



**Report to the
Department of Trade and Industry**

**Conservation Sites in the
SEA 4 Area**

Final Report
September 2003

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**UNIVERSITY
OF ABERDEEN**



SEA 4 Conservation Report

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1 INTRODUCTION

An integral element of any environmental assessment for offshore oil and gas exploration involves a review of sites of conservational importance within the region of interest. For the purpose of the SEA 4 region, this is especially important given the scale of the area in question and the fact that it includes the coastal zone, which is known to support a large number of sites with various types of protective status.

This report identifies coastal and nearshore conservation sites within the SEA 4 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. JNCC have worked together with other governmental and non-governmental organisations to assess the population status of UK birds. The findings have resulted in three lists being produced; red, amber and green. The most threatened of birds being placed on the red list. In SEA 4 a number of species appear on the amber list, these species have been noted in the site boxes of the SPA's and IBA's.

The conservation sites described in this section are listed in Box 1.1 and brief descriptions of the statutory and non-statutory mechanisms responsible for site protection are presented in Appendix 1. Statutory sites are legally protected whilst non-statutory sites rely on the planning process to confer protection.

Box 1.1 - Coastal and nearshore conservation sites	
International importance	Designation Candidate Special Areas of Conservation (cSAC) Special Protection Areas (SPA) Ramsar Important Bird Areas (IBA) World Heritage Site Environmentally Sensitive Areas (ESA)
National and local importance	National Nature Reserve (NNR) Sites of Special Scientific Interest (SSSI) Geological Conservation Review Sites (GCR) Royal Society for the Protection of Bird Sites (RSPB) National Trust for Scotland Sites Scottish Wildlife Trust (SWT) National Scenic Area (NSA) Local Nature Reserves (LNR) Preferred Conservation Zone (PCZ) Marine Conservation Area (MCA)

The report has been divided into four sections: 'The Shetland Islands', 'The Orkney Islands', 'North Highland' and 'Other Islands'. The island of Fair Isle, which lies south of Shetland, is described in the Other Islands section. This section also includes the two small islands of Sule Skerry and Sule Stack, which lie approximately 60km west of Orkney.

An overview of coastal and marine nature conservation initiatives within the SEA 4 area is presented in *Section 1.16.4* of the *Existing Users* report. Initiatives described include management of marine Special Areas of Conservation; initiatives to establish offshore conservation sites; the ongoing Review of Marine Nature Conservation, and a number of biodiversity initiatives, including Biodiversity Action Plans. Some coastal areas, in whole or in part, have more than one conservational designation.

In addition to the designation of specific conservation sites within the SEA 4 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/Plans/index.htm>).

Much of the information utilised by this report including site descriptions, mapping information and species inventories has come from JNCC and Scottish Natural Heritage to whom we are most grateful. Other sources of information include various non-governmental conservation organisations, including the National Trust for Scotland, RSPB and the Scottish Wildlife Trust.

2 THE SHETLAND ISLANDS

The coastline of the group of islands, the Shetlands, is long, intricate and dominated by rocky formations. Soft shorelines are rare and, therefore, have added environmental and ecological interest. It is a coastline of submergence and, as such, is best understood by assuming that a series of mountains, hills, ridges and valleys, normally glaciated, have been drowned by a post-glacial rise in sea level. Add substantial complexity of rock types and structures, and some of the most distinctive series of coastal landforms in the British Isles are found in these most northerly islands.

Although this is one of the highest energy sea environments in Britain with a substantial incidence of gales, storm events (especially from the western sector) and inclement weather, there are substantial local differences in coastal geomorphological activity. This is due, in part, to exposure to either the Atlantic Ocean with long fetches and incessant high energy swell waves or to the North Sea on the east side; but, again, the North Sea is also wide, high energy and subjected to “bad” weather. Thus the sense of windward west side and leeward east side must be regarded as relative differences. As a consequence of different phases of the tide on west and east sides (tides are normally of an order of



Laxo Voe and Dury Voe (W.Ritchie)

two metres), some inter-island channels have strong tidal flows, notably, Yell Sound between Yell and the Mainland. (For more detailed information on waves, tides and weather see the excellent Admiralty Sailing Directions (NP 52) 4th edition, 2000).

At a general level it is possible to classify the physical setting of the coastal types as OUTER where there is exposure to open marine forces and INNER where shelter is provided, either by an island or peninsula or, more often, long deep voes. A voe is equivalent

to a fiord or sea loch or fiard and is the product of submergence of a pre-existing valley with varying degrees of prior erosion and over deepening. The image of a voe as a fiord or sea loch is normally misleading as the voes are normally more open, wider and less incised than the classic examples of the western coastline of Scotland and Norway.

There are no major rivers in Shetland and the voes tend to have smaller streams entering at the head and this has produced local deposition. Another product of submergence but largely unexplained is the “houb and ayre” formation whereby a small lagoon has been impounded behind a shingle or gravel sand bar; these features provide special habitats including salt marshes which are rare in these islands.

Partly due to the lack of sand supply, the prevalence of deep water nearshore and a general absence of low receiving areas for aeolian deposition, sand dunes are relatively rare but some are found and provide spectacular series of active dune land forms with associated vegetation and wildlife (Dargie, 1998).

Having been glaciated repeatedly the most common coastal type consists of a rock basement with an overburden of glacial and, more rarely, fluvial glacial deposits. These reflect the underlying igneous

and metamorphic geological formations and are normally coarse sands or gravel with various sizes of rock fragments; clay deposits are less common. This overburden provides the sediment for contemporary beaches, which are usually coarse sand, gravel and clastic rocky deposits. In both the OUTER and INNER coastlines lag deposits are common, i.e. having been washed out of the glacial overburden but in the INNER coastlines there is insufficient wave energy to effect movements and the material remains angular. Finally most coastal areas retain some peat cover reflecting the wet cold oceanic conditions of historical and recent times.

As the northern extremity of Britain and facing deep, cold but very productive coastal waters, the coastline of Shetland supports distinctive and, at times, rare species of birds and occasionally, vegetation types. Cliff nesting birds are especially important. The abundance of populations is not only a consequence of rich food sources but also a relative lack of disturbance, especially in uninhabited offshore islands and remote headlands and peninsulas. The contrasting availability of shelter and habitats in, for example, a deep-set voe and an open gale-lashed Atlantic cliff also add variety of opportunity both annually and seasonally.

The literature on seabirds in Shetland is voluminous and the majority of conservational sites of all types are mostly dominated by ornithological citations. Shetland also has the advantage of unique twenty five year comprehensive island-wide surveys of seabirds emanating from the monitoring programmes of SOTEAG (Shetland Oil Terminal Environmental Advisory Group); a resource which proved to be invaluable during the Braer oil spill in south Shetland in 1993. (ESGOSS, 1994)



West Burra Firth (W. Ritchie)

At a general scenic level, Shetland (including Foula and Fair Isle) has seven National Scenic Areas – all of which are coastal and all of which subsume other conservational designations (Countryside Commission for Scotland, 1978).

Because of the long-term presence of the oil industry at Sullom Voe, and more recently oil production from the Atlantic Margin northwest and west of Shetland, additional information has become available in the form of Environmental Impact Statements and associated baseline and monitoring reports. Most of these relate to the Sullom Voe Terminal and its incoming pipelines and do not therefore relate to the remainder of the coastal zone.

As discussed elsewhere in the Report, the voes of Shetland, especially on the west coast, are the most important locations in Britain for salmon farming and, more recently, mussel aquaculture.

The area plays host to a variety of important marine habitats and species as well as bird areas which are protected under international, national and local designations (see Box 2.1 for details).

Box 2.1 – Coastal protected sites in Shetland**International**

Candidate Special Areas of Conservation (cSAC)	9
Special Protection Areas (SPA)	11
Ramsar	1
Important Bird Areas (IBA)	10
Environmentally Sensitive Areas (ESA)	1

National and Local

National Nature Reserve (NNR)	3
Sites of Special Scientific Interest (SSSI)	48
Geological Conservation Review Sites (GCR)	39
Royal Society for the Protection of Birds Sites (RSPB)	6
National Trust for Scotland Sites	7
National Scenic Area (NSA)	1
Preferred Conservation Zone (PCZ)	1
Marine Conservation Area (MCA)	4

Sources of information

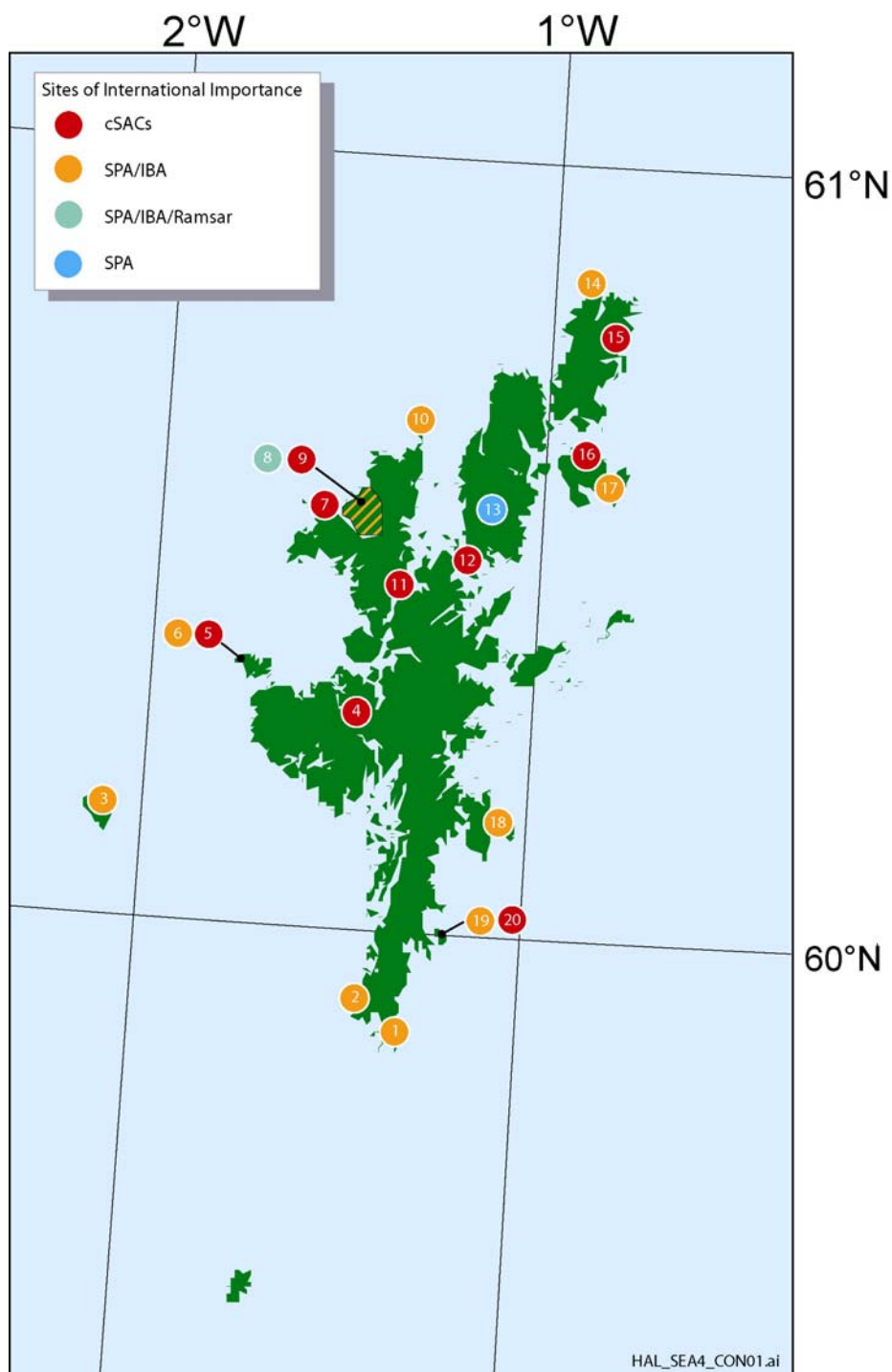
Dargie TCD (1998c). Sand dune vegetation survey of Scotland: Volume 1: Main Report, Volume 2: Site Reports, Volume 3: NVC maps. *SNH Research, Survey and Monitoring Report No. 123. Scottish Natural Heritage, Edinburgh*

Ritchie W & O'Sullivan M (1994). The Environmental Impact of the Wreck of the Braer, The Ecological Steering Group on the Oil Spill in Shetland, *The Scottish Office, Edinburgh*

2.1 Sites of international importance

There are a number of sites of international importance along the Shetland coast, which are described below. The number given in the right-hand corner of the summary information box identifies that site on Figure 2.1. Some sites contain relatively small areas of coastline within the area of the site as a whole. Accordingly some judgements have been made on their inclusion or exclusion from this report depending on the size and importance of the coastal zone. Similar judgements are made for both Orkney and the Northern Highlands.

Figure 2.1 – Coastal sites of international importance in the Shetland region



2.1.1 Sumburgh Head SPA/IBA

Summary information	Figure 2.1	1
<p>Location: 59°51'55"N, 01°16'05"W</p> <p>Area: 39.04ha</p> <p>Date submitted: 27/03/1996</p> <p>Birds of conservation concern: Arctic tern, guillemot, kittiwake, fulmar</p>		

Sumburgh Head is located at the most southern tip of the Shetland mainland in northern Scotland. The site comprises boulder-strewn beaches and cliffs up to 100m high along the east side of Sumburgh Head. The site is of importance as a breeding area for several species of seabirds, including terns, auks and gulls. These seabirds feed outside the SPA, both in the waters immediately around Sumburgh Head, and further away.

The IBA comprises boulder-strewn beaches and cliffs along the east side of Sumburgh Head, the most southerly tip of the Shetland mainland.

General site characteristics

Habitats:

Grassland (80%)

Wetland (shingle, stony beach)

Rocky areas (sea cliff/rocky shore)

Land-use:

Agriculture (80%)

Nature conservation/research, tourism, recreation

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Arctic tern (<i>Sterna paradisaea</i>)	700 pairs (1.6% of the UK breeding population) (Count as at 1994)

Assemblage qualification

During the breeding season, the area regularly supports 35,000 individual seabirds (Count as period on going) including guillemot (*Uria aalge*), kittiwake (*Rissa tridactyla*), fulmar (*Fulmarus glacialis*) and Arctic tern (*Sterna paradisaea*).

IBA qualification

The IBA is important for its colonies of breeding seabirds.

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. The site is a RSPB reserve, and has a management plan.

Component designations at national and local level

Sumburgh Head SSSI

RSPB Reserve Sumburgh Head

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002511.htm>

Birdlife International website

<http://www.birdlife.org.uk/sites/>

2.1.2 Lochs of Spiggie & Brow SPA/IBA

Summary information	Figure 2.1	2
Location: 59°56'00"N, 01°20'00"W Area: 141.48ha Date submitted: 02/02/1997 Birds of conservation concern: N/A		

The Lochs of Spiggie and Brow are located at the south of the Shetland mainland and are the largest 'machair type' lochs in Shetland. Loch of Spiggie was formed through the natural closure from the sea of a shallow voe (inlet) by a sand bar. Both lochs have slightly brackish conditions, and the sand and mud substrates are dominated by a range of stonewort (*Characeae*) species and aquatic mosses. The lochs are of importance as both a migratory staging area and wintering site for Icelandic whooper swan *Cygnus cygnus*. As well as feeding on the lochs, the swans also feed away from the SPA on surrounding agricultural land.

Species qualification:

Those bird populations responsible for SPA qualification of the site are shown below:

Over winter:

- Whooper swan (*Cygnus cygnus*) (143 individuals representing up to 2.6% of the wintering population in Great Britain, 5 year peak mean 1991/2 - 1995/6)

Assemblage qualification:

N/A

IBA qualification

The IBA is important for wintering wildfowl.

Vulnerability and management issues

Threats to the site include disturbance to birds from wildfowling and fishermen, and pollution. A management plan exists for the RSPB Reserve.

Component designations at national and local level

Loch of Spiggie RSPB

Loch of Spiggie and Brow SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002651.htm>

Birdlife International website

<http://www.birdlife.org.uk/>

2.1.3 Foula SPA/IBA

Summary information	Figure 2.1	3
Location: 60°08'20"N, 02°05'00"W Area: 1,323ha Date submitted: 27/11/1995 Birds of conservation concern: Arctic tern, Leach's-storm petrel, red-throated diver, great skua, guillemot, puffin, shag, fulmar, razorbill		

Foula is the most westerly of the Shetland Islands lying 20km west of the Shetland mainland, and is also the most isolated inhabited island in the UK. The island is formed of Old Red Sandstone with a low-lying eastern side rising steeply to a central ridge and terminating on the western coast in sea-cliffs, including the second highest sea-cliff in the UK (The Kame at 317m). The cold oceanic climate has produced extensive peat formation and much of the island is covered in different types of bog vegetation, largely dominated by Hare's-tail cottongrass (*Eriophorum vaginatum*) and crowberry (*Empetrum nigrum*), although with very little heather (*Calluna vulgaris*). At higher altitudes the vegetation becomes sub-maritime, whilst near cliff-tops it is highly spray-influenced. The island is important for a wide range of breeding seabirds, with different species nesting in different parts of the island. It is one of only seven known nesting localities in the EU for Leach's-storm petrel (*Oceanodroma leucorhoa*). The seabirds feed outside the SPA in nearby waters, as well as more distantly in the North Atlantic.

General site characteristics

Habitats:

Grassland
 Wetland (fen/transition mire/spring)
 Rocky areas (sea cliff/rocky shore)

Land-use:

Agriculture (90%)

Species qualification

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Arctic tern (<i>Sterna paradisaea</i>)	1,100 pairs (representing 2.5% of UK breeding population) (5 year mean, 1992-1996)
Leach's storm-petrel (<i>Oceanodroma leucorhoa</i>)	50 pairs (representing 0.1% of UK breeding population) (Count as at 1976)
Red-throated diver (<i>Gavia stellata</i>)	11 pairs (representing 1.2% of UK breeding population) (1994 national survey)
Great skua (<i>Catharacta skua</i>)	2,170 pairs (representing 16.0% of the world breeding population) (Count, as at 1992)
Guillemot (<i>Uria aalge</i>)	25,125 pairs (representing 1.1% of East Atlantic breeding population) (Count as at 1987)
Puffin (<i>Fratercula arctica</i>)	48,000 pairs (representing 5.3% of the international breeding population) (Count as at 1987)
Shag (<i>Phalacrocorax aristotelis</i>)	2,400 pairs (representing 1.9% of the Northern Europe breeding population) (1987)

Assemblage qualification

During the breeding season, the area regularly supports 250,000 individual seabirds including Leach's storm-petrel (*Oceanodroma leucorhoa*), razorbill (*Alca torda*), kittiwake (*Rissa tridactyla*), Arctic skua (*Stercorarius parasiticus*), fulmar (*Fulmarus glacialis*), puffin (*Fratercula arctica*), guillemot (*Uria aalga*), great skua (*Catharacta skua*), shag (*Phalacrocorax aristotelis*) and Arctic tern (*Sterna paradisaea*).

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, a number of other species are also recognised as important, as listed below:

During the breeding season:

- Fulmar (*Fulmarus glacialis*) (46,800 birds, 1987)
- Razorbill (*Alca torda*) (4,150 birds, 1987)

The site holds very large populations of cliff and moorland nesting seabirds, totalling 127,000 pairs on a regular basis. The IBA is also nationally important for breeding *Gavia stellata* (11 pairs, 1994, 1%) and *Stercorarius parasiticus* (125 pairs, 1995, 4%)

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. The predation of breeding birds by introduced species, particularly feral cats *Felis catus*, rats *Rattus norvegicus* and hedgehogs *Erinaceus europaeus*, is also a problem.

Component designations at national and local level

SSSI Foula
SSSI Foula Coast

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002061.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.4 The Vadills cSAC

Summary information	Figure 2.1 4
Location: 60°17'00"N, 01°23'15"W Area: 62.43ha Date submitted: October 1996 Relevant qualifying habitats: Coastal lagoons Relevant qualifying species: N/A	

General site characteristics

Habitats:

Tidal rivers and estuaries.

Mud flats and sand flats.

Lagoons (including saltwork basins) (100%).

Habitat qualification

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

Coastal lagoons

The Vadills, at the head of Brindister Voe in Shetland, is an outstanding example of a complex lagoon system. The complex comprises a number of shallow basins and has examples of both lagoonal inlets and silled lagoons. This is an extremely sheltered, undisturbed and natural environment. There is a gradation of habitats within the system, from brackish to fully marine conditions, from still to fast-flowing water, and from soft, flocculent, peaty mud through coarse sediments including maerl *Lithothamnion corallioides* to bedrock and boulders. There is a correspondingly wide range of communities, with a high diversity of species. Such diversity is unusual, given the complex's northern location and relatively small size. The site supports several unusual species and communities. These include the holothurians *Leptopentacta elongata* and *Leptosynapta inhaerens*, present in dense populations, areas of the free-living furoid alga *Ascophyllum nodosum ecad mackaii*, for which this is the only known location in Shetland, and the brittlestar *Ophiura affinis*, which is unusual in such shallow water. There are small areas of extremely sheltered littoral sediment, which support filamentous green and brown algae, and several beds of beaked tasselweed *Ruppia maritima*. Marlee Loch supports a bed of eelgrass *Zostera marina*. Shallow rock supports sugar kelp *Laminaria saccharina*, whilst *L. hyperborea* and sea-oak *Halidrys siliquosa* occur in the channels, where tidal streams are faster.

Vulnerability and management issues

There are no apparent threats to the site at present. A management plan was produced in February 2003 and details of the plan can be found in *Section 1.16.4.2 Marine cSAC management* of the *Existing Users* report.

Component designations at national and local level

The Vadills SSSI

Sources of information

JNCC SAC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/>

2.1.5 Papa Stour cSAC

Summary information	Figure 2.1 5
Location: 60°20'00"N, 01°41'30"W	
Area: 2076.69ha	
Date submitted: October 1996	
Relevant qualifying habitats: Reefs and submerged or partially submerged sea caves	
Relevant qualifying species: N/A	



Cribbie, Papa Stour (W. Ritchie)

General site characteristics

Habitats:

Marine areas. Sea inlets (99%)

Shingle. Sea cliffs. Islets (1%)

Habitat qualification

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

Reefs

Papa Stour is an example of very exposed **reefs** on hard rocks in the extreme north of Scotland. The rocky coastline of Papa Stour is among the most exposed in the UK, and the island and the adjacent mainland are fringed entirely by sublittoral bedrock and boulder reefs reaching depths of more than 30m. The underwater terrain is rugged, with rock walls, slopes, gullies, ledges, ridges and boulder slopes, which support a diverse range of plant and animal communities. The extensive kelp forests on these reefs have a rich associated algal community at shallow depths because wave action prevents grazing by sea-urchins in some exposed areas. Kelp extends to depths of up to 28m in the clear waters surrounding the

island. Communities on circalittoral rock are characteristic of northern parts of the UK, with dominant species including the soft coral *Alcyonium digitatum*, the featherstar *Antedon bifida*, encrusting coralline algae, and the serpulid worm *Pomatoceros triqueter*. Wave-exposed gullies have rich, surge-tolerant communities, with turfs of the jewel anemone *Corynactis viridis*, ascidians and bryozoans. In the strong tidal streams of the Sound of Papa, boulder reefs and bedrock ridges are dominated by scour-tolerant organisms such as the hydroid *Abietinaria abietina* and the brittlestar *Ophiocomina nigra*.

Submerged or partially submerged sea caves

Papa Stour has excellent examples of caves, tunnels and arches occurring in cold northerly waters. In very exposed sea conditions the caves support rich communities that illustrate the effects of surge, scour and changes in light conditions. The cave walls have extensive faunal turfs, and among the more unusual species present is the northern anemone *Phellia gausapata*. The rare, surge-tolerant alga *Schmitzia hiscockiana* is found on boulders in cave entrances. Further diversity is due to the presence of sheltered gullies and tunnels where the community zonation is influenced by tidal flows.

Vulnerability and management issues

There are no significant threats to the site at present. The current levels of fishing, including creel fishing, seem to be compatible with maintenance of the interesting features on the site. A management plan has been produced for the cSAC as part of the UK Marine SAC Project. Details of the plan can be found in *Section 1.16.4.2 Marine cSAC management of the Existing Users* report.

Component designations at national and local level

Papa Stour Geological Conservation Review Site (2 sites)

Papa Stour SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002051.htm>

Birdlife International website

<http://www.birdlife.org.uk/sites/>

Natura 2000, Scoping Study, Scottish Executive

2.1.6 Papa Stour SPA/IBA

Summary information	Figure 2.1	6
Location: 60°20'10"N, 01°42'00"W		
Area: 569.03ha		
Date submitted: 27/03/2000		
Birds of conservation concern: Arctic tern, ringed plover		

Papa Stour lies on the west coast of mainland Shetland in Northern Scotland. The SPA comprises the northern and western parts of Papa Stour and consists of rocky hillsides rising to about 90m, a number of lochs and a few offshore skerries. The main vegetation is a lichen-rich heath that has developed on substrates that formerly consisted of peat and turf. The island is an important breeding site for Arctic tern *Sterna paradisaea* and ringed plover *Charadrius hiaticula*. The terns feed outside the SPA in the waters around the island.

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During breeding season	
Arctic tern (<i>Sterna paradisaea</i>)	1000 pairs (2.3% of the UK breeding population) (Seabird Census Register)
Ringed plover (<i>Charadrius hiaticula</i>)	89 pairs (0.6% of the Europe/North Africa – wintering population)

Assemblage qualifications

N/A

IBA qualification

The IBA supports an important assemblage of breeding seabirds and waders, and is also nationally important for breeding *Charadrius hiaticula* (100 pairs, 1992, 1%).

Vulnerability and management issues

Oil pollution and unsustainable fishing of sandeels *Ammodytes* pose potential threats to seabirds. Disturbance from visitors to the visitor centre is also a problem.

Component designations at national and local level

Papa Stour Geological Conservation Review Site (2 sites)

Papa Stour SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002041.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.7 Tingon cSAC

Summary information	Figure 2.1 7
<p>Location: 60°32'00"N, 01°32'00"W</p> <p>Area: 569.3ha</p> <p>Date submitted: June 1995</p> <p>Relevant qualifying habitats: Blanket bogs</p> <p>Relevant qualifying species: N/A</p>	

General site characteristics

Habitats:

Shingle. Sea cliffs. Islets (5.5%)

Inland water bodies (standing water, running water) (5.5%)

Bogs. Marshes. Water fringed vegetation. Fens (74%)

Heath. Scrub. Maquis and garrigue. Phygrana (5%)

Humid grassland. Mesophile grassland (10%)

Habitat qualification

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

Blanket Bogs

Tingon demonstrates diversity of its surface patterning, erosion and other mire features, which cover a substantial tract of ground on the Tingon peninsula. Peat mounds are also a feature of the site. The vegetation is dominated by cottongrasses *Eriophorum* spp., heather *Calluna vulgaris*, deergrass *Trichophorum cespitosum*, cross-leaved heath *Erica tetralix* and bog-mosses *Sphagnum* spp.

