the very dynamic nature of the estuary
- Estuaries* - one of the least-industrialised and most natural large estuaries in Europe
- Mudflats and sandflats not covered by seawater at low tide* - representative of highly mobile, predominantly sandy intertidal flats on the west coast
- *Salicornia* and other annuals colonising mud and sand* - part of a complete sequence of saltmarsh types
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)* - demonstrates unusually large areas of upper marsh
- Reefs
- Perennial vegetation of stony banks
- Fixed dunes with herbaceous vegetation (`grey dunes`)

Species

- Sea lamprey *Petromyzon marinus** - the Firth provides migratory passage to and from spawning and nursery grounds in a number of rivers
- River lamprey *Lampetra fluviatilis** - the Firth provides migratory passage to and from spawning and nursery grounds in a number of rivers

3.1.1.2 SPA features

The site fulfils SPA species qualification criteria for four Annex 1 species (Over-wintering: Bar-tailed Godwit *Limosa lapponica*, Barnacle Goose *Branta leucopsis*, Golden Plover *Pluvialis apricaria*, Whooper Swan *Cygnus Cygnus*) and eight Annex 2 species (Over-wintering species, Curlew *Numenius arquata*, Dunlin *Calidris alpina alpina*, Knot *Calidris canutus*, Oystercatcher *Haematopus ostralegus*, Pink-footed Goose *Anser brachyrhynchus*, Pintail *Anas acuta*, Redshank *Tringa totanus*, Species on passage, Ringed Plover *Charadrius hiaticula*).

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the site regularly supports 133,222 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Redshank *Tringa totanus*, Barnacle Goose *Branta leucopsis*, Golden Plover *Pluvialis apricaria*, Bar-tailed Godwit *Limosa lapponica*, Pink-footed Goose *Anser brachyrhynchus*, Pintail *Anas acuta*, Oystercatcher *Haematopus ostralegus*, Knot *Calidris canutus*, Whooper Swan *Cygnus cygnus*, Curlew *Numenius arquata*, Lapwing *Vanellus vanellus*, Great Crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Shelduck *Tadorna tadorna*, Mallard *Anas platyrhynchos*, Scaup *Aythya marila*, Goldeneye *Bucephala clangula*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Dunlin *Calidris alpina alpina*.

Note: The site includes the subsumed SPA of Rockcliffe Marsh, which was subject to separate classification.

3.1.1.3 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils three of the Ramsar criteria. In addition to the criteria based on waterbird numbers (same as SPA described above) it also fulfils a criteria based on rare species; by supporting over 10% of the British population of natterjack toad *Bufo calamita*, and of great crested newt *Triturus cristatus*.

3.1.1.4 IBA features

The area fulfils nine IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also Greater Scaup *Aythya marila* and Lesser Black-backed Gull *Larus fuscus*.

3.1.1.5 Biosphere Reserve

The Caerlaverock Biosphere Reserve (NY005603, 5469 hectares) lies within the Scottish portion of the Solway Firth SAC.

3.1.1.6 Vulnerability and management issues

A management strategy for the area has been produced by the Solway Firth Partnership. The strategy addresses threats to the nature conservation interest on the site and sets out the means by which it is proposed to secure the sustainable use of the Firth. There has been relatively little land claim compared with most other estuaries in the UK but some established and new flood defence and coastal erosion works may exacerbate erosion elsewhere within the site. The cockle fishery has been closed for a number of years due to overexploitation and the other commercial, traditional and shell fisheries are regulated by Government to ensure that they are carried out in a sustainable way and that their impact on bird feeding areas are not significant. Roosts and feeding areas are vulnerable to disturbance and the management strategy addresses the planning of recreational and development activities to avoid disturbance to roosts and feeding areas. A large wind farm development is proposed for the outer Solway Firth.

3.1.1.7 Component designations at national and local level

SSSI: Upper Solway Flats and Marshes

NNR: Caerlaverock

3.1.1.8 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013025>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1980>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK058.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2454&m=0>

Solway Firth Partnership website: <http://www.solwayfirthpartnership.org.uk/strategy.htm#sems>

3.1.2 Drigg Coast SAC

Map Reference: Figure 3.1 Site 2

International designation	Area (ha)	EU code
Drigg Coast SAC	1,397.44	UK0013031

General site characteristics

Drigg is an example of a small, bar-built estuary on the north-west coast of England, with large areas of sand dunes on both sides of the mouth. It is fed by three rivers (the Irt, Mite and Esk) which discharge through a mouth that has been narrowed by large sand and shingle spits. Main habitat types include:

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	44.5%
Salt marshes. Salt pastures. Salt steppes	12%
Coastal sand dunes. Sand beaches. Machair	41%
Shingle. Sea cliffs. Islets	2%
Bogs. Marshes. Water fringed vegetation. Fens	0.5%

3.1.2.1 SAC features

The site includes ten Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Estuaries*
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)*
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)*
- Mudflats and sandflats not covered by seawater at low tide
- *Salicornia* and other annuals colonising mud and sand
- Atlantic salt meadows (*Glauco-Puccinellietalia maritima*)
- Embryonic shifting dunes
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')
- Fixed dunes with herbaceous vegetation ('grey dunes')
- Humid dune slacks

3.1.2.2 Vulnerability and management issues

The estuary and sand dunes systems are still relatively 'natural' and there is no threat at present of any development that may affect estuarine processes. Much of the sand dune area is under Countryside Stewardship Agreements or as a Cumbrian Wildlife Trust Reserve.

3.1.2.3 Component designations at national and local level

SSSI: Drigg Coast

3.1.2.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0013031>

3.1.3 Morecambe Bay and Duddon Estuary SAC / SPA / Ramsar / IBA

Map Reference: Figure 3.1 Sites 3 (Duddon Estuary) and 4 (Morecambe Bay)

International designation	Area (ha)	EU/IBA code
Morecambe Bay SAC	61,506.22	UK0013027
Morecambe Bay SPA	37,404.6	UK9005081
Duddon Estuary SPA	6,806.3	UK9005031
Morecambe Bay Ramsar	37,404.6	UK11045
Duddon Estuary Ramsar	6,806.3	UK11022
Morecambe Bay IBA	41,970	UK044
Duddon Estuary IBA	5120	UK018

General site characteristics

Two separate estuarine systems are included within the Morecambe Bay SAC:

Morecambe Bay is one of the largest estuarine systems in the UK and is fed by five main river channels (the Leven, Kent, Keer, Lune and Wyre) which drain through the intertidal flats of sand and mud. Mussel *Mytilus edulis* beds and banks of shingle are present, and locally there are stony outcrops. The whole system is dynamic, with shifting channels and phases of erosion and accretion affecting the estuarine deposits and surrounding saltmarshes. The flats contain an abundant invertebrate fauna that supports many of the waterbirds using the bay. Fringing saltmarshes, sand dunes and saline lagoons are also present.

The Duddon Estuary is located north-west of Morecambe Bay. It is formed where the River Duddon and the smaller Kirkby Pool opens into the Irish Sea. It is a complex site, mostly consisting of intertidal sand and mud-flats, important for large numbers of wintering and passage waterbirds. A range of grazed and ungrazed saltmarsh habitats occurs around the edge of the estuary. The site is the most important in Cumbria for sand-dune communities including large areas of calcareous dunes at Sandscale and Haverigg Haws and contrasting acid dunes on North Walney. Artificial habitats include a flooded iron-ore working known as Hodbarrow Lagoon which forms the largest coastal lagoon in north-west England. Main habitat types include:

Marine areas. Sea inlets	99.1%
Coastal sand dunes. Sand beaches. Machair	0.8%
Shingle. Sea cliffs. Islets	0.1%

3.1.3.1 SAC features

The Morecambe Bay SAC (including both Morecambe Bay and the Duddon Estuary) includes numerous Annex 1 and Annex 2 habitats and species. The qualifying features are listed below (*primary features):

Habitats

- Estuaries*
- Mudflats and sandflats not covered by seawater at low tide*
- Large shallow inlets and bays*
- Perennial vegetation of stony banks*
- *Salicornia* and other annuals colonising mud and sand*
- Atlantic salt meadows (*Glaucopuccinellietalia maritimae*) *
- Shifting dunes along the shoreline with *Ammophila arenaria* (‘white dunes’)*
- Fixed dunes with herbaceous vegetation (‘grey dunes’)*
- Humid dune slacks*
- Sandbanks which are slightly covered by sea water all the time
- Coastal lagoons
- Reefs
- Embryonic shifting dunes
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)

Species

- Great crested newt *Triturus cristatus**

3.1.3.2 SPA features

Morecambe Bay SPA

The site fulfils SPA species qualification criteria for four Annex 1 species (During the breeding season: Little Tern *Sterna albifrons*, Sandwich Tern *Sterna sandvicensis*, Over winter: Bar-tailed Godwit *Limosa lapponica*, Golden Plover *Pluvialis apricaria*) and fourteen Annex 2 species (During the breeding season: Herring Gull *Larus argentatus*, Lesser Black-backed Gull *Larus fuscus*, On passage: Ringed Plover *Charadrius hiaticula*, Sanderling *Calidris alba*, Over winter: Curlew *Numenius arquata*, Dunlin *Calidris alpina alpina*, Grey Plover *Pluvialis squatarola*, Knot *Calidris canutus*, Oystercatcher *Haematopus ostralegus*, Pink-footed Goose *Anser brachyrhynchus*, Pintail *Anas acuta*, Redshank *Tringa totanus*, Shelduck *Tadorna tadorna*, Turnstone *Arenaria interpres*).

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 210,668 individual waterfowl (5 year peak mean for 1991/92 to 1995/96) including: Great Crested Grebe *Podiceps cristatus*, Bar-tailed Godwit *Limosa lapponica*, Pink-footed Goose *Anser brachyrhynchus*, Shelduck *Tadorna tadorna*, Pintail *Anas acuta*, Oystercatcher *Haematopus ostralegus*, Grey Plover *Pluvialis squatarola*, Knot *Calidris canutus*, Dunlin *Calidris alpina alpina*, Curlew *Numenius arquata*, Golden Plover *Pluvialis apricaria*, Turnstone *Arenaria interpres*, Black-tailed Godwit *Limosa limosa islandica*, Cormorant *Phalacrocorax carbo*, Wigeon *Anas penelope*, Teal *Anas crecca*, Mallard *Anas platyrhynchos*, Eider *Somateria mollissima*, Goldeneye *Bucephala clangula*, Red-breasted Merganser *Mergus serrator*, Ringed Plover *Charadrius hiaticula*, Lapwing *Vanellus vanellus*, Sanderling *Calidris alba*, Redshank *Tringa totanus*, Whimbrel *Numenius phaeopus*.

The site also qualifies as a seabird assemblage of international importance by regularly supporting at least 20,000 seabirds. During the breeding season, the site regularly supports 61,858 individual seabirds (5 year peak mean for 1991/92 to 1995/96) including: Herring Gull *Larus argentatus*, Lesser Black-backed Gull *Larus fuscus*, Little Tern *Sterna albifrons*, Sandwich Tern *Sterna sandvicensis*.

The Duddon Estuary SPA

The site fulfils SPA species qualification criteria for one Annex 1 species (Breeding season: Sandwich Tern *Sterna sandvicensis*) and five Annex 2 species (On passage: Ringed Plover *Charadrius hiaticula*, Sanderling *Calidris alba*; Over winter: Knot *Calidris canutus*, Pintail *Anas acuta*, Redshank *Tringa totanus*)

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 78,415 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Curlew *Numenius arquata*, Dunlin *Calidris alpina alpina*, Sanderling *Calidris alba*, Oystercatcher *Haematopus ostralegus*, Red-breasted Merganser *Mergus serrator*, Shelduck *Tadorna tadorna*, Redshank *Tringa totanus*, Knot *Calidris canutus*, Pintail *Anas acuta*.

3.1.3.3 Ramsar features

Morecambe Bay qualifies as a site of international importance for conserving biological diversity and fulfils three of the Ramsar criteria. In addition to the criteria based on waterbird numbers (same as SPA described above) it also fulfils a criteria based on plant and/or animal species at a critical stage in their life cycles; by supporting internationally important numbers of passage Ringed Plover *Charadrius hiaticula*.

The Duddon Estuary qualifies as a site of international importance for conserving biological diversity and fulfils four of the Ramsar criteria. In addition to two criteria based on waterbird numbers (same as SPA described above) it also fulfils a criteria based on rare species; by supporting over 10% of the British population of natterjack toad *Bufo calamita*, at least one nationally scarce plant and at least two

British Red Data Book invertebrates; and it also fulfils a criteria based on plant and/or animal species at a critical stage in their life cycles; by supporting nationally important numbers of waterfowl during spring and autumn passage.

3.1.3.4 IBA features

Morecambe Bay fulfils nine IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

The Duddon Estuary fulfils six IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also include: Bar-tailed Godwit *Limosa lapponica*, Eurasian Curlew *Numenius arquata*, Dunlin *Calidris alpina*, and Little Tern *Sterna albifrons*.

3.1.3.5 Vulnerability and management issues

Morecambe Bay is subject to a wide range of pressures such as land-claim for agriculture, overgrazing, overfishing, industrial uses and unspecified pollution. However, overall the site is relatively robust and many of those pressures have only slight to local effects and are being addressed thorough Management Plans. The breeding tern interest is very vulnerable and the colony has recently moved to the adjacent Duddon Estuary. Positive management is being secured through management plans for non-governmental organisation reserves, English Nature Site Management Statements, European Marine Site Management Scheme, and the Morecambe Bay Partnership

The Duddon Estuary intertidal zone is being threatened by coastal squeeze as a result of land-claim and coastal defence works as well as sea-level rise and storm surges. Many of the saltmarshes are grazed by agricultural livestock, sometimes at a high level. These issues are being addressed through the Shoreline Management Plan and more locally Site Management Statements/Positive Management Schemes. The Morecambe Bay Partnership and Duddon Estuary Partnership are addressing some of the threats arising from recreational pressure and bait-digging. Feasibility studies are being carried out for a bridge across the estuary, any such proposals will be subject to assessment under the Habitats Regulations, 1994. There are various developments for housing, amenity and industry adjacent to the site, however to date there has been no significant effect on the nature conservation interest of the estuary

3.1.3.6 Component designations at national and local level

SSSIs: Annaside & Gutterby Banks, Arnside Knott, Barker Scar, Cockerham Marsh, Duddon Estuary, Humphrey Head, Jack Scout, Lune Estuary, Morecambe Bay, Shaw Meadow & Sea Pasture, South Walney & Piel Channel Flats, Wyre Estuary

NNRs: Sandscale Haws, North Walney

3.1.3.7 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites> [SPAs: <http://www.jncc.gov.uk/page-1417>]

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0013027>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1982>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK104.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2547&m=0>

Morecambe Bay Partnership website: <http://www.morecambebay.org.uk/>

3.1.4 Sefton Coast and Ribble and Alt Estuaries SAC / SPA / Ramsar / IBA

Map Reference: *Figure 3.1 Sites 5 (Ribble and Alt Estuaries) and 6 (Sefton Coast)*

International designation	Area (ha)	EU/IBA code
Sefton Coast SAC	4563.97	UK0013076
Ribble & Alt Estuaries SPA	12,361.13	UK9005103
Ribble & Alt Estuaries Ramsar	13,464.1	UK11057
Ribble & Alt Estuaries IBA	15,934	UK057

General site characteristics

The two sites are described together as they overlap considerably along the Sefton Coast. The site comprises two estuaries, of which the Ribble Estuary is by far the larger, together with an extensive area of sandy foreshore and sand dunes along the Sefton Coast. The site consists of extensive sand- and mud-flats, large areas of saltmarsh (particularly in the Ribble Estuary) and large sand dunes complexes. There are also areas of coastal grazing marsh located behind the sea embankments.

3.1.4.1 SAC features

The site includes six Annex 1 habitats and two Annex 2 species. The qualifying features are listed below (*primary features):

Habitats

- Embryonic shifting dunes*
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')*
- Fixed dunes with herbaceous vegetation ('grey dunes')*
- Dunes with *Salix repens ssp. argentea* (*Salicion arenariae*)*
- Humid dune slacks*
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)

Species

- Petalwort *Petalophyllum ralfsii**
- Great crested newt *Triturus cristatus*

3.1.4.2 SPA features

The site fulfils SPA species qualification criteria for six Annex 1 species (During the breeding season: Common Tern *Sterna hirundo*, Ruff *Philomachus pugnax*, Over winter: Bar-tailed Godwit *Limosa lapponica*, Bewick's Swan *Cygnus columbianus bewickii*, Golden Plover *Pluvialis apricaria*, Whooper Swan *Cygnus cygnus*) and fifteen Annex 2 species (During the breeding season: Lesser Black-backed Gull *Larus fuscus*, On passage: Ringed Plover *Charadrius hiaticula*, Sanderling *Calidris alba*, Over winter: Black-tailed Godwit *Limosa limosa islandica*, Dunlin *Calidris alpina alpina*, Grey Plover *Pluvialis squatarola*, Knot *Calidris canutus*, Oystercatcher *Haematopus ostralegus*, Pink-footed Goose *Anser brachyrhynchus*, Pintail *Anas acuta*, Redshank *Tringa totanus*, Sanderling *Calidris alba*, Shelduck *Tadorna tadorna*, Teal *Anas crecca*, Wigeon *Anas penelope*)

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 301,449 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Grey Plover *Pluvialis squatarola*, Whooper Swan *Cygnus cygnus*, Golden Plover *Pluvialis apricaria*, Bar-tailed Godwit *Limosa lapponica*, Pink-footed Goose *Anser brachyrhynchus*, Shelduck *Tadorna tadorna*, Wigeon *Anas penelope*, Teal *Anas crecca*, Bewick's

Swan *Cygnus columbianus bewickii*, Oystercatcher *Haematopus ostralegus*, Curlew *Numenius arquata*, Knot *Calidris canutus*, Sanderling *Calidris alba*, Dunlin *Calidris alpina alpina*, Black-tailed Godwit *Limosa limosa islandica*, Redshank *Tringa totanus*, Cormorant *Phalacrocorax carbo*, Common Scoter *Melanitta nigra*, Lapwing *Vanellus vanellus*, Pintail *Anas acuta*.

The site also qualifies as a seabird assemblage of international importance by regularly supporting at least 20,000 seabirds. During the breeding season, the site regularly supports 29,236 individual seabirds including: Black-headed Gull *Larus ridibundus*, Lesser Black-backed Gull *Larus fuscus*, Common Tern *Sterna hirundo*.

3.1.4.3 Ramsar features

The site qualifies as a site of international importance for conserving biological diversity and fulfils three of the Ramsar criteria. In addition to two criteria based on waterbird numbers (same as SPA described above) it also fulfils a criteria based on rare species; by supporting up to 40% of the British population of natterjack toad *Bufo calamita*.

3.1.4.4 IBA features

The site fulfils nine IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also include: Curlew *Numenius arquata*, Turnstone *Arenaria interpres*.

3.1.4.5 Vulnerability and management issues

Overall, the dunes, intertidal flats and saltmarsh enjoy a relatively robust status and a favourable condition. However, the site is, in places, subject to pressure from recreation, built development (including coastal defence), wildfowling and industry, including sand-winning. Wildfowling disturbance is effectively managed through the provision of refuge areas and strict regulation on shooting activities. Beach activities are managed by the Beach Management Plan. Sand-winning was addressed during a Public Inquiry in August 2001, with the result that detailed environmental monitoring will now be incorporated into the renewed planning permission. Much of the site attracts beneficial land management via the implementation of agreed plans for three NNRs, two LNRs and other initiatives developed by the Sefton Coast Partnership. Wider land management issues are being developed via the neighbouring Ribble and Mersey Estuary Strategies. The issue of grazing pressure on the saltmarsh will be addressed through a management agreement to reduce the grazing pressure.

The coast at Formby Point and Ainsdale is suffering intense erosion which is being investigated through the Sefton Shoreline Management Plan, and beach management practices have effectively encouraged the creation of considerable areas of embryo dunes on the upper shore elsewhere. The Ribble Estuary is also evolving as sediment patterns are changing and saltmarsh continues to accrete following past land-claim and the closure of Preston Docks. The Ribble drains the old industrial heartland of northwest England and this legacy does affect the water quality; so it has failed to meet the requirements of the Bathing Waters Directive. Government Office North West and the Environment Agency are investigating likely sources of pollution that may have caused this.

3.1.4.6 Component designations at national and local level

SSSIs: Lytham Coastal Changes, Lytham St Annes Dunes, Ribble Estuary, Sefton Coast

NNRs: Ainsdale Sand Dunes, Cabin Hill, Ribble Marshes

LNRs: Lytham St Annes, Ravenmeols Hills, Ainsdale and Birkdale Hills

3.1.4.7 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0013076>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1984>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK083.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SiteDetails.asp&sid=2584&m=0>

3.1.5 Mersey Estuary SPA / Ramsar / IBA

Map Reference: Figure 3.1 Site 7

International designation	Area (ha)	EU/IBA code
Mersey Estuary SPA	5033	UK9005131
Mersey Estuary Ramsar	5023	UK11041
Mersey Estuary IBA	7274	UK041

General site characteristics

A large, sheltered estuary which comprises large areas of saltmarsh and extensive intertidal sand- and mud-flats, with limited areas of brackish marsh, rocky shoreline and boulder clay cliffs, within a rural and industrial environment. The intertidal flats and saltmarshes provide feeding and roosting sites for large populations of waterbirds. During the winter, the site is of major importance for ducks and waders. The site is also important during the spring and autumn migration periods, particularly for wader populations moving along the west coast of Britain. Main habitat types include:

Tidal flats	89%
Salt marshes	11%

3.1.5.1 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Over winter: Golden Plover *Pluvialis apricaria*); and seven Annex 2 species (On passage: Redshank *Tringa totanus*, Ringed Plover *Charadrius hiaticula*; Over winter: Dunlin *Calidris alpina alpina*, Pintail *Anas acuta*, Redshank *Tringa totanus*, Shelduck *Tadorna tadorna*, Teal *Anas crecca*).

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 99,467 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Curlew *Numenius arquata*, Black-tailed Godwit *Limosa limosa islandica*, Lapwing *Vanellus vanellus*, Grey Plover *Pluvialis squatarola*, Wigeon *Anas penelope*, Great Crested Grebe *Podiceps cristatus*, Redshank *Tringa totanus*, Dunlin *Calidris alpina alpina*, Pintail *Anas acuta*, Teal *Anas crecca*, Shelduck *Tadorna tadorna*, Golden Plover *Pluvialis apricaria*.

3.1.5.2 Ramsar features

The site qualifies as a site of international importance for conserving biological diversity and fulfils two of the Ramsar criteria based on waterbird numbers (similar to SPA described above).

3.1.5.3 IBA features

The area fulfils seven IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also includes Curlew *Numenius arquata*.

3.1.5.4 Vulnerability and management issues

Threats include the development of an airport, hotels, a river crossing, pipelines, a power station and the proposed Mersey barrage, and sea-level rise that may result in flooding, erosion and improvements

to coastal defences. The RSPB leases parts of the estuary for management as reserves. A management plan exists for the area.

3.1.5.5 Component designations at national and local level

SSSIs: Mersey Estuary, New Ferry, Altcar Sand-dunes and Foreshore, North Wirral Foreshore

LNR: Pickerings Pasture

3.1.5.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1986>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK096.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2537&m=0>

3.1.6 Dee Estuary SAC / SPA / Ramsar / IBA

Map Reference: Figure 3.1 Site 8

The Dee Estuary is a cross border site, managed jointly by authorities in Wales and England. A full site description is given in Section 2.1.1.

3.2 Sites of national importance

There are a large number of sites of national and local importance along the north west coast of England including Sites of Special Scientific Interest, National Nature Reserves, Local Nature Reserves and various landscape designations and non-statutory reserves. These sites are described in this section. SSSIs have been marked on a separate map (Figure 3.2) for clarity. Figure 3.3 shows the location and reference numbers of other nationally and locally important sites.

3.2.1 Sites of Special Scientific Interest (SSSI)

For the definition of Site of Special Scientific Interest, see Appendix 2. Figure 3.2 shows the locations of the 31 SSSIs that are designated along the north west coast of England. Table 3.1 provides their names, Ordnance Survey grid references (approx. centre of each site), area in hectares and conservation interest. The conservation interest features for each site are based on the descriptions given in the SSSI citations available on the English Nature website. In the interests of brevity they have been summarised into just four categories: *Intertidal habitats* (between mean low water and mean high water), *Coastal habitats* (above mean high water - incl. saltmarsh, sand dunes, sea cliffs, vegetated shingle, coastal grassland / heath / woodland etc.), *Birds* (incl. wetland birds, and seabirds) and *Geology* (incl. features that are of geomorphological significance in addition to the normal definition of a geological site).

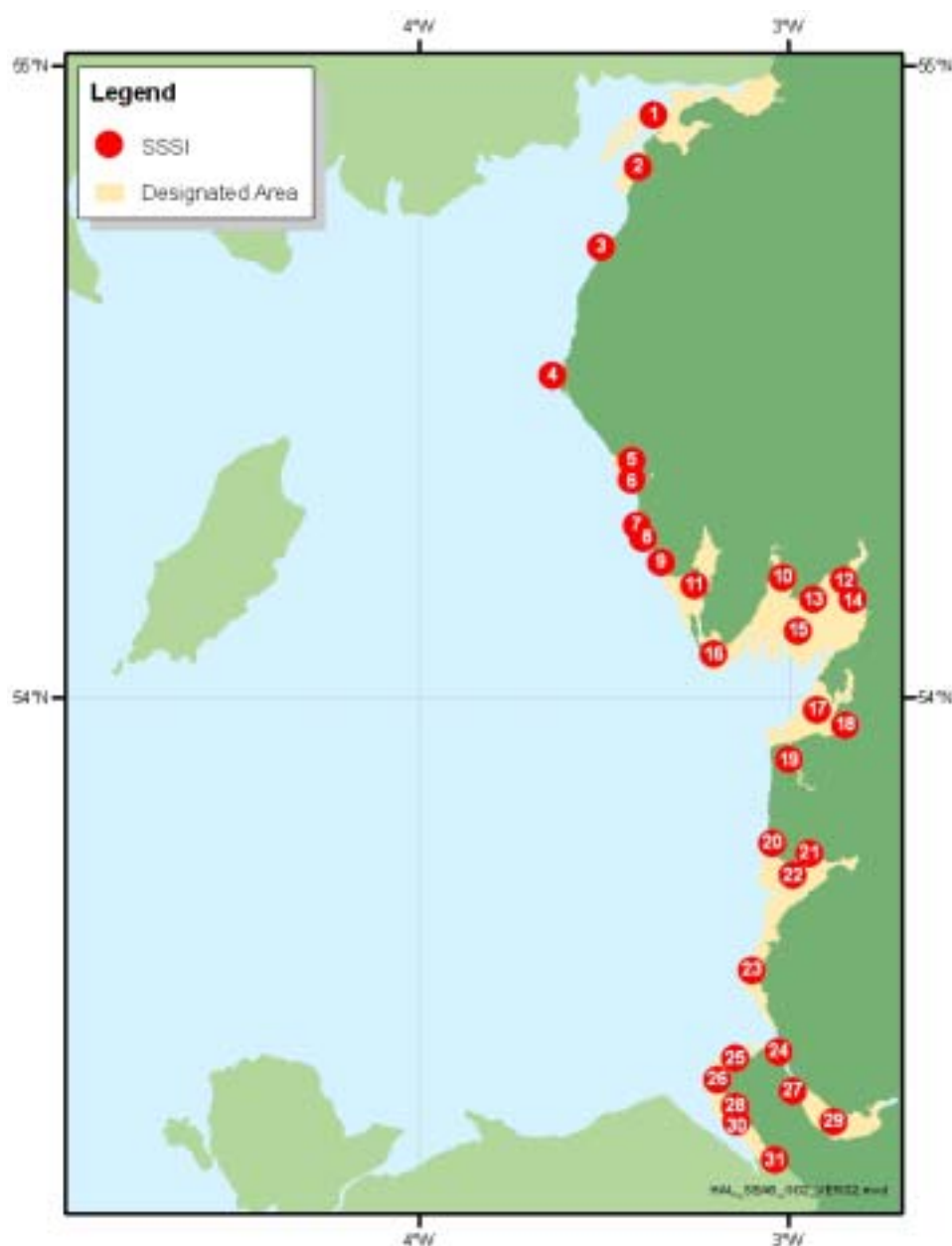


Figure 3.2 Coastal Sites of Special Scientific Interest (SSSIs) along the north west coast of England. Names and descriptions of the numbered sites are given in Table 3.1.

Table 3.1 Coastal Sites of Special Scientific Interest (SSSIs) along the north west coast of England. Locations of the numbered sites are given in Figure 3.2.

No.	Site name	Grid Ref.	Hectares	Interest
7	Annaside	SD 0818 8756	17.3	Coastal habitats (Natterjack Toad)
8	Annaside & Gutterby Banks	SD 0927 8526	23.8	Geology
12	Arnside Knott	SD 4460 7711	167.9	Coastal habitats
10	Barker Scar	SD 3367 7778	17.6	Coastal habitats, Geology
18	Cockerham Marsh	SD 4454 5149	9.8	Coastal habitats (Natterjack Toad)
28	Dee Cliffs	SJ 2376 8327	15.2	Coastal habitats, Geology
30	Dee Estuary	SJ 2401 8050	5231.1	Intertidal habitats, Coastal habitats, Birds
6	Drigg Coast	SD 0752 9566	1400.0	Coastal habitats

No.	Site name	Grid Ref.	Hectares	Interest
5	Drigg Holme	SD 0755 9890	9.0	Coastal habitats
11	Duddon Estuary	SD 1698 7774	6786.0	Intertidal habitats, Coastal habitats, Birds, Geology
13	Humphrey Head	SD 3907 7381	28.7	Coastal habitats, Geology
31	Inner Marsh Farm	SJ 3076 7336	22.5	Coastal birds
14	Jack Scout	SD 4597 7375	6.7	Coastal habitats
17	Lune Estuary	SD 3949 5496	7633.2	Intertidal habitats, Coastal habitats, Birds
21	Lytham Coastal Changes	SD 3786 2857	24.9	Geology
20	Lytham St Annes Dunes	SD 3111 3061	24.7	Coastal habitats
3	Maryport Harbour	NY 0293 3663	3.4	Coastal habitats
29	Mersey Estuary	SJ 3950 8181	6714.5	Intertidal habitats, Coastal habitats, Birds
24	Mersey Narrows	SJ 3176 9310	116.3	Intertidal habitats, Coastal habitats, Birds
15	Morecambe Bay	SD 3635 6828	25665.2	Intertidal habitats, Coastal habitats, Birds, Geology
27	New Ferry	SJ 3421 8594	73.4	Intertidal habitats, Coastal habitats, Birds
25	North Wirral Foreshore	SJ 2148 9166	1959.8	Intertidal habitats, Coastal habitats, Birds
26	Red Rocks	SJ 2067 8808	11.4	Coastal habitats
22	Ribble Estuary	SD 3479 2465	9348.4	Intertidal habitats, Coastal habitats, Birds
23	Sefton Coast	SD 2831 0348	4634.1	Intertidal habitats, Coastal habitats, Birds
9	Shaw Meadow & Sea Pasture	SD 1233 8089	8.8	Coastal habitats
2	Silloth Dunes & Mawbray Bank	NY 1013 5223	189.9	Coastal habitats
16	South Walney & Piel Channel Flats	SD 2092 6488	2329.9	Intertidal habitats, Coastal habitats, Birds, Geology
4	St Bees Head	NX 9520 1187	157.2	Coastal habitats, Birds, Geology
1	Upper Solway Flats & Marshes	NY 1122 6030	14097.7	Intertidal habitats, Coastal habitats, Birds, Geology
19	Wyre Estuary	SD 3590 4116	1481.8	Intertidal habitats, Coastal habitats, Birds

Sources of information

EN websites: <http://www.english-nature.org.uk/special/sssi/>; http://www.english-nature.org.uk/pubs/gis/gis_register.asp

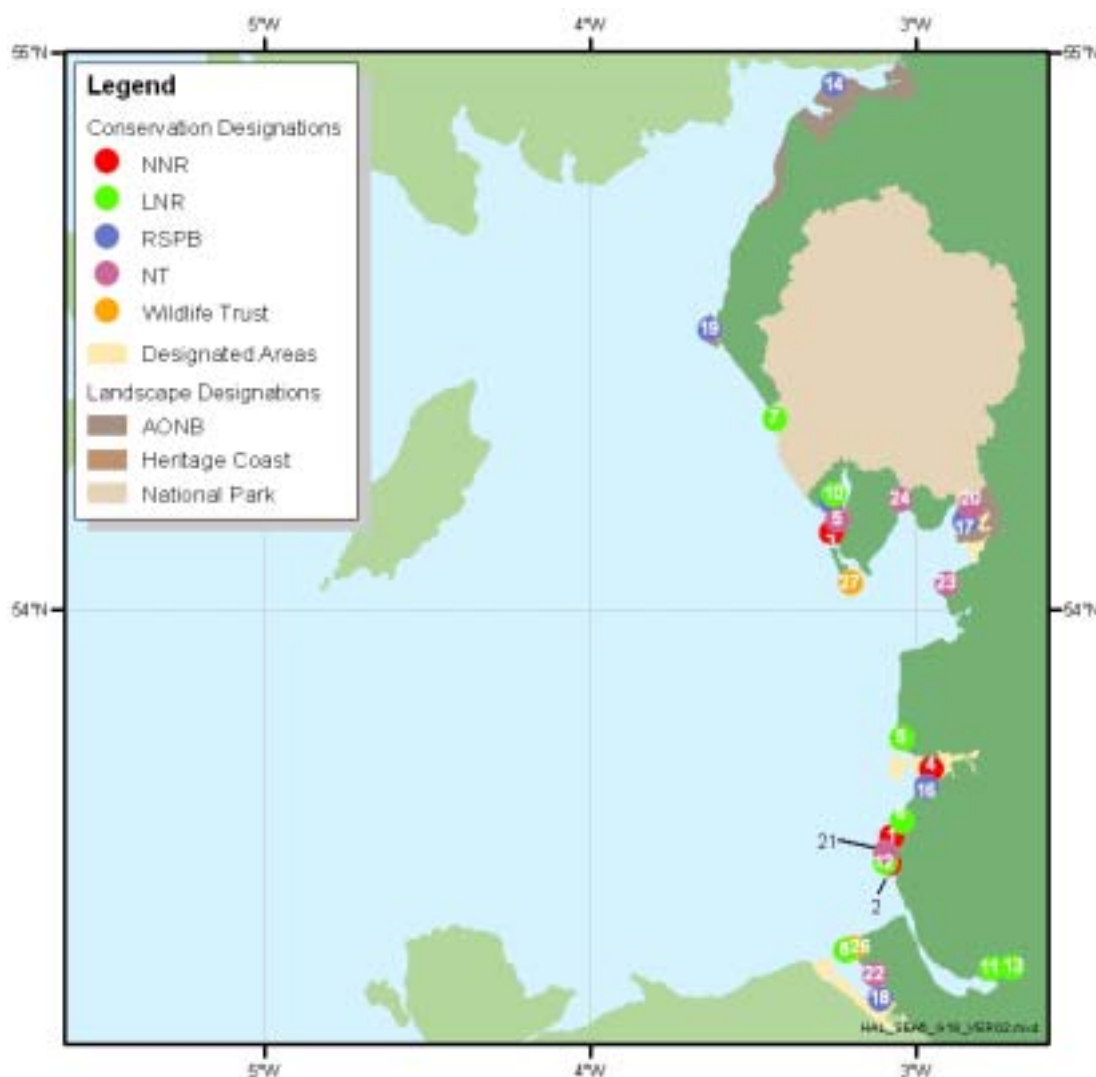


Figure 3.3 Other National/Local designated sites along the north west coast of England. Names and descriptions of the numbered sites are given in the relevant sections below.

3.2.2 National Nature Reserves (NNR)

Map Reference: Figure 3.3

No.	Site name	Grid Ref.	Hectares	Interest
1	Ainsdale Sand Dunes	SD 287 105	491.97	Intertidal sand flats, sand dunes, coastal scrub, waders & wildfowl
2	Cabin Hill	SD 282 050	28.27	Intertidal sand flats, sand dunes, coastal grassland, waders & wildfowl
3	North Walney	SD 176 723	624.85	Sand dunes, saltmarsh, coastal grassland & heath
4	Ribble Estuary	SD 370 241	4587.91	Intertidal sand & mud, saltmarsh, waders & wildfowl, terns and gulls
5	Sandscale Haws	SD 190 748	262.34	Intertidal sand & mud, sand dunes, saltmarsh, waders & wildfowl

Sources of information

EN website: http://www.english-nature.org.uk/special/nnr/nnr_search.asp; http://www.english-nature.org.uk/pubs/gis/gis_register.asp

3.2.3 Local Nature Reserves (LNR)

Map Reference: Figure 3.3

No.	Site name	Grid Ref.	Hectares	Interest
6	Ainsdale and Birkdale Hills	SD 310 136	295.83	Sand dunes, coastal scrub
7	Drigg Dunes and Gullery, Ravenglass	SD 069 953	377.07	Sand dunes
8	Hilbre Islands	SJ 189 874	53.58	Grey seals
9	Lytham St Annes	SD 311 306	16.08	Sand dunes
10	Millom Iron Works	SD 182 799	20.58	Orchids, natterjack toad
11	Pickerings Pasture	SJ 487 833	15.65	Coastal meadow and woodland
12	Ravenmeols Hills	SD 274 054	74.46	Sand dunes
13	Wigg Island	SJ 531 836	24.67	??

Sources of information

EN website: http://www.english-nature.org.uk/special/nnr/nnr_search.asp; http://www.english-nature.org.uk/pubs/gis/gis_register.asp

3.2.4 Royal Society for the Protection of Birds (RSPB) Reserves

Map Reference: Figure 3.3

No.	Site name	Grid Ref.	Hectares	Interest
14	Campfield Marsh	NY 197 615	239.69	Waders and wildfowl, saltmarsh and grassland
15	Hodbarrow	SD 176 784	108.51	Waders and wildfowl, terns, freshwater lagoons
16	Marshside	SD 358 205	108.88	Waders and wildfowl, coastal grassland
17	Morecambe Bay	SD 445 740	1797.75	Waders and wildfowl, saltmarsh and mudflats
18	Point of Air, Dee Estuary	SJ 259 774	5664.26	Waders and wildfowl, saltmarsh
19	St Bees Head	NX 942 135	22.18	Seabird cliffs (particularly auks and kittiwakes)

Sources of information

RSP web site: <http://www.rspb.org.uk/reserves/>

3.2.5 National Trust (NT) Sites

Map Reference: Figure 3.3

No.	Site name	Grid Ref.	Hectares	Interest
20	Arnsdale & Silverdale	SD 458 772	279.33	
21	Formby	SD 275 073	339.82	
22	Heswall	SJ 250 823	15.96	
23	Heysham Head	SD 407 615	6.94	
24	Plumpton	SD 317 787	3.38	
25	Sandscale Haws	SD 190 748	262.86	

Sources of information

Digital GIS map files provided by the National Trust

3.2.6 Wildlife Trusts Reserves – Cheshire (ChWT) & Cumbria (CuWT)

Map Reference: Figure 3.3

No.	Site name	Grid Ref.	Hectares	Interest
26	Red Rock Marsh (ChWT)	SJ 206 880	4	Sand dunes with brackish and freshwater marsh
27	South Walney (CuWT)	SD 214 620	130	Sand dunes, mudflats and saltmarsh

Sources of information

Wildlife Trusts website: <http://www.wildlifetrusts.org/index.php?section=places:reserves>

3.2.7 Geological Conservation Review (GCR) Sites

GCR sites have not been mapped in this report. Note: these sites include areas of geological and geomorphological interest; the latter being generally more vulnerable to impacts from developments. See Appendix 2 for an explanation of the designation.

GCR sites	
Ainsdale (SD285105)	Saltom Bay (NX962165)
Annaside & Gutterby Banks (SD085866)	Saltom Bay (NX958159)
Barker Scar (SD333786)	Skelwith Hill (SD331809)
Barrowmouth Beach Section, Saltom Bay (NX957157)	St Bees (NX965113)
Bullhill Brook (SJ554016)	The Dungeon (SJ252832)
Fleswick - St Bees (NX946132)	Thurstaston Road Cutting (SJ244848)
Humphrey Head (SD379739)	Thurstaston (SJ240830)
Iron Pit Spring Quarry (SD311783)	Upper Solway (NY143569)
Lytham St Annes (SD335274)	Walney Island (SD170730)
Meathop Quarry (SD432791)	

Sources of information

JNCC website (GCR pages): <http://www.jncc.gov.uk/page-2947>

3.3 Landscape and other designations

3.3.1 Areas of Outstanding Natural Beauty (AONB)

There are two large AONBs in the SEA 6 region of England: Solway Coast AONB and Arnsdale and Silverdale AONB. Their extent is shown in Figure 3.3 (but they are not individually numbered).

Sources of information

Magic website: <http://www.magic.gov.uk/>

3.3.2 Heritage Coast

There is 1 section of Heritage Coast in the SEA 6 region of England: St Bees Head Heritage Coast. Its extent is shown in Figure 3.3 (but not numbered).

Sources of information

Magic website: <http://www.magic.gov.uk/>

3.3.3 National Parks

There is one National Park in the SEA 6 region of England: Lake District National Park. Its extent is shown in Figure 3.3 (but not numbered). The Park extends close to the coast and includes some coastal habitat.

Sources of information

Magic website: <http://www.magic.gov.uk/>

4 South West Scotland – Solway Firth to Mull of Kintyre

The SEA 6 area encompasses the coast and offshore waters of south west Scotland, from the border with England in the Solway Firth to the tip of the Mull of Kintyre. This includes the Firth of Clyde and associated sea lochs, although this area (like most large bays, c.f. Figure 1.1) would not form part of an offshore oil and gas licensing round.

On the southern Scottish shore, the outer Solway Firth and the coastline running west to the Mull of Galloway are rocky, though only at the Mull of Galloway are there substantial cliffs. Sedimentary habitats, including moderately extensive areas of saltmarsh, sand dunes and intertidal sediments are also present in the bays and small estuaries, but the sand dominated inner Solway Firth is by far the largest area of coastal habitat and also the most important for wetland birds and wetland habitats. Luce Bay is also notable for its extensive coastal and subtidal sand habitats, and between them they are the most prominent nature conservation features of that coast. The majority of the coast is rural and relatively unexploited.

The wide entrance to the Firth of Clyde is characterised by high cliffs and rocky shores along the south western promontories (particularly the Rhins of Galloway, Mull of Kintyre and Ailsa Craig). Conservation interest in this area is focused on cliff nesting seabirds and cliff vegetation. Moving into the outer Firth the Ayrshire coast is predominantly sandy with extensive sand dunes and many areas of importance for tourism, particularly golf courses; while the Kintyre and Bute coasts are dominated by boulders, cobble and shingle backed by rural areas. Much of the conservation interest along these coasts is geological, including the excellent examples of raised shorelines; but there are a few sites of biological interest for their coastal vegetation.

The inner Firth, with its long and highly indented coastline, has a variety of shore and coastal forms. Muddy shores are common, particularly in the inner Clyde estuary which is also very important for wetland birds, but rocky, boulder and shingle shores are also frequent. There are few areas of saltmarsh and many of the shores are backed by steep slopes and coastal woodland. Given the length of the coastline only relatively small areas have been designated for nature conservation importance. The main exception is the inner Clyde estuary, despite the legacy of its long industrial and port related history.

4.1 Sites of international importance

There are 23 designated sites of international importance along the south west coast of Scotland, although some of them overlap considerably with other sites, so that there are effectively 14 areas to be described in this section. These areas are described below and are located on the following map (Figure 4.1).

4.1.1 Black Cart SPA

Map Reference: Figure 4.1 Site 1

International designation	Area (ha)	EU/IBA code
Black cart SPA	56.3	UK9003221

General site characteristics

A 3 km tidal stretch of the Black Cart Water and its associated floodplain, located directly north of Glasgow Airport. This stretch of Black Cart Water supports abundant submerged aquatic vegetation,

typical of brackish conditions, including Fennel Pondweed *Potamogeton pectinatus*, Floating Sweet-grass *Glyceria fluitans* and Beaked Tasselweed *Ruppia maritima*. The floodplain is mostly semi-intensified pasture, but also includes small creeks, small stands of Common Reed *Phragmites australis* and areas of rush *Juncus* spp. dominated grassland. Most of the land is used for low-intensity cattle and sheep grazing. The site is of European importance owing to the presence of significant numbers of overwintering Whooper Swan *Cygnus cygnus* of the Icelandic breeding population

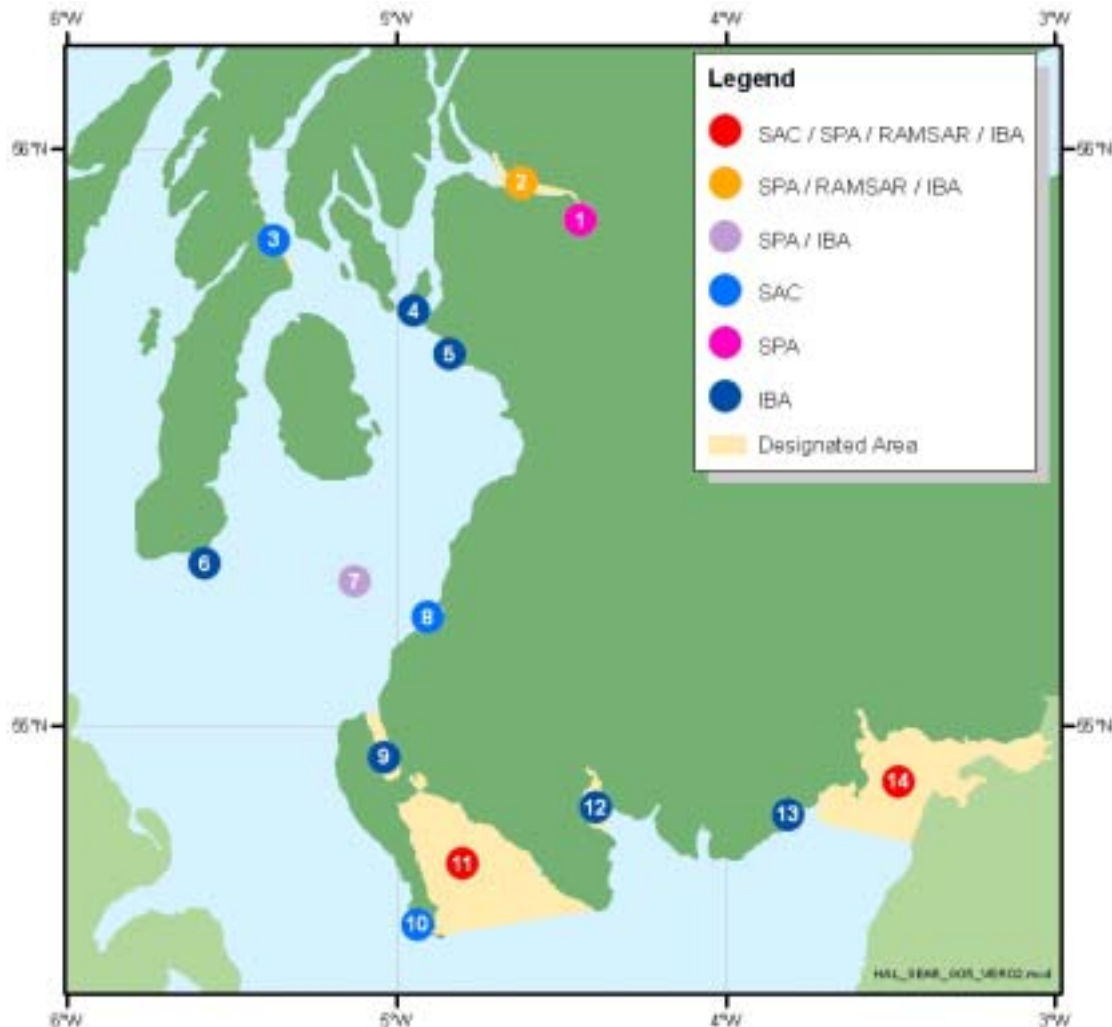


Figure 4.1 Marine and coastal areas of international importance along the south west coast of Scotland. The numbers identify the text sections below which describe the conservation importance of the sites.

4.1.1.1 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Whooper Swan *Cygnus cygnus*).

4.1.1.2 Vulnerability and management issues

The river and adjacent areas have previously supported intensive agriculture and heavy industry and maintenance of water quality is an important issue. Most of the land within the SPA is semi-improved grassland used for low-intensity cattle and sheep grazing. A management plan is being drawn up for the land area north of the river that aims to initiate management to benefit the swans. The site is easily accessible to walkers, anglers and wildfowlers. This generates some disturbance, but at current levels

birds readily return to favoured feeding areas once the disturbance has passed. Access is limited to some degree by the availability of parking near the site. Glasgow Airport abuts the southern boundary of the SPA and a concern over bird-strike exists.

4.1.1.3 Component designations at national and local level

SSSI: Black Cart

4.1.1.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1955>

4.1.2 Inner Clyde SPA / Ramsar / IBA

Map Reference: Figure 4.1 Site 2

International designation	Area (ha)	EU/IBA code
Inner Clyde SPA	1826	UK9003061
Inner Clyde Estuary Ramsar	1826	UK13024
Inner Clyde Estuary IBA	1670	UK165

General site characteristics

Although the Clyde Estuary is heavily industrialised along much of its length, upstream of Gourrock Bay and Helensburgh there are very extensive intertidal sand- and mud-flats. These have an abundant invertebrate fauna, the species composition of which has been changing consequent to recent improvements in the quality of water within the estuary. The Inner Clyde Estuary is important for a range of wintering waterbirds, notably Redshank *Tringa totanus*.