Vulnerability and management issues

The ecological character of this site is believed to be compatible with the continued low grazing pressure from sheep. A Management Agreement over part of the site controls the number of sheep grazing the blanket bog habitat.

Component designations at national and local level

Tingon SSSI

Sources of information

JNCC SAC website

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

2.1.8 Ronas Hill – North Roe & Tingon SPA/IBA/Ramsar

Summary information	Figure 2.1	8
Location: 60°33'00"N, 01°25'00"W Area: 5470.2ha Date submitted: 11/08/1997 Birds of conservation concern: Red-throated diver, merlin, great skua		

Ronas Hill – North Roe and Tingon SPA is located in the north mainland of Shetland in northern Scotland. The site comprises two adjacent headlands separated by the large Ronas Voe. Most of the site is composed of active blanket bog with numerous lochans and pools that support a typical peatland avifauna. The flatter parts of Tingon and North Roe have many pools and acidic lochans set within an open landscape of blanket bog and maritime heath. The area holds some of the highest-quality blanket bog in Shetland, which is floristically rich and intact. The site is of importance for breeding red-throated diver *Gavia stellata* and merlin *Falco columbarius*.

General site characteristics

Habitats:

Scrub (scrub; heathland)

Wetland (standing fresh water; blanket bog)

Land-use:

Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Merlin (<i>Falco columbarius</i>)	6 pairs representing at least 0.5% of the breeding population in Great Britain
Red-throated diver (<i>Gavia stellata</i>)	50 pairs representing at least 5.3% of the breeding population in Great Britain (Count, as at 1994)

Assemblage qualifications

N/A

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, a number of other species are also recognised as important, as listed below:

During the breeding season:

- Great skua (*Stercorarius skua*) (165 birds, 1992)

The IBA holds an important assemblage of breeding moorland birds, and is nationally important for breeding *Numenius phaeopus* (31 pairs, 1994, 6%) and *Stercorarius parasiticus* (140 pairs, 1992, 4%).

Ramsar features

Importance: The site supports outstanding examples of blanket bog with extensive pool systems. The site supports a number of rare species of animal and plant. Nationally important mammal species include common seal *Phoca vitulina* and otter *Lutra lutra* and the invertebrate fauna includes the arctic water flea *Eurycercus glacialis* found at only one other site in Britain. The Shetland endemic plant *Hieracia* sp. occurs at the site.

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds.

Component designations at national and local level

Fugla Ness - North Roe SSSI

Uyea, North Roe Coast SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002041.htm>

Birdlife International website

<http://www.birdlife.org.uk>

The Annotated Ramsar List: UK

http://ramsar.org/profiles_uk.htm

Wetlands International website

http://www.wetlands.org/RDB/Ramsar_Dir/UnitedKingdom/UK113D02.doc

2.1.9 Ronas Hill-North Roe cSAC

Summary information	Figure 2.1 9
<p>Location: 60°33'00"N 01°25'00"W</p> <p>Area: 4900.9ha</p> <p>Date submitted: January 1996</p> <p>Relevant qualifying habitats: Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the Isoëto-Nanaojunctea, natural dystrophic lakes and ponds, alpine and boreal heaths, blanket bogs</p> <p>Relevant qualifying species: N/A</p>	

General site characteristics:

Habitats:

Shingle. Sea cliffs. Islets (2.3%)

Inland water bodies (standing water, running water) (4.2%)

Bogs. Marshes. Water fringed vegetation. Fens (28%)

Heath. Scrub. Maquis and garrigue. Phygrana (51.1%)

Alpine and sub-alpine grassland (6%)

Inland rocks. Screens. Sands. Permanent snow and ice (8%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (0.4%)

Habitat qualification

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

Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanaojunctea*

This site represents oligotrophic lochs and lochans (Types 2 and 3) on peatlands in Shetland. The waterbodies are concentrated on the northern side of Ronas Hill. The lochs support vegetation typical of oligotrophic habitat including water lobelia *Lobelia dortmanna*, quillwort *Isoetes lacustris*, bulbous rush *Juncus bulbosus* and shoreweed *Littorella uniflora*. Many of the lochs also support the scarce spring quillwort *Isoetes echinospora*. Several of the lochs contain small holms that support important relicts of Shetland's tree and scrub habitat. In addition, the site supports one of the densest aggregations of breeding red-throated divers *Gavia stellata* in the UK and important aquatic invertebrate populations including the arctic water-flea *Eurycerus glacialis*, which occurs in the highest lochan on Ronas Hill and has been found at only one other site in Britain.

Natural dystrophic lakes and ponds

Ronas Hill is representative of dystrophic pools and lochans formed in **Blanket bogs** in Shetland. The dystrophic pools and lochans typically have a peat substrate and support an impoverished plant flora. The site has considerable aquatic invertebrate interest. Notable species include the northern aquatic beetles *Potamonectes griscostratus* and *Agabus arcticus*.

Alpine and Boreal heaths

Ronas Hill – North Roe is representative of the extreme northerly development of **Alpine and Boreal heaths** in the UK. The cool and windy climate on Shetland results in the development of alpine heaths at exceptionally low altitude, giving one of the best examples of the altitudinal descent of vegetation zones in the UK. The site contains the most extensive areas on any site in Britain of H14 *Calluna vulgaris* – *Racomitrium lanuginosum* heath, a type characteristic of the north-west and northern Scottish Highlands and Islands. This community is developed on some of the finest solifluction terracing found outside the Cairngorms. Mountain bearberry *Arctostaphylos alpinus*, bearberry *A. uva-ursi* and trailing azalea *Loiseleuria procumbens* are all present. There is also a large extent of an alpine form of H10 *Calluna vulgaris* – *Erica cinerea* heath with an unusual abundance of woolly fringe-moss *Racomitrium lanuginosum* and locally frequent bearberry. Other subalpine heaths present include H21 *Calluna vulgaris* – *Vaccinium myrtillus* – *Sphagnum capillifolium* heath and small areas of H20 *Vaccinium myrtillus* – *Racomitrium lanuginosum* heath.

Blanket bogs

North Roe represents a distinctive **blanket bog** type found only in the far north of Scotland, where there is a sub-arctic oceanic climate. The bog type is characterised by large peat mounds, and all stages of mound development can be seen at this site, ranging from early formation, to domes of several metres high, through to collapsed examples and finally crater-pool formations.

Vulnerability and management issues

The main use of this site is grazing land for sheep. The site includes three common grazings with sheep on the hill all year round. Stocking levels are being addressed through research and monitoring. Negotiations over a management agreement with graziers is underway to ensure lower grazing levels over much of the site, including an area where overgrazing is evident.

Component designations at national and local level

Fugla Ness - North Roe SSSI
Uyea, North Roe Coast SSSI

Sources of information

JNCC SAC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/>**2.1.10 Ramna Stacks & Gruney SPA/IBA****Summary information**

Fig 2.1

10

Location: 60°39'10"N, 01°18'10"W**Area:** 11.59ha**Date submitted:** 15/03/1996**Birds of conservation concern:** Leach's-storm petrel

Ramna Stacks and Gruney lie north of mainland Shetland in the north of Scotland. With the exception of Gruney, where guano-enriched maritime grassland occurs, these rocky islands support little or no vegetation. They are of importance as a site for breeding seabirds, particularly as one of only seven known nesting localities in the EU for Leach's-storm petrel *Oceanodroma leucorhoa*. The nesting seabirds using the site feed outside the SPA in surrounding and more distant marine areas.

General site characteristics**Habitats:**

Grassland (humid grassland)

Rocky areas (sea cliff/rocky shore; rock stacks/islets)

Land-use:

Agriculture (70%)

Species qualifications

Those bird populations responsible for SPA qualification of the site are:

During the breeding season:

- Leach's storm petrel (*Oceanodroma leucorhoa*) (22 pairs representing at least 0.1% of the breeding population in Great Britain, Count, as at 1994).

Assemblage qualifications

N/A

IBA qualifications

The qualifying species of the IBA is also Leach's storm petrel.

Vulnerability and management issues

The close proximity of the site to the Sullom Voe oil terminal makes the risk of oil pollution very high. Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. Part of the site is a RSPB reserve with a management plan.

Component designations at national and local level

Ramna Stacks and Gruney SSSI

Ramna Stacks and Gruney RSPB Reserve

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002021.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.11 Sullom Voe cSAC

Summary information	Fig 2.1	11
<p>Location: 60°27'50"N, 01°18'35"W Area: 2698.55ha Date submitted: November 2001 Relevant qualifying habitats: Large shallow inlets and bays Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Marine areas. Sea inlets (99%)

Tidal Rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (1%)

Habitat qualification

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

Large shallow inlets and bays

Sullom Voe in the Shetland Isles is the most northerly site in the UK to be selected as a representative of **large shallow inlets and bays**, and within the site series it is the only Scottish example of a ria (known locally as a 'voe'). The boreal-arctic (northern) species-rich communities of Sullom Voe are restricted to Shetland voes and are not represented elsewhere in the SAC series. The intertidal sediments, confined to lagoons near the mouth of the voe, are colonised by a diverse faunal community including bivalves, polychaetes and the sea cucumber *Leptosynapta inhaerens*. Poorly-mixed, muddy sediments which characterise the sublittoral are colonised by horse mussels, sea-pens *Virgularia* sp. and diverse burrowing communities. A range of bivalves, polychaetes and amphipods can also be found in the organically enriched shell-sand, gravel and muddy-sand sediments.

Vulnerability and management issues

Sullom Voe is one of the busiest ports in the UK, encompassing the largest oil terminal in Europe, and has an excellent safety record. A management scheme will be developed for the site through the Marine SAC advisory panel, which will include representatives from the oil terminal and Shetland Oil Terminal Environmental Advisory Group (SOTEAG).

Component designations at national and local level

N/A

Sources of information

JNCC SAC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/>

2.1.12 Yell Sound Coast cSAC

Summary information	Fig 2.1	12
Location: 60°27'40"N, 01°09'00"W Area: 1540.55ha Date submitted: October 1998 Relevant Qualifying Habitats: N/A Relevant Qualifying Species: Otter <i>Lutra lutra</i> , common seal <i>Phoca vitulina</i>		

General site characteristics

Habitats:

Marine areas. Sea inlets (30%)
 Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (1%)
 Salt marshes. Salt pastures. Salt steppes (1%)
 Coastal sand dunes. Sand beaches. Machair (1%)
 Shingle. Sea cliffs. Islets (15%)
 Inland water bodies (standing water, running water) (2%)
 Bogs. Marshes. Water fringed vegetation. Fens (20%)
 Heath. Scrub. Maquis and garrigue. Phygrana (10%)
 Dry grassland. Steppes (5%)
 Humid grassland. Mesophile grassland (5%)
 Improved grassland (10%)

Species qualification

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

Otter (*Lutra lutra*)

The **otter** *Lutra lutra* population in Shetland is one of the most intensively-studied in Europe. Not only are the Shetland animals morphologically distinct from their mainland counterparts, they are also believed to be genetically distinct. In addition, specialists consider that the populations are possibly the densest in Europe. Therefore, the Shetland population is in many ways unique, and is considered of special importance in a UK context. Within Shetland, the Yell Sound area has the highest density of otter. Indeed the site is believed to support more than 2% of the entire GB otter population. The site consists of a complex of islands and coastline, selected to include the areas of highest otter density. The areas are characterised by low-lying peaty coastlines with large numbers of otter holts and easy access to fresh water. The adjacent marine areas have extensive algal beds which are used for foraging.

Common Seal (*Phoca vitulina*)

Yell Sound Coast in the Shetland Islands is the most northerly UK site selected for the **common seal** *Phoca vitulina*. The rocky shores and uninhabited islands and skerries within Yell Sound support a colony representing over 1% of the UK population.

Vulnerability and management issues

There are no obvious threats to the otter and seal populations at present.

Component designations at national and local level

Yell Sound Coast SSSI

Sources of information

JNCC SAC website

<http://www.jncc.gov.uk/ProtectedSites/SACselection/>**2.1.13 Otterswick & Graveland SPA****Summary information**

Fig 2.1

13

Location: 60°35'42"N, 01°08'07"W**Area:** to be confirmed upon site classification**Date submitted:** not yet available**Birds of conservation concern:** Red-throated diver

Otterswick and Graveland are located on the island of Yell, in Shetland. Otterswick lies to the south of Yell, whilst Graveland is a peninsula on the west coast of the island. The site rises from sea level on Graveland to an altitude of 205m at Ward of Otterswick. Inland areas are dominated by blanket bog, with some stretches of dry heather moorland. The blanket bog is variable in quality, with considerable areas of eroded peat, especially on the eastern side of Otterswick. A band of maritime grassland extends along the coastal stretch of the Graveland peninsula. The site is of European importance as a breeding area for red-throated diver *Gavia stellata*.

General site characteristics

Those bird populations responsible for SPA qualification of the site are:

Species qualification**During the breeding season:**

- Red-throated diver (*Gavia stellata*) (27 pairs representing at least 2.9% of the breeding population in Great Britain, 1992 – 1996)

Vulnerability and management issues

There are no obvious threats to the site at present.

Component designations at national and local level

Otterswick SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002941.htm>**2.1.14 Hermaness, Saxa Vord & Valla Field SPA/IBA****Summary information**

Fig 2.1

14

Location: 60°49'19"N, 00°54'00"W**Area:** 1037.7ha**Date submitted:** 29/03/1994**Birds of conservation concern:** Red-throated diver, gannet, great skua, puffin, black guillemot

Hermaness, Saxa Vord and Valla Field SPA is located at the northernmost part of the Shetland island of Unst, Scotland, the most northerly part of the UK. The vegetation of Hermaness is mainly *Calluna/Eriophorum* blanket bog, with acidic grassland together with small oligotrophic lochans and streams. More species-rich closely grazed, maritime grasslands line the cliff tops. The cliffs of Hermaness, Saxa Vord and the off-lying stacks (including Muckle Flugga) are mostly 100-200m high. The site is important for a number of breeding seabird species that nest on both the extensive cliffs as well as on the heathland and grassland parts of the site. The seabirds feed outside the SPA in nearby waters, as well as more distantly elsewhere in the North Atlantic.

General site characteristics

Habitats:

Scrub (heathland)

Grassland (humid grassland)

Wetland (blanket bog)

Rocky areas (sea cliff/rocky shore)

Land-use:

Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During breeding season	
Red-throated diver (<i>Gavia stellata</i>)	28 pairs (representing 3.0% of UK breeding population) (1994-1996)
Gannet (<i>Morus bassana</i>)	12,000 pairs (representing 4.6% of North Atlantic breeding population) (Count, as at 1994)
Great skua (<i>Catharacta skua</i>)	630 pairs (representing 4.6% of World breeding population) (Count, as at 1997)
Puffin (<i>Fratercula arctica</i>)	25,400 pairs (representing 2.8% of the international breeding population) (Count, as at 1987)

Assemblage qualifications

During the breeding season, the area regularly supports 152,000 individual seabirds including guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, shag *Phalacrocorax aristotelis*, fulmar *Fulmarus glacialis*, puffin *Fratercula arctica*, great skua *Catharacta skua* and gannet *Morus bassana*.

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, one other species has also been recognised as important, as listed below:

During the breeding season:

- Black guillemot (*Cepphus grille*) (190 pairs, 1982)

The IBA holds 70,600 pairs of breeding seabirds on a regular basis, and is also nationally important for breeding *Gavia stellata* (9 pairs, 1994, 1%), *Fulmarus glacialis* (26,200 pairs, 1986-1987, 5%), *Numenius phaeopus* (14 pairs, 1994, 3%), *Stercorarius parasiticus* (115 pairs, 1992, 4%) and *Uria aalge* (11,400 pairs, 1991, 2%).

Vulnerability and management issues

A proposal exists to extract peat commercially from a small part of the IBA. Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. There is a management plan for the site.

Component designations at national and local level

Hermaness NNR
Hermaness SSSI
Saxa Vord MoD

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002011.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.15 Keen of Hamar cSAC

Summary information	Fig 2.1	15
Location: 60°46'00"N, 00°49'00"W		
Area: 38.52ha		
Date submitted: June 1995		
Relevant qualifying habitats: Calamarian grasslands of the <i>Violetalia calaminariae</i> calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>) (European dry heaths – present)		
Relevant qualifying species: N/A		

General site characteristics**Habitats:**

Shingle. Sea cliffs. Islets (3%)
Heath. Scrub. Maquis and garrigue. Phygrana (44.4%)
Dry grassland. Steppes (24%)
Inland rocks. Screes. Sands. Permanent snow and ice (28.6%)

Habitat qualification

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

Calaminarian grasslands of the *Violetalia calaminariae*

Keen of Hamar has the largest surviving area in the UK of near-natural **Calaminarian grasslands** on serpentine. The site is rich in rare northern species, such as arctic sandwort *Arenaria norvegica* ssp. *norvegica* and northern rock-cress *Arabis petraea*, and includes the endemic Shetland mouse-ear *Cerastium nigrescens*, found only on serpentine rocks at this site. The site has ecological features and

floristic composition similar to those of serpentine grasslands in Scandinavia, where the habitat type is also rare.

Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)

Keen of Hamar, in the north of Shetland, is the most northerly site selected to represent **calcareous and calcshist screes** in Scotland. It is highly unusual in that the communities have developed on serpentine rock debris, which occurs extensively throughout the site and forms a mosaic with **Calaminarian grasslands of the *Violetalia calaminariae*** at low altitude. The scree supports a flora that is unique in the number of endemic races and subspecies it contains. These include moss campion *Silene acaulis*, northern rock-cress *Arabis petraea*, arctic sandwort *Arenaria norvegica* ssp. *norvegica* and Shetland mouse-ear *Cerastium nigrescens*.

Vulnerability and management issues

A Management Agreement preventing grazing and agricultural improvements on this National Nature Reserve ensures that there are no current threats to the site interests.

Component designations at national and local level

Keen of Hamar NNR
Keen of Hamar SSSI

Sources of information

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

2.1.16 North Fetlar cSAC

Summary information	Fig 2.1	16
<p>Location: 60°37'00"N, 00°51'20"W Area: 1584.43ha Date submitted: January 2001 Relevant qualifying habitats: European dry heaths, alkaline fens Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Shingle. Sea cliffs. Islets (5%)
 Inland water bodies (standing water, running water) (1%)
 Bogs. Marshes. Water fringed vegetation. Fens (5%)
 Heath. Scrub. Maquis and garrigue. Phygrana (85%)
 Dry grassland. Steppes (2%)
 Inland rocks. Screes. Sands. Permanent snow and ice (2%)

Habitat qualification

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

European dry heaths

North Fetlar represents species-rich forms of maritime H7 *Calluna vulgaris* – *Scilla verna* and upland H10 *Calluna vulgaris* – *Erica cinerea* heaths at the northern limit of their range in the UK. The species-rich *Thymus praecox* – *Carex pulicaris* sub-type of *Calluna* – *Erica* heath (H10d) is especially well developed and extensive on base-rich serpentine rock. The combined extent of the maritime and upland species-rich heath is the largest within the SAC series but not as rich in associated flora and invertebrates as related heaths on Rum. Oceanic-northern species-poor forms of *Calluna* – *Erica* heath with abundant woolly fringe-moss *Racomitrium lanuginosum*, unusually developed at low altitude in the harsh climate, are also well-represented.

Alkaline fens

Alkaline fens fed by base-rich water from serpentine rocks are widespread across North Fetlar. They represent the habitat on Shetland and in the far north. The NVC type is M10 *Carex dioica* – *Pinguicula vulgaris* mire. Transitions occur to base-rich swamp communities.

Vulnerability and management issues

Management agreements prescribe grazing levels on much of the site, preventing agricultural improvement and maintaining the condition of heathland and fens.

Component designations at national and local level

North Fetlar SSSI

Sources of information

JNCC SAC website

<http://www.jncc.gov.uk>

2.1.17 Fetlar SPA/IBA

Summary information	Fig 2.1	17
Location: 60°36'35"N, 00°51'20"W Area: 2594.91ha Date submitted: 29/03/1994 Birds of conservation concern: Arctic tern		

Fetlar is one of the northernmost of the Shetland Islands in northern Scotland. The SPA comprises a range of habitats including species-rich heathland, marshes and lochans, cliffs and rocky shores. The principal areas of importance for birds are the northernmost part of the island and the south-western peninsula of Lamb Hoga. Most of the north of the island is vegetated by heathland and relatively species-poor grasslands owing to the influence of underlying serpentine-base-rich rocks. In wetter areas, small lochs and sedge-rich mires are present. Around the coasts are floristically rich maritime grasslands and heathlands. Lamb Hoga has heather moorland with areas of Cottongrass *Eriophorum* spp. Dominated blanket bog. Fetlar SPA is of importance for a number of northern breeding waders, as well as breeding seabirds, which nest especially on the moorlands as well as in some of the other wetlands.

General site characteristics

Habitats:

Coastline/rocky areas

Shrubland

Wetland
 Sea cliffs and rocky shores
 Heathland
 Blanket bogs
 (No areal percentages available)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During breeding season	
Arctic tern (<i>Sterna paradisaea</i>)	520 pairs representing at least 1.2% of the breeding population in Great Britain (Three year mean, 1994-1997)
Red-necked phalarope (<i>Phalaropus lobatus</i>)	30 pairs representing at least 75.0% of the breeding population in Great Britain (Count, as at mid-1990s)

Assemblage qualification

N/A

IBA qualification

The IBA holds 13,100 breeding seabirds on a regular basis, and is the best site in the UK for breeding *Phalaropus lobatus*. It is also nationally important for breeding *Fulmarus glacialis* (12,600 pairs, 1986, 2%) and *Numenius phaeopus* (70 pairs, 1989, 13%).

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. A management plan exists for the RSPB reserve.

Component designations at national and local level

SSSI's Lamb Hoga, North Fetlar, Trona Mires
 RSPB Reserve

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002031.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.18 Noss SPA/IBA

Summary information	Fig 2.1	18
<p>Location: 60°08'40"N, 01°01'00"W Area: 343.82ha Date submitted: 16/08/96 Birds of conservation concern: Gannet, great skua, guillemot, puffin, kittiwake, fulmar</p>		

Noss is located on the east coast of the island of Bressay, to the east of mainland Shetland in northern Scotland. The site comprises high cliffs of Old Red Sandstone that reach 180m. The steeper eastern part of the island is covered with maritime grassland and *Calluna/Eriophorum* heath, whilst lower land to the west is semi-intensified grassland. The horizontal bedding planes of the sandstone cliffs result in a high density of ledges suitable for nesting seabirds and accordingly the site supports large numbers of auks, gulls and gannet *Morus bassana*. On moorland areas large numbers of great skua *Catharacta skua* breed. The seabirds nesting on Noss feed outside the SPA in the immediately surrounding waters, as well as further away in the North Sea.

General site characteristics

Habitats:

Coastline/rocky areas: Sea cliffs and rocky shores

Grassland

Shrubland: Heathland

Land Use:

Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During breeding season	
Gannet (<i>Morus bassana</i>)	7,310 pairs representing at least 2.8% of the breeding North Atlantic population (Count, as at 1994)
Great skua (<i>Catharacta skua</i>)	410 pairs representing at least 3.0% of the breeding World population (Count, as at 1997)
Guillemot (<i>Uria aalge</i>)	30,619 pairs representing at least 1.4% of the breeding East Atlantic population (Count as at 1996)

Assemblage qualifications

During the breeding season, the area regularly supports 100,000 individual seabirds including puffin *Fratercula arctica*, kittiwake *Rissa tridactyla*, fulmar *Fulmarus glacialis*, guillemot *Uria aalge*, great skua *Catharacta skua* and gannet *Morus bassana*.

IBA qualification

The bird species responsible for qualifying this area as an IBA are the same as those of the SPA. It also recognises Noss as having one of the largest seabird colonies in Britain, holding 41,800 breeding pairs on a regular basis. The IBA is also nationally important for breeding *Fulmarus glacialis* (5,850 pairs, 1993, 1%).

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. Introduced rabbits *Oryctolagus cuniculus* and cats *Felis catus* are subject to control measures. There is a management plan for the site.

Component designations at national and local level

Noss SSSI
Noss NNR

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002081.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.19 Mousa SPA/IBA

Summary information	Fig 2.1	19
<p>Location: 60°00'00"N, 01°10'20"W Area: 197.98ha Date submitted: 27/11/1995 Birds of conservation concern: Storm petrel, Arctic tern</p>		

Mousa is a small island located off the east coast of the south part of the Shetland mainland in northern Scotland. It is a low grassy island, reaching only 55m above sea level, and is dominated by acidic grassland. There is also some maritime grassland and heathland on the exposed south-west coast. Mousa has a few freshwater lochs and, in the south-east, tidal pools. The island is of importance as a breeding site for seabirds, notably the largest colony of storm petrel *Hydrobates pelagicus* in Shetland as well as Arctic tern *Sterna paradisaea*. The seabirds nesting on Mousa feed outside the SPA in surrounding waters, as well as further away.

General site characteristics:

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)

Grassland

Shrubland (heathland)

Wetland (tidal rivers and enclosed tidal waters, standing freshwater)

Land Use:

Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Arctic tern (<i>Sterna paradisaea</i>)	767 pairs representing at least 1.7% of the breeding population in Great Britain (Count, as at 1994)
Storm petrel (<i>Hydrobates pelagicus</i>)	6,760 pairs representing at least 8.0% of the breeding population in Great Britain (Count, as at 1996)

Assemblage qualification

N/A

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA in recognising the European storm petrel as nationally important. The island is also recognised as nationally important for breeding *Sterna paradisaea* (765 pairs, 1994, 2%).

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds, and terns are susceptible to disturbance from tourists.

Component designations at national and local level

Mousa SSSI
Mousa RSPB

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002361.htm>

Birdlife International website

<http://www.birdlife.org.uk>

2.1.20 Mousa cSAC

Summary information	Fig 2.1	20
<p>Location: 60°00'00"N, 01°10'20"W</p> <p>Area: 530.6ha</p> <p>Date submitted: October 1996</p> <p>Relevant qualifying habitats: Reefs (present), submerged or partially submerged sea caves (present)</p> <p>Relevant qualifying species: Common seal <i>Phoca vitulina</i></p>		

General site characteristics

Habitats:

Marine areas. Sea inlets (100%)

Species qualification:

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

Common Seal (*Phoca vitulina*)

The exposed rocky island of Mousa, off the east coast of Shetland Mainland, supports one of the largest groups of **common seal** *Phoca vitulina* in Shetland and is one of the most northerly groups in the UK. The large rocky tidal pools on the island are of particular importance, as they are frequently used by the seals for pupping, breeding and moulting, and provide shelter from the exposed conditions on the open coast. The site supports just over 1% of the UK population.