4.1.2.1 SPA features

The site fulfils SPA species qualification criteria for one Annex 2 species (Redshank *Tringa totanus*).

4.1.2.2 Ramsar features

The site qualifies as a site of international importance for conserving biological diversity and fulfils one of the Ramsar criteria, based on the same species as the SPA.

4.1.2.3 IBA features

The area fulfils two IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

4.1.2.4 Vulnerability and management issues

Threats to the estuary include disturbance from recreational activities including wildfowling and motorcycling, and leisure, industrial, housing and retail developments. Industrial activity is not as intensive as it was formerly, with the major installations now comprising a large container terminal at Greenock and a petroleum storage area at Bowling. Contingency plans are in place in case of oil spills. The channel of the Clyde is maintained at 10m depth (high tide) by dredging although at current levels this is not thought to conflict with the nature conservation interest of the site. Three sewage works adjoin the site. Longer-term improvements in water quality may influence the overall productivity of the site in future years. The Clyde Forum has been established and is in the process of drawing up management guidelines.

4.1.2.5 Component designations at national and local level

SSSI: Inner Clyde

4.1.2.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1947>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK146.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2497&m=0>

4.1.3 Tarbert Woods SAC

Map Reference: Figure 4.1 Site 3

International designation	Area (ha)	EU/IBA code
Tarbert Woods SAC	1596	UK0030286

General site characteristics

Comprises a large coastal strip of fragmented broad-leaved woodland with good stands of old sessile oak woods. Main habitat types include:

Shingle. Sea cliffs. Islets	0.03%
Inland water bodies (standing water, running water)	1.19%
Bogs. Marshes. Water fringed vegetation. Fens	8.03%
Heath. Scrub. Maquis and garrigue. Phygrana	32.75%
Humid grassland. Mesophile grassland	12%
Broad-leaved deciduous woodland (46%)	

4.1.3.1 SAC features

The site includes one Annex 1 habitat. The qualifying features are listed below (*primary features):

Habitats

- Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles* - very important for their oceanic bryophyte communities.

4.1.3.2 Vulnerability and management issues

Control of colonisation by *Rhododendron* is being conducted through several management agreements. Forest Enterprise rangers undertake regular deer-culling on many parts of the site to minimise the impact of browsing on regeneration. Browsing impacts are also being reduced by the elimination of domestic grazing. Bracken has become dominant in parts of the woodland, though this is being controlled by agreements.

4.1.3.3 Component designations at national and local level

SSSIs: Tarbert to Skipness Coast, Artilligan & Abhain Srathain Burns

NNR: Mealdarroch

4.1.3.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0030286>

4.1.4 Little Cumbrae Island IBA

Map Reference: Figure 4.1 Site 4

International designation	Area (ha)	EU/IBA code
Little Cumbrae Island IBA	300	UK171

General site characteristics

A small island in the Outer Clyde estuary, just south of Great Cumbrae and the town of Millport.

4.1.4.1 IBA features

The area fulfils four IBA criteria. The bird population responsible for qualification is Lesser Black-backed Gull (*Larus fuscus*).

4.1.4.2 Vulnerability and management issues

No serious threats are known at the site, which is private land.

4.1.4.3 Component designations at national and local level

None

4.1.4.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2670&m=0>

4.1.5 Horse Island IBA

Map Reference: Figure 4.1 Site 5

International designation	Area (ha)	EU/IBA code
Horse Island IBA	20	UK161

General site characteristics

A small rocky island close to the coastline north of Ardrossan.

4.1.5.1 IBA features

The area fulfils one IBA criteria. The bird population responsible for qualification is Lesser Black-backed Gull (*Larus fuscus*).

4.1.5.2 Vulnerability and management issues

Human access to the island is the main cause of disturbance. An RSPB management agreement exists for the site.

4.1.5.3 Component designations at national and local level

RSPB Reserve

4.1.5.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2665&m=0>

4.1.6 Sanda Island IBA

Map Reference: Figure 4.1 Site 6

International designation	Area (ha)	EU/IBA code
Sanda Island IBA	210	UK239

General site characteristics

A grassy island with cliffs and associated islets.

4.1.6.1 IBA features

The area fulfils one IBA criteria. The bird populations responsible for qualification are European Shag (*Phalacrocorax aristotelis*) and Razorbill (*Alca torda*).

4.1.6.2 Vulnerability and management issues

Predation by American mink is considered a threat.

4.1.6.3 Component designations at national and local level

SSSI: Sanda Islands

4.1.6.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2590&m=0>

4.1.7 Ailsa Craig SPA / IBA

Map Reference: Figure 4.1 Site 7

International designation	Area (ha)	EU/IBA code
Ailsa Craig SPA	99.94	UK9003091
Ailsa Craig IBA	99.94	UK099

General site characteristics

A cone-shaped granitic island, rising to 338 m. Cliffs up to 100 m encircle the island and provide nesting sites for a range of seabird species, notably one of the largest colonies of Gannet *Morus bassanus* in the world.

4.1.7.1 SPA features

The site fulfils SPA species qualification criteria for two Annex 2 species (during breeding season: Gannet *Morus bassanus*, Lesser Black-backed Gull *Larus fuscus*).

The site also qualifies as a seabird assemblage of international importance by regularly supporting at least 20,000 seabirds. During the breeding season, the site regularly supports 65,000 individual seabirds including: Guillemot *Uria aalge*, Kittiwake *Rissa tridactyla*, Herring Gull *Larus argentatus*, Lesser Black-backed Gull *Larus fuscus*, and Gannet *Morus bassanus*.

4.1.7.2 IBA features

The area fulfils eight IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

4.1.7.3 Vulnerability and management issues

There is no significant threat to the interest at present. The site is subject to a Management Agreement to reduce and control the brown rat population which currently discourage ground-nesting birds. Grazing pressure by rabbits may be causing erosion, and it is proposed that this is monitored and if found to be a problem will be addressed through the Management Statement.

4.1.7.4 Component designations at national and local level

SSSI: Ailsa Craig

4.1.7.5 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1949>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2415&m=0>

4.1.8 Lendalfoot Hills Complex SAC

Map Reference: Figure 4.1 Site 8

International designation	Area (ha)	EU/IBA code
Lendalfoot Hills Complex SAC	1310	UK0013592

General site characteristics

Main habitat types include:

Bogs. Marshes. Water fringed vegetation. Fens	4%
Heath. Scrub. Maquis and garrigue. Phygrana	39%
Dry grassland. Steppes	37%
Humid grassland. Mesophile grassland	13%
Alpine and sub-alpine grassland	1%
Improved grassland	5%
Broad-leaved deciduous woodland	1%

4.1.8.1 SAC features

The site includes six Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe)* - the most southerly site where maritime species occur inland.
- Alkaline fens* - a well-developed series of Alkaline fens belonging to *Carex rostrata* – *Calliergon cuspidatum* mire and *Carex dioica* – *Pinguicula vulgaris* mire
- Northern Atlantic wet heaths with *Erica tetralix*
- European dry heaths
- Calaminarian grasslands of the *Violetalia calaminariae*

- Transition mires and quaking bogs

4.1.8.2 Vulnerability and management issues

The complex mosaic of interest features fall within agricultural holdings and their maintenance is dependent on differing grazing and management regimes. Approximately 50% of the site is covered by management agreements which permit Scottish Natural Heritage to monitor the condition of the habitat and recommend adjustments if necessary to the level and intensity of grazing and the application of artificial fertilisers. Consideration is being given to similar management agreements for the remainder of the site.

4.1.8.3 Component designations at national and local level

SSSIs: Knockdaw Hill, Pinbain Burn To Cairn Hill, Aldons Hill

4.1.8.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013592>

4.1.9 Loch Ryan IBA

Map Reference: Figure 4.1 Site 9

International designation	Area (ha)	EU/IBA code
Loch Ryan IBA	4240	UK184

General site characteristics

A large, shallow sea loch at the western end of Dumfries and Galloway, which supports the only commercial native oysterbeds in Scotland. Stranraer is located at the base of the loch, with its ferry port.

4.1.9.1 IBA features

The area fulfils one IBA criteria. The bird population responsible for qualification is Greater Scaup (*Aythya marila*)

4.1.9.2 Vulnerability and management issues

The main threats are from dredging, port development and disturbance caused by ferry bow-waves. In 1986 the site was designated a Marine Consultation Area, and Scottish Wildlife Link are lobbying for the area to be designated as a SAC.

4.1.9.3 Component designations at national and local level

None

4.1.9.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2671&m=0>

4.1.10 Mull of Galloway SAC

Map Reference: Figure 4.1 Site 10

International designation	Area (ha)	EU/IBA code
Mull of Galloway SAC	136.39	UK0030220

General site characteristics

Main habitat types include:

Shingle. Sea cliffs. Islets	75%
Heath. Scrub. Maquis and garrigue. Phygrana	10%
Dry grassland. Steppes	15%

4.1.10.1 SAC features

The site includes three Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Vegetated sea cliffs of the Atlantic and Baltic coasts* - considerable biogeographical importance, straddling the boundary between northern and southern biota.

4.1.10.2 Vulnerability and management issues

Parts of the site are grazed by sheep and cattle. In general, the impacts of grazing have not been deleterious to the site. Recent fencing and dyke provision along some stretches of the site should result in a reduction in grazing pressure on some areas, and a subsequent increase in heathland species.

4.1.10.3 Component designations at national and local level

SSSI: Mull of Galloway

4.1.10.4 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCODE=UK0030220>

4.1.11 Luce Bay and Sands & Torrs Warren SAC / SPA / Ramsar / IBA

Map Reference: Figure 4.1 Site 11

International designation	Area (ha)	EU/IBA code
Luce Bay and Sands SAC	48,759	UK0013039
Loch of Inch and Torrs Warren SPA	2,111	UK9003121
Loch of Inch and Torrs Warren Ramsar	2,111	UK13037
Loch of Inch and Torrs Warren IBA	4,710	UK191

General site characteristics

Comprises two separate areas: a large eutrophic freshwater loch (Loch of Inch) and an area of foreshore and sand dunes (Torrs Warren). The latter system contains important examples of dune slacks. Both components of the site support, in winter, important numbers of Greenland White-fronted Goose *Anser albifrons flavirostris* and Hen Harrier *Circus cyaneus*. Main habitat types include:

Sea inlets; Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)
 Salt marshes. Salt pastures. Salt steppes
 Coastal sand dunes. Sand beaches. Machair
 Shingle. Sea cliffs. Islets
 Inland water bodies (standing water, running water)
 Bogs. Marshes. Water fringed vegetation. Fens
 Heath. Scrub
 Arable land and Forestry plantations

4.1.11.1 SAC features

The site includes three Annex 1 habitats. The qualifying features are listed below (*primary features):
Habitats

- Large shallow inlets and bays*
- Embryonic shifting dunes* - an example of the northern variant of Embryonic shifting dunes, with lyme-grass *Leymus arenarius* dominant.
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')* - a narrow band of Shifting dunes along the shoreline.
- Fixed dunes with herbaceous vegetation ('grey dunes')* - contains a wide range of flowering plants and invertebrates typical of fixed dunes.
- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* - extensive areas dominated by heather occupies the drier dune areas.
- Sandbanks which are slightly covered by sea water all the time
- Mudflats and sandflats not covered by seawater at low tide
- Reefs

Species

- Great crested newt *Triturus cristatus*

4.1.11.2 SPA features

The site fulfils SPA species qualification criteria for two Annex 1 species (Over winter: Greenland White-fronted Goose *Anser albifrons flavirostris*, Hen Harrier *Circus cyaneus*).

4.1.11.3 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils two of the Ramsar criteria. In addition to the criteria based on bird numbers (same as SPA described above) it also fulfils a criteria based on representative areas of wetland types; by including outstanding examples of dune slack habitats in the dune system at Torrs Warren.

4.1.11.4 IBA features

The area fulfils three IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also include Greylag Goose (*Anser anser*).

4.1.11.5 Vulnerability and management issues

The majority of the terrestrial and intertidal area is owned by the Ministry of Defence, and a Memorandum of Understanding covers management issues. Some coastal defences occur within the site which have a localised influence on sediment movement. Extraction of sand and gravel takes place outside the site, but any expansion of these operations which might affect the site's interests will be

subject to planning procedures and the provisions of the Habitats Regulations. The localised spread of bracken, willow, and pine is being controlled by a programme of active management.

4.1.11.6 Component designations at national and local level

SSSIs: Mull of Galloway, Back Bay to Carghidown, Torrs Warren – Luce Sands, Scare Rocks, White Loch - Loch of Inch

4.1.11.7 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0013039>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=1951>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK131.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2526&m=0>

4.1.12 Wigtown Bay IBA

Map Reference: Figure 4.1 Site 12

International designation	Area (ha)	EU/IBA code
Wigtown Bay IBA	3470	UK269

General site characteristics

A large estuary draining the Rivers Cree and Bladnoch and several burns. The site includes extensive areas of intertidal mudflats and adjacent grazed saltmarshes.

4.1.12.1 IBA features

The area fulfils four IBA criteria. The bird populations responsible for qualification are Pink-footed Goose (*Anser brachyrhynchus*) and Eurasian Curlew (*Numenius arquata*).

4.1.12.2 Vulnerability and management issues

Threats include disturbance caused by illegal shooting. The advisory/management committee includes conservation bodies and land-owners. A management plan exists for the site.

4.1.12.3 Component designations at national and local level

SSSI: Cree Estuary

LNR: Wigtown Bay

4.1.12.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2635&m=0>

4.1.13 Almorness Point & Hestan Island IBA

Map Reference: Figure 4.1 Site 13

International designation	Area (ha)	EU/IBA code
Almorness Point & Hestan Island IBA	73	UK101

General site characteristics

A small island and rocky headland at the mouth of Auchencairn Bay.

4.1.13.1 IBA features

The area fulfils one IBA criteria. The bird population responsible for qualification is Lesser Black-backed Gull (*Larus fuscus*).

4.1.13.2 Vulnerability and management issues

The main threats to seabirds are from ground predators and outbreaks of botulism.

4.1.13.3 Component designations at national and local level

None

4.1.13.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2640&m=0>

4.1.14 Solway Firth SAC / SPA / Ramsar / IBA

Map Reference: Figure 4.1 Site 14

The Solway Firth is a cross border site, managed jointly by authorities in Scotland and England. A full site description is given in Section 3.1.1.

4.1.14.1 Biosphere Reserve

The Caerlaverock Biosphere Reserve (NY005603, 5469 hectares) lies within the Scottish portion of the Solway Firth SAC.

4.2 Sites of national importance

There are a large number of sites of national and local importance along the south west coast of Scotland including Sites of Special Scientific Interest, National Nature Reserves, Local Nature Reserves and various landscape designations and non-statutory reserves. These sites are described in this section. SSSIs have been marked on a separate map (Figure 4.2) for clarity. Figure 4.3 shows the location and reference numbers of other nationally and locally important sites.

4.2.1 Sites of Special Scientific Interest (SSSI)

For the definition of Site of Special Scientific Interest, see Appendix 2. Figure 4.2 shows the locations of the 58 SSSIs that are designated along the south west coast of Scotland. Table 4.1 provides their names, Ordnance Survey grid references (approx. centre of each site), area in hectares and conservation interest. The conservation interest features for each site are based on the descriptions given in the SSSI citations provided by Scottish Natural Heritage. In the interests of brevity they have

been summarised into just four categories: *Intertidal habitats* (between mean low water and mean high water), *Coastal habitats* (above mean high water - incl. saltmarsh, sand dunes, sea cliffs, vegetated shingle, coastal grassland / heath / woodland etc.), *Birds* (incl. wetland birds, and seabirds) and *Geology* (incl. features that are of geomorphological significance in addition to the normal definition of a geological site).

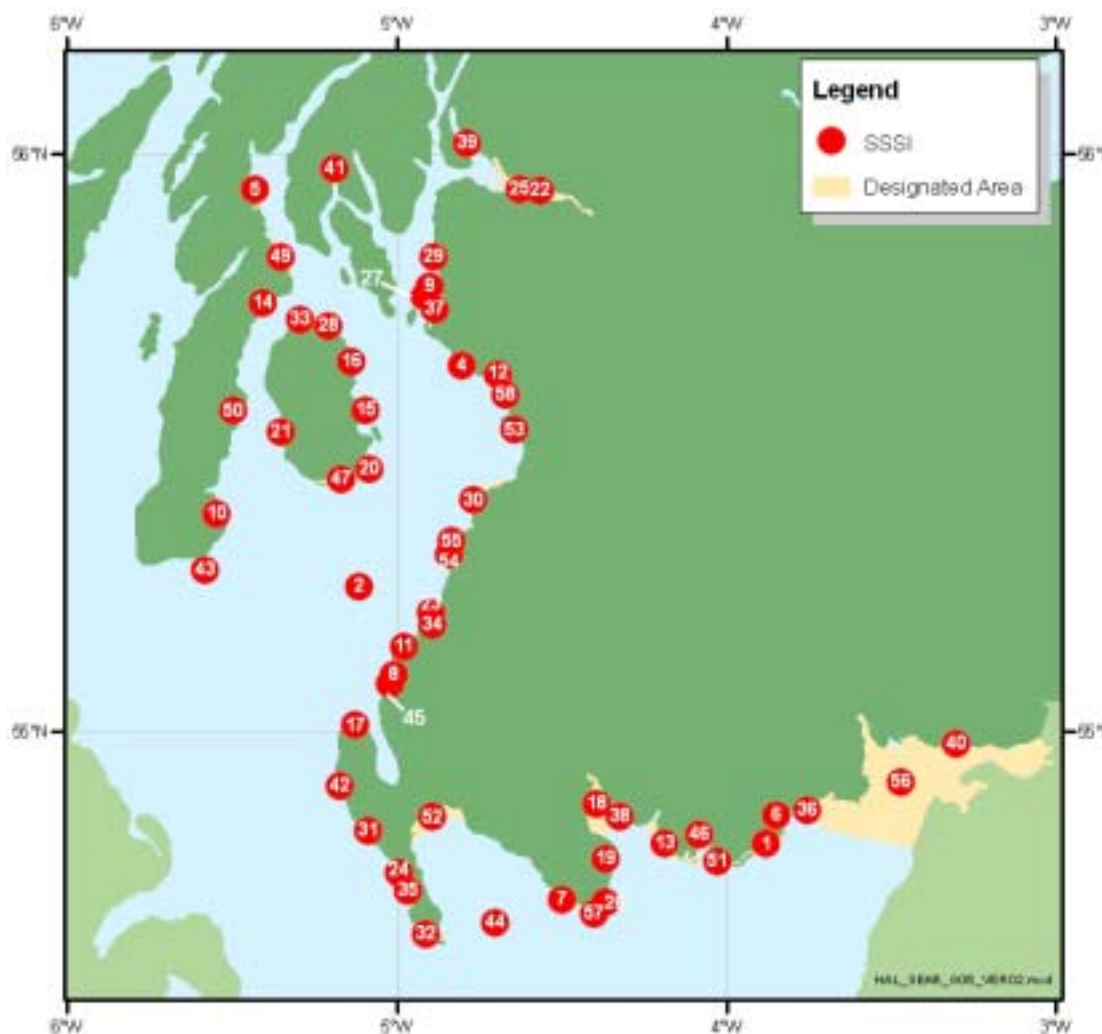


Figure 4.2 Coastal Sites of Special Scientific Interest (SSSIs) along the south west coast of Scotland. Names and descriptions of the numbered sites are given in Table 4.1.

Table 4.1 Coastal Sites of Special Scientific Interest (SSSIs) along the south west coast of Scotland. Locations of the numbered sites are given in Figure 4.2.

No.	Site name	Grid Ref.	Hectares	Interest
1	Abbey Burn Foot to Balcary Point	NX 7929 4689	181.16	Coastal habitat, Birds
2	Ailsa Craig	NX 0207 9979	99.94	Coastal habitat, Birds, Geology
3	Ardchyline Wood	NN 1063 0597	176.07	Coastal habitat
4	Ardrossan to Saltcoats Coast	NS 2268 4147	53.00	Geology
5	Artilligan and Abhain Srathain Burns	NR 8586 7691	60.49	Coastal habitat
6	Auchencairn and Orchardton Bays	NX 8171 5317	177.13	Coastal habitat, Birds
7	Back Bay to Carghidown	NX 3915 3727	230.51	Coastal habitat, Birds
8	Ballantrae Shingle Beach	NX 0795 8180	32.74	Coastal habitat, Birds
9	Ballochmartin Bay	NS 1821 5710	18.12	Intertidal habitats, Coastal habitat

No.	Site name	Grid Ref.	Hectares	Interest
10	Balnabraid Glen	NR 7555 1529	104.24	Coastal habitat
11	Bennane Head Grasslands	NX 1033 8777	70.86	Coastal habitat
12	Bogside Flats	NS 3032 3990	254.72	Intertidal habitats, Coastal habitat, Birds
13	Borgue Coast	NX 5943 4768	730.56	Coastal habitat, Birds, Geology
14	Claonaig Wood	NR 8632 5519	53.33	Coastal habitat
15	Clauchlands Point - Corrygills	NS 0496 3384	46.18	Intertidal habitats, Coastal habitat, Geology
16	Corrie Foreshore and Limestone Mines	NS 0259 4327	12.32	Geology
17	Corsewall Point - Milleur Point	NX 0017 7297	83.28	Geology
18	Cree Estuary	NX 4650 5569	3441.88	Intertidal habitats, Coastal habitat, Birds
19	Cruggleton Bay	NX 4796 4489	1.35	Geology
20	Dippin Head	NS 0514 2249	13.31	Geology
21	Drumadoon-Tormore	NR 8859 3043	73.99	Geology
22	Dumbarton Rock	NS 3999 7449	4.45	Geology
23	Girvan to Ballantrae Coast Section	NX 1523 9355	87.41	Geology
24	Grennan Bay	NX 0755 4380	6.36	Geology
25	Inner Clyde	NS 3264 7768	1824.92	Intertidal habitats, Coastal habitat, Birds
26	Isle of Whithorn Bay	NX 4762 3631	2.96	Geology
27	Kames Bay	NS 1707 5497	4.57	Intertidal habitats
28	Laggan	NR 9865 5026	6.05	Geology
29	Largs Coast Section	NS 1912 6260	7.39	Geology
30	Maidens - Doonfoot	NS 2823 1864	216.05	Coastal habitat, Geology
31	Morroch Bay	NX 0177 5230	11.46	Geology
32	Mull of Galloway	NX 1089 3219	137.17	Coastal habitat, Birds
33	North Newton Shore	NR 9336 5181	9.46	Geology
34	Pinbain Burn to Cairn Hill	NX 1584 9220	522.38	Coastal habitat, Geology
35	Port Logan	NX 0917 4022	4.21	Geology
36	Port O'Warren	NX 8750 5330	5.40	Coastal habitat, Birds
37	Portencross Coast	NS 1839 5210	463.36	Intertidal habitats, Coastal habitat, Birds, Geology
38	Ravenshall Wood	NX 5098 5313	44.40	Coastal habitat
39	Rhu Point	NS 2646 8400	0.31	Geology
40	Royal Ordnance Powfoot	NY 1656 6573	35.62	Coastal habitat
41	Ruel Estuary	NS 0115 8012	332.78	Intertidal habitats, Coastal habitat
42	Salt Pans Bay	NW 9663 6120	27.69	Coastal habitat
43	Sanda Islands	NR 7171 0432	81.45	Coastal habitat, Birds
44	Scare Rocks	NX 2667 3302	1.81	Birds
45	Sgavoch	NX 0730 8082	6.12	Geology
46	Shoulder O'Craig	NX 6633 4910	2.59	Geology
47	South Coast of Arran	NR 9966 2063	220.64	Coastal habitat, Geology
48	Strone Point, North Loch Fyne	NN 1124 0886	3.77	Geology
49	Tarbert to Skipness Coast	NR 9017 6396	607.76	Coastal habitat
50	Torrisdale Cliff	NR 7976 3487	27.10	Coastal habitat
51	Torrs to Mason's Walk	NX 6732 4484	161.41	Coastal habitat, Geology
52	Torrs Warren - Luce Sands	NX 1099 5332	2318.14	Intertidal habitats, Coastal habitat, Birds, Geology
53	Troon Golf Links and Foreshore	NS 3335 2879	150.11	Intertidal habitats, Coastal habitat, Birds
54	Turnberry Dunes	NS 1992 0597	55.71	Intertidal habitats, Coastal habitat
55	Turnberry Lighthouse to Port Murray	NS 2014 0763	24.41	Geology
56	Upper Solway Flats and Marshes	NY 1252 5866	43636.72	Intertidal habitats, Coastal habitat, Birds, Geology
57	West Burrow Head	NX 4525 3416	2.34	Geology
58	Western Gailes	NS 3182 3572	92.58	Intertidal habitats, Coastal habitat

Sources of information

GIS files provided by SNH Geographic Information Group, Edinburgh

SSSI citations provided by SNH Designated Areas and Sites Unit, Edinburgh

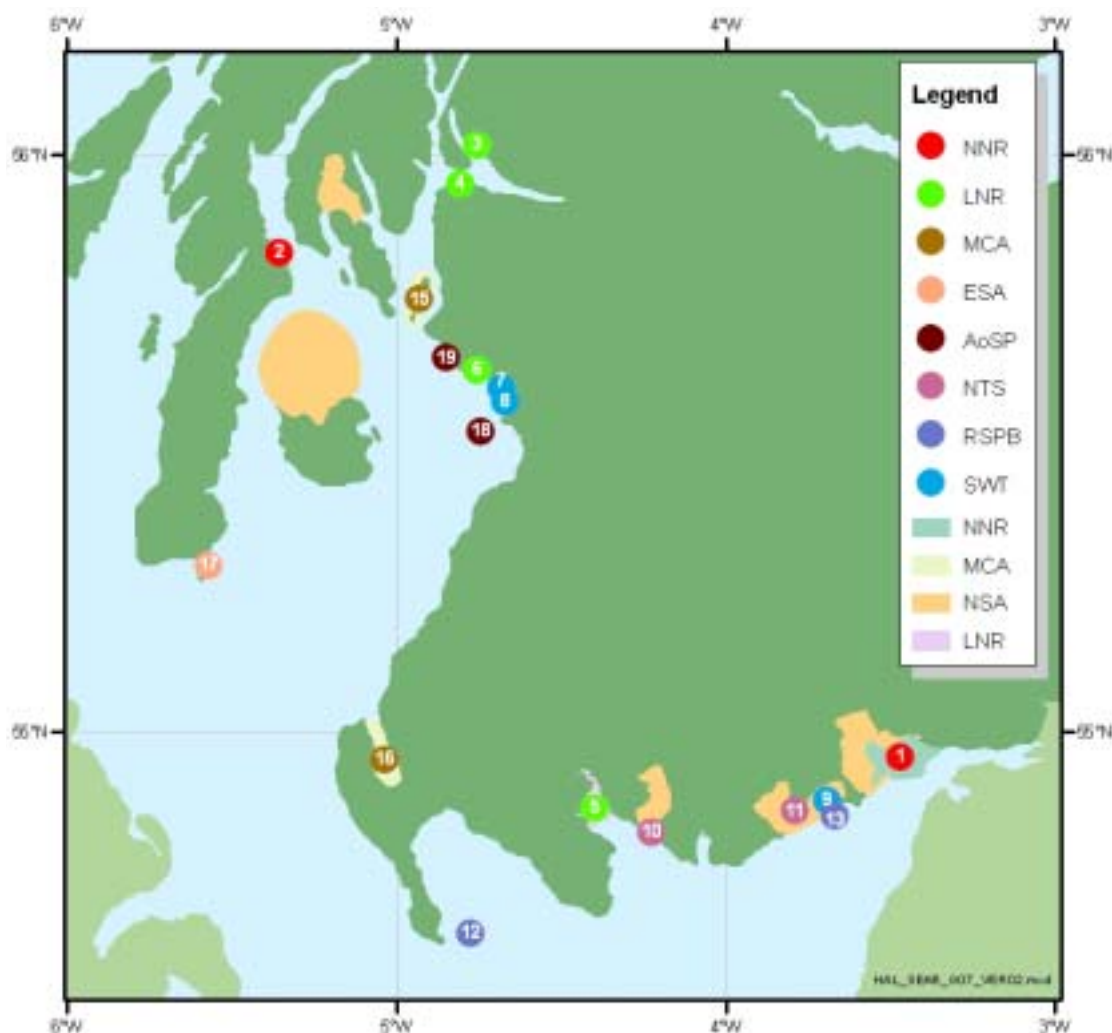


Figure 4.3 Other National/Local designated sites along the south west coast of Scotland. Names and descriptions of the numbered sites are given in the relevant sections below.

4.2.2 National Nature Reserves (NNR)

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
1	Caerlaverock	NY 059 632	7389	Mud and sand flats, Merse, Wildfowl
2	Mealdarroch	NR 900 648	202	Coastal woodland

Sources of information

GIS files provided by SNH Geographic Information Group, Edinburgh

SNH website: <http://www.snh.org.uk/>

4.2.3 Local Nature Reserves (LNR)

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
4	Coves Community Park	NS 249 765	25.58	Coastal grassland, heathland, woodland
3	Duchess Wood	NS 282 837	23.05	Coastal woodland, grassland
6	Stevenston Beach	NS 265 407	16.16	Sand dunes, wetland
5	Wigtown Bay	NX 462 550	2,821.29	Intertidal mud/sand flats, saltmarsh, grassland

Sources of information

GIS files provided by SNH Geographic Information Group, Edinburgh

SNH website: <http://www.snh.org.uk/>

4.2.4 Scottish Wildlife Trust (SWT) Reserves

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
8	Gailes Marsh	NS 317 343	18	Coastal grassland and freshwater marsh
7	Shewalton Sandpits	NS 310 371	17	Sand dunes and terrestrial habitats
9	Southwick Coast	NX 914 553	16	Wildfowl, seacliffs, fen and saltmarsh

Sources of information

Scottish Wildlife Trust website: <http://www.swt.org.uk/wildlife/westregion.asp>

4.2.5 National Trust Scotland (NTS) Sites

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
10	Murray Isles	NX 570 499	-	Uninhabited islands with cormorants and gulls
11	Rockcliffe	NX 852 532	8	Seabirds, coastal vegetation and hill fort

Sources of information

National Trust for Scotland website: <http://www.nts.org.uk/>

4.2.6 Royal Society for the Protection of Birds (RSPB) Reserves

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
13	Mersehead	NX 929 520	956.41	Waders and wildfowl, saltmarsh and mudflats
12	Mull of Galloway & Scar Rocks	NX 209 314	17.92	Seabird cliffs (particularly auks and gannets)

Sources of information

RSP web site: <http://www.rspb.org.uk/reserves/>

4.2.7 Wildfowl and Wetlands Trust (WWT)

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
	Caerlaverock	NY051657	726	Wetland birds, sand flats, saltmarsh and other coastal habitat

Sources of information

WWT website: <http://www.wwt.org.uk/visit/caerlaverock/reserve.asp>

4.2.8 Areas of Special Protection (AoSP)

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
19	Horse Isle	NS 209 433	-	Breeding seabirds
18	Lady Isle	NS 269 289	-	Breeding seabirds

Sources of information

SNH staff in Edinburgh and Ayr offices (pers.comm.)

4.2.9 Marine Consultation Areas (MCA)

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
15	Cumbraes	NS 143 549	2,698.22	Seabed habitats and species
16	Loch Ryan	NX 051 674	4,152.88	Seabed habitats and species (incl. native oysters)
14	Upper Loch Fyne	NN 138 092	1,763.93	Seabed habitats and species

Sources of information

GIS files provided by SNH Geographic Information Group, Edinburgh

Clyde Forum website: <http://www.clydeforum.org>

4.2.10 Geological Conservation Review (GCR) Sites

GCR sites have not been mapped in this report. Note: these sites include areas of geological and geomorphological interest; the latter being generally more vulnerable to impacts from developments. See Appendix 2 for an explanation of the designation.

GCR sites	
Ailsa Craig (NX019997)	Isle of Whithorn Bay (NX476365)
Ardrossan to Saltcoats Coast (NS236416)	Kilcreggan Coast (NS228804)
Auchensail Quarry (NS342798)	Kings Cave - Drumadoon (NR884309)
Back Bay, Monreith (NX368394)	Kirkbean (NX987563)
Balcreuchan Port - Bennane Head (NX097875)	Laggan (NR986504)
Balcreuchan Port to Port Vad (NX100878)	Largs (NS191633)
Balmae Coast (NX676465)	Luce Sands (NX150555)
Barlocco (NX585485)	Mealdarroch Point, Tarbert (NR879686)
Baron's Point (NS221813)	Meikle Ross (Borgue Coast) (NX637446)
Bennane Lea (NX091861)	Morroch Bay and Port of Spittal Bay (NX015524)
Bracken Bay - Longhill Point (NS281184)	Newbie (NY165651)
Corrie Foreshore (NS026432)	North Newton Shore (NR933518)
Corrie Shore (NS026422)	Port Logan (NX092402)
Corrie Shore (NS022444)	Port Schuchan to Dunure Castle (NS247152)
Corrygills Shore (NS042353)	Portincaple, Dumbarton (NS230933)
Corsewall Point (NX000729)	Redkirk Point (NY301652)
Cree (NX465545)	Rhu Point (NS264841)
Cruggleton Bay (NX477448)	Sgavoch Rock (NX073808)
Culzean Harbour (NS231102)	Shoulder O' Craig (NX663491)
Dippin Head (NS052224)	Slockenray Coast (NX135911)

GCR sites	
Drumadoon to Tormore (NR894287)	Solway Firth (North Shore) (NY003668)
Dumbarton Rock (NS400745)	South Bay, Barmore Island (NR868714)
Dunrod Hill (NS240730)	South Coast of Arran (NR952208)
Games Loup (NX103880)	Southwick Needles Eye (NX915561)
Geilston (NS341777)	Toward Quay, South Dunoon (NS115678)
Girvan Foreshore (NX147931)	Turnberry Lighthouse to Port Murray (NS196072)
Glen Dhualt (NS220828)	West Burrow Head (NX452341)
Grennan Bay (NX074438)	Woodland Point (NX169953)
Heads of Ayr (NS279183)	

Sources of information

JNCC website (GCR pages): <http://www.jncc.gov.uk/page-2947>

4.3 Landscape and other designations

There are a number of national, regional and local landscape designations in south west Scotland. At a national scale the most important are National Scenic Areas, and these are mapped (Figure 4.3) and described below. At a regional scale the local authorities have developed a number of different designations in recent years, and some are still under development - Regional Scenic Areas (Dumfries & Galloway), Sensitive Landscape Areas (Ayrshire) and Areas of Great Landscape Value (Argyll & Bute). No further detail is provided in this report on these regional designations. For more information contact the relevant local authorities.

Country Parks are included in this section as they are primarily intended for recreation and leisure opportunities close to population centres and do not necessarily have any nature conservation interest. Nevertheless, many are in areas of semi-natural habitat and so form a valuable network of locations at which informal recreation and the natural environment co-exist. They are statutorily declared and managed by local authorities under section 7 of the Countryside Act 1968.

4.3.1 National Scenic Areas (NSA)

There are five large NSAs in the SEA 6 region of Scotland: Kyles of Bute, North Arran, Fleet Valley, East Stewartry Coast and Nith Estuary. Their extent is shown in Figure 4.3 (but they are not individually numbered).

Sources of information

GIS files provided by SNH Geographic Information Group, Edinburgh

4.3.2 Environmentally Sensitive Areas (ESA)

Map Reference: Figure 4.3

No.	Site name	Grid Ref.	Hectares	Interest
17	Argyll Islands	NR 734 055	209	

Sources of information

GIS files provided by SNH Geographic Information Group, Edinburgh

5 East Northern Ireland – Fair Head to Carlingford Lough

The SEA 6 area encompasses the coast and offshore waters of the east coast of Northern Ireland, from just south of Fair Head in the north to the border with the Republic of Ireland in Carlingford Lough.

The east coast of Northern Ireland is sheltered from the prevailing westerly winds and the open coasts are certainly not as rugged as some other parts of the SEA 6 region, but the underlying geology has created a variety of coastal topographies and some very important features for nature conservation. The southern parts, from Carlingford to Larne are predominantly low lying with few prominent rocky headlands. A variety of rocky and sedimentary habitats are present along the open coast, including some internationally important sand dunes systems; but it is the sheltered coasts of the four Loughs (Carlingford, Strangford, Belfast and Larne) that provide most of the nature conservation interest. They provide conditions for some particularly well developed and highly productive wetland habitats supporting large populations of waders and wildfowl. Strangford Lough is particularly important, with arguably the greatest range of well developed intertidal, subtidal and coastal habitats of any marine inlet in the UK. All of the Loughs are heavily utilised by man, which inevitably has impacts on the coastal environment, so management for nature conservation is essential.

In contrast, the northern sections of coast from Larne to Fair Head are predominantly rocky and steep, with some impressive cliff formations, but little variety in habitat types. This area is also characterised by a low human population and very limited industry. In spite of the cliffs and rural nature there are few important populations of seabirds and there are generally very few sites of nature conservation importance in this area.

5.1 Sites of international importance

There are 18 designated sites of international importance along the east coast of Northern Ireland, although most of them overlap considerably with at least one other site, so that there are effectively 7 areas to be described in this section. These areas are described below and are located on the following map (Figure 5.1).

5.1.1 Larne Lough SPA / Ramsar / IBA

Map Reference: Figure 5.1 Site 1

International designation	Area (ha)	EU/IBA code
Larne Lough SPA	396	UK9020042
Larne Lough Ramsar	396	UK12003
Larne Lough, Swan & Blue Circle Islands IBA	277	UK1160

General site characteristics

The Lough is enclosed to the east by the peninsula of Island Magee. Much of the estuary is shallow, having become extensively infilled with sediments of fine muddy sand, and at low water the largest areas of intertidal flats are exposed in the south of the estuary. The northern parts of the estuary are wider and relatively deep, especially at the mouth where dredging is regularly carried out. In the upper reaches of the estuary at Ballycarry, there is an area of saltmarsh. The vegetation is dominated by mid-upper saltmarsh communities and a *Phragmites australis* reedbed, with some saltmarsh pans. The lough is of importance as a breeding and feeding area for a number of tern species as well as being a wintering site for the Canada/Ireland population of Light-bellied Brent Goose. The site also includes

the subsumed SPA of Swan Island which was subject to separate classification. Main habitat types include:

Rocky shores	15.2%
Tidal flats	78.3%
Salt marshes	4.5%
Coastal brackish / saline lagoons	2%

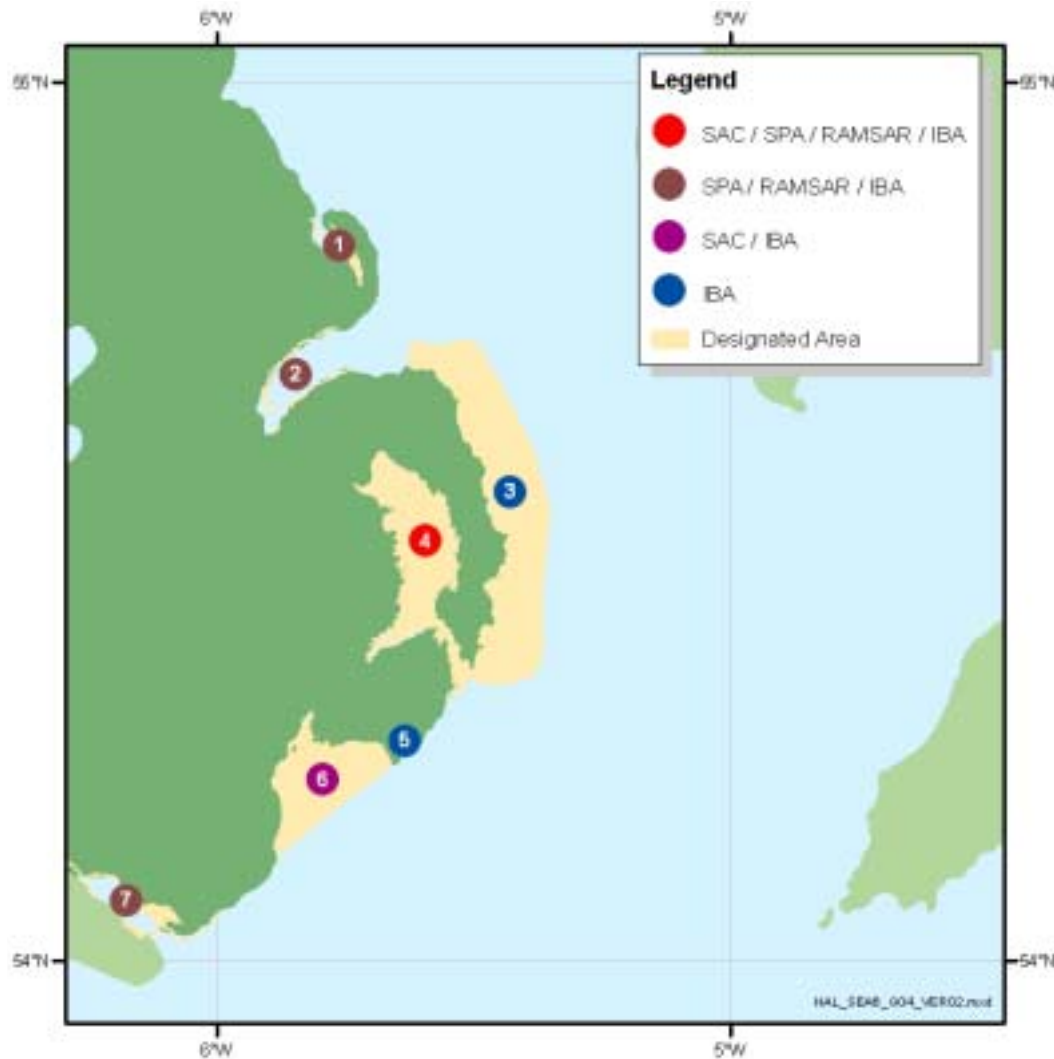


Figure 5.1 Marine and coastal areas of international importance along the east coast of Northern Ireland. The numbers identify the text sections below which describe the conservation importance of the sites.

5.1.1.1 SPA features

The site fulfils SPA species qualification criteria for three Annex 1 species (during the breeding season: Common Tern *Sterna hirundo*, Roseate Tern *Sterna dougallii*, Sandwich Tern *Sterna sandvicensis*); and one Annex 2 species (Light-bellied Brent Goose *Branta bernicla hrota*).

5.1.1.2 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils two of the Ramsar criteria. In addition to the criteria based on waterbird numbers (similar to the SPA described above) it also fulfils a criteria based on vulnerable and endangered species; by supporting an

important assemblage of Irish Red Data Book bird species. The site regularly supports nationally important numbers of breeding populations of the following species: Roseate Tern *Sterna dougallii*, Sandwich Tern *Sterna sandvicensis* and Common Tern *Sterna hirundo*.

5.1.1.3 IBA features

The area fulfils four IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

5.1.1.4 Vulnerability and management issues

Breeding terns are affected by factors such as disturbance, predation from gulls or reduction in suitable breeding habitat due to competition or change in vegetation. It is not known to what extent these factors have affected the tern populations in Larne Lough but a possible reason for the recent decrease in Roseate terns is thought to be due to the species geographically regrouping further south and therefore leaving the northern breeding sites.

Swan Island, where the main tern colony is located, is managed as a National Nature Reserve by the Royal Society for the Protection of Birds. Roseate terns have also recently bred on a small man-made island locally known as the 'Blue-Circle' Island. An existing Conservation Plan for Larne Lough is now under review. This review will up-date existing management prescriptions and refine existing conservation objectives.

5.1.1.5 Component designations at national and local level

ASSI: Larne Lough

NNR: Swan Island

5.1.1.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2070>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK109.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2503&m=0>

5.1.2 Belfast Lough SPA / Ramsar / IBA

Map Reference: Figure 5.1 Site 2

International designation	Area (ha)	EU/IBA code
Belfast Lough SPA	432	UK9020101
Belfast Lough Ramsar	432	UK12002
Belfast Lough IBA	273	UK11700

General site characteristics

The inner part of the Lough comprises areas of intertidal foreshore, mainly mud-flats and lagoons, and land (subject to past and current land claim) which are important feeding and roosting sites for significant numbers of wintering waders and wildfowl. The extent of the SPA in the outer lough is restricted to mainly rocky shores with some small sandy bays and beach-head saltmarsh. The site is of importance for a wide range of wintering waterbirds. Main habitat types include:

Rocky shores	34.7%
Tidal flats	60.2%
Coastal brackish / saline lagoons	5.1%

5.1.2.1 SPA features

The site fulfils SPA species qualification criteria for one Annex 1 species (Over winter: Bar-tailed Godwit *Limosa lapponica*); and two Annex 2 species (Over winter: Redshank *Tringa totanus*, Turnstone *Arenaria interpres*).

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 20,492 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Goldeneye *Bucephala clangula*, Redshank *Tringa totanus*, Turnstone *Arenaria interpres*, Great Crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Shelduck *Tadorna tadorna*, Mallard *Anas platyrhynchos*, Bar-tailed Godwit *Limosa lapponica*, Eider *Somateria mollissima*, Curlew *Numenius arquata*, Red-breasted Merganser *Mergus serrator*, Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Lapwing *Vanellus vanellus*, Knot *Calidris canutus*, Dunlin *Calidris alpina alpina*, Black-tailed Godwit *Limosa limosa islandica*, Scaup *Aythya marila*.

5.1.2.2 Ramsar features

The site qualifies as a site of international importance for conserving biological diversity and fulfils one of the Ramsar criteria based on waterbird numbers (similar to SPA described above).

5.1.2.3 IBA features

The area fulfils five IBA criteria. The bird populations responsible for qualification are the same as those of the SPA.

5.1.2.4 Vulnerability and management issues

The loss of wildlife habitat around Inner Belfast Lough as a result of land-claim for industry and port development, and the continued use of Belfast Harbour Estate pools and adjacent areas for dumping (involving domestic refuse disposal and hard-core tipping) could significantly affect the integrity and functioning of the site. Eutrophication of the lough from sewage disposal has been an issue in the past.

An agreement was reached between Belfast Harbour Commissioners and various conservation groups in 1990, and finalised in early 1995, to safeguard 81 hectares of intertidal mudflats, lagoons and land for wildlife conservation purposes and to undertake appropriate management. RSPB have recently (1998) taken the lead management role for much of the areas included above. Much of this area had previously been earmarked for development and includes key high-tide wader roosts. Under this agreement significant funds were secured from ERDF which has led to many nature conservation initiatives for the general Belfast Harbour Estate including the SPA. These initiatives have included education and interpretation facilities at one of the lagoons within the Lough, creation of tidal inlets, the creation of an area for breeding wetland birds and the capping and contouring of the nearby landfill site to include areas for nature conservation.

5.1.2.5 Component designations at national and local level

ASSIs: Outer Belfast Lough, Inner Belfast Lough, Ballymacormick Point

5.1.2.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2074>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK123.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2423&m=0>

5.1.3 Outer Ards Peninsula IBA

Map Reference: Figure 5.1 Site 3

International designation	Area (ha)	EU/IBA code
Outer Ards Peninsula IBA	281	UK1016

General site characteristics

This site covers a section of the flat, east-facing shoreline of the Irish Sea, and contains rocky outcrops, a number of islands and long sandy beaches.

5.1.3.1 IBA features

The area fulfils four IBA criteria. The bird populations responsible for qualification are Brent Goose (*Branta bernicla*), Eurasian Golden-plover (*Pluvialis apricaria*), Common Ringed Plover (*Charadrius hiaticula*), Ruddy Turnstone (*Arenaria interpres*), and Arctic Tern (*Sterna paradisaea*).

5.1.3.2 Vulnerability and management issues

Breeding terns are vulnerable to disturbance. A SPA conservation plan will be prepared for the site, once the designation as a SPA and Ramsar Site has been confirmed.

5.1.3.3 Component designations at national and local level

ASSIs: Ballymacormick Point, Ballyquintin Point

5.1.3.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2567&m=0>

5.1.4 Strangford Lough SAC / SPA / Ramsar / IBA

Map Reference: Figure 5.1 Site 4

International designation	Area (ha)	EU/IBA code
Strangford Lough SAC	15398	UK0016618
Strangford Lough SPA	15581	UK9020111
Strangford Lough Ramsar	15581	UK12021
Strangford Lough and Islands IBA	15581	UK286

General site characteristics

A shallow sea lough with an indented shoreline and a wide variety of marine and intertidal habitats. The west shore has numerous islands typical of flooded drumlin topography. The lough contains extensive areas of mud-flat, saltmarsh and rocky coastline. The diversity of sheltered estuarine habitats means that it is the most important coastal site in Northern Ireland for wintering waterbirds, holding large numbers of geese, ducks and waders. It is especially notable as an autumn arrival site for most of

the world population of the Canadian population of Light-bellied Brent Goose *Branta bernicla hrota*. In summer, the lough supports three species of breeding terns. Main habitat types include:

Marine areas. Sea inlets	65%
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	33%
Salt marshes. Salt pastures. Salt steppes	0.5%
Heath. Scrub. Maquis and garrigue. Phygrana	0.5%
Humid grassland. Mesophile grassland	1%

5.1.4.1 SAC features

The site includes three Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Mudflats and sandflats not covered by seawater at low tide* - the largest single continuous area of such habitat in Northern Ireland.
- Coastal lagoons* - the 'Dorn' is a silled lagoon on the eastern side of the Lough, with several exceptionally sheltered bays.
- Large shallow inlets and bays* - an outstanding example of a large, enclosed fjardic sea lough.
- Reefs* - including tide-swept bedrock and large boulders in the Narrows, sand-scoured bedrock and boulders, sheltered bedrock and boulders in the central portion of the Lough and beds of horse mussels.
- Annual vegetation of drift lines
- Perennial vegetation of stony banks
- *Salicornia* and other annuals colonising mud and sand
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)

Species

- Common seal *Phoca vitulina*

5.1.4.2 SPA features

The site fulfils SPA species qualification criteria for five Annex 1 species (during the breeding season: Arctic Tern *Sterna paradisaea*, Common Tern *Sterna hirundo*, Sandwich Tern *Sterna sandvicensis*; Over winter: Bar-tailed Godwit *Limosa lapponica*, Golden Plover *Pluvialis apricaria*); and four Annex 2 species (Over winter: Knot *Calidris canutus*, Light-bellied Brent Goose *Branta bernicla hrota*, Redshank *Tringa totanus*, Shelduck *Tadorna tadorna*).