Vulnerability and management issues

The current level of visitors to the island seems to be compatible with the maintenance of the seal population. An interpretative board has been put on site to advise visitors on responsible behaviour, and a ranger service for the island and adjacent mainland is being developed. A limited amount of

commercial sand-eel fishing takes place in the area, which also appears compatible with the maintenance of the interests of the site. A management scheme was produced for the site in February 2003. Details of the plan can be found in *Section 1.16.4.2 Marine SAC management of the Existing Users* report.

Component designations at national and local level

Mousa SSSI
Mousa RSPB

Sources of information

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

2.1.21 Environmentally Sensitive Areas (ESA)

The whole of Shetland has been designated an Environmentally Sensitive Area (ESA). The ESA Scheme offers 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.

Site Name	Area (ha)	Date Designated	Interest
Shetland Islands	146,478	1987	Natural heritage, crafting and farming. Serpentine heath, rushy and improved pasture, hay meadows, stone dykes. Peat and heather moorland important for breeding birds; marshy grassland for breeding waders. Relict field patterns of Neolithic and Bronze Age.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, Eds. (1997a). *Coasts and seas of the United Kingdom. Region 1 Shetland*. Peterborough, Joint Nature Conservation Committee.
DEFRA website
www.defra.gov.uk

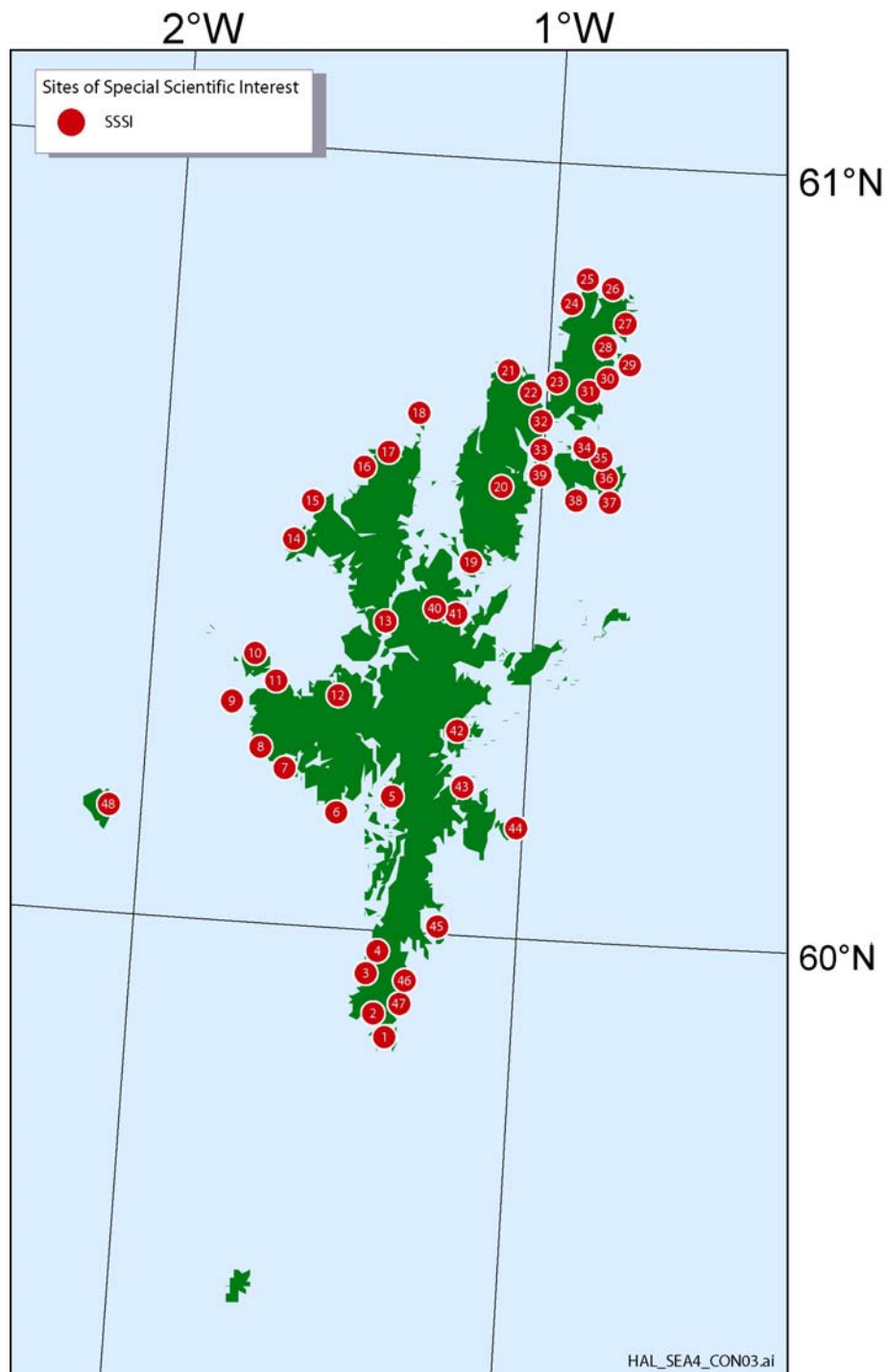
2.2 Sites of national and local importance

There are a number of sites of national and local importance along the Shetland coast including National Nature Reserves (NNR's), Marine Consultation Areas (MCA's) and Sites of Special Scientific Interest (SSSI's). These are described below. SSSI's have been marked on a separate map (Figure 2.2) for clarity. Figure 2.3 shows the location and reference numbers of other nationally and locally important sites (the number given in the text for each of these sites refers to their location on Figure 2.3). Numbering of the sites attempts to follow Shetland's coastline in a clockwise direction.

2.2.1 Sites of Special Scientific Interest

These are listed below along with map location (see Figure 2.2), and National Grid Reference. For more detailed information relating to designation please refer to the SNH website (www.snh.gov.uk), or consult the appropriate area office. For the definition of Site of Special Scientific Interest, see Appendix 2.

Figure 2.2 – SSSIs in Shetland



Map ref.	Site Name	Location
1	Sumburgh Head	HU408091
2	Quendale	HU380134
3	Lochs of Spiggie and Brow	HU374160
4	St. Ninians Tombola	HU372208
5	South Whiteness	HU388458
6	Skelda Ness	HU302405
7	Fidlar Geo to Watsness	HU190493
8	Sel Ayre	HU177540
9	Melby	HU168565
10	Papa Stour	HU165610
11	Sandness Coast	HU185580
12	The Vadills	HU290555
13	Voxter Voe and Valayre Quarry	HU365697
14	Eshanness Coast	HU210790
15	Villains of Hamnavoe	HU240824
16	Fugla Ness – North Roe	HU312913
17	Uyea, North Roe Coast	HU344916
18	Ramna Stacks and Gruney	HU380970
19	Yell Sound Coast	HU470760
20	Otterswick	HU492861
21	Breckon	HP529052
22	Ness of Cullivoe	HP550025
23	Lunda Wick	HP566044
24	Tonga Greff	HP585140
25	Hermaness	HP605160
26	Saxa Vord	HP628173
27	Norwick	HP650148
28	Keen of Hamar	HP645097
29	Balta	HP660077
30	Skeo Tang to Clugan	HP647075
31	Qui Ness to Pund Stacks	HP622033
32	Gutcher	HU551997
33	North Sandwick	HU550965
34	Tressa Ness to Colbinstoff	HU615944
35	North Fetlar	HU625930
36	Virva	HU645920
37	Funzie	HU656884
38	Lamb Hoga	HU602897
39	Hascosay	HU553923
40	Dales Voe	HU408687
41	The Ayres of Swinister	HU449723
42	Cat Firth	HU437538
43	Easter Rova Head	HU474453
44	Noss	HU545404

Map ref.	Site Name	Location
45	Mousa	HU461242
46	The Cletts, Exnaboe	HU407130
47	Pool of Virkie	HU398112
48	Foula	HT960390

Sources of information

Scottish Natural Heritage website

www.snh.org.uk

SNH Area Office at Golspie, Sutherland

2.2.2 National Nature Reserves

Figure 2.3



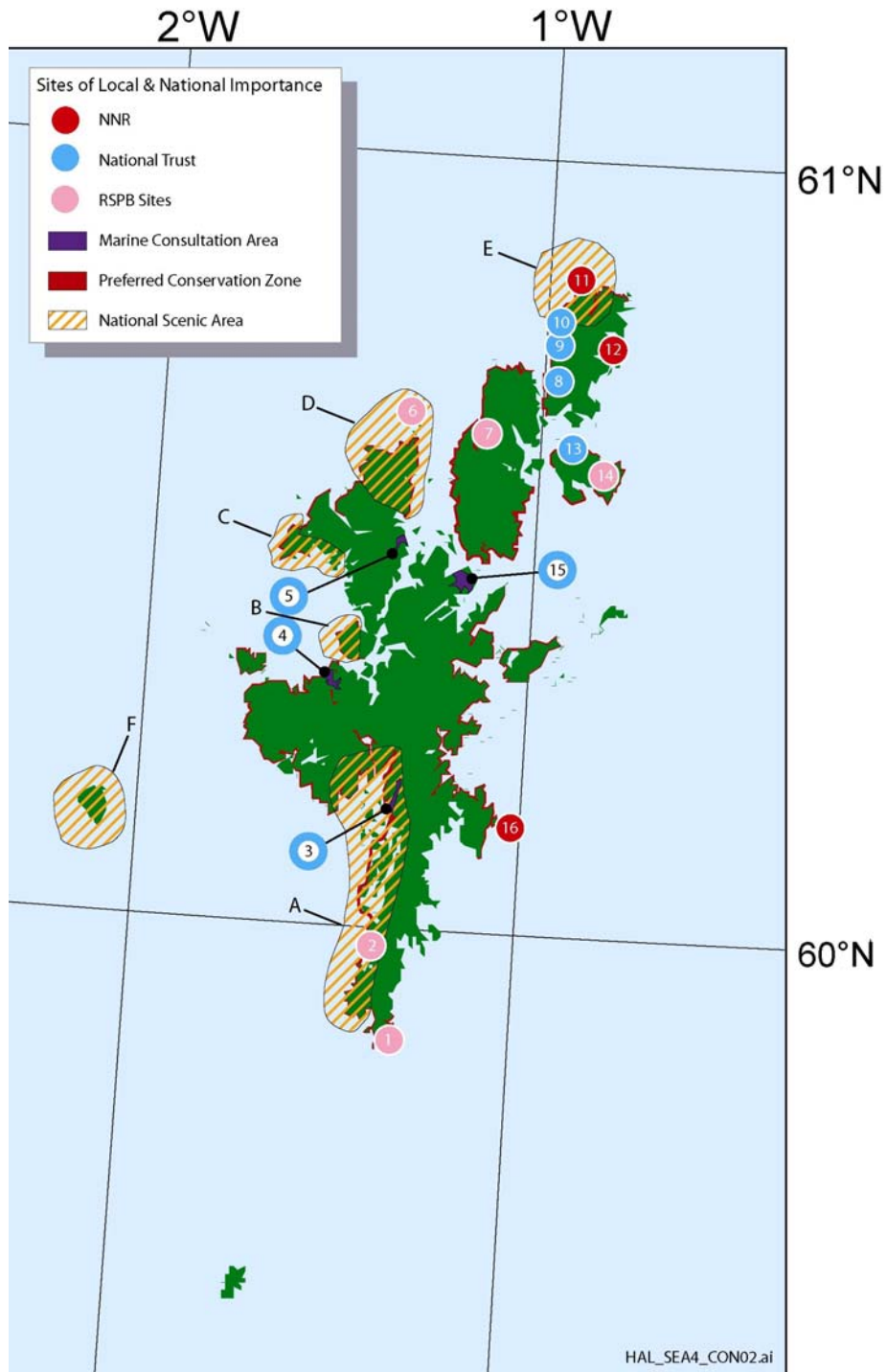
Map ref.	National Nature Reserves	Area (ha)	Site description
11	Hermaness	964	Overlooking Muckle Flugga, Britain's most northerly point, this reserve supports over 100,000 seabirds. The spectacular seacliffs, offshore arches and stacks support 16,000 pairs of gannets and in excess of 25,000 puffins, while the adjacent moorland is home to the third largest colony of great skuas in the World. Location – HP605160
12	Keen of Hamar	30	Sometimes likened to a moonscape, this apparently barren stony scree supports a unique collection of plants especially adapted to a rare serpentine rock debris environment on the most northerly island in Britain. Edmonston's chickweed endemic here on Unst (found nowhere else in the World), and several more common plants exhibit peculiar serpentine growth forms. Location - HP645099
19	Noss	313	With its thousands of seabirds, a boat trip to this island reserve provides an unforgettable experience. Some 45,000 guillemots, 7,000 pairs of gannets, 6,000 pairs of fulmar and 3,000 pairs of kittiwakes crowding its noisy ledges during the breeding season. Dive-bombing great skuas add an exciting dimension for visitors exploring the island's moorland. Location - HU545404

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Figure 2.3 – Coastal sites of national and local importance in the Shetland region



2.2.3 Geological Conservation Review Sites (GCRs)

For the definition of Geological Conservation Review Sites, see Appendix I. The areas that have been nominated on the basis of their geological and/or geomorphological importance are listed below. The sites are normally exposed at the coastline and have SSSI status. A few sites, such as quarries, are inland but the list as given below has been abstracted from the Coastal Directory, which was produced by JNCC, and there is therefore a general presumption of a coastal or near-coastal location.

GCR Sites in Shetland		
Norwick	Funzie	St. Ninians Tombola
The Punds to Wick of Hagdale	Cullivoe	Skelda Ness
Wick of Hagdale	Hascosay	Fidlar Geo to Watsness Sel Ayre
Hagdale Chromite - Quarry	Gutcher	Melby
Balta Island	North Sandwick	Papa Stour (2 sites)
Qui Ness to Pund Stack	Voxter Voe & Valayre Quarry	Ness of Clousta to the Brigs
Skeo Taing to Clugan	Garths Voe	Eshanness Coast
Ham Ness	The Ayres of Swinister	Villains of Hamnavoe
Lunda Wick	Easter Rova Head	Fugla Ness
Tonga Greff Coast	Burn of Aith	Uyea to North Roe Coast
Tressa Ness to Colbinstoff	The Cletts, Exnaboe	Foula
Sloager	The Cletts	Fair Isle
Virva	Sumburgh Head	

Sources of information

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1997a). *Coasts and seas of the United Kingdom Region 1 Shetland* Peterborough, Joint Nature Conservation Committee

2.2.4 RSPB Reserves

Figure 2.3



Map ref.	Shetland RSPB Reserves	Location	Area (ha)
1	Sumburgh Head	HU408080	16ha
2	Loch of Spiggie	HU374165	119ha
6	Ramna Stacks and Gruney	HU377972	11ha
7	Lumbister and Black Park	HU490940	1,843ha
16	Fetlar	HU625930	731ha
17	Mousa	HU462238	197ha

Sources of information

RSPB Web Site

http://www.rspb.org.uk/Images/5_26634.xls

2.2.5 National Trust for Scotland sites

Figure 2.3



Map ref.	National Trust for Scotland sites	Site description
8	Unst Wick	This estate, at the northern tip of Shetland and Britain, extends to 1,550ha (3,830a). It comprises ten parcels of
9	Unst N of Collaster	

Map ref.	National Trust for Scotland sites	Site description
10	Unst Sneuga	land, eight of which are on Unst, and includes a number of houses and agricultural buildings. The smallest parcel is the 12ha (30a) island of Daaey, off Fetlar. Most of the land is in agricultural use. Scenically the three west coast areas of Woodwick, Collaster and Lund are outstanding, with undulating hills, low rocky coastline, beaches, cliffs and voes, all typical of Unst as a whole. The area is of geological, botanical and ornithological importance. There is an interesting wood - the only one on Unst - at Halligarth, containing mostly sycamores.
13	Unst Swinnaness	
14	Unst Burga Wick	
15	Fetlar Daaey	
17	"Yell, N of Queyon"	

Sources of information

National Trust for Scotland website

http://www.nts.org.uk/conserv_frmset.htm

2.2.6 Shetland National Scenic Area

The National Scenic Area of Shetland consists of six separate locations, all of which are coastal and total 11,600ha.

- A. The south west coast from west of Quendale Bay (where the *Braer* ran aground in 1993), along the entire west coast with its narrow sounds, voes and distinctive islands. In the north narrow inlets and headlands occur in the Whiteness area west of Scalloway. The entire area is open to the Atlantic but most of the coastline is sheltered by long islands and headlands. This is the main area for salmon farming in Shetland.
- B. The west coast of Muckle Roe which faces the Atlantic and is a high varied coastline which is mainly dominated by scenic cliffs and associated features including geos and stacks.
- C. This area is dominated by the well-known cliffs of Eshaness with deep geos, wave-cut benches and storm-thrown boulders. There are also spectacular spray effects, which demonstrate the power of the Atlantic Ocean. To the east the south-facing coast is lower and more varied and includes several inlets but from a scenic point of view is famous for detached islands and sea stacks. As elsewhere the coastline contains large nesting seabird colonies.
- D. The north coast of mainland (North Roe) is especially important for seabirds on a rugged rocky coastline with variable cliffs and numerous small rocky inlets to the north the Ramna Stacks mark the entrance to Yell Sound, which is the main navigation channel to the Sullum Voe Terminal. These rugged stacks are of special importance for seabirds. The inland area is dominated by some of the highest upland areas in Shetland.
- E. This area embraces the north pointing peninsula of Herma Ness and is the most northerly point of Unst. The area includes Burra Firth. The peninsula consists of high moorland surrounded by cliffs, small rocky islands and narrow inlets. Again, the main ecological interest is seabirds with the open high-energy coasts contrasting with the shelter of Burra Firth and other smaller inlets.
- F. Although the entire area of Foula is included within the designation. The cliffs which face the open Atlantic to the west and south-west are particularly high and spectacular. There are several important seabird colonies throughout the island.

Sources of information

Scottish Natural Heritage website
<http://213.121.208.4/index/i-frame.htm>

2.2.7 Preferred Conservation Zones (PCZ)

Preferred Conservation Zones (PCZs) are non-statutory coastal areas in Scotland, of particular scenic, environmental or ecological importance, in which major new oil and gas related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. In Shetland there is one PCZ comprising several parts (see Figure 2.3)

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1997a). *Coasts and seas of the United Kingdom. Region 1 Shetland*. Peterborough, Joint Nature Conservation Committee.

2.2.8 Marine Consultation Areas

Figure 2.3



The non-statutory Marine Consultation designation identifies areas considered by Scottish Natural Heritage to deserve particular distinction in respect of the quality and sensitivity of the marine environment within them. Their selection encourages coastal communities and management bodies to be aware of marine conservation issues in the area. The areas are numbered according to their location on Figure 2.2.

3. **Whiteness Voe** lies within the Shetland National Scenic Area and is a Marine Consultation Area due to marine biological interest (including sea grass beds at the head of the Voe). The development of aquaculture within the Voe would be difficult without compromising both landscape and biological characteristics. Area - 338ha.
4. **Brindister Voe and the Vadills** is a Marine Consultation Area and contains The Vadills candidate Special Area of Conservation. The Vadills have been proposed under the lagoons category of the EU Habitats Directive, which is considered a priority habitat. In combination with the existing level of development opportunities for further development are constrained. Area - 131ha
5. **The Houb, Fugla Ness MCA**. Area – 30ha. No further information available for the reason for this designation.
18. **Swinster Voe and the Houb of Fora Ness** The Houb is a Marine Consultation Area for its enclosed basin/lagoon features. The extent of existing aquaculture sites in Swinster Voe limits the opportunities for further development. Area - 32ha.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1997a). *Coasts and seas of the United Kingdom. Region 1 Shetland*. Peterborough, Joint Nature Conservation Committee.

3 THE ORKNEY ISLANDS

The group of islands, forming the Orkney archipelago is generally low with gentle slopes and rounded topography. The most southerly island lies less than 10km from the Scottish Mainland. The exception is the west, Atlantic coastline of the main island (Mainland) and Hoy, which is characterised by some of the most spectacular cliff and rock formations in Britain, including the much-photographed stack, the Old Man of Hoy.

There are almost ninety islands and numerous rocks and skerries, all of which are separated by shallow and often narrow strands and inlets. Some of these, in response to their position between different tidal regimes in the Atlantic, North Sea and Pentland Firth, have strong tidal currents. Tide ranges are about 3m and the currents are normally due to constriction rather than sea surface gradient (Admiralty Sailing Directions (NP52), 4th Edition, 2000).



Typical Cliffs Orkney Mainland (W. Ritchie)

Like the Shetland Islands, the archipelago is a product of submergence and it has long been noted (NCC, 1978) that a fall in sea level of only 37m would unite them into one land mass.

Unlike Shetland, almost all of Orkney is composed of Old Red Sandstone rocks, mainly Middle and Old with the higher ground being referred to as the upper division (NCC, 1978).

The glacial periods were kind to Orkney and most islands are covered in glacial deposits which, being derived from underlying sandstones, form the basis of fertile soils and productive agricultural land.

Like Shetland, it is possible to sub-divide the coastline into OUTER and INNER settings and contrast the higher energy of the open Atlantic with the relatively lower wave climate of the North Sea and Pentland Firth.

Orkney has a large number of beaches and dune type coastlines including calcareous sands, which give rise to a type of coastline, which is known from its Hebridean origin as “machair” and as such has added conservational interest on the basis of landforms, soils, vegetation and bird life. Some islands in the north e.g. Sanday, Stronsay, North Ronaldsay are rarely more than 50m above sea-level and are almost entirely covered in wind blown sand. These dunes have been surveyed and mapped comprehensively by Dargie, 1998.

The northern group of islands have complex coastlines of small bays and headlands; many bays are shallow with very low energy environments. The beaches are relatively static with the sediment being supplied from adjacent glacial deposits, but in a few locations, shingle ayres (as in Shetland) enclose shallow lagoons, which have added ecological interest as special habitats.

Enclosed by the mainland and south islands including Hoy, Scapa Flow provides a unique coastal feature. It is an enclosed, extensive body of sheltered water once used to anchor the Home Fleet of the British Navy. To protect this strategic body of water the eastern approaches were sealed off by the Churchill Barriers, joining Mainland to Burray to South Ronaldsay. The small island of Flotta controls the main navigation channel from the south and now contains an oil refining and exporting terminal, which has been in operation for more than 25 years. The functions of this terminal and scale are less extensive than Sullom Voe in Shetland but have been monitored continuously for environmental and regulatory purposes throughout this period. Most of the monitoring has been concerned with Scapa Flow and not the outer coastlines of the remainder of the islands.



Skara Brae (W. Ritchie)

Although low vertical cliffs with wide platforms, stacks, geos, and other features occur occasionally on the east coast e.g. South Ronaldsay, Orkney is famous for the high, storm-lashed steep sandstone cliffs of Hoy and the west mainland. Near horizontal bedding planes and complex vertical fractures provide spectacular features. Colonies of seabirds use these cliffs for nesting and the surrounding seas provide sustenance, but, on the whole, the coastal ornithological interest is relatively less than in Shetland.

In addition to the considerable scientific interest in geology, geomorphology and coastal ecology, Orkney is rich in archeologically sites, one of which Skara Brae, is world famous and is presently under some threat from coastal erosion.

Again, like Shetland, Orkney is an area where the combination of high winds, powerful waves and strong forced tidal currents have produced considerable interest in all three forms of renewable energy and several pilot schemes have been mooted for appropriate coastal locations in Orkney as in Shetland.

The area plays host to a variety of important marine habitats and species as well as bird areas which are protected under international, national and local designations (see Box 3.1 for details).

Box 3.1 – Coastal protected sites in Orkney

International

Candidate Special Areas of Conservation (cSAC)	5
Special Protection Areas (SPA)	11
Ramsar	1
Important Bird Areas (IBA)	12
World Heritage Site	1

Box 3.1 – Coastal protected sites in Orkney	
Environmentally Sensitive Area (ESA)	0
National and Local	
National Nature Reserves (NNR)	0
Sites of Special Scientific Interest (SSSI)	22
Geological Conservation Review Sites (GCR)	14
Royal Society for the Protection of Birds Sites (RSPB)	8
National Trust for Scotland Sites	0
Scottish Wildlife Trust (SWT)	2
National Scenic Area (NSA)	1
Local Nature Reserves (LNR)	1
Preferred Conservation Zone (PCZ)	1
Marine Conservation Area (MCA)	0

Sources of information

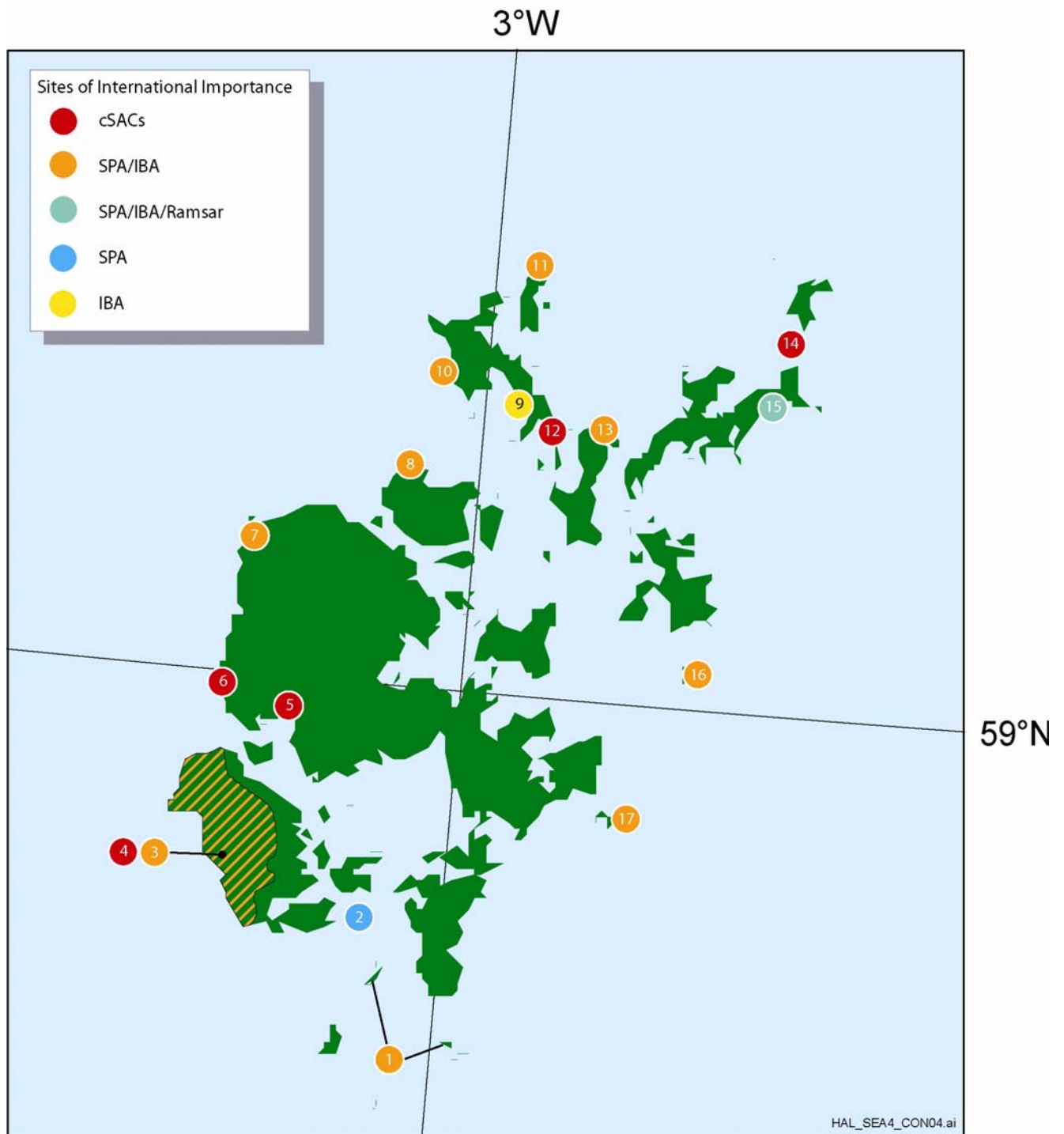
Nature Conservancy Council, 1978, Orkney: Localities of Geological and Geomorphological Importance. *Nature Conservancy Council, Newbury*

Dargie TCD 1988b. Sand dune vegetation survey of Scotland: Orkney. Volume 1: Main Report, Volume 2: Site Reports, Volume 3: NVC maps. SNH Research, Survey and Monitoring Report No. 123 *Scottish Natural Heritage, Edinburgh*

3.1 Sites of international importance

There are a number of sites of international importance along the Orkney coast which are described below. The number given in the right-hand corner of the summary information box identifies that site on Figure 3.1.