The site also qualifies as a wetland of international importance by regularly supporting at least 20,000 waterfowl. Over winter, the area regularly supports 60,220 individual waterfowl (5 year peak mean 1991/2 - 1995/6) including: Mallard *Anas platyrhynchos*, Bar-tailed Godwit *Limosa lapponica*, Light-bellied Brent Goose *Branta bernicla hrota*, Shelduck *Tadorna tadorna*, Knot *Calidris canutus*, Redshank *Tringa totanus*, Little Grebe *Tachybaptus ruficollis*, Great Crested Grebe *Podiceps cristatus*, Cormorant *Phalacrocorax carbo*, Greylag Goose *Anser anser*, Wigeon *Anas penelope*, Golden Plover *Pluvialis apricaria*, Teal *Anas crecca*, Turnstone *Arenaria interpres*, Pintail *Anas acuta*, Shoveler *Anas clypeata*, Goldeneye *Bucephala clangula*, Red-breasted Merganser *Mergus serrator*, Coot *Fulica atra*, Oystercatcher *Haematopus ostralegus*, Ringed Plover *Charadrius hiaticula*, Grey Plover *Pluvialis squatarola*, Lapwing *Vanellus vanellus*, Dunlin *Calidris alpina alpina*, Curlew *Numenius arquata*, Gadwall *Anas strepera*.

5.1.4.3 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils four of the Ramsar criteria. In addition to the criteria based on waterbird and seabird numbers (similar to the SPA described above) it also fulfils two criteria based on representative areas of wetland types and threatened ecological communities:

It supports a variety of important wetland features, including areas of fringing saltmarsh and freshwater habitats. The Lough supports one of the most extensive saltmarsh areas in Northern Ireland.

It supports an important assemblage of vulnerable and endangered wetland plants and animal species. These include a number of marine sponges, marine hydroids, marine mollusc and sea urchins which are restricted to Strangford Lough, in some cases unknown or very rare elsewhere in the British Isles. The mudflats support luxuriant beds of eelgrass; and such extensive 'beds' are rare in the British Isles.

5.1.4.4 IBA features

The area fulfils eight IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also Eurasian Curlew (*Numenius arquata*).

5.1.4.5 Vulnerability and management issues

Commercial fishing and mariculture activities continue to pose a potential threat to the Lough. In particular, bottom-dredging has had an impact on *Modiolus* communities. Seaweed harvesting, shellfish collection and bait-digging could pose a potential threat in the future. Pollution loadings present significant potential threats. The colonisation and spread of aggressive non-native species such as *Spartina* or *Sargassum muticum* are both current problems and pose potential threats in the future.

Breeding terns could be affected by factors such as disturbance, predation, reduction in suitable breeding sites within the site. The populations could also be affected by changes in food availability, winter mortality and shifts in breeding populations outside of the site.

Brent goose populations could be affected by the availability of eelgrass and algae in the site compared to other sites on the east Irish coast. All wildfowl and wader species could be affected by changes in sediment, nutrient enrichment, inter-specific competition and excessive disturbance.

All of the above issues are addressed in a Marine Nature Reserve management plan or in Nature Reserve management plans.

5.1.4.6 Component designations at national and local level

ASSIs: Strangford Lough part 1, Strangford Lough part 2, Strangford Lough part 3, Ballyquintin Point, Killard, Quoile

MNR: Strangford Lough

NNRs: North Strangford Lough, Dorn, Quoile Pondage Basin, Cloghy Rocks, Granagh Bay, Ballyquintin Point

5.1.4.7 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0016618>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2075>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK120.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2606&m=0>

5.1.5 Killough Harbour & Coney Island Bay IBA

Map Reference: Figure 5.1 Site 5

International designation	Area (ha)	EU/IBA code
Killough Harbour & Coney Island Bay IBA	240	UK276

General site characteristics

A small estuary with tidal mudflats and shingle banks.

5.1.5.1 IBA features

The area fulfils two IBA criteria. The bird populations responsible for qualification are Brent Goose (*Branta bernicla*).

5.1.5.2 Vulnerability and management issues

The RSPB are campaigning for the site to be put forward for designation as a SPA.

5.1.5.3 Component designations at national and local level

None

5.1.5.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2500&m=0>

5.1.6 Murlough SAC / IBA

Map Reference: Figure 5.1 Site 6

International designation	Area (ha)	EU/IBA code
Murlough SAC	11902	UK0016612
South Down Coast IBA	437	UK285
Dundrum Inner Bay IBA	500	UK275

General site characteristics

An enclosed sandy bay with extensive mudflats, which is fed by four small rivers and a long section of rocky and sandy coastline extending from Cranfield Point to St John's Point.

Main habitat types for Murlough include:

Marine areas. Sea inlets	88%
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	7%
Coastal sand dunes. Sand beaches. Machair	2%
Heath. Scrub. Maquis and garrigue. Phygrana	3%

5.1.6.1 SAC features

The site includes eight Annex 1 habitats. The qualifying features are listed below (*primary features):

Habitats

- Fixed dunes with herbaceous vegetation (`grey dunes`)* - one of the most diverse and natural dune systems in Northern Ireland.

- Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)* - the largest and most important dune heath site in Northern Ireland.
- Sandbanks which are slightly covered by sea water all the time
- Mudflats and sandflats not covered by seawater at low tide
- Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- Embryonic shifting dunes
- Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')
- Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)

Species

- Marsh fritillary butterfly *Euphydryas* (*Eurodryas*, *Hypodryas*) *aurinia** - one of the largest populations of marsh fritillary Northern Ireland
- Common seal *Phoca vitulina*

5.1.6.2 IBA features

The South Down Coast IBA fulfils three IBA criteria. The bird populations responsible for qualification are Common Ringed Plover (*Charadrius hiaticula*) and Ruddy Turnstone (*Arenaria interpres*).

The Dundrum Inner Bay IBA fulfils two IBA criteria. The bird population responsible for qualification is Brent Goose (*Branta bernicla*).

5.1.6.3 Vulnerability and management issues

In recent years, the spread of scrub and increase in rank vegetation and bracken have occurred. This has been addressed by the introduction of grazing by stock and scrub clearance. Tourist pressures and military training have locally increased dune erosion and the risk of damaging fires. These issues are addressed in management plans for the National Nature Reserve and the military training area.

5.1.6.4 Component designations at national and local level

ASSI: Murlough

NNR: Murlough

5.1.6.5 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SAC descriptions: <http://www.jncc.gov.uk/ProtectedSites/SACselection/sac.asp?EUCode=UK0016612>

IBA descriptions: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2459&m=0;>

5.1.7 Carlingford Lough SPA / Ramsar / IBA

Map Reference: Figure 5.1 Site 7

International designation	Area (ha)	EU/IBA code
Carlingford Lough SPA	827	UK9020161
Carlingford Lough Ramsar	827	UK12004
Carlingford Lough incl. Green Island IBA	4660	UK274

General site characteristics

Carlingford Lough straddles the international border with the Irish Republic. It is a narrow sea lough surrounded by mountains. The northern shore lies in Northern Ireland and includes the most significant mud-flats in the lough and an area of saltmarsh. These provide important feeding areas for wintering Light-bellied Brent Goose *Branta bernicla hrota* of the Canada/Ireland population. At the mouth of the lough are several small rock and shingle islands which are of importance to breeding terns, which feed in the shallow waters of the lough. Main habitat types include:

Rocky shores	1.2%
Sand / shingle shores (including dune systems)	96.7%
Salt marshes	2.1%

5.1.7.1 SPA features

The site fulfils SPA species qualification criteria for two Annex 1 species (during the breeding season: Common Tern *Sterna hirundo*, Sandwich Tern *Sterna sandvicensis*); and one Annex 2 species (Light-bellied Brent Goose *Branta bernicla hrota*).

5.1.7.2 Ramsar features

The area qualifies as a site of international importance for conserving biological diversity and fulfils two of the Ramsar criteria. In addition to the criteria based on waterbird numbers (similar to the SPA described above) it also fulfils a criteria based on vulnerable and endangered species; by supporting an important assemblage of Irish Red Data Book bird species. The site supports nationally important breeding populations of Common Tern *Sterna hirundo*.

5.1.7.3 IBA features

The area fulfils four IBA criteria. The bird populations responsible for qualification are similar to those of the SPA, but also Greater Scaup (*Aythya marila*).

5.1.7.4 Vulnerability and management issues

Breeding terns could be affected by factors such as disturbance, predation, reduction in limited suitable breeding sites within the site. The populations could also be affected by changes in food availability, winter mortality and shifts in breeding populations outside of the site. An existing Conservation Plan for Carlingford Lough is now under review. This review will up-date existing management prescriptions and refine existing conservation objectives.

5.1.7.5 Component designations at national and local level

ASSI: Carlingford Lough

5.1.7.6 Sources of information

JNCC website <http://www.jncc.gov.uk/ProtectedSites>

BirdLife International website <http://www.birdlife.net/datazone/sites>

SPA description: <http://www.jncc.gov.uk/default.aspx?page=2076>

Ramsar description: <http://www.jncc.gov.uk/pdf/RIS/7UK119.pdf>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2441&m=0>

5.2 Sites of national importance

There are a large number of sites of national and local importance along the east coast of Northern Ireland including Areas of Special Scientific Interest, National Nature Reserves, Local Authority

Nature Reserves and various landscape designations and non-statutory reserves. These sites are described in this section. ASSIs have been marked on a separate map (Figure 5.2) for clarity. Figure 5.3 shows the location and reference numbers of other nationally and locally important sites.

5.2.1 Areas of Special Scientific Interest (ASSI)

For the definition of Area of Special Scientific Interest, see Appendix 2. Figure 5.2 shows the locations of the 18 ASSIs that are designated along the east coast of Northern Ireland. Table 5.1 provides their names, Ordnance Survey grid references (approx. centre of each site), area in hectares and conservation interest. The conservation interest features for each site are based on the descriptions given in the ASSI citations available on the Environment and Heritage Service website. In the interests of brevity they have been summarised into just four categories: *Intertidal habitats* (between mean low water and mean high water), *Coastal habitats* (above mean high water - incl. saltmarsh, sand dunes, sea cliffs, vegetated shingle, coastal grassland / heath / woodland etc.), *Birds* (incl. wetland birds, and seabirds) and *Geology* (incl. features that are of geomorphological significance in addition to the normal definition of a geological site).

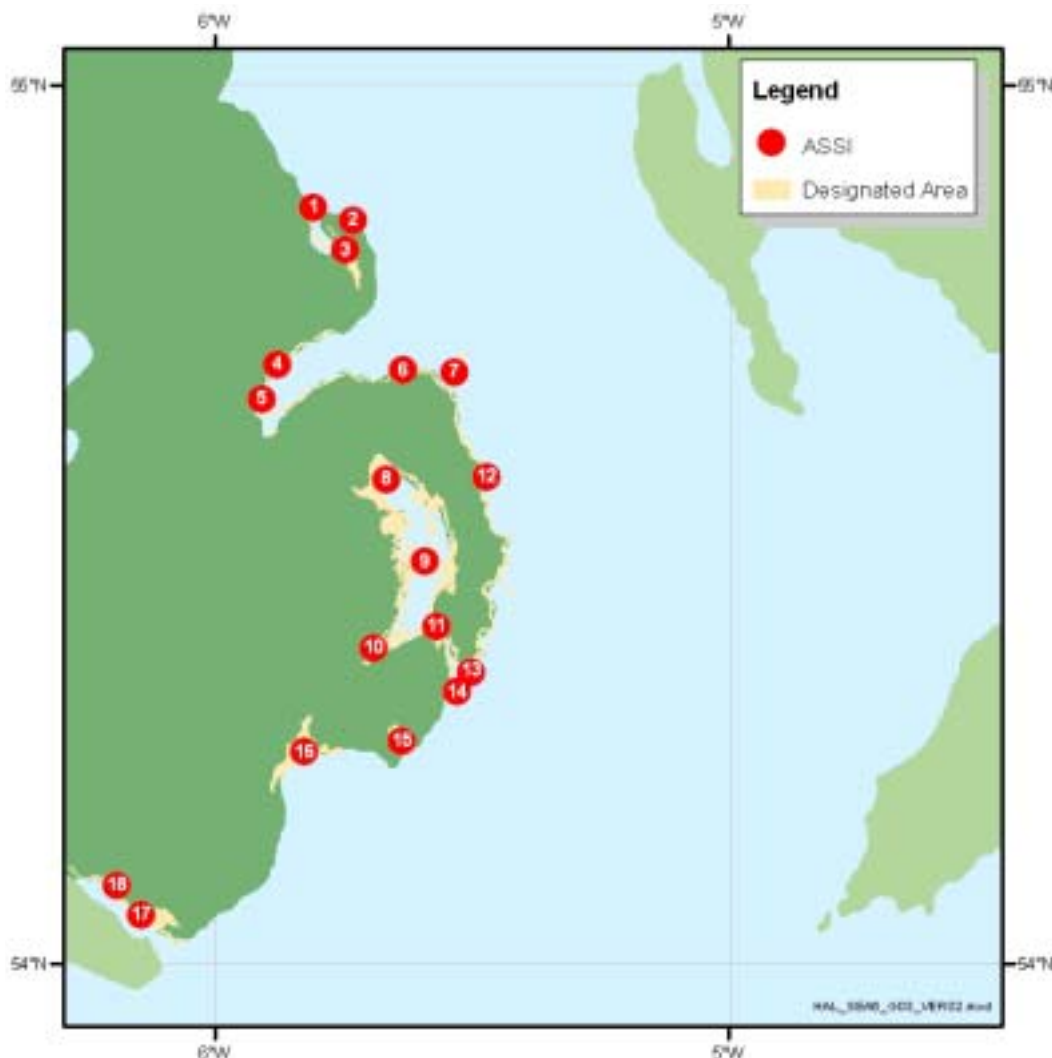


Figure 5.2 Coastal Sites of Areas of Scientific Interest (ASSIs) along the east coast of Northern Ireland. Names and descriptions of the numbered sites are given in Table 5.1.

Table 5.1 Coastal Areas of Scientific Interest (ASSIs) along the east coast of Northern Ireland. Locations of the numbered sites are given in Figure 5.2.

No.	Site name	Grid Ref.	Hectares	Interest
6	Ballymacormick Point	J 527 836	38.0	Coastal habitats
13	Ballyquintin Point	J 625 456	53.7	Coastal habitats
17	Carlingford Lough	J 217 134	1099.5	Coastal habitats, Birds, Geology
7	Copeland Islands	J 591 836	201.5	Intertidal habitats, Coastal habitats
5	Inner Belfast Lough	J 351 794	254.7	Intertidal habitats, Coastal habitats, Birds
14	Killard	J 608 431	116.0	Coastal habitats, Geology
15	Killough Bay and Strand Lough	J 541 367	175.9	Birds
3	Larne Lough	J 449 984	395.9	Intertidal habitats, Coastal habitats, Birds
16	Murlough	J 418 348	1481.3	Coastal habitats
12	Outer Ards	J 636 705	1116.2	Intertidal habitats, Coastal habitats, Geology
4	Outer Belfast Lough	J 369 838	227.9	Coastal habitats, Birds, Geology
2	Portmuck	D 457 023	20.2	Coastal habitats, Birds, Geology
10	Quoile	J 501 483	210.4	Coastal habitats
18	Rostrevor Wood	J 185 172	16.6	Coastal woodland
8	Strangford Lough Part 1	J 511 698	1596.9	Intertidal habitats, Coastal habitats
11	Strangford Lough Part 2	J 579 513	679.1	Intertidal habitats, Coastal habitats
9	Strangford Lough Part 3	J 562 595	2002.2	Intertidal habitats, Coastal habitats
1	Waterloo	D 408 037	5.3	Coastal habitats, Geology

Sources of information

EHS (NI) website: http://www.ehsni.gov.uk/natural/designated/area_interest.shtml

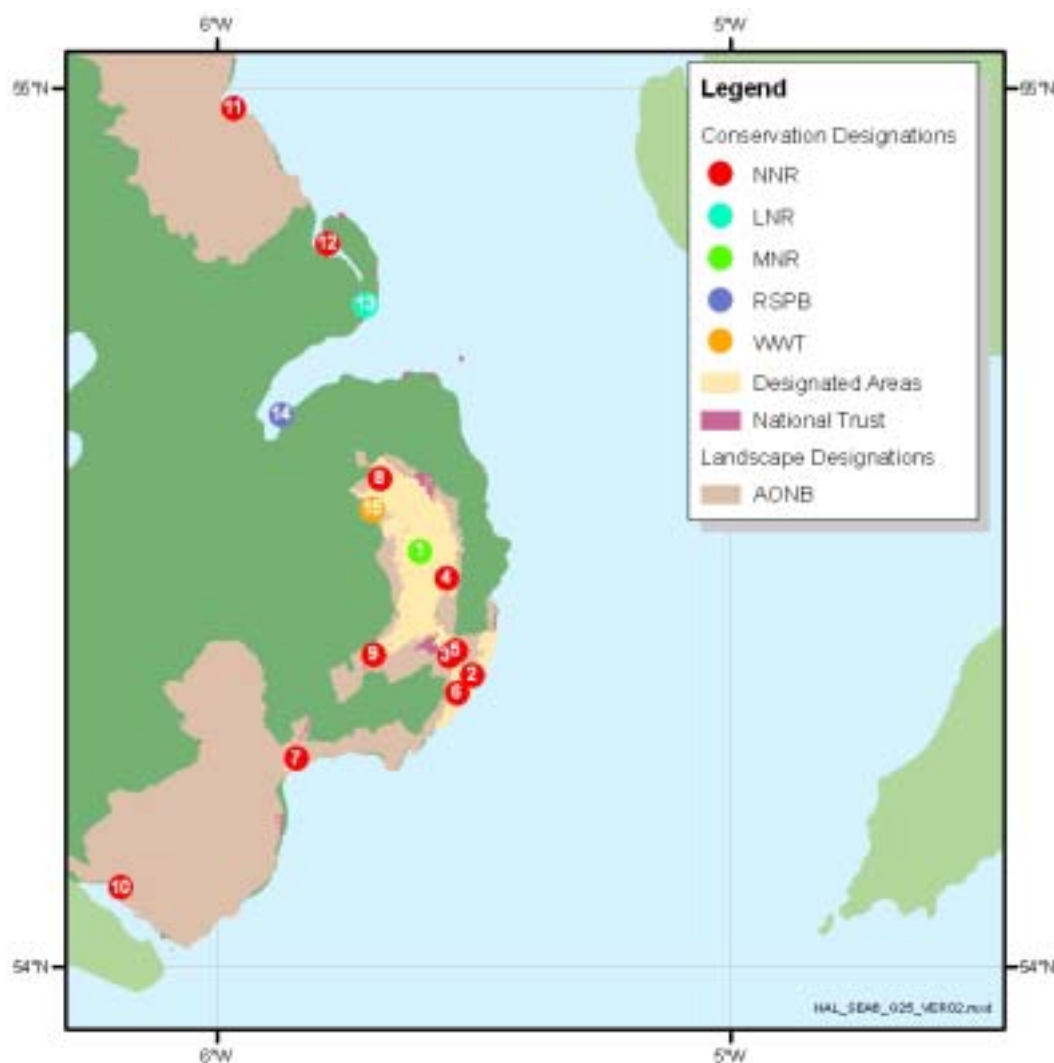


Figure 5.3 Other National/Local designated sites along the east coast of Northern Ireland. Names and descriptions of the numbered sites are given in the relevant sections below.

5.2.2 Marine Nature Reserve (MNR)

Map Reference: Figure 5.3

The reserve includes all the waters, seabed and shores (up to high water mark mean tide) of Strangford Lough itself plus those of an area around the mouth of the Lough. Extensive surveys have shown that the Lough supports an exceptional range of marine life, with some of its features being of international renown.

No.	Site name	Grid Ref.	Hectares	Interest
1	Strangford Lough	J5658	16489.00	Intertidal and subtidal habitats and species, incl. horse mussel beds, seagrass beds, tidal rapids, mudflats, lagoons

Sources of information

EHS (NI) website: http://www.ehsni.gov.uk/natural/designated/marine_reserves.shtml

5.2.3 National Nature Reserves (NNR)

Map Reference: Figure 5.3

No.	Site name	Grid Ref.	Hectares	Interest
2	Ballyquintin Point	J624456	16.90	Rocky shore, coastal grassland
3	Cloghy Rocks	J594478	29.90	Intertidal habitats, grey & common seals
4	Dorn	J593568	783.10	Lagoon, intertidal habitats, saltmarsh, wetland birds
5	Granagh Bay	J504488	30.10	Intertidal habitats, grey & common seals
6	Killard	J610433	131.00	Coastal grassland
7	Murlough	J410350	279.90	Sand dune, estuary, coastal heath, wetland birds
8	North Strangford Lough	J508706	1037.50	Mud flats, saltmarsh, eelgrass, wetland birds, gulls & terns
9	Quoile Pondage Basin	J500478	196.50	Coastal swamp, scrub & woodland
10	Rostrevor Forest	J186170	17.20	Oak woodland
11	Straidkilly	D158305	10.20	Coastal woodland
12	Swan Island	J422993	0.04	Tern colony

Sources of information

EHS (NI) website: http://www.ehsni.gov.uk/natural/designated/nature_reserves.shtml

5.2.4 Local Authority Nature Reserves (LANRs)

Map Reference: Figure 5.3

No.	Site name	Grid Ref.	Hectares	Interest
13	Whitehead Quarry	J474912	-	-

Sources of information

Supplied by EHS staff (pers. comm.)

5.2.5 Royal Society for the Protection of Birds (RSPB) Reserves

Map Reference: Figure 5.3

No.	Site name	Grid Ref.	Hectares	Interest
14	Belfast Lough	J383780	70.86	Waders and wildfowl, mudflats and grassland

Sources of information

RSP web site: <http://www.rspb.org.uk/reserves/>

5.2.6 Wildfowl & Wetlands Trust (WWT) Reserves

Map Reference: Figure 5.3

No.	Site name	Grid Ref.	Hectares	Interest
15	Castle Espie	J490663	?	Wetland birds, mud flats, saltmarsh and other coastal habitat

Sources of information

WWT website: <http://www.wwt.org.uk/visit/castleespie/default.asp>

5.2.7 National Trust NI

The National Trust owns and manages considerable areas of the coast in Northern Ireland. Within the SEA 6 region of Northern Ireland the Trust has 62 properties that lie on or close to the coast. These areas are marked on Figure 5.3, but there are too many to individually number or tabulate.

Sources of information

Digital GIS map files provided by the National Trust

The National Trust Northern Ireland website: <http://www.ntni.org.uk/>

5.3 Landscape and other designations

5.3.1 Areas of Outstanding Natural Beauty (AONB)

There are four large AONBs in the SEA 6 region of Northern Ireland: Antrim Coast & Glens AONB, Lecale Coast AONB, Mourne AONB and Strangford Lough AONB. Their extent is shown in Figure 5.3 (but they are not individually numbered).

Sources of information

EHS (NI) website: <http://www.ehsni.gov.uk/natural/designated/aonb.shtml>

6 Isle of Man

The SEA 6 area does not include the Isle of Man or the waters within its jurisdiction. However, for the purposes of this report it is considered important to describe the nature conservation designations of the Isle of Man as useful background information for potential offshore oil and gas licensing decisions within the SEA 6 area.

Much of the Isle of Man coastline is dominated by slate cliffs, interrupted here and there by sandy bays and tiny shingle coves, except in the north where there are long sandy beaches and sand dunes which separate the lowland heath of the Ayres from the sea. There are no large marine inlets and wave sheltered conditions are very limited, so saltmarsh and other muddy habitats are rare. Tourism is the main human activity that impinges on the coastal environment, due to the islands essentially natural and scenic character. The main features of designated nature conservation interest are seabirds along the south coast and Calf of Man cliffs, the sand dune vegetation at Ayres, and some other coastal habitats.

6.1 Sites of international importance

Note: The Habitats and Species Directives do not apply to the Isle of Man, so they are not obliged to designate Natura 2000 sites. However, there are two Important Bird Areas. These areas are described below and are located on the following map (Figure 6.1).

6.1.1 Isle of Man Sea Cliffs IBA

Map Reference: Figure 6.1 Site 1

International designation	Area (ha)	IBA code
Isle of Man Sea Cliffs IBA	1300	UK295

General site characteristics

Stretches of slate cliffs of varying profile, some are high, steep and vertical, others are rounded and low. Several small bays and Baie ny Carrickey are also included in the site. Habitat-types present include agricultural land, moorland and maritime heath.