Figure 3.1 – Coastal sites of international importance in the Orkney region



3.1.1 Pentland Firth Islands SPA/IBA

<p>Summary information</p>	<p>Fig 3.1 1</p>
<p>Location: 58°44'30"N, 03°03'30"W Area: 170.5ha Date submitted: 01/12/1997 Birds of conservation concern: Arctic tern</p>	

The Pentland Firth Islands are located between the Orkney Islands and the mainland coast of north-east Scotland. They are a group of two main islands, Swona and Muckle Skerry, and a group of rocky skerries in the Pentland Firth. The islands contain a variety of habitats, including cliffs, rocky shores, maritime heath, moorland rough grassland marsh and open freshwater. They provide strategic nesting localities for Arctic tern *Sterna paradisaea*, which feed outside the SPA in the rich surrounding waters of the Pentland Firth.

General site characteristics

Habitats:

Coastline/Rocky areas (sea cliffs and rocky shores, rock stacks and islets)

Grassland

Shrubland (heathland)

Wetland (standing freshwater)

Species qualification

Those bird populations responsible for SPA qualification of the site are:

During the breeding season:

- Arctic tern (*Sterna paradisaea*) (1,200 pairs representing at least 2.7% of the breeding population in Great Britain, 4 year mean 1992-1995)

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, one other species has been recognised as important, as listed below:

During the breeding season:

- Great black-backed gull (*Larus marinus*) (285 pairs, 1986)

These islands are important for large numbers of breeding seabirds, holding 11,600 pairs on a regular basis. They are also nationally important for breeding *Uria aalge* (9,200 pairs, 1986, 1%).

Vulnerability and management issues

A tanker route passes through the Pentland Firth, and oil pollution is therefore a threat.

Component designations at national and local level

Pentland Firth Islands SSSI (2 sites)

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001131.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.2 Switha SPA (South Walls and Switha IBA)

Summary information	Fig 3.1	2
Location: 58°47'08"N, 03°06'00"W Area: 57.39ha Date submitted: 27/03/2000 Birds of conservation concern: Barnacle goose		

Switha is a small, uninhabited, low-lying grassy island at the southern end of the Orkney archipelago in northern Scotland. It lies 2km east of South Walls (Hoy) and 2km south of the island of Flotta. Switha has a rocky coastline with cliffs along the north, east and west shores, and is almost totally covered by maritime grassland, with smaller areas of heath and bog. Switha is of importance as a winter roosting site for barnacle goose *Branta leucopsis*.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)
 Grassland
 Shrubland (heathland)

Land Use:

Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are:

Over winter:

- Barnacle goose *Branta leucopsis* (1,000 individuals representing at least 3.7% of the wintering population in Great Britain, winter peak mean)

IBA qualification

The bird species responsible for qualifying this area as an IBA are the same as those of the SPA. The area is important for breeding seabirds and waders, and wintering geese.

Vulnerability and management issues

SNH run a refuge scheme for the geese, and contract a researcher to monitor *Branta leucopsis* utilisation of the site.

Component designations at national and local level

Switha SSSI
 Hill of White Hamars SWT

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002891.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.3 Hoy SPA/IBA

Summary information	Fig 3.1	3
Location: 58°51'30"N, 03°19'10"W Area: 9499.7ha Date submitted: 07/12/2000 Birds of conservation concern: Great skua, red-throated diver, peregrine		

Hoy is one of the most southerly of the major islands of the Orkney archipelago in northern Scotland. The Hoy SPA covers the northern and western two-thirds of the island, which is formed of Old Red Sandstone and contains Orkney's highest hills. Most of the island is moorland, drained by numerous streams with diverse vegetation. The site supports an extremely diverse mixture of mire, heath and alpine vegetation, and also Britain's most northerly native woodland. The highly exposed nature of the vegetation results in an arctic-alpine character to the summit of Ward Hill at only 479m. The low intensity of burning and grazing on Hoy has allowed scrub regeneration to a much greater extent than on most British moorlands. On the west coast, Old Red Sandstone cliffs reach 339m in height and include a number of notable stacks and crags. These cliffs provide important breeding sites for a number of seabird species, especially gulls and auks, whilst moorland areas support large numbers of breeding birds, in particular great skua *Catharacta skua*. Red-throated diver *Gavia stellata* nest on the numerous small lochans found on the moorland. The divers and seabirds feed in the rich waters around Hoy, outside the SPA.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores, rock stacks and islets)

Forest (mixed woodland)

Grassland (alpine, subalpine and boreal grassland)

Shrubland (shrub, heathland)

Wetland (standing freshwater, rivers and streams)

Land Use:

Agriculture (65%)

Nature conservation and research (35%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Peregrine (<i>Falco peregrinus</i>)	6 pairs representing at least 0.5% of the breeding population in Great Britain (Mid-1990s)
Red-throated diver (<i>Gavia stellata</i>)	56 pairs representing at least 6.0% of the breeding population in Great Britain (1994 National Survey)
Great skua (<i>Catharacta skua</i>)	1,900 pairs representing at least 14.0% of the breeding World population (Seabird Census Register)

Assemblage qualification

During the breeding season, the area regularly supports 120,000 individual seabirds including: puffin *Fratercula arctica*, guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, great black-backed gull *Larus*

marinus, Arctic skua *Stercorarius parasiticus*, fulmar *Fulmarus glacialis* and great skua *Catharacta skua*.

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, one other species has been listed as important, as shown below.

During the breeding season:

- Great black-backed gull (*Larus marinus*) (645, 1996)

The IBA is important for breeding seabirds (56,000 pairs on a regular basis), raptors and waders. It is also nationally important for breeding *Fulmarus glacialis* (37,000 pairs, 1986, 7%), *Stercorarius parasiticus* (96 pairs, 1996, 3%), *Sterna paradisaea* (525 pairs, 1987-1995, 1%) and *Uria aalge* (13,900 pairs, 1986, 2%).

Vulnerability and management issues

Native woodland regeneration is being encouraged through planting and protection measures, with progress being monitored. Monitoring of heathland regeneration and of geomorphological features is also undertaken. A management plan exists for the RSPB Reserve.

Component designations at national and local level

Hoy SSSI
North Hoy RSPB Reserve
North Hoy GCR
Hoy and West Mainland NSA

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002141.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.4 Hoy cSAC

Summary information	Fig 3.1	4
<p>Location: 58°51'30"N, 03°19'10"W</p> <p>Area: 9499.7ha</p> <p>Date submitted: June 1995</p> <p>Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic Coasts, natural dystrophic lakes and ponds, Northern Atlantic wet heaths with <i>Erica tetralix</i>, alpine and boreal heaths, blanket bogs</p> <p>Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Shingle. Sea cliffs. Islets (2.5%)
Inland water bodies (standing water, running water) (2%)
Bogs. Marshes. Water fringed vegetation. Fens (35%)
Heath. Scrub. Maquis and garrigue. Phygrana (56%)

Dry grassland. Steppes (1%)
Broad-leaved deciduous woodland (0.5%)
Inland rocks. Scree. Sands. Permanent snow and ice (3%)

Habitat qualification

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

Vegetated sea cliffs of the Atlantic and Baltic Coasts

Hoy's high sandstone cliffs have a superb range of vertical faces with a range of aspects, and well-developed talus fans. The ledges provide habitat for cliff plants and birds despite the high exposure, and northern Scottish species are well represented.

Natural Dystrophic lakes and ponds

Hoy provides an important representation of dystrophic lochs and pools on **Blanket bogs** and heathlands. The dystrophic lochs and ponds range in size and substrate type from pool complexes to moderate-sized lochs with peat, sand or stone substrates. The waterbodies support a limited flora typical of the acidic, low-nutrient habitat that includes bulbous rush *Juncus bulbosus*. As with many upland sites the remote location has protected the waterbodies from significant disturbance.

Northern Atlantic wet heaths with *Erica tetralix*

The northern form of **northern Atlantic wet heaths**, characterised by an abundance of lichens, is very local in the UK but is extensively developed on Hoy. Both M15 *Scirpus cespitosus* – *Erica tetralix* wet heath and M16 *Erica tetralix* – *Sphagnum compactum* wet heath are found here and are relatively undisturbed. This lack of disturbance may have contributed to the luxuriance of the lichen cover. A range of transitions to **Alpine and Boreal heaths**, **Blanket bogs** and flush mire are also found on this site.

Alpine and Boreal heaths

Hoy is representative of the more northerly oceanic sub-types of **Alpine and Boreal heaths**, where the cool and windy climate results in the development of this habitat at low altitude. The site has the largest high-quality examples of H17 *Calluna vulgaris* – *Arctostaphylos alpinus* heath in the UK, and the community is unusually rich in lichens. The alpine heaths are developed on an impressive series of solifluction terraces. The western oceanic H14 *Calluna vulgaris* – *Racomitrium lanuginosum* heath, occurring here with bearberry *Arctostaphylos uva-ursi*, is also represented. On more sheltered slopes, there are well-developed transitions to alpine forms of the oceanic H10 *Calluna vulgaris* – *Erica cinerea* heath, and to **European dry heaths**.

Blanket Bogs

Despite its island setting, the extensive **blanket bog** on Hoy, dominated by heather *Calluna vulgaris* and hare's-tail cotton-grass *Eriophorum vaginatum*, is akin to the more continental bogs found in the drier parts of the mainland, although more typically oceanic communities do occur locally. Lichen-rich blanket bog with *Cladonia* spp. is characteristic of higher parts of the site. In addition to pool systems and areas of extensive bog-moss *Sphagnum* cover, the site supports numerous peat mounds, a feature typical of, but local within, northern blanket bogs.

Vulnerability and management issues

The heaths, bogs and flushes on this site are dependent on low-intensity management regimes, including very low or zero levels of grazing and no burning. Management Agreements over about

two-thirds of the site ensure that low levels of stocking density are maintained. Part of the site is managed by the Royal Society for the Protection of Birds.

Component designations at national and local level

Hoy SSSI
North Hoy RSPB Reserve
North Hoy GCR
Hoy and West Mainland NSA

Sources of information

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

3.1.5 Loch of Stenness cSAC

Summary information	Fig 3.1 5
<p>Location: 58°59'45"N, 03°15'00"W Area: 791.87ha Date submitted: October 1996 Relevant qualifying habitats: Coastal lagoons Relevant qualifying species: N/A</p>	

General site characteristics

Habitats:

Tidal rivers.
Estuaries. Mud flats.
Sand flats.
Lagoons (including saltwork basins)
(no aerial percentages available)

Habitat qualification

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

Coastal lagoons

Loch of Stenness has a single basin characteristic of **Coastal lagoons** in Orkney, and has features of both silled lagoons and lagoonal inlets. It is the largest brackish lagoon in the UK and is of particular importance on account of its large size, stability, reduced salinity regime and northern location. There is a salinity gradient in the lagoon, and communities representing sheltered marine, brackish and freshwater conditions are found. Loch of Stenness is predominantly sedimentary: the lagoon basin is floored by soft mud, while round the shoreline muddy sediments with sand and gravel grade into pebbles, cobbles and boulders. The soft sublittoral mud supports mats of filamentous green algae and large numbers of burrowing worms, and the bivalve *Mya arenaria* and the snail *Hydrobia ulvae* may be dominant. Littoral boulders are dominated by filamentous green algae or furoid algae, with *Fucus ceranoides*, characteristic of brackish conditions, abundant in places. Submerged boulders in more saline areas of the lagoon support clumps of mussels *Mytilus edulis*, the brown alga *Fucus serratus* and species of foliose red and filamentous green algae. In the inner parts of the loch, where salinity is reduced, the cobbles and gravel support stands of beaked tasselweed *Ruppia maritima*, *F. ceranoides* and filamentous green algae. Extensive stands of pondweed *Potamogeton* spp. are present in areas of particularly low salinity.

Vulnerability and management issues

Current activities on and around this site appear to be compatible with the European interest. Restricted flushing rates in the loch make it sensitive to eutrophication from domestic septic tanks and agricultural runoff. SNH and other organisations are considering management options should it become necessary to reduce nutrient inputs in the future.

Component designations at national and local level

Hoy and West Mainland NSA

Sources of information

JNCC SAC website

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

3.1.6 Stromness Heaths & Coasts cSAC

Summary information	Fig 3.1	6
<p>Location: 59°00'00"N, 03°21'00"W</p> <p>Area: 635.78ha</p> <p>Date submitted: June 1995</p> <p>Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts, European dry heaths (alkaline fens - present)</p> <p>Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Shingle. Sea cliffs. Islets (3%)
 Inland water bodies (standing water, running water) (1%)
 Bogs. Marshes. Water fringed vegetation. Fens (12%)
 Heath. Scrub. Maquis and garrigue. Phygrana (70%)
 Dry grassland. Steppes (10%)
 Humid grassland. Mesophile grassland (4%)

Habitat qualification

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

Vegetated sea cliffs of the Atlantic and Baltic coasts

This cliff site on the north Atlantic coast of Mainland Orkney is selected as an example of extremely exposed cliffs in the north of Scotland. The combination of high, hard acidic rock cliffs and exposure to wind and salt spray results in one of the largest examples of maritime cliff in Scotland, associated with well-developed cliff-top transitions. Grazed cliff-top maritime grassland supports red fescue *Festuca rubra*, thrift *Armeria maritima*, spring squill *Scilla verna* and sea plantain *Plantago maritima*. Further inland there are transitions to maritime heath rich in species. Rarities such as Scottish primrose *Primula scotica* occur, with an unusual maritime form of crowberry *Empetrum nigrum*-rich heath present on deep, free-draining mineral soils and cross-leaved heath *Erica tetralix* on wetter soils.

European dry heaths

Stromness Heaths is an example of H7 *Calluna vulgaris* – *Scilla verna* heath that is subject to conditions of extreme maritime exposure. It is the largest area of the distinctive northern lichen-rich maritime **European dry heaths** in the UK. The abundance and growth forms of the lichens in this community are better developed than in other known sites in the UK. There are seaward transitions to maritime grasslands, and inland there are transitions to non-maritime H10 *Calluna vulgaris* – *Erica cinerea* heath and other habitats.

Vulnerability and management issues

The dry heaths found within the site depend on traditional low-intensity agriculture. Management Agreements are in place to protect the site from agricultural intensification. Limited areas are popular with walkers but present levels of use do not threaten the integrity of the site.

Component designations at national and local level

Stromness Heaths and Coast SSSI
 South Stromness Coast GCR
 Stromness MoD Site

Sources of information

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

3.1.7 Marwick Head SPA/IBA

Summary information	Fig 3.1	7
Location: 59°06'20"N, 03°21'00"W		
Area: 8.7ha		
Date submitted: 16/12/1994		
Birds of conservation concern: Guillemot, kittiwake		

Marwick Head lies on the west coast of the island of Mainland in the Orkney archipelago of northern Scotland. The site comprises a 2km section of high, eroded Old Red Sandstone cliffs rising to 85m and backed by cliff-top maritime grassland. The site is of importance as a nesting area for large numbers of guillemot *Uria aalge* and kittiwake *Rissa tridactyla*. These species feed outside the SPA in surrounding marine areas.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)
 Grassland

Land Use:

Nature conservation and research (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are:

During the breeding season:

- Guillemot (*Uria aalge*) (24,388 pairs representing up to 1.1% of the breeding East Atlantic population, Count as at 1991)

IBA qualification

The bird species responsible for qualifying this area as an IBA is the same as the SPA, i.e. the guillemot.

The site holds 26,000 pairs of breeding seabirds on a regular basis, and is also nationally important for breeding *Rissa tridactyla* (6,850 pairs, 1994, 1%).

Habitat qualification

During the breeding season, the area regularly supports 75,000 individual seabirds including kittiwake *Rissa tridactyla* and guillemot *Uria aalge*.

Vulnerability and management issues

Oil pollution poses an ongoing threat. Monitoring of seabird breeding success is carried out by the Joint Nature Conservation Committee (JNCC). A management plan exists for the RSPB Reserve.

Component designations at national and local level

Marwick Head SSSI
Marwick Head RSPB Reserve

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002121.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.8 Rousay SPA/IBA

Summary information	Fig 3.1	8
Location: 59°10'50"N, 03°06'00"W Area: 633.41ha Date submitted: 02/02/2000 Birds of conservation concern: Arctic tern, guillemot, kittiwake, fulmar		

Rousay is an island off the northeast coast of the island of Mainland in the Orkney archipelago, in northern Scotland. The site is composite and consists of two parts located at the northwest and northeast ends of the island. Here, sea-cliffs grade inland to areas of maritime heath and grassland. The maritime heath contains numerous base-rich flushes characterised by Black Bog-rush *Schoenus nigricans* and various sedges *Carex* spp. and grasses. The maritime heath also supports colonies of the nationally scarce Scottish Primrose *Primula scotica*. The site holds a diverse assemblage of breeding seabirds, including terns, auks, gulls and skuas. The nesting seabirds feed in the waters around Rousay outside the SPA, as well as further away.

General site characteristics

Habitats:

Grassland (Alpine, subalpine and boreal grassland)

Shrubland (heathland)

Wetland (standing freshwater, blanket bogs, fens, transition mires and springs)

Land Use:

Agriculture (50%)

Not utilised (50%)

Species qualification

Those bird populations responsible for SPA qualification of the site are:

During the breeding season:

- Arctic tern (*Sterna paradisaea*) (1,000 pairs representing at least 2.3% of the breeding population in Great Britain, Seabird Census Register)

Assemblage qualification

During the breeding season, the area regularly supports 30,000 individual seabirds (Three year mean, 1986-1988) including guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, Arctic skua *Stercorarius parasiticus*, fulmar *Fulmarus glacialis* and Arctic tern *Sterna paradisaea*.

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA i.e. the presence of the Arctic tern during the breeding season. The IBA also supports an important assemblage of breeding moorland birds, including *Stercorarius parasiticus* (142 birds, 1992, 4%).

Vulnerability and management issues

Monitoring of *Sterna paradisaea*, *Stercorarius parasiticus*, *Rissa tridactyla* and raptor breeding success is undertaken. Part of the IBA is a RSPB Reserve, for which a management plan exists.

Component designations at national and local level

Rousay SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002371.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.9 South Westray Coast IBA

Summary information	Fig 3.1	9
Location: 59°16'00"N 02°54'00"W		
Area: 530ha		
Birds of conservation concern: N/A		

General site characteristics

Habitats:

Coastline/rocky area (sea cliffs and rocky shores)

Wetland (sand dunes and beaches, shingle or stony beaches)

Land Use:

Land not utilised (100%)

Species qualification

Those bird populations responsible for IBA qualification of the site are shown below:

IBA qualifying bird species	Number of birds
<i>During winter</i>	
Sanderling (<i>Calidris alba</i>)	27 (count as at 1994)
Purple Sandpiper (<i>Calidris maritime</i>)	415 (count as at 1994)

Assemblage qualification

N/A

IBA qualification

The IBA is important for wintering waders.

Vulnerability and management issues

Sand extraction at the site has recently been proposed.

Component designations at national and local level

N/A

Sources of information

Birdlife International website

<http://www.birdlife.org.uk>**3.1.10 West Westray SPA/IBA**

Summary information	Fig 3.1	10
Location: 59°17'40"N, 03°00'45"W		
Area: 350.62ha		
Date submitted: 16/08/1996		
Birds of conservation concern: Arctic tern, guillemot, razorbill, kittiwake, fulmar		

The SPA is located on the west coast of the island of Westray, one of the most northerly of the Orkney islands in northern Scotland. The site comprises an 8km length of Old Red Sandstone cliffs, together with adjoining areas of species-rich maritime grassland and heath. The area is rich in cliff-top plants including the nationally scarce Scottish Primrose *Primula scotica*, Sea Plantain *Plantago maritima*, and Spring Squill *Scilla verna*. The cliffs support large colonies of breeding auks and kittiwake *Rissa tridactyla*, whilst the grassland and heathland areas support breeding colonies of skuas and terns. The seabirds feed in the surrounding waters outside the SPA.

General site characteristics**Habitats:**

Coastline/rocky areas (sea cliffs and rocky shores)

Grassland
Shrubland (heathland)
Land Use:
Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During breeding season	
Arctic tern (<i>Sterna paradisaea</i>)	1,200 pairs representing at least 2.7% of the breeding population in Great Britain (Count, as at 1997)
Guillemot (<i>Uria aalge</i>)	28,274 pairs representing at least 1.3% of the breeding East Atlantic population (Count as at 1988)

Assemblage qualification

During the breeding season, the area regularly supports 120,000 individual seabirds including razorbill *Alca torda*, kittiwake *Rissa tridactyla*, Arctic skua *Stercorarius parasiticus*, fulmar *Fulmarus glacialis*, guillemot *Uria aalge* and Arctic tern *Sterna paradisaea*.

IBA qualification

The bird species responsible for qualifying this area as an IBA is, as with the SPA, the guillemot. The IBA holds 45,000 pairs of breeding seabirds and 32,200 pairs of breeding waterbirds on a regular basis. It is also nationally important for breeding *Stercorarius parasiticus* (95 pairs, 1992, 3%) and *Alca torda* (1,180 pairs, 1987, 1%).

Vulnerability and management issues

There is ongoing monitoring of *Sterna paradisaea* breeding success. Part of the IBA is covered by the Noup Cliffs RSPB Reserve, for which a management plan exists.

Component designations at national and local level

West Westray SSSI
Noup Cliffs RSPB

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002101.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.11 Papa Westray (North Hill and Holm) SPA/IBA

Summary information	Fig 3.1	11
Location: 59°22'40"N, 02°52'45"W Area: 245.71ha Date submitted: 27/03/1996 Birds of conservation concern: Arctic tern, black guillemot		

Papa Westray is a small island lying close to Westray in the northern Orkney Islands in Scotland. The island rises to 48m above sea level at North Hill and is surrounded by a rocky coastline backing onto maritime sedge heath. Halophytic communities of plants typify the grassland immediately above the shore, grading inland to maritime sedge heath with a few small pools. The site supports a wide variety of plants, including the nationally scarce Scottish Primrose *Primula scotica*. The Holm is a small, low-lying island of 48ha off the east coast of Papa Westray dominated by a rocky coastline and maritime grassland. The islands are an important breeding site for both Arctic tern *Sterna paradisaea* and Arctic skua *Stercorarius parasiticus*. The terns feed outside the SPA in the waters surrounding the islands.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)

Grassland

Shrubland (heathland)

Wetland (standing freshwater)

(No areal percentages available)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
During breeding season	
Arctic tern (<i>Sterna paradisaea</i>)	1,950 pairs representing at least 4.4% of the breeding population in Great Britain (Count, as at 1997)
Arctic skua (<i>Stercorarius parasiticus</i>)	135 pairs representing at least 0.4% of the breeding North Atlantic population (Seabird Census Register)

Assemblage qualification

N/A

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, one other species has been listed as important, as shown below.

During the breeding season:

- Black guillemot (*Cephus grylle*) (190 pairs, 1995)

The site is important for breeding seabirds, and is also nationally important for breeding *Stercorarius parasiticus* (150 pairs, 1994, 5%).

Vulnerability and management issues

Ongoing monitoring of breeding seabirds is undertaken on North Hill, whilst Glasgow University conduct studies of *Cephus grylle* on Holm. North Hill is subject to communal grazing under an RSPB Reserve Agreement. There is a management plan for the site.

Component designations at national and local level

Holm of Papa Westray SSSI
 North Hill SSSI
 North Hill, Papa Westray RSPB Reserve

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002111.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.12 Faray & Holm of Faray cSAC

Summary information	Fig 3.1	12
<p>Location: 59°13'30"N, 02°49'30"W Area: 785.68ha Date submitted: October 1998 Relevant qualifying habitats: N/A Relevant qualifying species: Grey seal (<i>Halichoerus grypus</i>)</p>		

General site characteristics

Habitats:

Marine areas. Sea inlets (80%)
 Coastal sand dunes. Sand beaches. Machair (3%)
 Shingle. Sea cliffs. Islets (6%)
 Inland water bodies (standing water, running water) (0.5%)
 Bogs. Marshes. Water fringed vegetation. Fens (0.5%)
 Improved grassland (10%)

Species qualification:

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

Grey seal (Halichoerus grypus)

These two uninhabited islands in the northern part of Orkney support a well-established **grey seal** *Halichoerus grypus* breeding colony. The seals tend to be found in areas where there is easy access from the shore, and freshwater pools on the islands appear to be particularly important. The islands support the second-largest breeding colony in the UK, contributing around 9% of annual UK pup production.

Vulnerability and management issues

The site is not subject to any direct pressures, and visitor numbers are low, especially during the grey seal pupping season. A small amount of creel fishing takes place around the islands, which is compatible with the interests of the site.

Component designations at national and local level

Faray and Holm of Faray SSSI

Sources of information

JNCC SAC website

<http://www.jncc.gov.uk/ProtectedSites/>**3.1.13 Calf of Eday SPA (Eday IBA)**

Summary information	Fig 3.1	13
Location: 59°14'24"N, 02°43'48"W		
Area: 238.03ha		
Date submitted: 29/06/1998		
Birds of conservation concern: Cormorant, fulmar, kittiwake		

General site characteristics**Habitats:**

Coastline/rocky areas (sea cliffs and rocky shores)

Grassland (humid grasslands)

Shrubland (heathland)

Wetland (standing freshwater)

(No areal percentages available)

Species qualification

N/A

Assemblage Qualification:

The Calf of Eday is a small, uninhabited island located to the north of the island of Eday in the Orkney archipelago in northern Scotland. The island has a rocky coastline with cliffs on the north and east coasts. The dominant vegetation on the island is dry dwarf-shrub heath dominated by Heather *Calluna vulgaris*, with smaller areas of wet heath, semi-improved grassland and coastal grassland. The site is of importance as a nesting area for breeding seabirds, which feed in surrounding waters outside the SPA and use most of the island for loafing. Gulls and cormorant *Phalacrocorax carbo* nest in the dry heath and grassland areas, whilst fulmar *Fulmarus glacialis*, kittiwake *Rissa tridactyla* and auks nest on the cliffs.

IBA Qualification:**During the breeding season:**

- Great black-backed gull (*Larus marinus*) (940 pairs, 1996)

The IBA supports notable breeding populations of seabirds (10,700 pairs on a regular basis) and upland species. The site is also nationally important for breeding *Gavia stellata* (10 pairs, 1991-1996, 1%), *Phalacrocorax carbo* (225 pairs, 1995, 3%), *Numenius phaeopus* (8 pairs, 1995, 2%), *Stercorarius parasiticus* (110 pairs, 1992, 3%) and *Uria aalge* (8,450 pairs, 1986, 1%), and for wintering *Calidris maritima* (250 birds, 1992, 1%).

Vulnerability and management issues

The expansion of aquaculture into offshore feeding areas poses a threat.

Component designations at national and local level

Calf of Eday SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002431.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.14 Sanday cSAC

Summary information	Fig 3.1	14
<p>Location: 59°17'00"N, 02°30'00"W Area: 10971.65ha Date submitted: June 1999 Relevant qualifying habitats: Reefs Relevant qualifying species: Common seal (<i>Phoca vitulina</i>)</p>		

General site characteristics

Habitats:

Marine areas. Sea inlets (88%)

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (1.5%)

Salt marshes. Salt pastures. Salt steppes (0.1%)

Coastal sand dunes. Sand beaches. Machair (5%)

Shingle. Sea cliffs. Islets (5.1%)

Bogs. Marshes. Water fringed vegetation. Fens (0.1%)

Improved grassland (0.2%)

Habitat Qualification

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

Reefs

Sanday is a large, low-lying island in the north-east of the Orkney archipelago. Surrounded by clear, relatively shallow water, the island has a complex coastline dominated by extensive sandy beaches and sheltered inlets, interspersed with rocky headlands. Sanday is notable for the extensive subtidal bedrock reefs that surround the island and provide a habitat for dense forests of kelp *Laminaria* spp. The kelp occurs to a depth of about 20m and provides a habitat for species-rich, red algal turf communities. Sponges, such as *Clathrina coriacea*, and ascidians, such as *Aplidium punctum*, occur on the vertical rock faces. The north coast of Sanday is tide-swept and appears to support a richer fauna than the south coast, with a dense bryozoan/hydroid turf and dense brittlestar and horse mussel *Modiolus modiolus* beds in mixed sediment below the kelp zone. Crabs and brittlestars are common within crevices in the rock.

Species qualification

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

Common seal (*Phoca vitulina*)

Sanday is situated in the north-east of the Orkney archipelago and supports the largest group of common seal *Phoca vitulina* at any discrete site in Scotland. The breeding groups, found on intertidal haul-out sites that are unevenly distributed around the Sanday coast, represent over 4% of the UK population. Nearshore kelp beds that surround Sanday are important foraging areas for the seals, and the colony is linked to a very large surrounding population in the Orkney archipelago.

Vulnerability and management issues

This site is not subject to any direct pressure. A low level of traditional cockle gathering occurs on the site and a small amount of creel fishing takes place around the island, which is compatible with the interests of the site. Tourist numbers do not cause any notable problems during the common seal pupping season.

Component designations at national and local level

Central Sanday SSSI
Central Sanday GCR

Sources of information
JNCC SAC website
<http://www.jncc.gov.uk/ProtectedSites/>

3.1.15 East Sanday Coast SPA (East Sanday IBA)/Ramsar

Summary information	Fig 3.1	15
<p>Location: 59°16'00"N, 02°34'00"W Area: 1515.23ha Date submitted: 11/08/1997 Birds of conservation concern: Bar-tailed godwit, turnstone, ringed plover, sandwich tern</p>		

East Sanday Coast SPA is located on the island of Sanday in the Orkney Islands of northern Scotland. The site comprises a 55km stretch of coast, and consists of both rocky and sandy sections. It is notable for the presence of sand dune and machair habitats, rare outside the Hebrides, as well as extensive intertidal flats and saltmarsh. The site is further characterised by a series of tombolos, bars, spits and shingle ridges. The coastline supports internationally important populations of wintering waders.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)
Grassland (machair)
Wetland (mud flats and sand flats, salt marshes, sand dunes and beaches, shingle or stony beaches)

Land Use:

Fisheries/aquaculture (5%)
Not-utilised (95%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
Over Winter	
Bar-tailed godwit (<i>Limosa lapponica</i>)	600 individuals representing at least 1.1% of the wintering population in Great Britain (Winter peak mean 1991/2-1993/4)
Purple sandpiper (<i>Calidris maritima</i>)	840 individuals representing at least 1.7% of the wintering Eastern Atlantic - wintering population (winter peak means)
Turnstone (<i>Arenaria interpres</i>)	1,400 individuals representing at least 2.0% of the wintering Western Palearctic - wintering population (Three year peak mean, 1991/2-1993/4)

Assemblage qualification

N/A

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, other species have been listed as important, as shown in the table below.

IBA qualifying bird species	Number of birds
Over Winter	
Common ringed plover (<i>Charadrius hiaticula</i>)	710 pairs (1994)
Sandwich tern (<i>Sterna sandvicensis</i>)	135 pairs (1994)
Passage	
Ruddy turnstone (<i>Arenaria interpres</i>)	1800 pairs (1987)
Purple sandpiper (<i>Calidris maritima</i>)	1060 pairs (1987)

Ramsar features

Importance: Over winter, the site regularly supports purple sandpiper *Calidris maritima* (an average of 840 individuals representing 1.7% of the Eastern Atlantic wintering population) and turnstone *Arenaria interpres* (an average of 1,400 individuals representing 2.1% of the Western Palearctic wintering population). The internationally important mammal *Phoca vitulina* occurs at the site.

Vulnerability and management issues

The cockle *Cardium* fishery in Otterswick is currently unregulated. Regulating orders are under discussion.

Component designations at national and local level

East sanday Coast SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002331.htm>

Birdlife International website

<http://www.birdlife.org.uk>

Wetlands International website

http://www.wetlands.org/RDB/Ramsar_Dir/UnitedKingdom/UK114D02.doc

3.1.16 Auskerry SPA/IBA

Summary information	Fig 3.1	16
Location: 59°02'00"N, 02°34'00"W Area: 101.97ha Date submitted: 29/06/1998 Birds of conservation concern: Arctic tern, storm petrel		

Auskerry is a small, uninhabited low-lying island situated 5km south of Stronsay in the Orkney Islands of northern Scotland. The shore is a mixture of rocky platforms interspersed with low cliffs and boulder/shingle beaches. The vegetation is mainly composed of sheep-grazed *Calluna* heath and acidic grassland, with smaller areas of other semi-natural habitats including neutral, marshy and coastal grasslands, bog and mire, and standing water. There is an extensive area of peat cuttings in the south of the island, almost all of which are now disused. The site is important as a nesting area for a number of breeding seabirds. These birds feed outside the SPA in the waters surrounding the island, as well as more distant waters.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)

Grassland

Sea/marine area (open sea)

Shrubland (heathland)

Land Use:

Agriculture (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown in the following table:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Arctic tern (<i>Sterna paradisaea</i>)	780 pairs representing at least 1.8% of the breeding population in Great Britain (4 year mean, 1992-1995)
Storm petrel (<i>Hydrobates pelagicus</i>)	3,600 pairs representing at least 4.2% of the breeding population in Great Britain (Count, as at 1995)

Assemblage qualification

N/A

IBA qualification

The IBA supports large numbers of breeding seabirds, and is also nationally important for breeding *Sterna paradisaea* (670 pairs, 1993, 2%).

Vulnerability and management issues

There is an ongoing threat of oil pollution.

Component designations at national and local level

Auskerry SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002381.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.17 Copinsay SPA/IBA

Summary information	Fig 3.1	17
<p>Location: 58°54'00"N, 02°40'30"W Area: 125.42ha Date submitted: 29/03/1994 Birds of conservation concern: Guillemot, kittiwake, fulmar</p>		

Copinsay lies 4km off the east coast of Orkney mainland in northern Scotland. It consists of the island of Copinsay and three islets (Corn Holm, Ward Holm and Black Holm). The three holms are vegetated and a storm beach connects them to Copinsay at low water. The islands have good examples of unimproved sub-maritime grasslands and coastal inundation grasslands with a number of distinct vegetation zones. Copinsay is formed of Old Red Sandstone with the largely horizontal bedding planes providing ideal breeding ledges for seabirds (auks and kittiwake *Rissa tridactyla*), especially on the sheer cliffs of the south-east of Copinsay which reach to over 60m. The seabirds feed outside the SPA in the nearby waters, as well as more distantly.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores, rock stacks and islets)

Grassland

Land Use:

Agriculture 50%

Species qualification

N/A

Assemblage qualification

During the breeding season, the area regularly supports 70,000 individual seabirds including guillemot *Uria aalge*, kittiwake *Rissa tridactyla*, great black-backed gull *Larus marinus* and fulmar *Fulmarus glacialis*.

IBA qualification

During the breeding season:

- Great black-backed gull (*Larus marinus*) (695 pairs, 1994)

The site is important for breeding seabirds, holding 16,500 pairs on a regular basis. It is also nationally important for breeding *Uria aalge* (20,440 birds, 1994, 2%).

Vulnerability and management issues

A management plan exists for the RSPB Reserve. Attempts are being made to encourage Corncrake (*Crex crex*) recolonisation.

Component designations at national and local level

Copinsay RSPB Reserve
Copinsay SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002151.htm>

Birdlife International website

<http://www.birdlife.org.uk>

3.1.18 The Heart of Neolithic Orkney, World Heritage Site

Inscribed: 1999

Justification for Inscription: The monuments of Orkney, dating back to 3000-2000 BC, are outstanding testimony to the cultural achievements of the Neolithic peoples of northern Europe.

Brief description: The group of Neolithic monuments on Orkney (see table below) consists of a large chambered tomb (Maes Howe), two ceremonial stone circles (the Stones of Stenness and the Ring of Brodgar) and a settlement (Skara Brae), together with a number of unexcavated burial, ceremonial and settlement sites. The group constitutes a major prehistoric cultural landscape, which gives a graphic depiction of life in this remote archipelago in the far north of Scotland some 5,000 years ago. Although most of the sites are inland, Skara Brae is a coastal location on the west Mainland.

Site	Location
Maes Howe	HY318127
The Stones of Stenness and adjacent stones	HY306125
The Ring of Brogar	HY294133
Skara Brae	HY231187

Sources of information

UNESCO website

<http://whc.unesco.org/sites/514.htm>

3.2 Sites of national and local importance

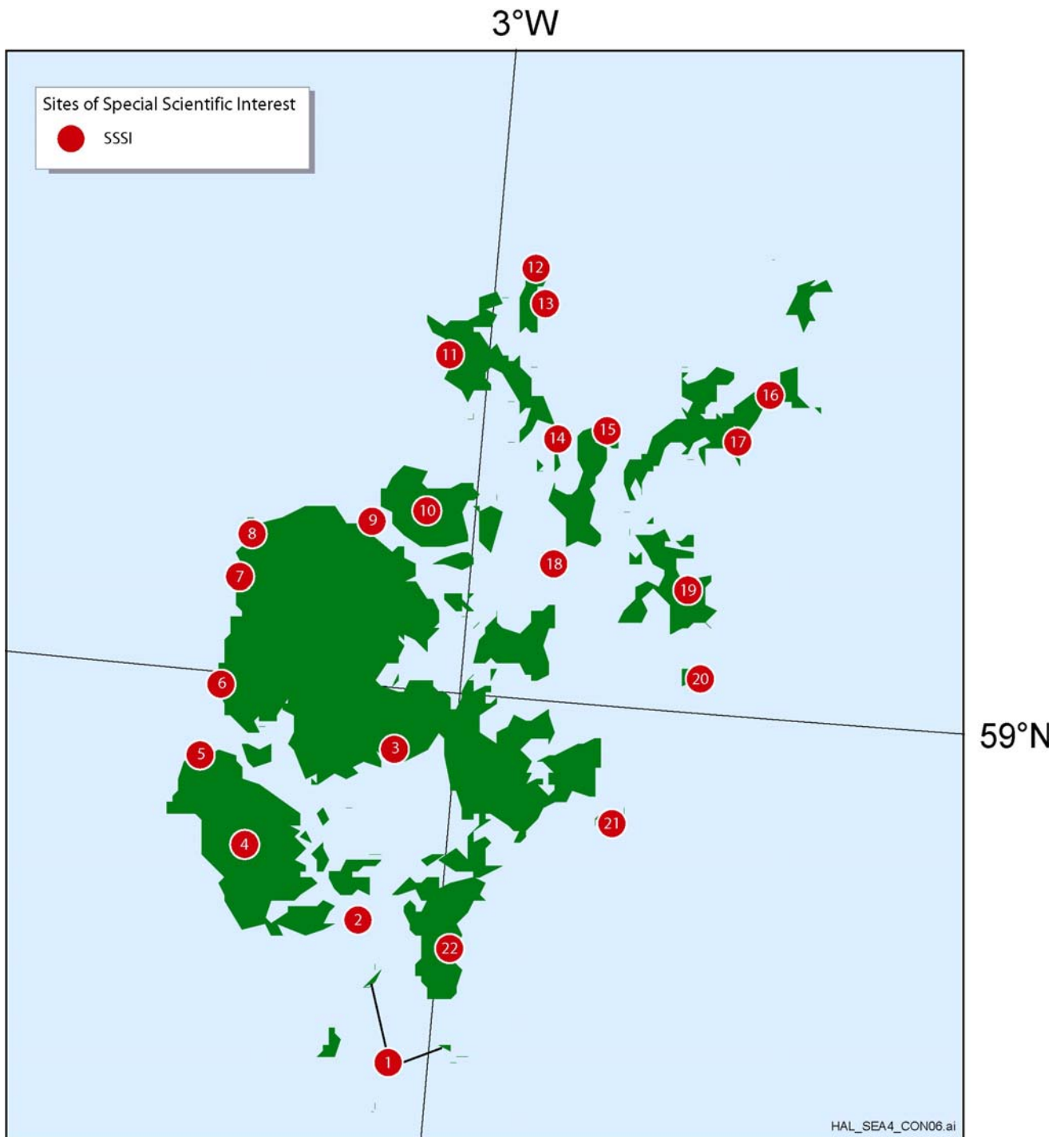
There are a number of sites of national and local importance along the Orkney coast including Scottish Wildlife Trust Reserves (SWT's), National Scenic Areas (NSA's) and Sites of Special Scientific Interest (SSSI's). These are described below. SSSI's have been marked on a separate map (Figure 3.2) for clarity. Figure 3.3 shows the location and reference numbers of other nationally and locally important sites (the number given in the text for each of these sites refers to their location on Figure 3.3). Numbering of the sites attempts to follow the Orkney coastline in a clockwise direction.

Again, some judgements have been made on the importance of the coastal components of the total list of sites for the entire area of the Orkney Islands.

3.2.1 Sites of Special Scientific Interest (SSSI)

These are listed below along with map location (see Figure 3.2), and National Grid Reference. For more detailed information relating to designation please refer to the SNH website (www.snh.gov.uk), or consult the appropriate area office. For the definition of Site of Special Scientific Interest, see Appendix I.

Figure 3.2 – SSSIs in Orkney



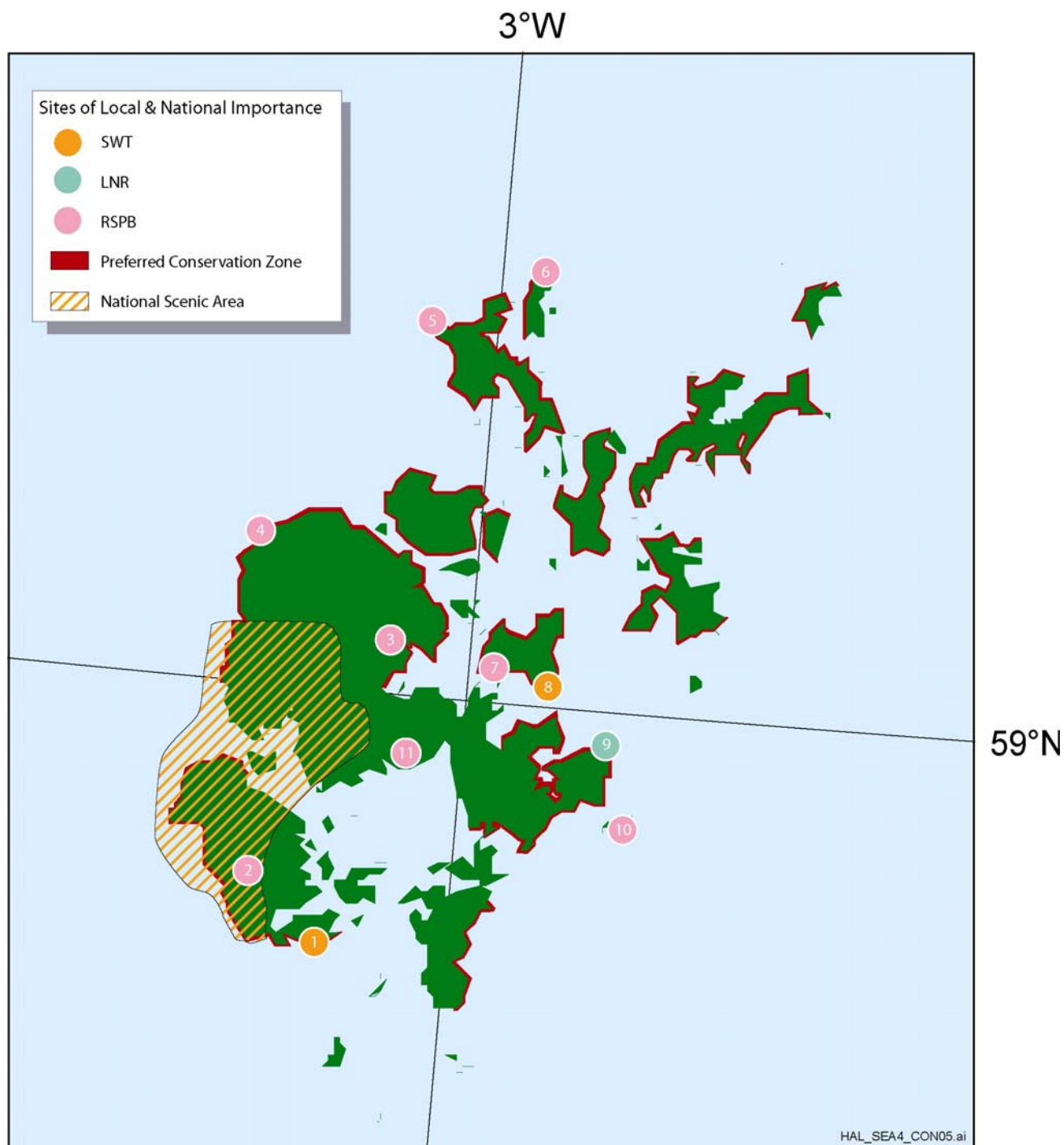
Map ref	Site Name	Location
1	Pentland Firth Islands	ND388844 ND465783
2	Switha	ND363907
3	Waulkimill	HY377065
4	Hoy	HY225010
5	Muckle Head and Selwick	HY213053

Map ref	Site Name	Location
		HY225055
6	Stromness Heaths and Coast	HY226135
7	Bay of Skail	HY233197
8	Marwick Head	HY226257
9	Eynhallow	HY360293
10	Rousay	HY400310
11	West Westray	HY425464
12	North Hill	HY500550
13	Holm of Papa Westray	HY508520
14	Faray and Holm of Faray	HY528383
15	Calf of Eday	HY581391
16	East Sanday Coast	HY680420
17	Central Sanday	HY700403
18	Muckle and Little Green Holm	HY527272
19	Mill Bay	HY665254
20	Auskerry	HY675162
21	Copinsay	HY605015
22	Ward Hill Cliffs	ND466885

Sources of information

SNH Area Office at Golspie, Sutherland

Figure 3.3 – Coastal sites of national and local importance in the Orkney region



3.2.2 National Nature Reserves (NNR)

There are no National Nature Reserves in Orkney.

3.2.3 Geological Conservation Review Sites (GCRs)

For the definition of Geological Conservation Review Sites, see Appendix 2. The areas that have been nominated on the basis of their geological and/or geomorphological importance are listed below. The sites are normally exposed at the coastline and have SSSI status. A few sites, such as quarries,

are inland but the list as given below has been abstracted from the Coastal Directory which was produced by JNCC and there is therefore a general presumption of a coastal or near-coastal location.

GCR sites in Orkney		
South Fersness Bay	Tarracliff Bay to Newark Bay	Bay of Skail
Greenan Nev Coast	South Stromness Coast - Section	Too of the Head
Central Sanday	Yesnaby & Gaulton Coast - Section	Old Man of Hoy Coast
Mill Bay	Point of Ayre	North Hoy
Denwick	West Coast of Orkney	

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson N.C, Eds. (1997b). *Coasts and seas of the United Kingdom. Region 2 Orkney*. Peterborough, Joint Nature Conservation Committee.

3.2.4 RSPB reserves

Figure 3.3



Map ref.	Shetland RSPB Reserves	Location	Area (ha)
2	Hoy	HY229022	3,946
3	Birsay Moors & Cottascarth, Mainland	HY375184	2,360
4	Marwick Head	HY223248	19
5	Noup Cliffs, Westray	HY397492	14
6	North Hill, Papa Westray	HY499548	206
7	Mill Dam	HY485175	16
10	Copinsay	HY611014	153
11	Hobbister	HY390082	759

Sources of information

RSPB website

http://www.rspb.org.uk/Images/5_26634.xls

3.2.5 National Trust for Scotland sites

There are no coastal National Trust sites in Orkney.

3.2.6 Scottish Wildlife Trust reserves

Figure 3.3



Map ref.	Wildlife Trust reserves	Area (ha)	Site description
1	Hill of White Hamars	71	This reserve lies on the south coast of South Walls island in Orkney off the minor road between The Ayre and Cantick Head (turn south at Eastbister Farm) and covers 71ha. A healthy population of Scottish primrose and a wide variety of herbs flourish on the grazed cliff ledges. The many narrow inlets provide good opportunities for short-range viewing of the cliff-nesting seabirds. Location - ND3138
8	Holm of Burghlee	11	This 11ha reserve is on the east coast of Shapinsay, east of the B9059. Lying on coastal hill ground, the reserve is an area of ungrazed maritime heathland

Map ref.	Wildlife Trust reserves	Area (ha)	Site description
			much of which has been lost from Shapinsay due to agricultural improvement. It supports an interesting bird community with breeding gulls, terns, skuas and waders. Location - HY536158

Sources of information

Scottish Wildlife Trust website
www.swt.org.uk

3.2.7 Hoy and West Mainland NSA

This is a most extensive scenic area, designated in 1980 and with an area of 14,800ha. The area embraces some of the most scenic and spectacular cliffs in Britain including the well-known Man of Hoy and the adjacent horizontally bedded sandstone cliffs. Equally scenic cliffs of sandstones and flagstones occur further north on the west coast of the Mainland west of Stromness. In addition to the



Churchill Barrier and Scapa Flow (W. Ritchie)

inland plateaux and distinctive mountain spine of Hoy, the area also includes the western entrance to Scapa Flow with low rocky islands and fast flowing tidal streams. East of Stromness there is a relatively wide sheltered inlet leading to Loch of Stenness; this area is a cSAC.

Sources of information

Scottish Natural Heritage website
<http://213.121.208.4/index/i-frame.htm>

3.2.8 Local Nature Reserves (LNR)

Figure 3.3



Map ref.	Local nature reserves	Area (ha)	Date declared	Site description
9	Mull Head	243.5	1992	Grassland, heathland

Mull Head is the north-easterly point of the Mainland and is typical low-level rounded landscape. Unlike most of the Mainland there is less intensive agricultural use in the form of grazing and cultivation. This area has a more natural appearance including locally important areas of heathland.

Sources of information

Scottish Natural Heritage website

www.snh.org.uk

3.2.9 Preferred Conservation Zones (PCZ)

Preferred Conservation Zones (PCZs) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil- and gas-related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. PCZs are the opposite of Preferred Development Zones. In Orkney there is one PCZ comprising several parts (see Figure 3.2)

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, Eds. (1997b). *Coasts and seas of the United Kingdom. Region 2 Orkney*. Peterborough, Joint Nature Conservation Committee.

3.2.10 Marine Consultation Area (MCA)

According to standard sources there would appear to be no Marine Consultation Areas (MCA's) in Orkney although the navigation channels and approaches to the oil terminal at Flotta require special consideration. Similarly in Scapa Flow there are several large wrecks on the seabed which are used for sub-aqua diving and one vessel (the Royal Oak) is a national war grave as a consequence of the substantial loss of life on its sinking.