6.1.1.1 IBA features

The area fulfils three IBA criteria. The bird populations responsible for qualification are European Shag (*Phalacrocorax aristotelis*), Great Black-backed Gull (*Larus marinus*), Herring Gull (*Larus argentatus*), Red-billed Chough (*Pyrrhocorax pyrrhocorax*).

6.1.1.2 Vulnerability and management issues

No serious threats are known at the site.

6.1.1.3 Component designations at national and local level

Langness, Sandwick and Derbyhaven ASSI; Parish of Malew Wild Bird Sanctuary, Scarlett Manx Wildlife Trust Reserve; various Manx National Heritage properties.

6.1.1.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2703&m=0>

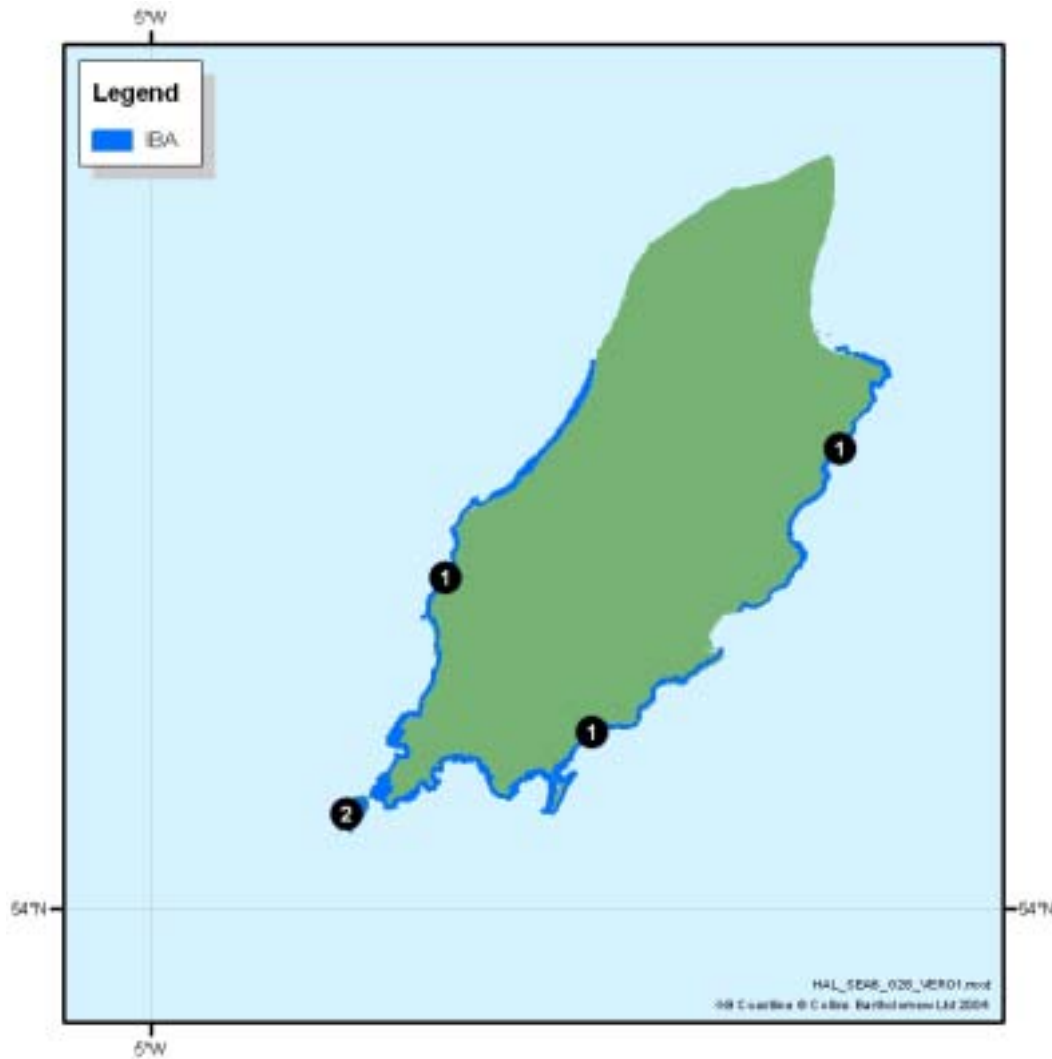


Figure 6.1 Coastal sites of international importance around the Isle of Man. The numbers identify the text sections below which describe the conservation importance of the sites.

6.1.2 Calf of Man IBA

Map Reference: Figure 6.1 Site 2

International designation	Area (ha)	EU/IBA code
Calf of Man IBA	250	UK293

General site characteristics

Lying 400m off the south-western tip of the Isle of Man, the Calf has a rugged coastline with steep slate cliffs of varying height. Habitat-types present include maritime heath and grassland. The island was farmed until 1958, and is currently grazed by Manx loaghtan sheep

6.1.2.1 IBA features

The area fulfils one IBA criteria. The bird population responsible for qualification is Red-billed Chough (*Pyrrhocorax pyrrhocorax*).

6.1.2.2 Vulnerability and management issues

No serious threats are known at the site, which is run as a bird observatory.

6.1.2.3 Component designations at national and local level

Manx National Heritage site

6.1.2.4 Sources of information

BirdLife International website <http://www.birdlife.net/datazone/sites>

IBA description: <http://www.birdlife.net/datazone/sites/index.html?action=SitHTMDetails.asp&sid=2702&m=0>

6.2 Sites of national / local importance

There are a number of sites of national and local importance around the coast of the Isle of Man including Areas of Special Scientific Interest and National Nature Reserves; and various non-statutory reserves. These sites are described in this section.. Figure 6.2 shows the location and reference numbers of the sites.

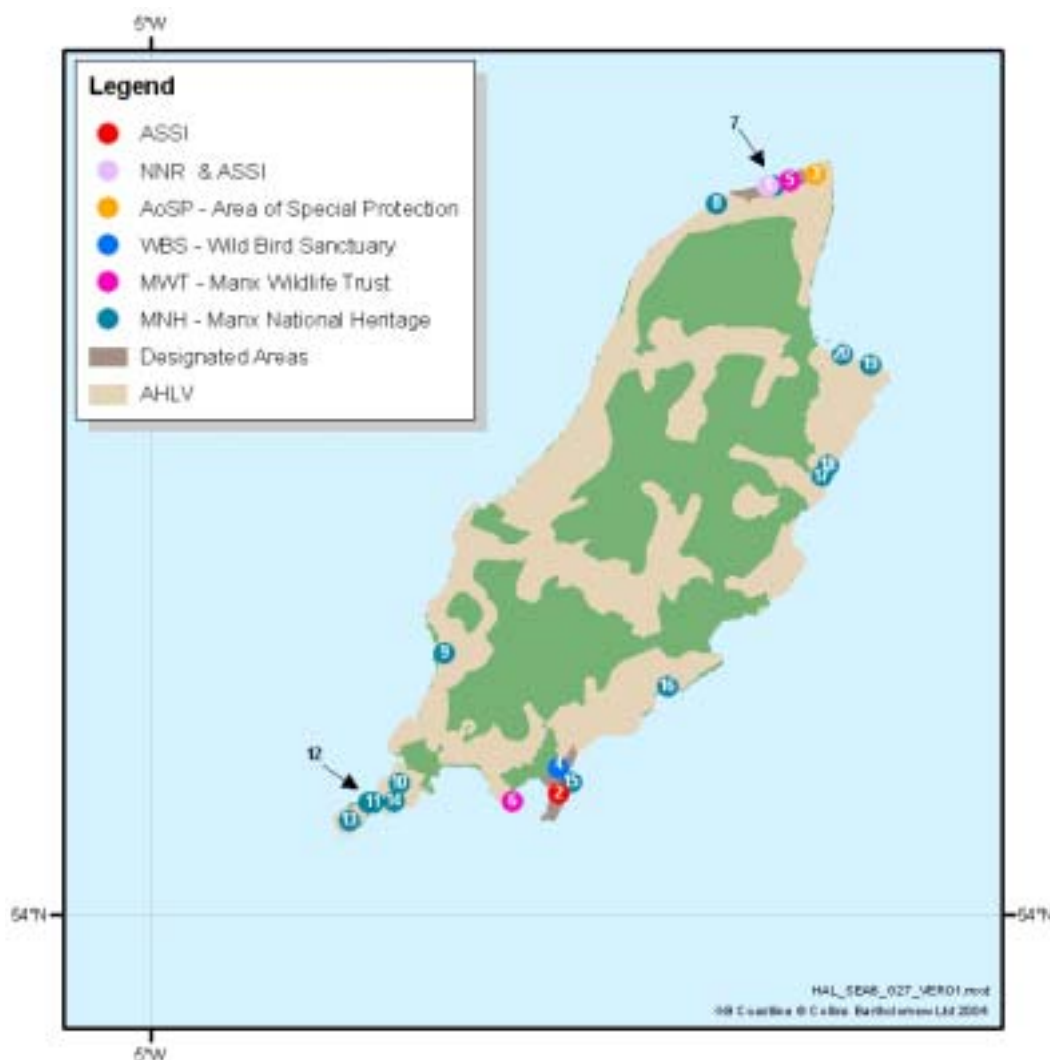


Figure 6.2 Coastal sites of national/local importance around the Isle of Man. Names and descriptions of the numbered sites are given in the relevant sections below.

6.2.1 Area of Special Scientific Interest (ASSI)

Map Reference: Figure 6.2

No.	Site name	Grid Ref.	Hectares	Interest
1	Central Ayres	NX 428 036	272	Sand dunes, coastal grassland & heath, shorebirds, terns
2	Langness, Sandwick and Derbyhaven	SC 287 667	309	Wetland birds, saltmarsh, coastal grassland, geology

Sources of information

Isle of Man: DAFF pers. comm..

6.2.2 National Nature Reserve (NNR)

Map Reference: Figure 6.2

No.	Site name	Grid Ref.	Hectares	Interest
1	The Ayres National Nature Reserve	NX 428 036	272	Sand dunes, coastal grassland & heath, shorebirds, terns

Sources of information

Isle of Man: DAFF pers. comm..

6.2.3 Area of Special Protection (AoSP)

Map Reference: Figure 6.2

No.	Site name	Grid Ref.	Hectares	Interest
3	Ayres Gravel Pits	NX 458 042	41	Birds

Sources of information

Isle of Man: DAFF pers. comm..

6.2.4 Wild Bird Sanctuary

Map Reference: Figure 6.2

No.	Site name	Grid Ref.	Hectares	Interest
4	Parish of Malew (Derbyhaven, Langness and Fort Island and foreshore)	SC 288 682	367	All wild birds

Sources of information

Isle of Man: DAFF pers. comm..

6.2.5 Manx Wildlife Trust (MWT) Reserves

Map Reference: Figure 6.2

No.	Site name	Grid Ref.	Hectares	Interest
5	The Ayres	NX 442 038	-	Shingle, dunes and heath
6	Scarlett	SC 259 663	-	Seabird cliffs, coastal heath

Sources of information

<http://www.wildlifetrusts.org/index.php?section=places:reserves>

6.2.6 Manx National Heritage

Map Reference: Figure 6.2

No.	Site name	Grid Ref.	Hectares	Interest
17	Bulgham Brooghs	SC 456 857	15	Cliffs and rough pasture
13	Calf of Man	SC 159 655	249	Islet, cliffs, rough pasture and maritime heath
18	Dhoon	SC 460 863	13	Cliffs and rough pasture
9	Early Cushlin and Creggan Mooar	SC 221 756	196	Cliffs and pasture
20	Gob ny Rona	SC 471 931	4	Low cliffs and rough ground
12	Kitterland Islet	SC 171 666	4	Coastal grassland
16	Marine Drive	SC 357 731	17	Cliffs
19	Maughold Head and Brooghs	SC 488 924	44	Cliffs and pasture
10	Meayll Hill	SC 190 677	8	Heath
14	Spanish Head, the Chasms and Cregneash	SC 187 666	152	Cliffs, pasture and farmland
15	St. Michael's Isle	SC 296 674	5	Islet, coastal grassland
7	The Ayres: Outer Ballakesh	NX 433 036	20	Maritime heath on blown sand over shingle
8	The Ayres: Outer Ballakeyl	NX 397 026	10	Maritime heath on blown sand over shingle
11	The Sound	SC 174 666	1	Rough pasture

Sources of information

Barnes *et al.* 1996

MNH website: <http://www.gov.im/mnh/>

6.3 Landscape and other designations

6.3.1 Areas of High Landscape or Coastal Value and Scenic Significance

A large proportion of the island is designated under the Isle of Man Planning Scheme (Development Plan) Order 1982. The extent is shown in Figure 6.2.

Sources of information

Isle of Man: DLGE pers. comm..

Isle of Man Government website: <http://www.gov.im/dlge/planning/plan/welcome.xml>

7 CONTIGUOUS AREAS

7.1 South Wales

The southern limit of SEA 6 on the Welsh coast is at Angle Point, on the south side of the entrance to the Milford Haven waterway. The south coast of Pembrokeshire continues for another 20km to the east of this point, with similar formations of wave exposed cliffs, rocky shores and occasional sand beaches and sand dunes. Nature conservation interest of this coast is also similar, with important seabird breeding colonies and well developed coastal habitats. The majority of this coast is designated as SAC. The area is more frequented by tourists, although significant sections are within MOD firing ranges which effectively limits recreational disturbance.

Continuing east from Tenby into Carmarthen Bay, the character of the coast changes to a low lying soft sediment dominated area. The open coasts are of extensive sand beaches backed by sand dunes; with entrances into the two large shallow estuarine systems. The majority of Carmarthen Bay is designated as SAC and SPA.

7.2 West Scotland

The northern limit of SEA 6 on the Scottish coast is at the Mull of Kintyre. The west coast of Kintyre is relatively featureless, with long stretches of wave exposed narrow rocky shores and sand beaches (some backed by sand dunes). There are some stretches of sea cliffs at the south end, but otherwise the shores are backed by an almost continuous line of outstanding raised shorelines and a former cliffline. There is limited nature conservation interest along this coast until Rhunahaorine Point, opposite Gigha Island, where there are important areas for roosting geese. Slightly closer, but across the water to Islay, the south east Islay Skerries form a complex network of small low lying islands and islets which are important for common seals.

7.3 North coast of N. Ireland

The northern limit of SEA 6 on the Irish coast is at Torr Head, just south of Fair Head. The majority of this coast is rocky and rugged, with many sections of cliffs, rocky islets and boulder beaches. There are a few bays with wave exposed sandy beaches, but there are no notable wave sheltered areas for over 50km until the Bann Estuary joins the coast near Portstewart. The impressive Rathlin Island lies 5km off Ballycastle Bay, with its high rocky cliffs which continue as subtidal cliffs to depths of over 100m on the north coast. The island and its surrounding waters are designated as SAC, SPA and ASSI for a variety of marine, coastal, geological, sea birds and other wildlife interests. Conservation interest along the rocky mainland coast is primarily geological, including the Giant's Causeway near Benbane Head; with some sections designated as SAC/ASSI for coastal vegetation. Much of the mainland coast and the whole of Rathlin Island is designated as AONB, and many parts are important for tourism.

7.4 East coast of Ireland

The southern limit of SEA 6 on the Irish coast is just north of Carlingford Lough, but as the border with the Republic of Ireland lies within the Lough the conservation interest of the Lough was included in Section 5 above. South from Carlingford Lough the coast continues as a series of bays and small headlands, backed by relatively low lying agricultural hinterland and no rocky cliffs. The Ballymascanlon Estuary opens into Dundalk Bay, which forms a large sandy expanse backed by some areas of saltmarsh. The whole of this Bay is designated as SPA, SAC and Natural Heritage Area for wetland birds and a variety of coastal habitats. Otherwise, the open coast shores for nearly 50km

down to Skerries are mostly narrow, consisting of mixtures of sand and shingle with outcrops of bedrock and boulders and relatively few prominent features. A few short sections of coast are designated as Natural Heritage Area for their coastal vegetation and the entrance to the Boyne Estuary, near Drogheda, is designated as SAC for the sand dunes and saltmarsh habitats.

8 SPECIES CONSERVATION WITHIN THE SEA 6 AREA

In addition to the designation of specific conservation sites within the SEA 6 area, a number of individual marine species have been afforded protection. At a European level, a number of marine species including all cetacean species and otters, a number of fish species and a range of marine invertebrates are listed on Annex IV (Animal and Plant Species of Community Interest in Need of Strict Protection) of the Habitats Directive. Under this Annex, the deliberate capture, killing or disturbance of such species is banned, as is their keeping, sale or exchange.

Several marine species are also protected in UK waters under Schedule 5 of *The Wildlife And Countryside Act, 1981*. These include all cetacean species, otters, all turtle species, a range of fish including sturgeon, allis shad, twaite shad and basking shark, and a number of marine invertebrates.

The management and monitoring of protected species as well as many additional marine species, is co-ordinated through the implementation of individual and grouped species action plans under the UK Biodiversity Action Plan (<http://www.ukbap.org.uk>).

9 COASTAL AND MARINE NATURE CONSERVATION INITIATIVES

9.1 Coastal and marine management plans

Management plans have been developed or are in development for a number of the Natura 2000 sites in the SEA 6 region. A number of coastal fora have also been developed to manage particular areas. The following table lists sources where more information on these can be found:

Organisation	Source
Irish Sea Forum	http://www.liv.ac.uk/~isf1/isfhome.html
Wales	
Pembrokeshire Marine SAC	http://www.pembrokeshiremarinesac.org.uk/
Cardigan Bay SAC	http://www.cardiganbaysac.org.uk/
Dee Estuary Strategy	http://www.deeestuary.org.uk/
North Wales Coastal Forum	http://www.northwales.org.uk/nwcf/index.htm
England	
Dee Estuary Strategy	http://www.deeestuary.org.uk/
Morecambe Bay Partnership	http://www.morecambebay.org.uk/
Solway Firth Partnership	http://www.solwayfirthpartnership.org.uk/strategy.htm#sems
North West Coastal Forum	http://www.nwcoastalforum.co.uk/
Scotland	
Solway Firth Partnership	http://www.solwayfirthpartnership.org.uk/strategy.htm#sems
Firth of Clyde Forum	http://www.clydeforum.org/strategy/
Loch Ryan Advisory Management Forum	http://www.scotland.gov.uk/environment/coastalforum/lochryan.asp
Scottish Coastal Forum	http://www.scotland.gov.uk/environment/coastalforum/
N Ireland	
EHS / Strangford Lough Management Committee	http://www.ehsni.gov.uk/pubs/publications/StrangfordManagementScheme.pdf http://www.strangfordlough.org/home.htm

The UK conservation agencies are currently developing 'Regulation 33' advice for each European marine site, including i) conservation objectives, and ii) any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated. This is a requirement under Regulation 33 of the Conservation (Natural Habitats, etc.) Regulations 1994.

9.2 Initiatives to extend or establish new conservation sites in SEA 6 region

Initiatives at both national and European level are in the process of identifying potential new coastal and offshore sites which may warrant protection, designating sites that have already been proposed and extending some existing sites. These initiatives include the Offshore Natura 2000 Project and OSPAR's Marine Protected Areas programme. The following paragraphs describe progress with these and other relevant conservation initiatives.

9.2.1 Coastal and offshore Natura 2000 sites

9.2.1.1 Initiatives for sites in offshore waters (12nm to UK continental shelf limit)

A public consultation on draft *Offshore Marine Conservation (Natural Habitats &c.) Regulations 2003* (<http://www.defra.gov.uk/corporate/consult/offshore-marine/index.htm>) was launched by DEFRA in August 2003. This set out the proposed Regulations to apply the Habitats and Birds

Directives to the UKCS and waters beyond 12 nautical miles over which the UK exercises sovereignty. The results of this consultation, which closed in October 2003, were published on the DEFRA website; and DEFRA are currently using them to prepare modifications to the Regulations

Meanwhile, the Joint Nature Conservation Committee are undertaking, for DEFRA, work to identify potential SACs and SPAs (together referred to as Natura 2000 sites) that lie within offshore waters of the UK, out to the limit of UK jurisdiction (the median line within Ireland in the SEA 6 region). These initiatives have been reviewed previously in the Conservation Reports for SEAs 3, 4 and 5. Given their ongoing nature, this section will review progress and identify important sources of information. Recent progress is described in Johnston *et al.* (2004) (<http://www.jncc.gov.uk/pdf/comm04P23.pdf>).

In 2002 JNCC published the results of a detailed review and analysis of available information on relevant habitats and species in offshore waters and advice on how the selection of offshore sites could be approached (Johnston *et al.* 2002). The report describes the application of Habitats Directive selection criteria and identifies potential areas of habitat which may be considered for site designation. Although work continues to identify and define areas that require protection, the majority of potential areas of Annex I habitat shown in that report are still under consideration for site selection. In the interim, the oil and gas sector are required to take into account the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 and treat areas of Annex I habitat in a precautionary manner. Figure 9.1 (provided by JNCC) shows the relevant areas of potential Annex I habitat within the SEA6 region.

Following the publication of Johnston *et al.* 2002, JNCC and the Marine Natura Project Group have initiated studies of the areas identified. The following paragraphs describe current progress.

SACs

As described in the SEA 5 report, the initiatives to identify potential offshore sites have identified the Darwin Mounds (an area of sandy mounds on the Wyville Thomson Ridge to the north west of Scotland) as an area worthy of SAC status; and have resulted in its protection by European Council Regulations that ban the use of bottom trawled fishing gear in this area. The area is currently a proposed SAC; DEFRA have completed the required consultation process and they are expected to take it forward to Europe as a candidate SAC once The Offshore Marine Conservation Regulations 2003 are in place.

JNCC have now proposed four more areas of Annex I marine habitat in UK offshore waters for recommendation to DEFRA as SACs. They are:

- Haig Fras (reef);
- Wyville Thomson ridge (reef);
- Dogger Bank (sandbanks which are slightly covered by seawater all the time); and
- Scanner pockmark (submarine structures made by leaking gases).

None of these areas is within the SEA 6 region, but JNCC have also identified a further nine areas of Annex I habitat in UK offshore waters for which they have (or will imminently have) sufficient data to enable their assessment against the Annex III selection criteria, and definition of possible SACs and their boundaries if the areas fulfil the selection criteria. This list includes one area within the SEA 6 region:

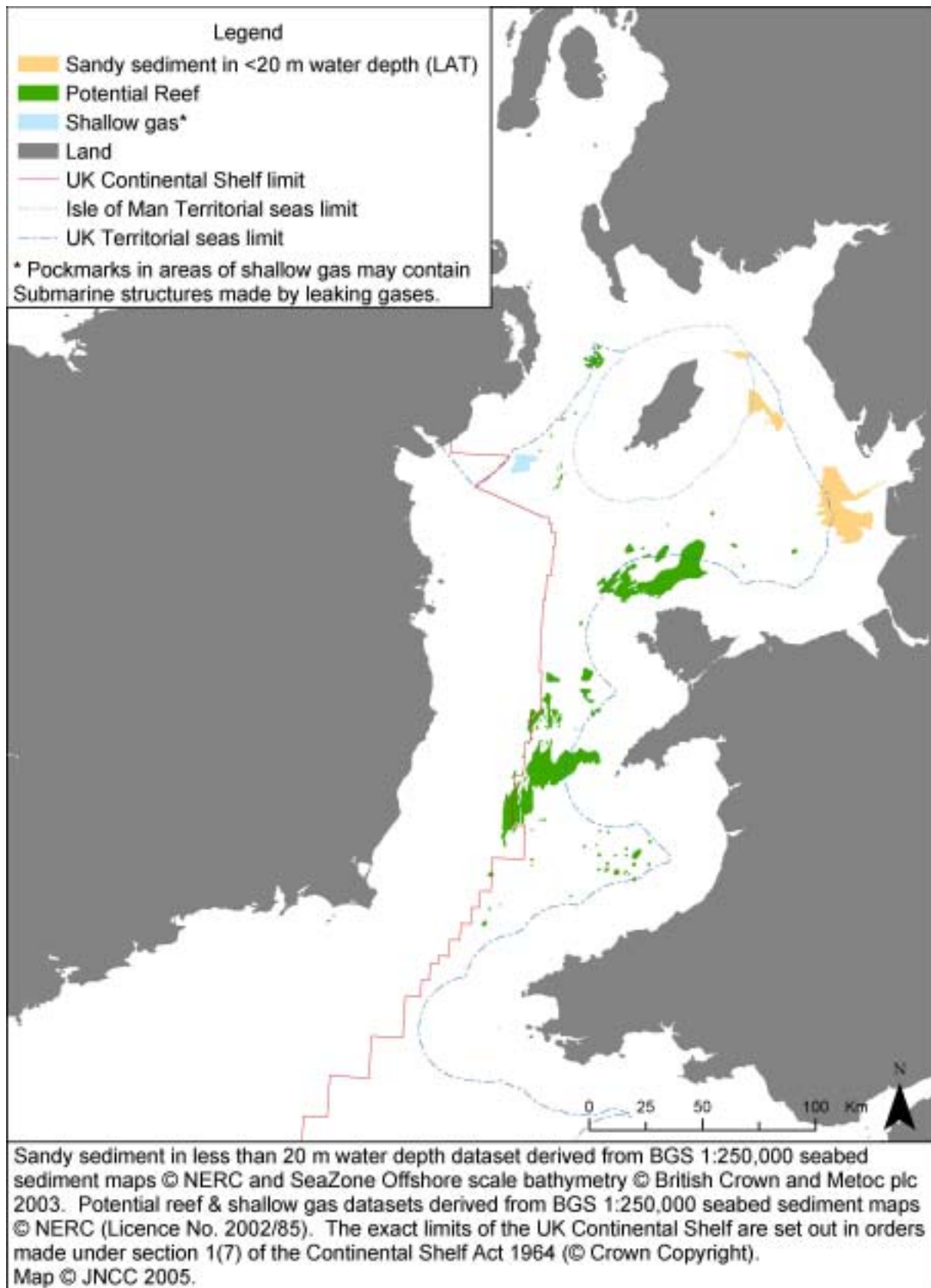


Figure 9.1 Areas of potential Annex I habitat (based on the definitions in the Habitats Directive) in the UK offshore waters of the Irish Sea. Map provided by JNCC. See text and Johnston *et al.* (2002) for more details.