4 NORTH HIGHLAND

This coastline is defined as lying within the counties of Sutherland, on the west, and Caithness, on the east, and is bounded by high spectacular cliffs, including Cape Wrath and Duncansby Head, both of which are among the highest and most dramatic cliff formations in the British Isles. Most of the coastline is open to the full exposure of the Atlantic Ocean to the northwest but the eastern part looks across a narrow strait, the Pentland Firth, to the southern islands of Orkney.



Cliffs East of Cape Wrath (J. Livingston)

Within prominent, bold headlands several beach and dune systems have evolved. These take three main forms – the bayhead e.g. Farr Bay, the extensive strand with climbing dunes e.g. the N.N.R at Torrisdale Bay and the cliff foot e.g. Coldbackie. One of the largest dune systems in Scotland is found in the west in the Balnakeil peninsula.

To the east of Caithness the main coastal type is the low cliff of horizontally bedded flagstone with extensive rock platforms. Many of these beds contain fossil beds of fish remains and are of critical importance. One large bayhead dune system occurs at Dunnet Bay with extensive sand penetration inland.

It is obvious that this is a very diverse coastline – almost the Highlands in microcosm. This generalisation extends to late and post-glacial shorelines which are not found in the Northern Islands and good examples of raised beaches, platforms, former cliff lines and terraces can be found in many locations.

Biological interest reflects the underlying geological and geomorphological framework. Some dune systems contain plants which are towards the northern limits of their growth. Calcareous sand and

Underlying geological structures and rock types can be used to divide this coastline into a sandstone and flagstone series of structures which are similar to the Orkney Islands in the east, in Caithness, whereas the western sector is much more complex. This complexity contains the classic formations of Highland Scotland which tend to run at 90° to the east – west alignment of the coast and therefore provide successive features of great geological interest. The boundary of the Old Red Sandstone is east of Strathy Point. To the west successive igneous and metamorphic rocks are of great antiquity.

The most important feature is the Moine Thrust which extends northwards from the south coast of Skye to reach the coast to the east of Loch Eriboll – one of the great geological fault planes in the British Isles. Geology controls the shape and form of the coastal zone, and from a conservation perspective this coastline is dominated by geological citations.

Three deep sea lochs in Sutherland, Kyle of Durness, Loch Eriboll and Kyle of Tongue align with the geological formations. The valleys of the Naver, Borgie, Strathy and Armadale accord faithfully with the south to north geological trend lines.

Within prominent, bold headlands several beach and dune systems have evolved. These take three main



Farr Bay (W. Ritchie)

aeolian deposition to high altitudes along the coast also add variety. All these systems have been surveyed and mapped in great detail by Dargie (1998).

Marine areas are also productive with relatively deep water offshore and a highly variable sea bed of rock outcrops and mixed glacial and fluvio-glacial deposits. Reefs and skerries are common between Orkney and Caithness with well-known tidal races and dangerous sailing conditions – again, a product of differential tidal flows between the Atlantic and the North Sea. For modern vessels the Pentland Firth presents few navigational problems and there is a steady passage of ships from Northern Europe to the open Atlantic.

Settlement is confined to small villages and Thurso is the largest community with a small port function. To the west the port of Scrabster provides daily car-ferries to Orkney.

Economic activity is dominated by Dounreay, an atomic energy establishment west of Thurso. Located at the coastal edge on 10 to 30m high flagstone cliffs with a small enclosed beach, reefs and rock platforms the site is experiencing substantial interest and close monitoring due to the discharges into the marine environment. A few irradiated particles have been found on the beach (Sandside) to the west and to date, the source and mode of transport along the coast remain unknown. When first constructed the reactors at Dounreay were hailed as the leading edge of British nuclear technology but are now in a long phase of decommissioning which is likely to have a severe impact on the regional economy.

Other unique activities are military use including firing range in the western part of the coastline, especially near the uninhabited areas near Cape Wrath.

Tourism especially in summer is a mainstay of the economy and is concentrated in the coastal zone, including significant reliance on features of ecological interest and the



Smoo Cave (J. Livingston)

spectacular scenery of juxtaposed mountains and sea. A much visited-coastal feature is Smoo Cave near Balnakeil in Sutherland. Thurso is a centre for sport sea fishing. John O'Groats is a major tourist destination, mainly for day-visitors.

The area plays host to a variety of important marine habitats and species as well as bird areas which are protected under international, national and local designations (see Box 4.1 for details).

Box 4.1 – Coastal protected sites in the North Highlands	
International	
Candidate Special Areas of Conservation (cSAC)	5
Special Protection Areas (SPA)	3
Ramsar	1
Important Bird Areas (IBA)	4
World Heritage Site	0
Environmentally Sensitive Area (ESA)	0
National and Local	
National Nature Reserves (NNR)	2
Sites of Special Scientific Interest (SSSI)	21
Geological Conservation Review Sites (GCR)	20
Royal Society for the Protection of Birds Sites (RSPB)	0
National Trust for Scotland Sites	0
Scottish Wildlife Trust (SWT)	0
National Scenic Area (NSA)	1
Local Nature Reserve (LNR)	0
Preferred Conservation Zone (PCZ)	2
Marine Conservation Area (MCA)	1

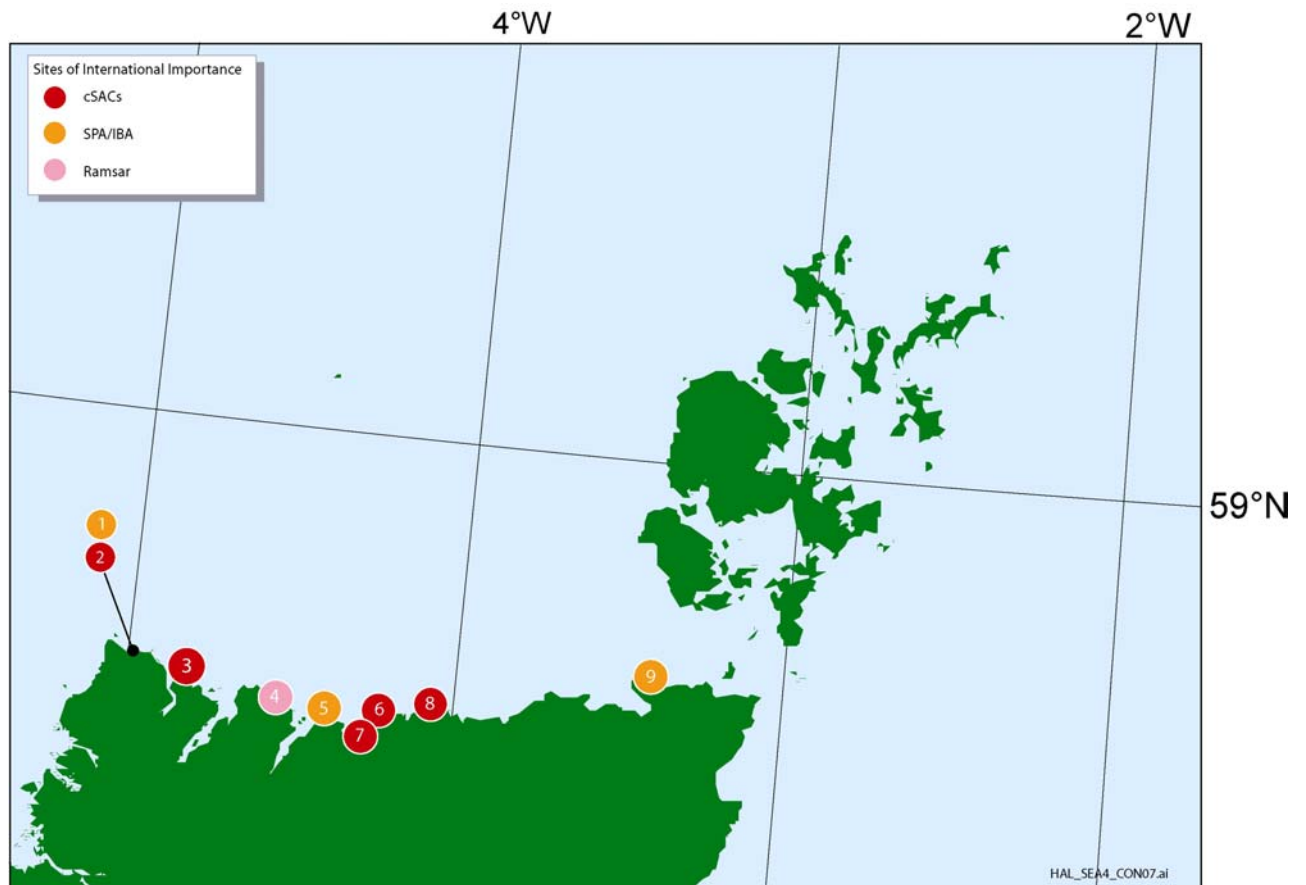
Sources of information

Dargie TCD (1998d) Sand dune vegetation survey of Scotland: North West. Volume 1: Main Report, Volume 2: Site Reports, Volume 3: NVC maps. SNH Research, Survey and Monitoring Report No.124. *Scottish Natural Heritage, Edinburgh*

4.1 Sites of international importance

There are a number of sites of international importance along the North Highlands coast which are described below. One Ramsar site is a peatlands designation but is marginal to the coastline and has therefore been included. The number given in the right-hand corner of the summary information box identifies that site on Figure 4.1.

Figure 4.1 – Coastal sites of international importance in the North Highlands region



4.1.1 Cape Wrath SPA/IBA

Summary information	Fig 4.1	1
Location: 58°36'00"N, 04°53'30"W Area: 1019.18ha Date submitted: 15/03/1996 Birds of conservation concern: Puffin, razorbill, guillemot, kittiwake, fulmar		

Cape Wrath lies at the north-westernmost tip of mainland Scotland in Sutherland. The site comprises two stretches of Torridonian sandstone and Lewisian gneiss cliffs (of *c.* 15km length) around the headland of Cape Wrath. These cliffs provide suitable nest sites for large numbers of breeding seabirds. West of Cape Wrath, the cliffs are broken with undercliffs vegetated by Heather *Calluna vulgaris*, Juniper *Juniperus communis* and ferns, whilst east of the headland, far more precipitous cliffs rise to about 200m. Cape Wrath is especially important for gulls and auks. The seabirds feed outside the SPA in the nearby waters and more distantly in the North Atlantic.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)
 Shrubland (heathland)

Land Use:

Agriculture
 Hunting

Military
(No areal percentages available)

Species qualification

N/A

Assemblage qualification

During the breeding season, the area regularly supports 50,000 individual seabirds including puffin *Fratercula arctica*, razorbill *Alca torda*, guillemot *Uria aalge*, kittiwake *Rissa tridactyla* and fulmar *Fulmarus glacialis*.

IBA qualification

During the breeding season:

- Razorbill (*Alca torda*) (1330 pairs, 1988)

The IBA holds 17,100 pairs of breeding seabirds and 10,800 pairs of breeding waterbirds on a regular basis. The site is also nationally important for breeding *Rissa tridactyla* (10,300 pairs, 1987-1988, 2%) and *Uria aalge* (9,800 pairs, 1987-1988, 1%).

Vulnerability and management issues

Disturbance results from a MoD bombing and live firing range.

Component designations at national and local level

Cape Wrath SSSI

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001231.htm>

Birdlife International website

<http://www.birdlife.org.uk>

4.1.2 Cape Wrath cSAC

Summary information	Fig 4.1	2
Location: 58°36'00"N, 04°53'30"W Area: 1019.18ha Date submitted: December 2000 Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts Relevant qualifying species: N/A		

General site characteristics:

Habitats:

Coastal sand dunes. Sand beaches. Machair (1%)
Shingle. Sea cliffs. Islets (14%)
Inland water bodies (standing water, running water) (1%)
Bogs. Marshes. Water fringed vegetation. Fens (15%)
Heath. Scrub. Maquis and garrigue. Phygrana (62%)

Alpine and sub-alpine grassland (7%)

Habitat qualification

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

Vegetated sea cliffs of the Atlantic and Baltic coasts

Cape Wrath includes Clò Mór, the highest vertical sea cliffs in mainland Britain. Here and on some of the surrounding cliffs and cliff tops, the vegetation is heavily bird-influenced, and locally dominated by common scurvygrass *Cochlearia officinalis*. There is a wide range of cliff habitats ranging from very exposed faces and crevices to comparatively sheltered gullies and even, at Cape Wrath itself, remarkable cliff-top sand dunes. Grasslands and heaths are well-represented, and the strip above the cliff edge has a good deal of sub-maritime short heather heath, rich in species including the montane dwarf willow *Salix herbacea*. The high exposure is sufficient to bring montane conditions close to sea level, and this is a classic site for the 'altitudinal descent' of upland species. On cliffs that are relatively sheltered from the north and north-west gales, there is strong development of a wood-rush *Luzula*-tall fern community leading down to roseroot *Sedum rosea* and wild angelica *Angelica sylvestris* ledges.

Vulnerability and management issues

The site is owned by the Ministry of Defence (MoD) and used as a naval bombardment range. A MoD Conservation Group provides a forum for discussion of ways in which range procedures might be modified if there is a need to reduce the impacts on conservation and other interests. Changes to the maritime cliff communities are not expected as a result of current activity. Current recreational use of the site is low and disturbance is minimal.

Component designations at national and local level

Cape Wrath SSSI

Sources of information

JNCC SAC website

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

4.1.3 Durness cSAC

Summary information	Fig 4.1	3
<p>Location: 58°34'09"N, 04°46'06"W</p> <p>Area: 1212.74ha</p> <p>Date submitted: October 1996</p> <p>Relevant qualifying habitats: Fixed dunes with herbaceous vegetation ('grey dunes'), hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp, alpine and subalpine calcareous grasslands, limestone pavements</p> <p>Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Coastal sand dunes. Sand beaches. Machair (39%)

Shingle. Sea cliffs. Islets (8%)

Inland water bodies (standing water, running water) (7%)

Bogs. Marshes. Water fringed vegetation. Fens (6%)
Heath. Scrub. Maquis and garrigue. Phygrana (19%)
Dry grassland. Steppes (3%)
Humid grassland. Mesophile grassland (6%)
Alpine and sub-alpine grassland (8%)
Improved grassland (0.5%)
Coniferous woodland (0.5%)
Inland rocks. Screes. Sands. Permanent snow and ice (2.5%)
Other land (including towns, villages, roads, waste places, mines, industrial sites) (0.5%)

Habitat qualification

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

Fixed dunes with herbaceous vegetation ('grey dunes')

Durness contains one of the largest sand dune systems in the north of Scotland. It is an example of an extreme northern variant of **fixed dunes with herbaceous vegetation**. The site is maintained by very active physical and biological processes. Fixed dune vegetation at this site occurs on an extensive and diverse sequence of dunes and on soils covered with blown sand. A rich variety of calcareous dune grassland species grow here in association with arctic-alpine plants such as mountain avens *Dryas octopetala*.

Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp

Durness contains a cluster of three marl lochs (Croispol, Borrallie and Caladail) on Dalradian Durness limestone in the extreme north-west of Scotland. These are the northernmost examples of marl lakes in the UK and one of the few high-quality occurrences of the habitat type in Scotland. The water is very clear, low in nutrients and with little phytoplankton production. There are extensive growths of submerged macrophytes, including seven species of pondweed *Potamogeton* and three species of stonewort *Chara*. In addition, Borrallie is the only marl lake in the UK with a population of Arctic charr *Salvelinus alpinus*.

Alpine and subalpine calcareous grasslands

Durness is one of four sites representing the low-altitude **Alpine and subalpine calcareous grasslands** that are restricted to the north-west mainland of Scotland. Durness contains the largest stands of CG13 *Dryas octopetala* – *Carex flacca* heath in the UK, developed on dolomitic limestone at 0–60m. The site has an outstanding representation of characteristic species, including wild thyme *Thymus polytrichus*, ribwort plantain *Plantago lanceolata*, sea plantain *Plantago maritima*, purging flax *Linum catharticum* and common bird's-foot-trefoil *Lotus corniculatus*. The endemic Scottish primrose *Primula scotica* is present, and other uncommon species include mountain everlasting *Antennaria dioica*, hair sedge *Carex capillaris*, lesser meadow-rue *Thalictrum minus*, frog orchid *Coeloglossum viride* and hart's-tongue *Phyllitis scolopendrium*. Locally, the calcifuge species crowberry *Empetrum nigrum* occurs, giving rise to an unusual sub-type of *Dryas* heath. There are transitions to a wide range of other communities, including coastal dunes, other types of base-rich grasslands, and a range of dwarf-shrub heaths.

Limestone pavements

This site on Cambro–Ordovician Durness limestone is the most north-westerly occurrence of **Limestone pavements** in the UK. It is one of five sites representing the northern variant of this habitat type. Because of its location it supports a diverse flora rich in northern and arctic-alpine species. The site supports communities with a maritime element, similar to those on Strath, with burnet rose *Rosa pimpinellifolia*, stone bramble *Rubus saxatilis*, mountain avens *Dryas octopetala*,

dark-red helleborine *Epipactis atrorubens* and black spleenwort *Asplenium adiantum-nigrum*. Both lesser meadow-rue *Thalictrum minus* and alpine meadow-rue *Thalictrum alpinum* occur here. Further inland, brittle bladder-fern *Cystopteris fragilis* and hard shield-fern *Polystichum aculeatum* flourish.

Vulnerability and management issues

The site is grazed heavily by rabbits, causing erosion which is exacerbated by wind. Other activities, including muirburn, tipping, sand extraction and vehicle use, occur on a localised basis and will be monitored. A Management Agreement with the nearby golf club is in place to encourage sensitive management, including rabbit control.

Component designations at national and local level

Durness SSSI
Durness GCR

Sources of information

JNCC SAC website

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

4.1.4 Caithness and Sutherland Peatlands Ramsar site

Summary information	Fig 4.1	4
<p>Location: 58°20'10"N, 03°56'15"W Area: 143,539ha Date submitted: 02/02/99</p>		

Ramsar features

Importance: The Caithness and Sutherland Peatlands site encompasses large parts of the peatland complex of this same name. These areas form one of the largest and most intact areas of blanket bog in the world. They include an exceptionally wide range of vegetation and surface pattern types, some of which are unknown elsewhere. This range of habitats supports a number of rare species of wetland plants and animals. The plants include three nationally rare mosses, five nationally scarce higher aquatic plants and four nationally scarce mosses. The insect fauna includes several nationally scarce species and one nationally rare species. The site also harbours internationally important populations of *Calidris alpina schinzii* (1,860 pairs, representing an average of 17% of the breeding population) and *Anser anser* (30 pairs, representing an average of 5% of the breeding population). There are nationally important breeding populations of ten waterbird species.

The primary habitat of the site is active blanket bog. The dominant plant communities vary from the wetter west to the drier east, but all are dominated by dwarf shrubs, sedges and *Sphagnum* mosses. The site also contains some permanent streams and lakes.

Sources of information

The Annotated Ramsar List: UK

http://ramsar.org/profiles_uk.htm

Wetlands International website

http://www.wetlands.org/RDB/Ramsar_Dir/UnitedKingdom/UK130D02.doc

4.1.5 North Sutherland Coastal Islands SPA (Eilean Hoan IBA & Eilean nan Ron IBA)

Summary information	Fig 4.1	5
Location: 58°33'30"N, 04°21'00"W Area: 221.11ha Date submitted: 02/02/1999 Birds of conservation concern: Barnacle goose, Leach's-storm petrel		

The North Sutherland Coastal Islands SPA comprises two islands off the north coast of Sutherland in northern Scotland: Eilean nan Ron off the Kyle of Tongue, and Eilean Hoan at the mouth of Loch Eriboll. These islands have a rocky coastline and are covered by maritime heath and grassland. The more sheltered, central area around the abandoned township on Eilean nan Ron was previously cultivated and is now dominated by rank grassland communities. Eilean Hoan is formed largely of Durness limestone, and accordingly there is a range of limestone plant communities influenced by salt spray and by previous cultivation. Most of the island is covered by a range of grassland communities, although at the north-west end there is a small area of maritime heath, as well as small areas of nutrient-enriched vegetation close to colonies of breeding gulls. The islands support a traditional wintering flock of barnacle goose *Branta leucopsis*. The birds roost and feed on both islands, as well as on other small islands outside the SPA, and on agriculturally improved land on the nearby mainland.

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)
 Grassland (100%)

Land Use:

Agriculture (100%)
 Nature conservation and research (100%)

Species qualification

Those bird populations responsible for SPA qualification of the site are:

Over winter:

- Barnacle goose (*Branta leucopsis*) (631 individuals representing at least 2.3% of the wintering population in Great Britain, 4 year peak mean, 1992/3-1995/6)

Assemblage qualification

N/A

IBA qualification

Eilean Hoan IBA

During the breeding season:

- Leach's storm-petrel (*Oceanodroma leucorhoa*) (0 pairs, 1994)

Over winter:

- Barnacle goose (*Branta leucopsis*) (495 pairs, 1994)

Notable breeding birds include a few pairs of *Sterna paradisaea* and *Hydrobates pelagicus*. *Branta leucopsis* are from the Greenland breeding population.

Eilean Nan Roan IBA

Over winter:

- Barnacle goose (*Branta leucopsis*) (350 pairs, 1994)

This is also an important site for breeding seabirds. *Branta leucopsis* are from the Greenland breeding population.

Vulnerability and management issues

No serious threats are known at either of the two islands. There is no visitor access to this leased RSPB Reserve (Eilean Hoan), and a management plan is available.

Component designations at national and local level

Eilean Hoan SSSI
Eilean Nan Roan SSSI
Eilean Hoan RSPB Reserve

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001211.htm>

Birdlife International website

<http://www.birdlife.org.uk>

4.1.6 Invernaver cSAC

Summary information	Fig 4.1	6
<p>Location: 58°31'21"N, 04°15'00"W Area: 294.54ha Date submitted: June 1995 Relevant qualifying habitats: Fixed dunes with herbaceous vegetation ('grey dunes', Atlantic decalcified fixed dunes (<i>Calluno-Tlicetea</i>), dunes with <i>Salix repens</i> ssp <i>argentea</i> (<i>Salicion arenariae</i>), coastal dunes with <i>Juniperus.spp</i>, alpine and boreal heaths, alpine and subalpine calcareous grasslands Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (37.2%)

Coastal sand dunes. Sand beaches. Machair (20.2%)

Inland water bodies (standing water, running water) (0.5%)

Bogs. Marshes. Water fringed vegetation. Fens (2%)

Heath. Scrub. Maquis and garrigue. Phygrana (17.9%)

Dry grassland. Steppes (3.2%)

Alpine and sub-alpine grassland (9.8%)

Broad-leaved deciduous woodland (0.3%)

Inland rocks. Screes. Sands. Permanent snow and ice (8.9%)

Habitat qualification

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

Fixed dunes with herbaceous vegetation ('grey dunes')

Invernaver is one of the two largest dune sites in north Scotland, and it is actively accreting owing to its exposed location. Dunes merge into areas of sand that have been blown up and over the cliffs by strong winds as so-called 'climbing dunes', giving mosaics of fixed dune with grassland or heathland communities. Transitions from calcareous grassland to heath are well-developed. The presence of a number of arctic-alpine species such as mountain avens *Dryas octopetala* and purple oxytropis *Oxytropis halleri*, as part of the fixed dune vegetation, is particularly important. The nationally scarce endemic Scottish primrose *Primula scotica* is also present.

Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)

This very exposed and active dune system is an extensive representative of **Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)** on the north coast of Scotland and is an extreme northern variant of the habitat type. Areas of sand have been blown up and over cliffs by strong winds to form 'climbing dunes'. This situation is functionally similar to the blown sand of Penhale Dunes, although the communities present are very different because of climate and location. These dunes support a highly complex mosaic of fixed dune grassland and heathland communities. **Atlantic decalcified fixed dunes** exist in a matrix of other dune heath communities that include a number of arctic-alpine species. This is the largest example of an extreme northern variant of this vegetation type and is of interest because it forms a transition between the typical northern acidic dune heath vegetation and the arctic vegetation that is widespread further north. It is therefore considered to be particularly important in the European range of ecological variation of dune vegetation.

Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)

Invernaver is the only Scottish site that can be confidently allocated to **dunes with *Salix repens* ssp. *argentea***, because of the relative density of creeping willow. The site is an extreme northern variant of the habitat type and contains a wide range of sand dune habitats. **Dunes with *Salix repens* ssp. *argentea*** occurs in hollows among hummocky dunes and within narrow blow outs in two main areas and extends into areas of 'climbing dunes' where sand has been blown up onto cliffs.

Coastal dunes with *Juniperus* spp

Invernaver contains a high density of dune habitats in a relatively small area, with an extensive transition zone to non-dune conditions. Dune juniper thickets occur in their more dispersed form, with scattered individuals occurring relatively widely. Of particular interest is the occurrence of the scattered form of **Coastal dunes with *Juniperus* spp.** on 'climbing dunes' found where sand has been blown onto cliff slopes, giving complex transitions from dune to cliff habitats and mountain avens *Dryas octopetala* heath. Juniper is also found as more discrete areas of low scrub in the dunes, extending as more scattered individuals into the non-dune habitats of this site.

Alpine and Boreal heaths

Invernaver represents a form of **Alpine and Boreal heaths** that is, as far as is known, floristically unique in the UK. The site is complementary to Ronas Hill in representing altitudinal descent of the habitat type to near sea level on the exposed north coast of Scotland. The heath consists of a mix of short heather *Calluna vulgaris*, juniper *Juniperus communis*, crowberry *Empetrum nigrum*, bearberry *Arctostaphylos uva-ursi* and bell heather *Erica cinerea*, similar to mixed heaths developed in coastal districts in Norway, but practically unknown in the UK outside Invernaver. This may be related to H16 *Calluna vulgaris* – *Arctostaphylos uva-ursi* heath, but its NVC status is uncertain at present.

This is the only site in the series where there are widely-developed transitions to **Alpine and subalpine calcareous grasslands**, for which the site is also selected. There are also transitions to oceanic H10 *Calluna vulgaris* – *Erica cinerea* heath and to coastal communities.

Alpine and subalpine calcareous grasslands

Invernaver is one of five sites representing low altitude CG13 *Dryas octopetala* – *Carex flacca* heath, and this is the only site with extensive development of **Alpine and subalpine calcareous grasslands** on wind-blown calcareous shell-sand, from near sea level to about 100m. On the other four low-altitude examples, the heath is developed chiefly on limestone outcrops. The site has an unusually extensive representation of a sub-type of *Dryas* heath in which the *Dryas* is mixed with ericaceous and other woody plants, including crowberry *Empetrum nigrum*, bearberry *Arctostaphylos uva-ursi*, creeping willow *Salix repens* ssp. *argentea* and juniper *Juniperus communis*. This sub-type is better represented here than on any other site selected. The abundance of woody plants may be partly attributable to lower grazing pressure. The diversity of arctic-alpine species is relatively low compared with high-altitude sites, but mountain avens, crowberry *Empetrum nigrum* ssp. *hermaphroditum* and bearberry *Arctostaphylos uva-ursi* are abundant, and other species, such as purple saxifrage *Saxifraga oppositifolia*, yellow saxifrage *S. aizoides* and hair sedge *Carex capillaris*, are frequent. The site is unusually exposed for a low-altitude site, and this is reflected by the occurrence of dwarf juniper *Juniperus communis* ssp. *nana*. There are transitions to calcareous coastal habitats to seaward, while inland there are transitions to a unique form of mixed *Calluna* – *Juniperus* – *Arctostaphylos* heath on more acid soils, and to oceanic *Calluna* – *Erica cinerea* heath, calcareous grassland and base-rich mires.

Vulnerability and management issues

The fragile dune communities of this site are subject to natural erosion and human activities such as sand extraction, vehicle use and muirburn. Alkaline fens and the dune communities are subject to livestock grazing. Efforts are being made to control muirburn by management agreement. Further measures to regulate activities on and adjacent to the site are under consideration.

Component designations at national and local level

Invernaver SSSI
Invernaver NNR

Sources of information

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

4.1.7 River Borgie cSAC

Summary information	Fig 4.1	7
Location: 58°29'30"N, 04°17'20"W		
Area: 32.72ha		
Date submitted: October 1998		
Relevant qualifying habitats: N/A		
Relevant qualifying species: Freshwater pearl mussel <i>Margaritifera margaritifera</i>		

General site characteristics

Habitats:

Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins) (14%)

Shingle. Sea cliffs. Islets (11%)
 Inland water bodies (standing water, running water) (65%)
 Heath. Scrub. Maquis and garrigue. Phygrana (5%)
 Broad-leaved deciduous woodland (5%)

Species qualification

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

Freshwater pearl mussel *Margaritifera margaritifera*

Freshwater pearl mussel *Margaritifera margaritifera* are found throughout the main stem of the Borgie, from just above the estuary to the outflow of Loch Slaim, the lowest of a series of lochs on the river. Mussels are comparatively rare in the lower reaches and most abundant in the middle reaches, with mean densities in some places of 1–9 individuals m², exceptionally attaining 35m² at one location. Although juveniles were absent at lower and upper sites, they were common in the middle reaches occurring at densities of up to 7m². It is likely that pearl mussels are restricted to the main stem of the river. At the time of survey in 1996, most tributaries were dry, and only one contained pearl mussels, in very low numbers.

Vulnerability and management issues

Freshwater pearl mussels are particularly sensitive to pollution, acidification, organic enrichment and river engineering. Research is being undertaken to improve understanding of appropriate river management for the species. Otter and salmon are also dependent on the maintenance of a high quality river habitat, and future river management issues will be discussed with land managers and the relevant district Salmon Fishery Board. Consideration is also being given to a river conservation strategy to ensure integrated catchment management.

Component designations at national and local level

N/A

Sources of information

JNCC SAC website

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

4.1.8 Strathy Point cSAC

Summary information	Fig 4.1	8
<p>Location: 58°35'28"N, 04°02'15"W Area: 203.58ha Date submitted: October 1998 Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts Relevant qualifying species: N/A</p>		

General site characteristics

Habitats:

Shingle. Sea cliffs. Islets (83.2%)
 Inland water bodies (standing water, running water) (0.3%)
 Heath. Scrub. Maquis and garrigue. Phygrana (16.2%)
 Inland rocks. Screens. Sands. Permanent snow and ice (0.2%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (0.1%)

Habitat qualification

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

Vegetated sea cliffs of the Atlantic and Baltic coasts

Strathy Point is an important example of northern, hard acidic rock cliffs, subject to extreme wind and wave exposure. Extensive maritime communities are found on the cliffs and cliff tops, as a result of the exposure and landward reach of sea-spray. In addition, the headland provides a range of aspects, slopes, gullies and crevices which affect the degree of exposure and result in a high diversity of relatively more sheltered cliff communities. Due



Strathy Point (W. Ritchie)

to its geographic position and climatic conditions, the flora contains northern elements, such as the endemic Scottish primrose *Primula scotica*, which is absent from the majority of other sites selected. The site contains good representation of transitional communities from exposed maritime grasslands and heaths to essentially non-maritime heath. In addition, the inaccessibility of stacks and steep cliffs to grazing animals results in different grazing regimes and a diversity of maritime grassland communities.

Vulnerability and management issues

There are no threats to the cliff-edge communities as these are inaccessible to humans and grazing animals. Current moderate levels of grazing on the cliff-top communities are necessary to maintain the site interests.

Component designations at national and local level

Strathy Coast SSSI

Sources of information

JNCC SAC website

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

4.1.9 North Caithness Cliffs SPA (Caithness Cliffs IBA)

Summary information	Fig 4.1	9
<p>Location: 58°39'00"N, 03°24'30"W Area: 557.73ha Date submitted: 16/08/1996 Birds of conservation concern: Peregrine, guillemot, puffin, razorbill, kittiwake, fulmar</p>		

The North Caithness Cliffs SPA is located on the north coast of Caithness in northern Scotland. The site comprises most of the sea-cliff areas between Red Point and Duncansby Head on the north mainland coast, and the western cliffs on the island of Stroma. The cliffs are formed from Old Red Sandstone and are generally between 30-60 m high, rising to 120 m at Dunnet Head. Cliff ledges, stacks and geos provide ideal nesting sites for important populations of seabirds, especially gulls and auks. The seabirds nesting on the North Caithness Cliffs feed outside the SPA in the surrounding waters of the Pentland Firth, as well as further afield. The cliffs also provide important nesting habitat for Peregrine *Falco peregrinus*.



Dunnet Head (W. Ritchie)

General site characteristics

Habitats:

Coastline/rocky areas (sea cliffs and rocky shores)
Grassland
Shrubland (heathland)

Land Use:

Agriculture
(no aerial percentages available)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Peregrine (<i>Falco peregrinus</i>)	6 pairs representing at least 0.5% of the breeding population in Great Britain (Mid-1990s)
Guillemot (<i>Uria aalge</i>)	26,994 pairs representing at least 1.2% of the breeding East Atlantic population (Count as at 1987)

Assemblage qualification

During the breeding season, the area regularly supports 110,000 individual seabirds including puffin *Fratercula arctica*, razorbill *Alca torda*, kittiwake *Rissa tridactyla*, fulmar *Fulmarus glacialis* and guillemot *Uria aalge*.

IBA qualification

Those bird populations responsible for IBA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
European shag (<i>Phalacrocorax aristotelis</i>)	(2540 pairs, 1987)
Great black-backed gull (<i>Larus marinus</i>)	(875 pairs, 1987)

SPA qualifying bird species	Number of individual birds
Herring gull (<i>Larus argentatus</i>)	(9,550 pairs, 1987)
Black-legged kittiwake (<i>Rissa tridactyla</i>)	(40,800 pairs, 1987)
Common murre (<i>Uria aalge</i>)	(87,000 pairs, 1987)

These cliffs support 127,000 pairs of breeding seabirds, and 54,000 pairs of breeding waterbirds on a regular basis. The site is also nationally important for breeding *Fulmarus glacialis* (27,100 pairs, 1986-1987, 5%) and *Phalacrocorax carbo* (250 pairs, 1985-1986, 3%).

Vulnerability and management issues

Threats to the coastline include oil pollution from passing tankers, development of oil-extraction facilities and inshore oil fields, and disturbance from recreational activities.

Component designations at national and local level

N/A

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9001181.htm>

Birdlife International website

<http://www.birdlife.org.uk>

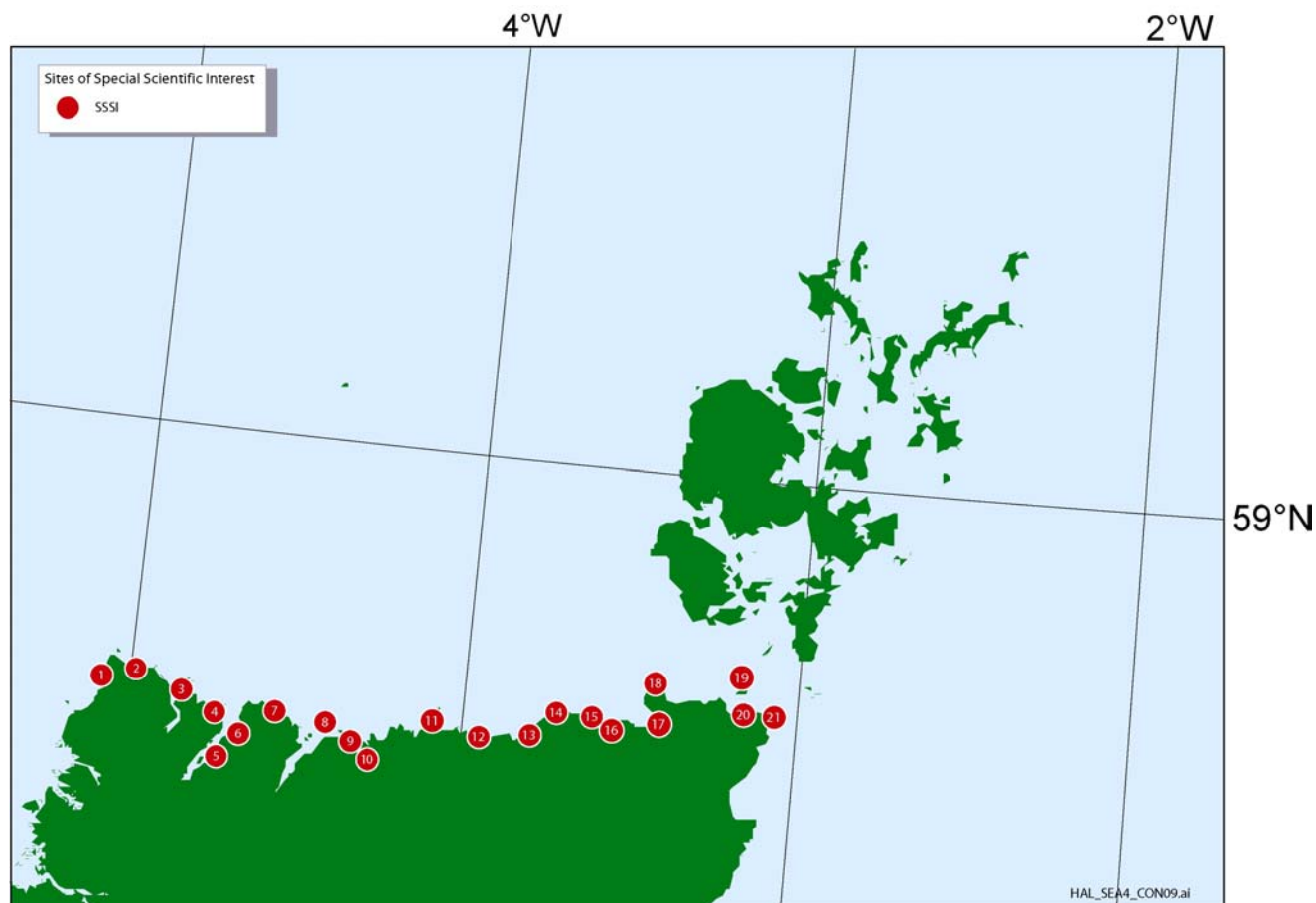
4.2 Sites of national and local importance

There are a number of sites of national and local importance along the Orkney coast including Scottish Wildlife Trust Reserves (SWT's), National Scenic Areas (NSA's) and Sites of Special Scientific Interest (SSSI's). These are described below. SSSI's 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 (the number given in the text for each of these sites refers to their location on Figure 4.3). Numbering of the sites moves from west to east along the coastline of the North Highlands.

4.2.1 Sites of Special Scientific Interest (SSSI)

These are listed below along with map location (see Figure 4.2), and National Grid Reference. For more detailed information relating to designation please refer to the SNH website (www.snh.gov.uk), or consult the appropriate area office. For the definition of Site of Special Scientific Interest, see Appendix I.

Figure 4.2 – SSSIs in the North Highlands



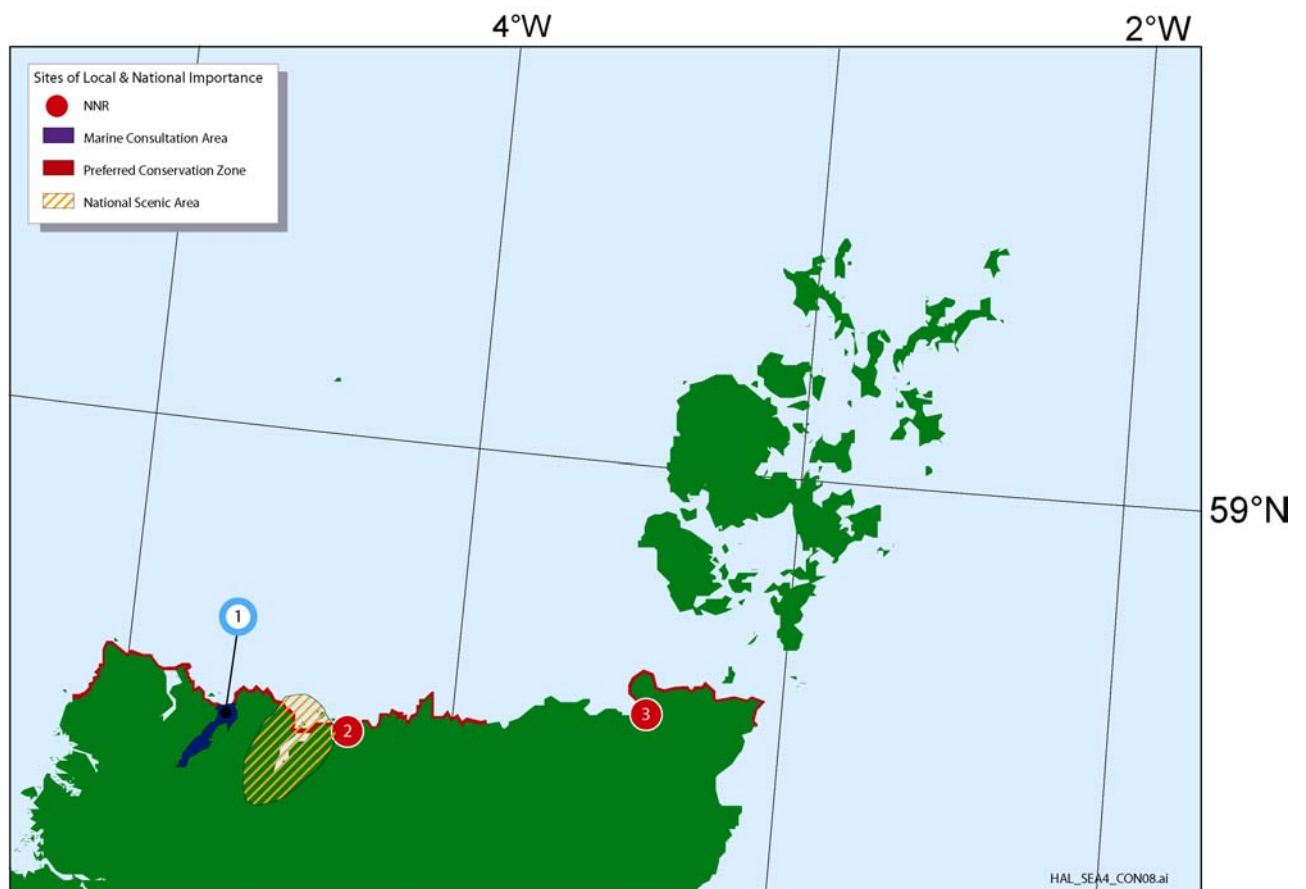
Map ref	Site Name	Location
1	Cape Wrath	NC260740
2	Cape Wrath	NC256749
3	Durness	NC380670
4	Eilean Hoan	NC445675
5	Eriboll	NC445570
6	Inverhope	NC482618
7	Ben Hutig	NC542655
8	Eilean Nan Roan	NC638655
9	Aird Torrisdale and River Borgie	NC665575
10	Invernaver	NC685605
11	Strathy Coast	NC806663
12	Red Point Coast	NC930657
13	Sandside Bay	NC965655
14	Ushat Head	ND035710
15	Holburn Head	ND073712 ND107707
16	Pennylands	ND102695 ND114687
17	Dunnet Links	ND220690

Map ref	Site Name	Location
18	Dunnet Head	ND207713 ND217751
19	Stroma	ND350780
20	John O'Groats	ND380735
21	Duncansby Head	ND397710

Sources of information

SNH Area Office at Golspie, Sutherland

Figure 4.3 – Coastal sites of national and local importance in the North Highland region



4.2.2 National Nature Reserves (NNR)

Figure 4.3



Map Ref	National nature reserves	Area (ha)	Site description
2	Invernaver	552	Blown sand, montane and maritime communities, juniper scrub.
3	Dunnet Links	465	Dune links, marsh, grassland, fens and heathland

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

4.2.3 Geological Conservation Review Sites (GCRs)

For the definition of Geological Conservation Review Sites, see Appendix 2. The areas that have been nominated on the basis of their geological and/or geomorphological importance are listed below. The sites are normally exposed at the coastline and have SSSI status. A few sites, such as quarries, are inland but the list as given below has been abstracted from the Coastal Directory which was produced by JNCC and there is therefore a general presumption of a coastal location.

GCR sites in the North Highlands		
Balnakeil	Strathan Skerry - Skerry Bay	Dunnet Bay
Faraid Head	Torrisdale Bay and Invernaver	John O'Groats
Durness	Drumhollistan	Duncansby to Skirza Head
Eriboll	Red Point	Culgower Bay
Lochan An Druim	Holborn Head Quarry	Cadh'-an'Righ
An t-Stron	Penny Land	Whiteness Head
Cleit An t-Seabhaig	Penny Land to Castlehill	

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, Eds. (1996). *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus*. Peterborough, Joint Nature Conservation Committee.

4.2.4 RSPB Reserves

There are no RSPB reserves in this area.

4.2.5 National Trust for Scotland sites

There are no National Trust for Scotland Sites along the coast of the North Highlands.

4.2.6 Scottish Wildlife Trust (SWT)

There are no Scottish Wildlife Trust Sites along the coast of the North Highlands.

4.2.7 Kyle of Tongue National Scenic Area (NSA)

This area consists of three main landscape elements, high mountain ridges, and low peat covered plateau and the deeply indented Kyle of Tongue. This major inlet corresponds to a major geological discontinuity. The scenery is especially attractive with the backdrop of some of the most dramatic mountains in Scotland. The shoreline consists of occasional sand beaches, low boulder beaches, intertidal lag deposits (often covered by seaweed) and occasional



Kyle of Tongue (W. Ritchie)

steep rocky outcrops. At low tide there are extensive sand banks. Some of the lower slopes are well-wooded and the entire area is a popular tourist attraction. Accessibility has been improved by the recent construction of a causeway near the village of Tongue and this new road offers many scenic viewpoints. The total area of the NSA is 18,500ha.

Sources of information

Scottish Natural Heritage website

<http://213.121.208.4/index/i-frame.htm>

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, Eds. (1996). *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus*. Peterborough, Joint Nature Conservation Committee.

4.2.8 Local Nature Reserves (LNR)

There are no Local Nature Reserves along the coast of the North Highlands.

4.2.9 Preferred Conservation Zones (PCZ)

Preferred Conservation Zones (PCZ's) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil- and gas-related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. PCZ's are the opposite of Preferred Development Zones.

There are two PCZ's in the North Highlands region. The Machrihanish-Dounreay PCZ extends along the coast to the west (see Figure 4.3) and includes Loch Eriboll MCA, Kyle of Tongue NSA and Invernavear NNR. While, to the east, the second PCZ extends along the coast from Dunnet Bay to Brough Head.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1996). *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus.* Peterborough, Joint Nature Conservation Committee.

4.2.10 Marine Consultation Area (MCA)

Figure 4.3

1

There is one MCA in the North Highland region, namely Loch Eriboll MCA (Sutherland). Loch Eriboll is the largest major sea loch lying midway between Cape Wrath and Kyle of Tongue and penetrates more than 20km into the heart of spectacular Highland landscapes of mountain and peat bog. There are several islands and much of the area has SSSI status. It has had naval use in the past but it is not clear if this use continues.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1996). *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus.* Peterborough, Joint Nature Conservation Committee.

4.2.11 Coastline adjacent to the Dounreay Nuclear Facility

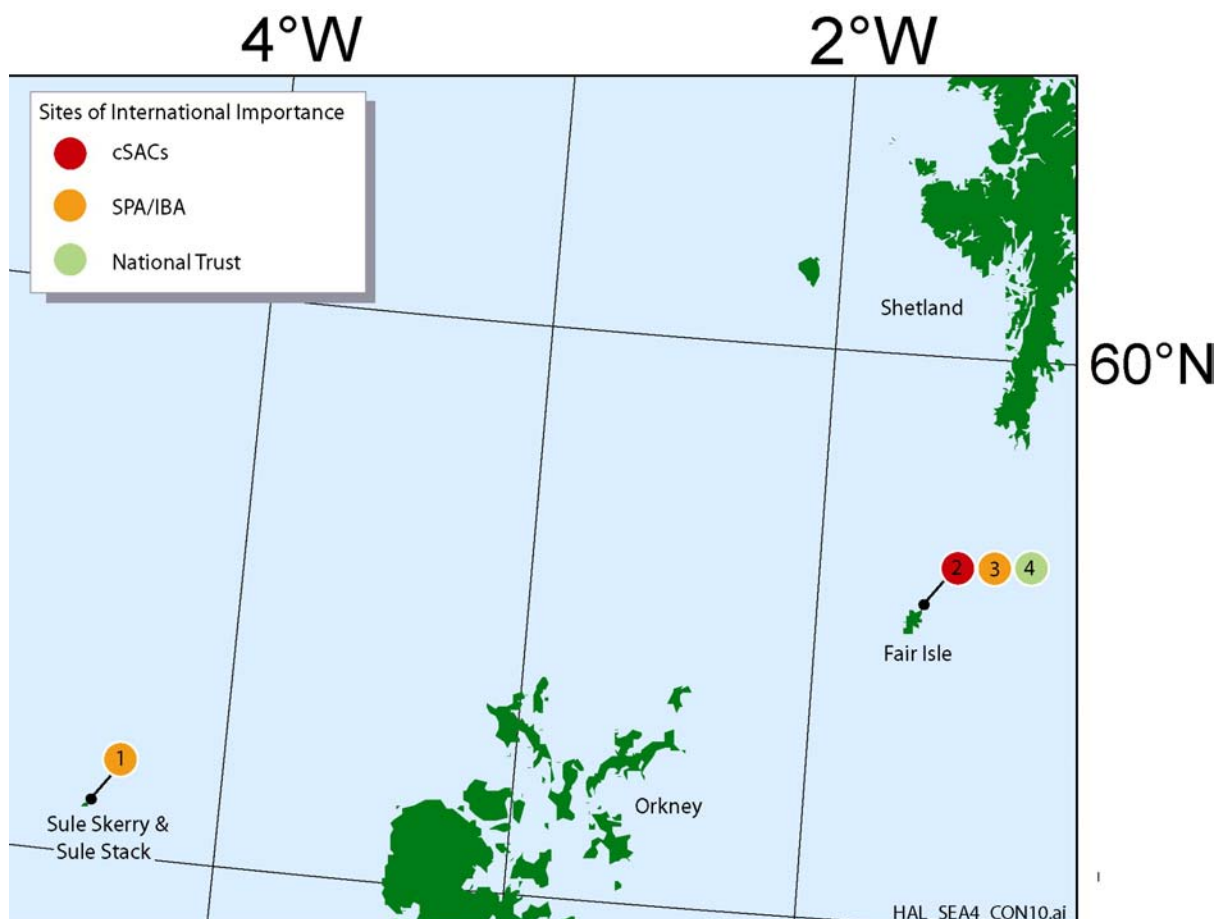
Marine processes along this area of coastline are currently being studied on behalf of the Scottish Environmental Protection Agency (SEPA) in relation to the discovery of a small number of irradiated particles on Sandside beach to the west. See *section 1.15.1* in the *Existing Users Report*. Details of these investigations are available on the SEPA (North) website (www.sepa.org.uk).

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5 OTHER ISLANDS

There are two sites of international and national importance in the general area of SEA 4 that are described below.

Figure 5.1 - Sites of international importance on other islands within the SEA 4 area



5.1 Sule Skerry & Sule Stack

The two small and remote islands of Sule Skerry and Sule Stack lie in the North Atlantic, west of Orkney. Sule Skerry is roughly 60km from Orkney and covers about 16ha. It is low-lying and covered by peaty soil with rocky outcrops. Vegetation is limited by the combination of salt spray and seabird activity. The smaller island of Sule Stack (8km to the south-west) is a higher, bare rock with no vascular plants.

5.1.1 International sites of importance

Although Sule Skerry and Sule Stack are separate islands, they are taken together for the purpose of international conservation designations. SPA and IBA status for the area helps to protect the islands important bird populations of gannet, puffin, guillemot, Leach's-storm petrel and storm petrel.

5.1.1.1 Sule Skerry & Sule Stack SPA/IBA

Summary information	Figure 5.1	1
Location: 59°05'05"N, 04°24'15"W		
Area: 18.9ha		
Date submitted: 29/03/1994		
Birds of conservation concern: Leach's-storm petrel, storm petrel, gannet, puffin, guillemot		

The islands provide strategically placed nesting localities for large numbers of seabirds, which feed in the waters off the north coast of Scotland outside the SPA. These include large numbers of petrels, auks and gannet *Morus bassana*. The site is one of only seven known nesting localities in the EU for Leach's-storm petrel *Oceanodroma leucorhoa*.

General site characteristics

Habitats:

Rocky areas (rock stacks, islets - 100%)

Land-use:

Not utilised (95%)

Other (5%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below:

SPA qualifying bird species	Number of individual birds
<i>During breeding season</i>	
Leach's storm-petrel (<i>Oceanodroma leucorhoa</i>)	5 pairs representing <0.1% of the breeding population in Great Britain (Count, as at 1986)
Storm petrel (<i>Hydrobates pelagicus</i>)	1,000 pairs representing at least 1.2% of the breeding population in Great Britain (Count, as at 1986)
Gannet (<i>Morus bassana</i>)	4,890 pairs representing at least 1.9% of the breeding North Atlantic population (Count, as at 1994)
Puffin (<i>Fratercula arctica</i>)	43,380 pairs representing at least 4.8% of the breeding population (Count, as at 1993)

Assemblage qualification

During the breeding season, the area regularly supports 100,000 individual seabirds including Leach's storm-petrel *Oceanodroma leucorhoa*, guillemot *Uria aalge*, shag *Phalacrocorax aristotelis*, puffin *Fratercula arctica*, gannet *Morus bassana* and storm petrel *Hydrobates pelagicus*.