- The North West Irish Sea mounds – an area of bedrock and stony ground including rocky outcrops that rise >20m above the surrounding seabed, lying at the south end of the North Channel, approximately mid way between the Ards Peninsula in N.Ireland and the Mull of Galloway in Scotland. (Figure 9.1) (c.f. Map 12 and Plate 4 in Irish Sea Pilot, <http://www.jncc.gov.uk/page-1541>, for more details)

Assessment of these nine areas, including the Irish Sea mounds, and proposals for SACs will be undertaken during 2005, and JNCC anticipate that SACs selected from these areas will be proposed for recommendation to DEFRA by December 2005.

Of further possible interest are the pockmarks that have recently been found in the NW Irish Sea between the N.Ireland coast and the Isle of Man (Judd, 2005). The surveys suggest that ‘methane-derived authigenic carbonate’ is likely to be present in this area, but this does not necessarily mean that they will be defined as ‘submarine structures made by leaking gases’ (the Habitats Directive classification).

SPAs

As described in the SEA 5 report, JNCC and the Marine Natura Project Group have prepared guidance on appropriate offshore extensions to existing coastal SPAs designated for seabird populations. The guidance recommends extensions of 1 or 2 km, depending on species (Note: since SEA 5 there has been an additional recommendation for 2 km extensions to SPAs designated for gannets). The individual country agencies are now in the process of identifying those coastal SPAs that should be extended.

Initial analysis of available survey data from inshore areas has also identified areas where non-breeding waterbirds aggregate, and a list of potential inshore sites for seaduck, divers and grebes are being considered (c.f. more details in section 9.2.1.2). Analysis of offshore survey data is also planned, but not yet started, to identify possible hotspots for seabirds, with a view to possible offshore SPA classification (c.f. <http://www.jncc.gov.uk/page-1414>).

9.2.1.2 Initiatives by country agencies (territorial waters)

In addition to the offshore initiatives coordinated by JNCC, the individual country conservation agencies coordinate other initiatives within their own territorial waters (out to the 12 nautical mile limit).

England

English Nature have divided the nearshore and offshore English territorial waters into six *Marine Natural Areas* (MNA) (c.f. http://www.english-nature.org.uk/science/natural/na_search.asp). One of these is the Irish Sea, which extends out to the border with Ireland and also borders the 12 mile limit of Wales, Scotland and Isle of Man waters. For each of these MNAs they have prepared ‘profile’ documents which highlight the key features from a nature conservation perspective. They plan to use the MNAs to aid regional planning and management, and are drawing up nature conservation objectives and targets. They are also developing survey methods and survey plans to identify key habitats of interest within each area, that may warrant designation as future SACs. For the Irish Sea MNA they have not yet prioritised any sites for such survey work, but the Irish Sea MNA profile explains the habitats that are being prioritised: ‘Sandbanks slightly covered by seawater all the time’ and ‘Reefs’ (as defined by the Habitats Directive). The profile also notes that the definition of ‘Reefs’ can include biogenic reefs formed by *Sabellaria* tube worms and seabed that is predominantly composed of stable boulders and cobbles, which may be present in the Area; so some survey work may focus on such features.

Designation of the Dee Estuary pSAC (proposed jointly by English Nature and the Countryside Council for Wales in the first round of proposals) has been held up during its consultation process and it has still not been put forward to Europe (Ben Fraser pers.comm.).

English Nature are also proposing two new marine SPAs in the SEA 6 region:

The Mersey Narrows and North Wirral Foreshore proposed SPA is mostly intertidal and follows the same boundaries as the existing Mersey Narrows SSSI and North Wirral Foreshore SSSI. It is proposed as an area of European ornithological importance, primarily as feeding and roosting habitat for non-breeding wading birds and as a breeding site for terns. The consultation process for this SPA has been completed and it is expected to be designated in 2005. The area is also proposed as a Wetland of International Importance under the Ramsar convention.

A proposal for an offshore SPA in Liverpool Bay is being developed jointly by EN and CCW; primarily due to its importance for large aggregations of red throated divers and common scoter. A draft departmental brief with proposed boundaries has been prepared by EN and is currently undergoing a review process (Ben Fraser pers.comm.).

Scotland

Scottish Natural Heritage are currently scrutinising Luce Bay regarding a possible seaward extension of the existing SAC, but are not currently looking to identify any new sites or extend other existing sites offshore in the Scottish territorial waters of SEA 6. They are currently consolidating the development of conservation objectives, performance indicators and monitoring techniques for the existing SACs and SPAs (http://www.jncc.gov.uk/pdf/14_09_04_FinalMins.pdf).

Northern Ireland

The Environment and Heritage Service are in the early stages of a process that will identify potential offshore SACs in the territorial waters of Northern Ireland. Of particular interest at the moment are the pockmarks that have recently been found in the NW Irish Sea off the south Down coast (c.f. 9.2.1.1) and large waves composed of dead maerl found off the east Antrim coast (Joe Breen, EHS, pers. comm.).

EHS are also proposing two new SPAs with marine areas and marine extensions to three others in the SEA 6 region (Ian Enlander, EHS, pers. comm.):

- Copeland Islands - proposed SPA for arctic terns and manx shearwater – includes a marine extension
- Outer Ards coast - proposed SPA - includes a marine extension near the entrance to Strangford Lough for arctic tern
- Belfast Lough SPA – proposed marine extension for non-breeding aggregations of great crested grebe
- Carlingford Lough SPA - proposed marine extension for tern colonies
- Larne Lough SPA - proposed marine extension for tern colonies

The Environment and Heritage Service have also commissioned a review of management of marine sites in the province by Haskoning UK Ltd. The report, which is currently in draft, provides a summary of the existing and potential mechanisms for the creation of a suite of Marine Protected Areas (MPAs) in the territorial waters of Northern Ireland. A series of recommendations are given in the report, which suggest amendments to existing legislation and the longer term development of a Marine Act to enable the designation and management of multiple use MPAs (pers.comm., Mat Cork, Haskoning UK).

Wales

The Countryside Council for Wales are not currently looking to identify any new sites or extend existing sites offshore in Wales (but c.f. notes above on Liverpool Bay SPA, jointly proposed by English Nature and CCW, and Dee Estuary SAC). They consider that the existing SACs and SPAs, which already cover large areas of offshore seabed, are adequate at present; and they are consolidating the development of conservation objectives, performance indicators and monitoring techniques (Adam Cole-King, pers.comm.).

Note: The recently confirmed presence of *Modiolus* beds extending north of Anglesey (across the territorial waters limit) will be of interest to CCW and JNCC (Rees, 2005).

Isle of Man

The Habitats and Species Directives do not apply to the Isle of Man, so they are not obliged to designate Natura 2000 sites. However, it is expected that development of Marine Nature Reserves (MNR) will follow best practice from the SAC process.

The Wildlife and Conservation Division of the Department of Agriculture, Fisheries and Forestry are currently developing a marine nature conservation strategy that will identify potential MNRs (Note: the Wildlife Act 1990, includes a legislative framework for designation of MNRs). The Calf of Man has been proposed in the past as an MNR and is a likely candidate. Other potential sites around the Island have been identified, but further research and survey work is required. Seabed habitats of interest include horse mussel beds, maerl beds and seagrass beds (pers. comm. Fiona Gell, DAFF).

9.2.2 OSPAR Marine Protected Areas (MPAs)

This section provides details of progress since the previous review of the MPA initiative (Section 8.2 of the SEA 5 Conservation report).

In 2004 OSPAR agreed a revision of the *Initial OSPAR List of Threatened and/or Declining Species and Habitats* (OSPAR Ref. No. 2004-06), with the addition of two further fish species and four further habitats. This initial OSPAR List will be subject to further development, in the light of changes to their conservation status etc. The species and habitats present in OSPAR Region III (the Celtic Seas – which includes the Irish Sea) are listed below:

Species	Habitats
Invertebrates	Deep-sea sponge aggregations
<i>Arctica islandica</i> (Ocean quahog)	Intertidal mudflats
<i>Nucella lapillus</i> (Dogwhelk)	<i>Lophelia pertusa</i> reefs
<i>Ostrea edulis</i> (Flat oyster)	Maerl beds
Birds	<i>Modiolus modiolus</i> beds
<i>Sterna dougallii</i> (Roseate tern)	Intertidal <i>Mytilus edulis</i> beds on mixed and sandy sediments
Fish	<i>Ostrea edulis</i> beds
<i>Alosa alosa</i> (Allis shad)	<i>Sabellaria spinulosa</i> reefs
<i>Cetorhinus maximus</i> (Basking shark)	Sea-pen and burrowing megafauna communities
<i>Dipturus batis</i> (Common Skate)	<i>Zostera</i> beds
<i>Raja montagui</i> (Spotted Ray)	
<i>Gadus morhua</i> (Cod)	
<i>Hippocampus guttulatus</i> (Long-snouted seahorse)	
<i>Hippocampus hippocampus</i> (Short-snouted seahorse)	
<i>Petromyzon marinus</i> (Sea lamprey)	
<i>Salmo salar</i> (Salmon)	

Species	Habitats
Reptiles <i>Dermochelys coriacea</i> (Leatherback turtle)	
Mammals <i>Balaenoptera musculus</i> (Blue whale) <i>Eubalaena glacialis</i> (Northern right whale) <i>Phocoena phocoena</i> (Harbour porpoise)	

OSPAR 2004 have also published descriptions of the 14 habitats on the initial list of threatened and/or declining species and habitats (OSPAR Ref. No. 2004-07).

At the October 2004 meeting of the OSPAR working group on Marine Protected Areas Species and Habitats (MASH) the UK presented a paper on theoretical and practical aspects of what would constitute an ecologically coherent network of MPAs. The paper included 14 recommendations which describe the key principles on which an ecologically coherent network of OSPAR MPAs could be based. These were agreed by MASH.

Further details of the Initial OSPAR List, MASH and the MPA initiative can be found on the OSPAR website (<http://www.ospar.org/eng/html/welcome.html>).

9.2.3 Other proposed site designations

Two new Ramsar sites are proposed within the SEA 6 region of N.Ireland. Killough Bay proposed Ramsar and the Outer Ards proposed Ramsar are currently going forward for ratification.

Following a review carried out by Oxford University in 2000, it is proposed that the Dyfi biosphere designation be extended to include the wider Dyfi catchment. <http://www.ecodyfi.org.uk/biosphereproject/dyfibiosphere.html>.

9.3 Review of Marine Nature Conservation

The UK government's Review of Marine Nature Conservation (RMNC), established by DEFRA in 1999, is currently in its last stages. The final report and recommendations of the RMNC Working Group (<http://www.defra.gov.uk/wildlife-countryside/ewd/rmnc/index.htm>) were published in July 2004. The government response to the report is expected later in 2005.

The Review produced 16 key recommendations; each with a number of supporting recommendations. The key recommendations are listed below:

1. In consultation with relevant stakeholders, and as a matter of priority, Government should finalise and apply the overarching UK policy framework of strategic goals, objectives, targets and indicators.
2. Government should promote Regional Seas with other countries in the North-east Atlantic biogeographic region and take action to identify and adopt a series of UK Regional Seas.
3. Government should refine the process for identifying Marine Landscapes, and agree and map them in all UK waters.
4. Government should identify areas important for marine biodiversity and geodiversity in UK waters and those requiring priority conservation action. Management measures should be identified for important marine areas as considered appropriate.
5. Government should identify priority marine features in UK waters and those requiring priority conservation action. Management measures should be identified for priority marine features as considered appropriate.
6. Government should establish conservation objectives at each level of the marine nature conservation framework where necessary.

7. Government should undertake a trial of marine spatial planning at the Regional Sea scale to determine the suitability of implementing such an approach across all UK waters.
8. An ecologically coherent and representative network of marine protected areas should be identified and established, and appropriate and proportionate measures applied to ensure their conservation needs are met.
9. Government should introduce the necessary measures, including policy and legislation as appropriate, to underpin the application of the marine nature conservation framework throughout waters under UK jurisdiction.
10. Government should develop procedures to assess the impact of human activities at each level of the marine nature conservation framework and to assist in the determination of the appropriate level of response.
11. Government should further develop and agree indicators and procedures to monitor the state of marine biodiversity and the impacts of human activities at each level of the marine nature conservation framework.
12. Government should establish a coordinated UK-wide marine information network.
13. Government should facilitate the continued involvement of stakeholder interests in the development of proposals arising from this Review.
14. Government should ensure that mechanisms are in place to deliver enforcement arrangements capable of supporting any legislation underpinning the marine nature conservation framework.
15. Government should consider appropriate changes to existing governance arrangements to ensure the effective application of the marine nature conservation framework.
16. Government should initiate a programme of work to implement the Review's recommendations with lead partners, and supported by the necessary resources, based on the action plan outlined in this report.

An interim review by the RMNC Working Group (in March 2001) proposed that a pilot scheme should be developed to test ways of integrating nature conservation into key sectors at the regional seas scale. This resulted in the preparation of the Irish Sea Pilot, which is particularly relevant to SEA 6 and is described below.

9.3.1 Irish Sea Pilot

The boundaries of the Irish Sea as defined by the Pilot are mostly the same as the boundaries of the SEA 6 region, but also include Irish waters adjacent to the east and southeast coasts of the Republic.

The purpose of the Irish Sea Pilot was to help develop a strategy for marine nature conservation that could be applied to all UK waters and, with international collaboration, the waters of the north-east Atlantic. The Pilot was commissioned by DEFRA as part of the Review of Marine Nature Conservation (RMNC) and undertaken by the JNCC.

A proposed framework for marine nature conservation, developed as part of the RMNC, envisaged the need to take action at a range of scales, i) the Wider Sea, ii) the Regional Sea, iii) Marine Landscapes, and iv) Nationally-important habitats and species. The proposed framework anticipated that a range of measures would be needed to conserve marine biodiversity, including protected areas, spatial planning and other measures. The Pilot tested the practicality and potential method of operation of the proposed framework and the additional measures needed to put it into effect (Vincent *et al.* 2004).

The Pilot's final report as well as details of underpinning reports can be found on the JNCC Irish Sea Pilot website (<http://www.jncc.gov.uk/page-1541>).

The results and generic recommendations from the Irish Sea Pilot formed the basis of many recommendations in the final RMNC report. A number of Irish Sea specific recommendations were also made:

Completion of marine nature conservation framework for the Irish Sea

The final report on the Pilot also suggested a further programme of work to complete the marine nature conservation framework for the Irish Sea. This included:

- discussions should be held with the Governments of Ireland and the Isle of Man on the work to be undertaken to complete the framework;
- identify key gaps in the data and acquire the data to fill them;
- identify the high level objectives of the main marine sectors and regulatory infrastructure in terms of income generation, employment, protection of human health and safety, and protection of the environment. Also, identify the dependency of the various marine sectors on the maintenance of ecosystem services;
- develop a draft ecologically-coherent network of nationally-important areas for the Irish Sea; then consult experts and sectoral stakeholders to identify where area selection would assist individual sectors and how the network would affect them; then revise the network to provide a best fit;
- identify and agree with stakeholders appropriate targets for the 'generic' conservation objectives already proposed (or more specific conservation objectives where necessary) to individual marine landscapes or to nationally-important areas. In doing this, there should be close liaison with sectoral stakeholders to seek to ensure that the objectives and targets are consistent with achieving sustainable development, meeting international and national commitments and strategic goals, and implementing the ecosystem approach.

A specific finding that came out of survey work carried out for the Pilot was the identification of the North West Irish Sea mounds (c.f. Section 9.2.1.1 above); which will probably result in that area being proposed as an SAC by the end of 2005.

9.4 Mapping European seabed habitats (MESH) and CMap

JNCC are leading an EU Interreg-funded international marine habitat mapping programme entitled 'Development of a framework for Mapping European Seabed Habitats' (MESH). It aims to present seabed habitat maps covering the marine waters of north-west Europe via the internet, and to develop internationally agreed standards for future seabed mapping campaigns.

Originally proposed at the OSPAR Biodiversity Committee meeting in January 2003, it is intended to facilitate 1) spatial planning and decision-making in the marine environment; 2) the establishment of an ecologically-coherent network of marine protected areas; 3) the protection of internationally-threatened marine habitats and species. It is a three year project, due to end 30 April 2007, and has 12 partners across the UK, Ireland, the Netherlands, Belgium and France.

The project is currently working into its 3rd phase, including data collation, initiating the modelling part of the programme and developing a prototype of the MESH mapping website.

Further information can be found on the JNCC website (<http://www.jncc.gov.uk/page-1542>; recent progress report: <http://www.jncc.gov.uk/pdf/comm05D04.pdf>).

Closely linked to MESH is another mapping initiative for UK waters. *Cmap* (a countryside map for the sea) is an extension of the marine landscape mapping approach that was trailed by the Irish Sea Pilot. It aims to produce a map of marine landscapes for the rest of UK waters. It is expected that the outputs will provide a fundamental spatial information layer to support more effective management of marine resources and also support the implementation of existing international commitments and targets. Further information can be found on the JNCC website (<http://www.jncc.gov.uk/page-2117>).

CCW have also just started an Interreg funded habitat mapping/modelling project – *HabMap* (<http://www.habmap.org/>) – which aims to produce working habitat maps of the seabed of the southern Irish Sea.

9.5 Biodiversity initiatives

At both a national and local level, Biodiversity Action Plans (BAPs) are an important element of the UK's efforts to conserve biodiversity (UKBAP website - www.ukbap.org.uk). A key component of the UKBAP is the creation and implementation of Local Biodiversity Action Plans (LBAPs). LBAPs relevant to SEA 6 are presented in the following table, details of each plan can be accessed through the relevant link.

LBAPs of relevance to SEA 6	
Wales	
Plan name:	A Local Biodiversity Plan for Pembrokeshire
Plan coverage:	Pembrokeshire & Pembrokeshire Coast National Park
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=442
Plan name:	Ceredigion Biodiversity Action Plan
Plan coverage:	Ceredigion
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=363
Plan name:	Bioamrywiaeth yn Eryri
Plan coverage:	Snowdonia National Park
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=461
Plan name:	Natur Gwynedd
Plan coverage:	Gwynedd County outside Snowdonia National Park
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=420
Plan name:	Working for the Wealth of Wildlife - Anglesey's Local Biodiversity Action Plan
Plan coverage:	Anglesey
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=357
Plan name:	A Local Biodiversity Action Plan for Conwy
Plan coverage:	Conway County Borough
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=366
Plan name:	Denbighshire Biodiversity Action Plan
Plan coverage:	Denbighshire
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=367
Plan name:	Flintshire Local Biodiversity Action Plan (Creating Space for Wildlife)
Plan coverage:	Flintshire
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=392
England	
Plan name:	Countdown - the Cheshire region Biodiversity Action Plan
Plan coverage:	Cheshire region (Cheshire, Halton, Warrington, Wirral)
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=435

LBAPs of relevance to SEA 6	
Plan name:	North Merseyside BAP
Plan coverage:	Knowsley, City of Liverpool, St Helens MBC and Sefton MBC
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=440
Plan name:	Lancashire's Biodiversity Action Plan
Plan coverage:	Lancashire
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=439
Plan name:	Cumbria Biodiversity Action Plan
Plan coverage:	Cumbria (including Lake District National Park and that part of Yorkshire Dales NP that falls within Cumbria)
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=436
Scotland	
Plan name:	Dumfries and Galloway
Plan coverage:	Dumfries and Galloway
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=368
Plan name:	Ayrshire
Plan coverage:	Ayrshire
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=433
Plan name:	Local Biodiversity Action Plan for Argyll and Bute
Plan coverage:	Argyll and Bute
Details of plan:	http://www.ukbap.org.uk/lbap.aspx?ID=358

In Northern Ireland the District Councils have less remit for biodiversity conservation and consequently have been generally less active in biodiversity conservation (c.f. <http://www.ehsni.gov.uk/natural/biodiversity/biostrat.shtml>). However, the Northern Ireland Biodiversity Group (NIBG) have prepared regional Biodiversity Action Plans for selected priority habitats and species. Draft plans (relevant to marine and coastal areas) are currently published for Seagrass Beds, Tidal Rapids, Maerl Beds, Saline Lagoons, Mudflats, Sheltered Muddy Gravels, Chough (c.f. http://www.ehsni.gov.uk/natural/biodiversity/hap_uk.shtml).

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Wildlife Trusts website: <http://www.wildlifetrusts.org/index.php?section=places:reserves>

APPENDICES

A1 GLOSSARY AND ABBREVIATIONS

Term	Definition
Accretion	An increase in land resulting from depositional processes
AoSP	Areas of Special Protection
Biodiversity	Diversity of species
Brackish	Slightly salty
Coniferous	Trees or shrubs bearing cones and evergreen leaves
Deciduous	Shedding foliage at the end of the season
EC	European Community
ESA	Environmentally Sensitive Area
Estuary	The wide part of a river where it meets the sea; normally where fresh and salt water mix
Eutrophic	Rich in dissolved nutrients, photosynthetically productive and often deficient in oxygen during warm weather
Flora	All the plant life in a particular region
GCR	Geological Conservation Review Sites
Geomorphology	The study of the underlying form, and weathering processes, of rocks and land surfaces
Grey dunes	Mature dunes, normally vegetated and inland
Ha	Hectare
IBA	Important Bird Area
Intertidal	The coastal zone between high water mark and low water mark
Invertebrate	Animals without backbones
Islets	Very small islands
JNCC	Joint Nature Conservation Committee
Km	Kilometre
LNR	Local Nature Reserve
Machair	Gaelic word for links or dune pasture
Maquis and garrigue	Terms defining vegetation in the Mediterranean area, normally developing on limestone, and degraded
MCA	Marine Consultation Area
Merse	Coastal saltmarsh in Scotland
MNR	Marine Nature Reserve
Mud-flats	Intertidal areas which are composed of mud and silt
Natura 2000 Network	Sites of conservational value designated under the EU Habitats Directive
NNR	National Nature Reserve
Non-statutory	Having no basis in statute or in law
NSA	National Scenic Area
Perennial	Recurring again and again
Ramsar Sites	Areas designated by the UK under the Ramsar Convention (Convention on Wetlands of International Importance especially as waterfowl habitat)
Red Data Book	Documents the current status of globally threatened biodiversity
Riverine	Relating to or resembling a river
RLD	Regional Landscape Designation

RSPB	Royal Society for the Protection of Birds
SAC (Special Area of Conservation)	Area designated as European Sites (Natura 2000) under the Habitats and Species Directive
Salt pastures	General term, usually applied to higher levels of saltmarshes which are used for grazing
Salt steppes	Term defining certain semiarid grasslands
Saltmarsh	Low coastal grassland normally overflowed by the tide
SCI	Sites of Community Importance
Screes	A sloping mass of rocks at the base of a cliff
SEA (Strategic Environmental Assessment)	An appraisal process through which environmental protection and sustainable development is considered in advance of decisions on policy, plans and programmes
SNH	Scottish Natural Heritage
SPA (Special Protection Area)	Area designated as European Sites under the Wild Birds Directive
SSSI	Site of Special Scientific Interest
Statutory	Prescribed, authorised or punishable under a statute
SWT	Scottish Wildlife Trust
UK	United Kingdom
UNESCO	United Nations Organisation for Education, Science, Culture and Communications
Waders	Any of many long-legged birds that wade in water in search of food. Includes oystercatcher, whimbrel, snipe, avocets, stilts, plovers, sandpipers, godwits, curlews, snipe and phalarope
Waterbirds	Group of birds which include divers and grebes, bitterns and herons, rails, crakes and coots, wildfowl and waders.
Waterfowl	Collective term for all swimming waterbirds including grebes, coots and all wildfowl
White dunes	Embryonic small dunes on the upper beach
Wildfowl	Collective term for all ducks, shelducks, geese and swans

A2 CONSERVATION DESIGNATIONS

This appendix identifies and gives details of the major statutory and non-statutory mechanisms that operate at international, national and local level to conserve the SEA 6 environment, including those administered by voluntary bodies and other organisations.

Further explanations of most of the designations given in this appendix are available on the JNCC website (<http://www.jncc.gov.uk/page-1527>); the Scottish Office website (<http://www.scotland.gov.uk/library/documents-w4/nhd-13.htm>) and the Macaulay Institute website (<http://www.mluri.sari.ac.uk/ccw/task-two/designations.html>).

A2.1 Sites of international importance

The UK Government has entered into a number of international natural heritage obligations. These flow from European Directives affecting all Member States of the European Union, and from the UK being a signatory to several wider international conventions or treaties on habitats and species. Consequently a number of international natural heritage designations now exist in addition to national ones. They are normally based on national designations, notably SSSIs or ASSIs.

EC Habitats and Birds Directives

In 1979 the European Community adopted *Council Directive 79/409/EC on the conservation of wild birds*, known as the Birds Directive. One of the key provisions of this Directive is the establishment of an internationally co-ordinated network of protected areas. Member states are required to identify and classify the most suitable territories in size and number for rare or vulnerable species listed in Annex I to the Directive and for regularly occurring migratory species. These sites are known as Special Protection Areas (SPAs).

In 1992 the Community adopted *Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora*, known as the Habitats Directive. The Habitats Directive includes a requirement to establish a European network of important high quality conservation sites that will make a significant contribution to conserving the habitat types and species listed in Annexes I and II of the Directive. The listed habitat types and species are those considered to be most in need of conservation at a European level. Each member state is required to prepare and propose to the EC a national list of sites, which will be evaluated in order to form a network of Sites of Community Importance (SCIs). These will eventually be designated by Member States as Special Areas of Conservation (SACs). SACs and SPAs will together be known as the *Natura 2000 Network*.

A2.1.1 Special Areas of Conservation (SAC)

The UK statutory provisions applying to *Natura 2000* sites are contained in the *Conservation (Natural Habitats &c) Regulations 1994* which includes marine areas in or up to the seaward limit of territorial waters (12 nautical miles). Advice to Government on the selection of possible SACs has been provided by the statutory nature conservation agencies – Countryside Council for Wales (CCW), English Nature (EN) and Scottish Natural Heritage (SNH), coordinated through the Joint Nature Conservation Committee (JNCC). Sites are submitted to the European commission, following consultation with site owner/occupiers and other interested parties. At this stage, sites become known as candidate Special Areas of Conservation (cSACs). The process that the UK Government and the European Commission must follow for cSAC selection is in two stages and is described in Table A1.

Table A1 - cSAC Selection Process

<p>Stage 1 – Assessment of relative importance of sites containing examples of the individual Annex I habitats and Annex II species in each member state. Factors considered:</p> <ul style="list-style-type: none"> - Percentage of national resources contained within the site series - The quality of habitats, including features that are important for associated species - Member States' special responsibility for particular habitats and species - Coverage of geographical range of habitat or species within the site series - Coverage of ecological variation of habitat or species within the site series <p>Stage 2 – Assessment of overall importance of sites in the context of the biogeographical region and the EU as a whole. Factors considered:</p> <ul style="list-style-type: none"> - The relative value of the site at a national level - The relationship of the site to migration routes - The total area of the site - The diversity of habitats and species present on the site - The overall quality of the site in the context of the biogeographical region and/or the EU
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Currently, 567 SACs covering an area of over 2.3 million hectares have been submitted by the UK, 22 of which are found within the SEA 6 area. There is a considerable overlap in sites with SPAs.

All of the cSACS are now in the process of formal designation as SACs by DEFRA and the devolved governments. At the time of writing, those in Wales and England have already been designated and those in Scotland and Northern Ireland are expected to follow shortly.

In October 2004, the EU Habitats Committee adopted the list of Sites of Community Importance for the Atlantic Biogeographic Region, and formal adoption of the list has been accepted by the Commission. The European Commission has, however, placed a 'reserve' on the three habitat types and four species expected to occur in offshore waters, thereby keeping the site lists for these habitats and species open and allowing more time for the selection of a full suite of sites for these habitats. The 'reserved' habitats and species are:

- sandbanks which are slightly covered by seawater all the time;
- reefs;
- submarine structures made by leaking gases;
- grey seal - *Halichoerus grypus*;
- common (or harbour) seal - *Phoca vitulina*;
- harbour porpoise – *Phocoena Phocoena*;
- bottlenose dolphin - *Tursiops truncatus*.

Sources of information

Joint Nature Conservation Committee website: <http://www.jncc.gov.uk/page-23>

UK Marine SAC Project website: <http://www.ukmarinesac.org.uk/>

A2.1.2 Special Protection Areas (SPA)

Natura 2000 will also comprise Special Protection Areas (SPAs) classified under the *EC Birds Directive*. The process of selecting SPAs in the UK has been hindered by lack of agreed selection criteria formalised at a European level. The UK has therefore used internationally recognised criteria, especially those given under the Ramsar Convention (see Box 3 - Categories of criteria for site selection under the Ramsar Convention) to select SPAs.

The UK SPA network has been compiled by the JNCC together with the various UK conservation agencies and comprises 243 sites (c.a. 1,454,500ha). Marine SPAs may be introduced in due course.

Sources of information

Joint Nature Conservation Committee website: <http://www.jncc.gov.uk/page-162>

A2.1.3 Ramsar sites

The *Convention on Wetlands of International Importance, Especially as Waterfowl Habitats* (The Ramsar Convention, 1971) is an intergovernmental treaty that aims to stem the progressive encroachment on and loss of wetland habitat. Ramsar sites are designated for their important waterfowl populations and rare or endangered plant and animal species. The criteria for site selection are shown in Table A2.

Table A2 - Categories of criteria for site selection under the Ramsar Convention.
<ul style="list-style-type: none"> – Representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region – Supports vulnerable, endangered, or critically endangered species or threatened ecological communities – Supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region – Supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions – Regularly supports 20,000 or more waterbirds – Regularly supports 1% of the individuals in a population of one species or subspecies of waterbird – Supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity – An important sources of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend

The Convention on Wetlands of International Importance was adopted in 1971 at Ramsar in Iran. The application of the Ramsar label indicates that an SSSI is a valued wetland site, a habitat which has declined world-wide and is often important for water-fowl and other wetland birds.

Sources of information

Joint Nature Conservation Committee website: <http://www.jncc.gov.uk/page-161>

Ramsar Convention on Wetlands website: <http://ramsar.org>

A2.1.4 Biosphere Reserves

Biosphere Reserves are non-statutorily protected areas representing significant examples of biomes - terrestrial and coastal environments, throughout the world - protected for conservation purposes. They have particular value as benchmarks or standards for the measurement of long-term changes in the biosphere as a whole. They were devised by UNESCO as Project No. 8 of their Man and the Biosphere (MAB) ecological programme, and were launched in 1970. Criteria and guidelines for selection of sites were produced by a UNESCO task force in 1974. All British sites are also National Nature Reserves

Sources of information

UK Man and the Biosphere Programme website: <http://www.ukmab.org/ukbr.htm>

A2.1.5 Important Bird Areas (IBA)

The Important Bird Areas (IBA) Programme of Birdlife International is a worldwide initiative aimed at identifying and protecting a network of sites that are important for the long-term viability of naturally occurring bird populations. The programme aims to guide national conservation strategies and assist the conservation activities of international organisations. The criteria for site selection are shown in Table A3.

Table A.3 - Relevant categories of criteria for IBA site selection	
A4i	Site is known or thought to hold, on a regular basis, 1% or more of a biogeographic population of a congregatory waterbird species
A4iii	Site is known or thought to hold, on a regular basis, at least 20,000 waterbirds, or at least 10,000 pairs of seabird, of one or more species
B1i	Site is known or thought to hold 1 % of a flyway population or other distinct population of a waterbird species
B2	Site is one of the 'n' most important sites for a species with an unfavourable conservation status in Europe
B3	Site is one of the 'n' most important sites for a species with a favourable conservation status in Europe but with its global range concentrated in Europe
C2	Site is known to regularly hold at least 1% of the flyway or EU population of a species considered to be threatened in the EU
C3	Site is known to regularly hold at least 1% of the flyway or EU population of a species not considered to be threatened in the EU
C4	Site is known to regularly hold at least 20,000 migratory waterbirds, or at least 10,000 pairs of migratory seabird, of one or more species
C6	Site is one of the five most important in the European region for a species or subspecies considered threatened in the EU

Sources of information

Birdlife International website <http://www.birdlife.org.uk/>

A2.2 Sites of national and local importance

The main national land-based nature conservation designations are Sites of Special Scientific Interest (SSSIs) in Wales, England and Scotland, Areas of Special Scientific Interest (ASSIs) in Northern Ireland and the Isle of Man and National Nature Reserves (NNR). Marine Nature Reserves are currently the only statutory nature conservation designation that apply to areas below mean low water. The main landscape designations are National Scenic Areas (NSA) in Scotland and Areas of Outstanding Natural Beauty in Wales, England and Northern Ireland. The vast majority of the total area of these designated sites are on privately-owned land, but some are also found on public land.

The designations are listed in alphabetical order.

A2.2.1 Areas of Special Protection (AoSP)

In England, Scotland, Wales and Isle of Man [equivalent to Wildlife Refuges in Northern Ireland].

In Great Britain, Sanctuary Areas, originally designated under the Protection of Birds Acts 1954, were amended to AoSPs under the Wildlife and Countryside Act 1981. In the Isle of Man, AoSPs are designated under the Wildlife Act 1990. Designation aims to prevent the disturbance and destruction of the birds for which the area was identified, by making it unlawful to damage or destroy either the birds or their nests and in some cases by prohibiting or restricting access to the site.

The appropriate Minister may make an Order in relation to a specified area, which prohibits the killing, injuring or taking of any wild bird, the taking, damage or destruction of the nest (while in use or being built) or eggs of such a bird, the disturbance of such a bird while building a nest or which is on or near a nest containing eggs or young, or the disturbance of dependent young. The Order may prohibit the public from entering the area, or part of it, during specified periods.

There are 3 AoSPs in the SEA 6 region, 2 in Ayrshire and 1 on the Isle of Man.

Sources of information

UK Clearing House Mechanism for Biodiversity website: <http://www.chm.org.uk/cats.asp?t=398>

A2.2.2 Areas of Special Scientific Interest (ASSI)

In N.Ireland and the Isle of Man [c.f. Sites of Special Scientific Interest in Wales, England and Scotland].

ASSIs are the main nature conservation designation in N.Ireland. These sites are special for their plants, animals or habitats, their rocks or landforms or a combination of these. They are notified under the Nature Conservation and Amenity Lands (Northern Ireland) 1985. Measures to improve ASSI protection and management are contained in the Environment (Northern Ireland) Order 2002.

ASSIs in the Isle of Man are designated under Section 27 of the Wildlife Act 1990 and are managed by the Department of Local Government and the Environment.

Sources of information

EHS (NI) website: http://www.ehsni.gov.uk/natural/designated/area_interest.shtml

Isle of Man: DAFF pers. comm..

A2.2.3 Geological Conservation Review (GCR) Site

A major initiative to identify and describe the most important geological sites in Britain began in 1977, with the launching of the Geological Conservation Review (GCR). The initiation of the Geological Conservation Review (GCR) was a major step forward in Earth heritage conservation. It was designed to identify those sites of national and international importance needed to show all the key scientific elements of the Earth heritage of Britain. The sites selected - GCR sites - form the basis of statutory geological and geomorphological site conservation in Britain. The results of the Geological Conservation Review programme are to be published in a series of 42 volumes, the Geological Conservation Review Series, each of which provides a public record of the evaluation of each Geological Conservation Review site placed in a national and, where appropriate, international context. Note: areas of geomorphological interest are generally more vulnerable to impacts from developments than areas of geological interest.

Sources of information

JNCC website (GCR pages): <http://www.jncc.gov.uk/page-2947>

A2.2.4 Local Nature Reserve (LNR) / Local Authority Nature Reserve (LANR)

LNR in England, Scotland and Wales. LANR in N.Ireland.

Under the National Parks and Access to the Countryside Act 1949 LNRs may be declared by local authorities after consultation with the relevant statutory nature conservation agency. LNRs are declared and managed for nature conservation, and provide opportunities for research and education, or simply enjoying and having contact with nature.

Sources of information

CCW website:

<http://www.ccw.gov.uk/generalinfo/index.cfm?Action=ResourceMore&ResourceID=34&Subject=ProtectedSites&lang=en>

EN website: http://www.english-nature.org.uk/special/lmr/lmr_search.asp

The Scottish Executive Website: <http://www.scotland.gov.uk/library/documents-w4/nhd-07.htm>

Biodiversity Section, Environment and Heritage Service, N.Ireland – pers.comm.

A2.2.5 Manx National Heritage

Manx National Heritage (previously The Manx National Trust) was created by Act of Tynwald in 1951 as an expansion of the remit of the Manx Museum and Ancient Monument Trustees. It has a similar role on the Isle of Man to that of the National Trust and National Trust for Scotland. Manx National Heritage protects in perpetuity for their aesthetic and wildlife value the areas which it owns; most of them are coastal. The National Trust for England and Wales, who acquired the Calf of Man in 1937, first let and then gave the site to the Manx National Trust in 1986.

Sources of information

Manx National Heritage website: <http://www.gov.im/mnh/>

A2.2.6 Marine Consultation Area (MCA)

Marine Consultation Areas are non-statutory areas introduced in 1986 by Scottish Natural Heritage. The areas are considered to deserve particular distinction in respect of the quality and sensitivity of the marine environment within them. They are areas in which SNH wish to be consulted on developments, in particular fish farms, which are likely to have an impact on the marine environment.

There are 28 sites, all in Scotland, either on the West Coast or the Islands, and one in the Scottish Borders. There are 3 within the SEA 6 region.

Sources of information

SNH website: http://www.snh.org.uk/publics/docs/factsandfigures/docs/3/Des_Areas.pdf

A2.2.7 Marine Nature Reserve (MNR)

The purpose of MNRs is to conserve marine flora and fauna and geological features of special interest, while providing opportunities for study of marine systems. They are the mechanism for the protection of nationally important marine (including subtidal) areas. Their designation requires the agreement of statutory and voluntary bodies and interest groups. There are three MNRs designated: Lundy Island (in England), Skomer Island (in Wales) and Strangford Lough (in Northern Ireland); the latter two being within the SEA 6 region.

MNRs are established under the Wildlife and Countryside Act 1981 for England, Scotland and Wales. In Northern Ireland they are designated under the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985.

Sources of information

CCW website:

<http://www.ccw.gov.uk/generalinfo/index.cfm?Action=ResourceMore&ResourceID=34&Subject=ProtectedSites&lang=en>

EHS (NI) website: http://www.ehsni.gov.uk/natural/designated/marine_reserves.shtml

A2.2.8 National Nature Reserve (NNR)

National Nature Reserves (NNR's) were established to protect the most important areas of wildlife habitat and geological formations in Britain, and to provide a resource for scientific research. NNR's are usually designated for their broader ecological value rather than for the presence of any rare species. A number of factors may contribute to the designation of a NNR including; how fragile a site is, the size of the site, how 'natural' the site is and the presence of species rich communities. The reserves are either owned or controlled by the relevant conservation agency, or held by approved bodies such as the Wildlife Trusts.

Sources of information

Scotland's NNRs website: <http://www.nnr-scotland.org.uk/>

EN website: http://www.english-nature.org.uk/special/nnr/nnr_search.asp

CCW website: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

EHS (NI) website: http://www.ehsni.gov.uk/natural/designated/nature_reserves.shtml

Isle of Man: DAFF pers. comm..

A2.2.9 National Trust / National Trust for Scotland

The National Trust and the National Trust for Scotland are independent charities that together own or have protective covenants for land of scenic value in the UK. Under the National Trust Act (1907) and the National Trust for Scotland Order Confirmation Acts 1935 and 1938 their holdings are inalienable and cannot be sold or mortgaged. Both National Trusts have the power to create by-laws relating to access and management of land. They own and manage significant areas within the SEA 6 region

The National Trust was founded in 1895 to act as a guardian for the nation in the acquisition and protection of threatened coastline, countryside and buildings. It manages over 248,000 hectares (612,000 acres) of countryside in England, Wales and Northern Ireland, plus almost 600 miles of coastline and more than 200 buildings and gardens. The National Trust for Scotland was established in 1931.

Sources of information

The National Trust website: <http://www.nationaltrust.org.uk>

The National Trust Northern Ireland website: <http://www.ntni.org.uk/>

National Trust for Scotland website: <http://www.nts.org.uk>

A2.2.10 Royal Society for the Protection of Birds (RSPB) Reserve

The RSPB is an independent Non Governmental Organisation. It maintains a large number of nature reserves in the UK covering a wide range of wildlife habitats. These reserves have no statutory basis, but a large number are also SSSIs / NNRs / SPAs / SACs / Ramsar sites etc.

Sources of information

RSPB website: <http://www.rspb.org.uk/reserves/index.asp>

A2.2.11 Scottish Wildlife Trust (SWT) Reserve

These are areas managed or owned by the Scottish Wildlife Trust to protect locally important plants, animals and other wildlife. These reserves have no statutory basis, but some are protected by statutory designations.

Sources of information

Scottish Wildlife Trust website: <http://www.swt.org.uk/wildlife/westregion.asp>

A2.2.12 Sites of Special Scientific Interest (SSSI)

In Wales, England and Scotland [c.f. Areas of Special Scientific Interest in N.Ireland and the Isle of Man].

Sites of Special Scientific Interest (SSSI) are the main nature conservation designation in Great Britain. These sites are special for their plants, animals or habitats, their rocks or landforms or a combination of these. In Scotland, England and Wales a SSSI is an area that has been notified as being of special interest under the Wildlife and Countryside Act 1981. The 1981 Act was amended by the Countryside and Rights of Way Act 2000 which improved protection for SSSIs in England and Wales.

Sources of information

SNH website: <http://www.snh.org.uk/>

EN website: <http://www.english-nature.org.uk/special/sssi/>

CCW website: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

A2.2.13 Wild Bird Sanctuary (Isle of Man)

Wild Bird Sanctuaries in the Isle of Man are established under the section 11 of the Wild Birds Protection Act 1932. They provide protection to all wild birds, nests and eggs in the designated area.

Sources of information

Isle of Man: DAFF pers. comm..

A2.2.14 Wildfowl and Wetlands Trust (WWT) Reserves

WWT manages 9 reserves in the UK, totalling over 4,000 acres. These reserves have no statutory basis, but some are protected by statutory designations. Two of these reserves lie within the SEA 6 region.

Sources of information

WWT website: <http://www.wwt.org.uk/visit/caerlaverock/reserve.asp>

A2.2.15 Wildlife Refuges (Northern Ireland)

In Northern Ireland England [equivalent to Areas of Special Protection (AoSP) in England, Scotland, Wales and Isle of Man].

The statutory provision of an area as a 'Wildlife Refuge' is a protection mechanism under the Wildlife (Northern Ireland) Order 1985. It was intended that this provision would replace that of Bird Sanctuary, established under the Wild Birds Protection Act 1931. There are several coastal Bird Sanctuaries in Northern Ireland but as yet no Wildlife Refuges have been established.

Sources of information

UK Clearing House Mechanism for Biodiversity website: <http://www.chm.org.uk/cats.asp?t=399>

A2.2.16 Wildlife Trust Reserve

These are areas managed or owned by the Wildlife Trusts of England, Wales, N.Ireland and the Isle of Man to protect locally important plants, animals and other wildlife. These reserves have no statutory basis, but some are protected by statutory designations. The Trusts with reserves that lie within the SEA 6 region are:

Wildlife Trust West Wales (WTWW)
Wildlife Trust North Wales (WTNW)
Cheshire Wildlife Trust (ChWT)
Cumbria Wildlife Trust (CuWT)
Manx Wildlife Trust

Sources of information

Wildlife Trusts website: <http://www.wildlifetrusts.org/index.php?section=places:reserves>

A2.3 Landscape and other designations

There are a number of national, regional and local landscape designations in the SEA 6 region. This report does not provide details on those at a regional or local scale, as many are not yet well developed, are defined differently by each local authority, and may change again according to local requirements. For example, in Scotland, Regional Landscape Designations (RLD) and Areas of Regional Scenic Significance (ARSS) which were described in previous SEAs, are no longer extant. In the SEA 6 region they have been replaced by Regional Scenic Areas (Dumfries & Galloway), Sensitive Landscape Areas (Ayrshire) and Areas of Great Landscape Value (Argyll & Bute). For more information contact the relevant local authorities.

A2.3.1 Areas of High Landscape or Coastal Value and Scenic Significance

Isle of Man only.

These are areas that are designated for the purposes of the Isle of Man Planning Scheme (Development Plan) Order 1982. They are referred to as part of the planning process on the Isle of Man and they also provide a guide to areas of Scenic Significance.

Sources of information

Isle of Man Government website: <http://www.gov.im/dlge/planning/plan/welcome.xml>

A2.3.2 Areas of Outstanding Natural Beauty (AONB)

In England, Wales and Northern Ireland. [National Scenic Areas are broadly equivalent to AONBs in Scotland. For Isle of Man, c.f. Areas of High Landscape Value and Scenic Significance]

The primary purpose of the AONB designation is to conserve natural beauty which by statute includes wildlife, physiographic features and cultural heritage as well as the more conventional concepts of landscape and scenery. Account is taken of the need to safeguard agriculture, forestry and other rural industries and the economic and social needs of local communities. AONBs have equivalent status to National Parks as far as conservation is concerned.

AONBs are designated in England and Wales under the National Parks and Access to the Countryside Act 1949, amended in the Environment Act 1995. The Countryside and Rights of Way Act 2000 clarifies the procedure and purpose of designating AONBs. Originally designated in Northern Ireland under the Amenity Lands Act (Northern Ireland) 1965, AONBs are now designated under the Nature Conservation and Amenity Lands Order (Northern Ireland) 1985.

Sources of information

National Association for Areas of Outstanding Natural Beauty website: <http://www.aonb.org.uk/>

Environment and Heritage Service, N.Ireland: <http://www.ehsni.gov.uk/natural/designated/aonb.shtml>

A2.3.3 Environmentally Sensitive Area

The Environmentally Sensitive Areas Scheme was introduced in 1987 to offer incentives to encourage farmers to adopt agricultural practices which would safeguard and enhance parts of the country of particularly high landscape, wildlife or historic value. The ESAs scheme aims to maintain and often to enhance the conservation, landscape and historical value of the key environmental features of an area, and, where possible, improve public access to these areas.

They are managed separately for Scotland, Wales and England, by the Scottish Executive, the National Assembly for Wales and DEFRA respectively.

Note: The scheme has now closed to new applicants. DEFRA proposes to launch a new Environmental Stewardship Scheme in 2005.

Sources of information

Scottish Executive website:

<http://www.scotland.gov.uk/Topics/Agriculture/Environment/Agrienvironment/ESA>

DEFRA website: <http://www.defra.gov.uk/erdp/schemes/esas/default.htm>

DARD website: <http://www.ruralni.gov.uk/environment/countryside/schemes/>

Magic website: <http://www.magic.gov.uk/>

A2.3.4 Heritage Coast

In Wales and England only.

Heritage Coasts are a non-statutory landscape definition, unlike the formally designated National Parks and Areas of Outstanding Natural Beauty (AONBs). They are defined by agreement between the relevant maritime local authorities and the Countryside Agency (England) or CCW (Wales), as an aid to local authorities in planning and managing their coastlines. Most are part of a National Park or AONB.

They are sections of coast exceeding one mile in length that are of exceptionally fine scenic quality, substantially undeveloped and containing features of special significance and interest.

Sources of information

Countryside Agency website:

http://www.countryside.gov.uk/LivingLandscapes/finest_countryside/heritage_coasts/index.asp

CCW website: <http://www.ccw.gov.uk/generalinfo/index.cfm?Subject=ProtectedSites&lang=en>

A2.3.5 National Parks

In England and Wales only

The purpose of National Parks is to conserve and enhance landscapes within the countryside whilst promoting public enjoyment of them and having regard for the social and economic well being of those living within them.

The National Parks and Access to the Countryside Act 1949 established the National Park designation. In addition, the Environment Act 1995 also requires relevant authorities to have regard for nature

conservation. Special acts of Parliament may be used to establish statutory authorities for their management.

Sources of information

Association of National Park Authorities website: <http://www.anpa.gov.uk>

A2.3.6 National Scenic Area (NSA)

National Scenic Areas are only relevant to Scotland. They are nationally important areas of outstanding natural beauty. They were identified by CCS (since incorporated into SNH) in the report "Scotland's Scenic Heritage" and introduced by the Government in 1980 under Town and Country Planning legislation.

Note: Preferred Development Zones and Preferred Conservation Zones were forerunners of NSAs. The requirement to notify central government of certain kinds of planning application affecting these Zones has been withdrawn since the introduction of NSAs.

Sources of information

Macaulay Institute: (<http://www.mluri.sari.ac.uk/ccw/task-two/designations.html>).