Vulnerability and management issues

Oil pollution is a threat. Attempts are being made to make the surrounding sea area a Marine Environment High Risk Area (MEHRA). A ringing group regularly visit Sule Skerry to ring seabirds, especially *Fratercula arctica*, and to census breeding species.

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002181.htm>

Birdlife International website

<http://www.birdlife.org.uk>**5.1.2 National and local sites of importance**

Each island contains a Site of Special Scientific Interest (SSSI). Sule Skerry has the larger of the two at 16ha, whilst the SSSI found on Sule Stack covers an area of 3ha.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1997b). *Coasts and seas of the United Kingdom. Region 2 Orkney.* Peterborough, Joint Nature Conservation Committee.

5.2 Fair Isle

Fair Isle lies about 40km south of Sumburgh Head, mid-way between Shetland and Orkney. It is separated from Orkney by the Fair Isle Channel, which is over 100m in depth, and lies with the rest of the Shetland Island group on a shallower platform of rock. It has some of the most exposed rocky coastline in the British Isles with numerous promontaries, geos and stacks. There are steep cliffs on the north and west coasts whilst the southeast is lower lying. Most of the island is extremely exposed to wave action although the east coast is less exposed than the Atlantic west coast. Tidal streams are of moderate strength around the headlands but are negligible elsewhere.

The island has large populations of breeding seabirds and has a bird observatory. It is an SSSI for both its geological and ornithological interest. There is a sand-eel fishing ground around the island.

Sources of information

Fair Isle website

www.fairisle.org.uk**5.2.1 International sites of importance****5.2.1.1 Fair Isle cSAC**

Summary information	Figure 5.1	2
Location: 59°32'00"N, 01°32'00"W		
Area: 561.27ha		
Date submitted: January 2001		
Relevant qualifying habitats: Vegetated sea cliffs of the Atlantic and Baltic coasts		
Relevant qualifying species: N/A		

General site characteristics:**Habitats:**

Shingle. Sea cliffs. Islets (24%)

Inland water bodies (standing water, running water) (1%)

Bogs. Marshes. Water fringed vegetation. Fens (5%)

Heath. Scrub. Maquis and garrigue. Phygrana (55%)

Humid grassland. Mesophile grassland (14%)

Other land (including towns, villages, roads, waste places, mines, industrial sites) (1%)

Habitat qualification

The Annex I habitat that is a primary reason for selection of this site is:

Vegetated sea cliffs of the Atlantic and Baltic coasts

The sea cliff vegetation of Fair Isle is principally oceanic and varies from spray-influenced maritime grassland swards to maritime heather *Calluna vulgaris moorland*. Prostrate juniper *Juniperus communis ssp. nana*, now rare throughout Shetland, remains common over extensive areas of the moorland. The European dry heaths found in this area are also an Annex I habitat, but are not the primary reason for selection of this site.

Vulnerability and management issues

Unsustainable fishing of sandeels *Ammodytes* poses a potential threat to seabirds. There is a management plan for the site.

Component designations at national and local level

Fair Isle SSSI

National Trust for Scotland

Sources of information

JNCC website

<http://www.jncc.gov.uk/UKSPA/sites/Scotland/UK9002091.htm>

Birdlife International website

<http://www.birdlife.org.uk>

5.2.1.2 Fair Isle SPA/IBA

Summary information	Figure 5.1	3
<p>Location: 59°32'15"N, 01°37' 00"W</p> <p>Area: 561ha</p> <p>Date submitted: 16/12/1994</p> <p>Birds of conservation concern: Arctic tern, guillemot, shag, great skua, razorbill, puffin</p>		

Fair Isle is of major importance as a breeding area for seabirds, including skuas, terns, gulls and auks. It is also notable for its endemic race of wren *Troglodytes troglodytes fridariensis*. The seabirds nest both on the cliffs and crags around the island as well as on moorland and maritime grassland areas, and feed in the waters around the island, outside the SPA. The SPA includes the entire coastline of the island together with an extensive area of moorland and grassland to the north of the island.

General site characteristics:

Habitats:

Scrub (heathland)

Grassland

Rocky areas (sea cliff/rocky shore)

Land Use:

Agriculture (90%)

Species qualification

Those bird populations responsible for SPA qualification of the site are shown below.

SPA qualifying bird species	Number of individual birds
During breeding season	
Arctic tern (<i>Sterna paradisaea</i>)	1,120 pairs (2.5% of UK breeding population) (5 year mean, 1993 – 1997)
Fair Isle wren (<i>Troglodytes troglodytes fridariensis</i>)	37 individuals (100% of breeding population) (Count, as at 1997)
Migratory Species	
During breeding season	
Guillemot (<i>Uria aalge</i>)	25,165 pairs (1.1% of East Atlantic breeding population) (Count, as at 1994)

IBA qualification

The bird species responsible for qualifying this area as an IBA are similar to those of the SPA, however, a number of other species are also recognised as important, as listed below:

During the breeding season:

- Shag (*Phalacrocorax aristotelis*) (1,070 birds, 1990)
- Great skua (*Stercorarius skua*) (130 birds, 1995)
- Razorbill (*Alca torda*) (2,050 birds, 1988)
- Puffin (*Fratercula arctica*) (8,700 birds, 1995)

Sources of information

Bird Life International website
www.birdlife.org.uk

5.2.1.3 Other European designations

Fair Isle is part of the Shetland ESA region, where farmers and crofters are encouraged, through Scottish Office Agriculture, Environment and Fisheries Department (SOAEFD) payments, to plan and carry out management measures to maintain and enhance the landscape, wildlife and archaeological conservation features of their land.

The Council of Europe has also awarded a Diploma to the island which is an accolade to acknowledge the European interest of sites and the quality of their protection and management. The Diploma recognises sites of outstanding natural quality where the resident human population lives in harmony with its environment.

Sources of information

Fair Isle Marine Environment and Tourism (FIMETI) website
http://www.fairisle.org.uk/FIMETI/Reports/Safeguarding_Our_Heritage/future.htm

5.2.2 Sites of national and local importance

There are a number of sites of national and local importance along the Fair Isle coast. Approximately half of the island has been designated a Site of Special Scientific Interest (SSSI). Shetland's National Scenic Area (NSA) extends to include the entirety of Fair Isle, making the island one of the seven coastal landscapes in Shetland designated as having "outstanding scenic interest". The island is also

protected by the National Trust for Scotland who work closely with locals and the bird observatory, particularly on issues of marine protection. The area contains two Geological Conservation Review (GCR) sites.

Sources of information

Fair Isle Marine Environment and Tourism (FIMETI) website

http://www.fairisle.org.uk/FIMETI/Reports/Safeguarding_Our_Heritage/future.htm

National Trust for Scotland website

http://www.nts.org.uk/conserv_frmset.htm

Scottish Executive website

<http://www.scotland.gov.uk/library/documents-w4/nhd-06.htm>

Fair Isle Lodge and Bird Observatory website

http://www.fairislebirdobs.co.uk/about_fair_isle.htm

Barne J, Robson CF, Kaznowska SS, Doody JP & Davidson NC, *Eds.* (1997a). *Coasts and seas of the United Kingdom Region 1 Shetland* Peterborough, Joint Nature Conservation Committee

6 INITIATIVES TO ESTABLISH OFFSHORE CONSERVATION SITES

Introduction

Initiatives at both national and European level are in the process of identifying selection criteria and potential offshore sites which may warrant protection. These initiatives include the Offshore Natura 2000 Project and OSPAR's Marine Protected Areas programme.

The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 came into force on 31 May 2001, and regulates UKCS offshore oil and gas activities with respect to the European Council Directive on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive), and the European Council Directive on the conservation of wild birds (the Birds Directive).

The JNCC has completed an assessment to inform the selection of Natura 2000 sites in offshore waters (Johnston *et al.* 2002, <http://www.jncc.gov.uk/Publications/JNCC325/intro325.htm>). The report describes selection criteria and identifies potential areas which may qualify for protection.

A summary of this report, as well as a description of the OSPAR MPA initiative was provided for SEA 3 (Section 6 of the technical report, *Conservation Sites in the SEA 3 Area* - http://www.offshore-sea.org.uk/sea/dev/html_file/pdf2.cgi/TR_010_W.pdf). This current section will not re-examine issues covered by the SEA 3 review but will rather describe progress to date in identifying potential offshore conservation sites.

Progress in identifying offshore Natura 2000 sites

At present, all identified marine cSACs and SPAs (which will form part of the *Natura 2000* network) are on or adjacent to the UK coast. There are no sites that are wholly at sea. However, JNCC are currently undertaking work to assist in identifying further sites in the offshore environment; this project follows a change in policy by the UK Government to apply both the Birds and Habitats Directives to the entire UK continental shelf. The first phase of this project will identify suitable sites in waters beyond 12nm from land. In undertaking this review of waters beyond 12nm, it is possible that further suitable sites will be identified within 12nm from the shore.

In June 2002, a seminar was held by DEFRA with representatives of other European countries and interested parties to consult on the methods proposed by the UK to implement the Habitats and Birds Directive out to 200 nautical miles. The proceedings of the meeting can be found on the JNCC website (http://www.jncc.gov.uk/marine/offnat/pdf/meeting_0602.pdf). In general, the methodology was received favourably with only some reservations on the methods proposed to identify offshore seabird aggregations. This element of work is to be developed further in 2003 to identify the most appropriate techniques.

To complete the site selection process for sites in the UK as a whole, a JNCC led inter-agency project group has been set up to co-ordinate all aspects of Natura 2000 site selection in the marine environment (0-200nm). This group replaces the former Offshore Natura 2000 Project groups, and integrates work on SACs with work under the Birds Directive.

A more recent update on the selection of criteria and potential areas for SACs and SPAs is provided in the JNCC paper (Johnston *et al.* 2003, <http://www.jncc.gov.uk/management/committee/papers03-03/>). In summary, this paper proposed:

- Guidance for defining the seaward boundaries of seabird colony SPAs and habitat SACs away from the coast
- A methodology for the selection of offshore habitat SACs and that this methodology, together with the group 1 sites, be the subject as a basis for wider consultation with stakeholders
- Wider discussion on the level of biological information needed to select offshore habitat SACs with stakeholders, including Government during 2003

Following a consideration of selection criteria and principles, areas of Annex 1 habitat within the 12-200 nautical mile zone could be classified into Group 1 or Group 2 depending (respectively) on the confirmation/suspicion of the presence of Annex I habitat, adequacy/inadequacy of biological information, and absence/presence of sites of such character in territorial waters (0-12nm).

It is noted that sites will need to be selected from Group 2 as well as areas of habitat in Group 1 to fully represent the range of marine habitat types under Annex I of the Directive in UK waters.

Darwin Mounds

In summer 2002, the JNCC formally submitted to DEFRA its recommendations that the Darwin Mounds should be a Special Area of Conservation (SAC). The area of sandy mounds on the Wyville Thomson Ridge currently supports the best known natural occurrence of the cold water coral, *Lophelia pertusa* in UK waters. Formal proposing of the site by the UK Government will proceed when regulations are in place to implement the EC Habitats Directive in UK offshore waters.

A public consultation on the Offshore Marine Conservation (Natural Habitats &c.) Regulations 2003 was launched by DEFRA in August 2003. This sets out the proposed Regulations to apply the Habitats and Birds Directives to the UK Continental Shelf and waters beyond 12 nautical miles over which the UK exercises sovereignty. The consultation document can be found on the DEFRA website (<http://www.defra.gov.uk/corporate/consult/offshore-marine/index.htm>).

The European Commission has, as of the 20th August 2003, adopted emergency measures immediately banning the use of bottom trawled gear over the Darwin Mounds. Under new measures adopted last December to reform the Common Fisheries Policy, the UK government requested Commission action because of the damage the gear is causing to the corals. The emergency measures are applicable for 6 months and will allow time for the Commission to adopt a Council Regulation permanently banning the use of the fishing gear concerned (EUROPA website).

Qualifying habitats and species in the SEA 4 area

As mentioned above, Johnston *et al.* (2002) identifies potential areas of Annex I habitat and the distribution of Annex II species in UK offshore areas. This report remains the main source of information regarding offshore sites and includes distribution maps which will not be reproduced here but should be referred to for further information.

From the report, potential areas of 'reef' habitat relevant to SEA 4 include iceberg ploughmarks along the West Shetland Slope and Wyville Thomson Ridge; the Judd Deeps; Solan Bank; Turbot and Otter Banks, and areas around the Shetland Islands. Of the potential areas the JNCC Marine Natura 2000 paper of 2003 identifies the Wyville Thomson Ridge as the only area of habitat within the SEA 4 area for which there is sufficient information to class it in Group 1.

Pockmarks with carbonate structures formed by leaking gases are the only features known to occur in UK offshore waters that may conform to the Annex I habitat 'Submarine structures made by leaking gases'. To date, a number of pockmark regions have been identified in the northern North Sea to the east of the SEA 4 area.

The SEA 4 area also supports a number of Annex II species for which offshore SACs may possibly be designated. These include grey seal, common seal, bottlenose dolphin and harbour porpoise. Further research is needed to clarify the offshore distributions of these species but it is likely, given the importance of the coastal regions of SEA 4 for seal breeding and haul out sites as well as our current knowledge of cetacean distribution, that offshore areas of SEA 4 may be protected in the future.

The importance of the coastal waters of SEA 4 for a large number of seabirds also make it likely that coastal SPAs in the region may be further extended into the marine environment and offshore areas important for feeding or overwintering may be designated.

Progress in identifying OSPAR Marine Protected Areas (MPAs)

At Sintra, Portugal, in 1998 the OSPAR Commission adopted a new Annex V '*On the Protection and Conservation of the Ecosystems and Biological Diversity of the Maritime Area*' and an accompanying OSPAR Strategy. The objective of this Annex is to take the necessary measures to protect and conserve the ecosystems and the biological diversity of the maritime area which are, or could be, affected as a result of human activities, and to restore, where practicable, marine areas which have been adversely affected.

At a meeting in January 2003, in Dublin, the Biodiversity Committee published *Draft OSPAR Recommendations on a Network of Marine Protected Areas* which shall be put forward for adoption by the Commission. The purpose of the Recommendation is to establish by 2010 in the OSPAR maritime area an ecologically coherent network of well managed marine protected areas which will:

- Protect, conserve and restore species, habitats and ecological processes which have been adversely affected by human activities;
- Prevent degradation of, and damage to, species, habitats and ecological processes, following the precautionary approach;
- Protect and conserve areas that best represent the range of species, habitats and ecological processes in the maritime area.

It was also agreed at the meeting that an intercessional group on marine protected areas be set up to facilitate the implementation of the proposed OSPAR recommendation.

A Summary Record of the Dublin meeting, including a list of threatened species and habitats can be found on the OSPAR website (<http://www.ospar.org/eng/html/welcome.html>).

A review of distinctive habitats and species as well as those of conservation interest in the OSPAR maritime area was produced by WWF in October 2002 (Gubbay *et al.* 2002). *The Offshore Directory – Review of a selection of habitats, communities and species of the north-east Atlantic* aims to provide a useful reference to those working towards marine habitat and species conservation and the identification, establishment and management of MPAs in the OSPAR maritime area.

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http://www.birdlife.org.uk/sites/site_factsheet_search.cfm?SitRecID=2608&GeoRecID=221

Conservation Sites in the SEA 3 Area. Report for the DTI

http://www.offshore-sea.org.uk/sea/dev/html_file/pdf2.cgi/TR_010_W.pdf

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<http://www.countryside.gov.uk/nationalparks/>

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www.snh.org.uk

Scottish Wildlife Trust website

www.swt.org.uk

SNH Area Office at Golspie, Sutherland

UK Marine SAC Project website

<http://www.ukmarinesac.org.uk/>

UNESCO website

<http://whc.unesco.org/sites/514.htm>

Wetlands International website

http://www.wetlands.org/RDB/Ramsar_Dir/UnitedKingdom/UK113D02.doc

APPENDIX 1: GLOSSARY AND ABBREVIATIONS

Term	Definition
Biodiversity	Diversity of species
CSAC	Candidate Special Area of Conservation
EC	European Commission
ESA	Environmentally Sensitive Area
EU	European Union
GCR	Geological Conservation Review Sites
Ha	Hectare
IBA	Important Bird Area
IUCN	The World Conservation Union
JNCC	Joint Nature Conservation Committee
Km	Kilometre
LNR	Local Nature Reserve
MCA	Marine Consultation Area
Natura 2000	Sites of conservation value designated under the EU Habitats Directive
NNR	National Nature Reserve
NSA	National Scenic Area
OSPAR	Oslo and Paris Commission
PCZ	Preferred Conservation Zone
RLD	Regional Landscape Designation
RSPB	Royal Society for the Protection of Birds
Ramsar Sites	Areas designated by the UK under the Ramsar Convention (Convention on Wetlands of International Importance especially as waterfowl habitat)
SCI	Sites of Community Importance – network of candidate SACs
SNH	Scottish Natural Heritage
SAC (Special Areas of Conservation)	Areas designated as European Sites (Natura 2000) under the Habitats and Species Directive
SPA (Special Protection Areas)	Areas designated as European Sites under the Wild Birds Directive
SSSI	Site of Special Scientific Interest
SEA (Strategic Environmental Assessment)	An appraisal process through which environmental protection and sustainable development is considered in decisions on policy, plans and programmes
SWT	Scottish Wildlife Trust
UK	United Kingdom
UNESCO	United Nations Organisation for Education, Science, Culture and Communications

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APPENDIX 2: 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 4 environment, including those administered by voluntary bodies and other organisations.

Sites of international importance

The numbers of sites of international importance in the SEA 4 region are detailed in Box A.1.

Box A.1 - Sites of international importance in the SEA 4 area.	
Special Areas of Conservation (SACs)	20
Special Protection Areas (SPAs)	27
Ramsar Sites	3
Important Bird Areas (IBAs)	28
World Heritage Sites	1
Environmentally Sensitive Area	1
Council of Europe Diploma Site	1

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.

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*.

Special Areas of Conservation (SACs)

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 Box A.2.

Box A.2- cSAC Selection Process

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:

- 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

Stage 2 – Assessment of overall importance of sites in the context of the biogeographical region and the EU as a whole. Factors considered:

- 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

Currently, 567 cSACs covering an area of over 2.3 million hectares have been submitted by the UK, a number of which are found within the SEA 4 area. A total of 115 candidate SACs had been submitted by Scotland to the European Commission by August 1998. Those on land represent about 6% of Scotland. There is a considerable overlap in sites with SPAs.

Sources of information

Joint Nature Conservation Committee website

<http://www.jncc.gov.uk/>

UK Marine SAC Project website

<http://www.ukmarinesac.org.uk/>

Special Protection Areas (SPAs)

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). The Government is considering making approximately 150 SPAs in Scotland, of which 91 were classified at the beginning of August 1998. The total area of those on land will be about 6% of Scotland. Marine SPAs may be introduced in due course.

Sources of information

JNCC UK SPA Network website
<http://www.jncc.gov.uk/UKSPA/sites/>

Birds of Conservation Concern

The leading governmental and non-governmental conservation organisations in the UK have reviewed the population status of the birds that are regularly found here. A total of 247 species has been assessed, and each has been placed onto one of three lists - red, amber or green. Many of the birds in the SEA 4 area appear on the amber list and have been noted in the site boxes of the SPA's and IBA's. Amber list species are those with an unfavourable conservation status in Europe; those whose population or range has declined moderately in recent years; those whose population has declined historically but made a substantial recent recovery; rare breeders; and those with internationally important or localised populations. Seven quantitative criteria were used to assess the population status of each species and place it onto the red, amber or green list, as listed below;

Global Conservation Status
 Recent Decline
 Historical Decline
 European Conservation Status
 Rare Breeders
 Localised Species
 International Importance

Sources of information

JNCC website
www.jncc.gov.uk/species/Birds/Conservation.htm

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 Box A.3.

Box A.3 - Categories of criteria for site selection under the Ramsar Convention.

- 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. There were 42 designated Ramsar sites in Scotland by August 1998 and another 20 potential Scottish sites have been identified. 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/>

Important Bird Areas (IBAs)

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.

Box A.4 - 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/>

Important Bird Areas in Europe: Priority sites for conservation. Vol. 1: Northern Europe. Birdlife International

World Heritage Sites

World Heritage Sites - arising from the 1984 World Heritage Convention - are generally considered to be the ultimate accolade. Sites are listed by the World Heritage Committee of UNESCO to provide recognition that a site is of "outstanding universal value" and also that the national Government has provided it with an especially high level of assured protection. There are both natural and cultural categories of site. St Kilda is the only "natural" World Heritage Site in Scotland at present. The Heart of Neolithic Orkney is included as a World Heritage Site and the citation includes archaeological sites, which are located at the coastline. The Government is consulting on placing a number of other sites on a provisional list for future assessment. SNH advises Government on natural sites, and Historic Scotland on cultural sites.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

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.

Farmer managed ESAs include some of our most important landscapes - upland: wetland; moor; coastal marsh; river valleys, which offer protection for some of our rarest plants (orchids, cornflower) and establish a suitable environment for the recovery of native species (brown hare, otter, water vole).

There is one ESA in the SEA 4 region, which extends across the entirety of Shetland and Fair Isle.

Sources of information

DEFRA website

<http://www.defra.gov.uk>

Council of Europe Diploma site

The Council of Europe awards a Diploma, which is an accolade to acknowledge the European interest of sites and the quality of their protection and management. Scotland has two Diploma sites - Beinn Eighe NNR which is outwith SEA 4 and Fair Isle NSA which is described in section 4 (above).

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Sites of national and local importance

The numbers of sites of national and local importance in the SEA 4 region are detailed in Box A.5.

Box A.5 - Sites of national and local importance in the SEA 4 area

National Scenic Areas	3
National Nature Reserves (NNRs)	5
Sites of Special Scientific Interest (SSSI)	94
Local Nature Reserves (LNRs)	1
RSPB Reserves	14
The National Trust for Scotland	8
Scottish Wildlife Trust Reserves	2
Marine Consultation Areas	5

The main national land-based designations are Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNR), and National Scenic Areas (NSA). SSSIs and NNRs are both nature

conservation designations, and apply throughout Britain. The NSA is the main landscape designation, and is unique to Scotland. The vast majority of the total area of these designated sites are on privately-owned land, but some are also found on public land.

Sources of information

The Countryside Agency website

<http://www.countryside.gov.uk/nationalparks/>

National Scenic Area (NSAs)

National Scenic Areas 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.

Sources of information

Scottish Natural Heritage

<http://www.snh.org.uk/index/i-frame.htm>

National Nature Reserves (NNRs)

National Nature Reserves (NNRs) were established to protect the most important areas of wildlife habitat and geological formations in Britain, and to provide a resource for scientific research. NNRs 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.

Within Scotland and England, the reserves are either owned or controlled by Scottish Natural Heritage or English Nature respectively, or held by approved bodies such as the Wildlife Trusts.

Sources of information

Scottish Natural Heritage

<http://www.snh.org.uk/index/i-frame.htm>

Sites of Special Scientific Interest (SSSIs)

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 both Scotland and England, 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.

There are 1,446 SSSIs in Scotland covering 917,000 hectares, which is 11.6% of Scotland's land area. Many of the larger sites are in the north and west, with the largest assemblage being in the Flow Country of Caithness and Sutherland and measuring, in total, more than 150,000 hectares. There are other large SSSIs in the uplands, including some in the Cairngorms over 10,000 hectares.

Scottish Natural Heritage and English Nature are responsible for identifying and protecting SSSIs in Scotland and England respectively.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Local Nature Reserves (LNRs)

Local Authorities can designate Local Nature Reserves (LNRs) where they own or lease the land or have an agreement with the landowner. LNRs should be managed to promote nature conservation, and may have facilities to enable people to enjoy them, and help to understand them. There are currently 28 in Scotland covering over 8,000 hectares, the largest being Wigtown Bay in Dumfries and Galloway at 2,800 hectares.

Sources of information

The Scottish Executive website

<http://www.scotland.gov.uk/library/documents-w4/nhd-06.htm>

RSPB Reserves

The RSPB (Royal Society for the Protection of Birds) maintain a large number of nature reserves in the UK covering a wide range of wildlife habitats.

Sources of information

RSPB website

<http://www.rspb.org.uk/wildlife/reserves/england.asp>

The National Trust for Scotland

The National Trust for Scotland is a registered charity and acts to protect architectural, scenic and historic sites and properties in Scotland.

Sources of information

National Trust for Scotland website

<http://www.nts.org.uk/stabb.html>

Scottish Wildlife Trust Reserves

These are areas managed or owned by the Scottish Wildlife Trust to protect locally important plants, animals and other wildlife. There is no statutory requirement for SWT reserves.

Sources of information

Scottish Natural Heritage website

<http://www.snh.org.uk/index/i-frame.htm>

Marine Consultation Areas

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. MCA's were not reviewed by JNCC in terms of sensitivity to marine pollution.

Sources of information

DEFRA website

<http://www.defra.gov.uk/environment/consult/mehra/pdf/appx4pt2.pdf>

Geological Conservation Review Sites

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 being 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.

Sources of information

JNCC GCR website

<http://www.jncc.gov.uk/gcr/gcrweb/gcrhome.htm>

MoD Sites

As at August 1994, the ministry of Defence (MoD) owned, leased or used under licence landholdings covering some 320km of coastline around the UK, not all of it significant for its nature conservation value. The MoD gives high priority to nature conservation on the Defence Estate, subject to the overriding importance of military training. The restrictions to public access on some sites mean that they can be among the most pristine areas of wildlife habitat in the region.

Sources of information

Barne JH, Robson CF, Kaznowska SS, Doody J.P & Davidson NC Eds. (1996). *Coasts and seas of the United Kingdom. Region 3 North-east Scotland: Cape Wrath to St. Cyrus*. Peterborough, Joint Nature Conservation Committee.

Preferred Conservation Zones

Preferred Conservation Zones (PCZs) are non-statutory coastal areas in Scotland, of particular national scenic, environmental or ecological importance, in which major new oil- and gas-related developments would be inappropriate or would have a socio-economic impact on a small community. They are areas with a distinctive aesthetic appeal, heritage and character, where tourism and recreation take priority over major industrial processes. PCZs are the opposite of Preferred Development Zones.

Sources of information

Joint Nature Conservation Council website

<http://www.jncc.gov.uk/communications/natcons/wildlife.htm#PreferredConservationZones>