

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7 (1990), as amended by Resolution VIII.13 of the 8th Conference of the Contracting Parties (2002) and Resolutions IX.1 Annex B, IX.6, IX.21 and IX. 22 of the 9th Conference of the Contracting Parties (2005).

Notes for compilers:

1. The RIS should be completed in accordance with the attached *Explanatory Notes and Guidelines for completing the Information Sheet on Ramsar Wetlands*. Compilers are strongly advised to read this guidance before filling in the RIS.
2. Further information and guidance in support of Ramsar site designations are provided in the *Strategic Framework for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 7, 2nd edition, as amended by COP9 Resolution IX.1 Annex B). A 3rd edition of the Handbook, incorporating these amendments, is in preparation and will be available in 2006.
3. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Secretariat. Compilers should provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of all maps.

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

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 16 March 1998

3. Country:

UK (England)

4. Name of the Ramsar site:

Duddon Estuary

5. Designation of new Ramsar site or update of existing site:

This RIS is for: Updated information on an existing Ramsar site

6. For RIS updates only, changes to the site since its designation or earlier update:

a) Site boundary and area:

** Important note: If the boundary and/or area of the designated site is being restricted/reduced, the Contracting Party should have followed the procedures established by the Conference of the Parties in the Annex to COP9 Resolution IX.6 and provided a report in line with paragraph 28 of that Annex, prior to the submission of an updated RIS.

b) Describe briefly any major changes to the ecological character of the Ramsar site, including in the application of the Criteria, since the previous RIS for the site:

7. Map of site included:

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

a) A map of the site, with clearly delineated boundaries, is included as:

- i) **hard copy** (required for inclusion of site in the Ramsar List): *yes* ✓ -or- *no* ☐;
- ii) **an electronic format** (e.g. a JPEG or ArcView image) *Yes*
- iii) **a GIS file providing geo-referenced site boundary vectors and attribute tables** *yes* ✓ -or- *no* ☐;

b) **Describe briefly the type of boundary delineation applied:**

e.g. the boundary is the same as an existing protected area (nature reserve, national park etc.), or follows a catchment boundary, or follows a geopolitical boundary such as a local government jurisdiction, follows physical boundaries such as roads, follows the shoreline of a waterbody, etc.

The site boundary is the same as, or falls within, an existing protected area.

For precise boundary details, please refer to paper map provided at designation

8. Geographical coordinates (latitude/longitude):

54 10 39 N 03 15 24 W

9. General location:

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

Nearest town/city: Barrow-in-Furness

Duddon Estuary is situated in north-west England to the north-west of Morecambe Bay and to the north of Barrow-in Furness.

Administrative region: Cumbria

10. Elevation (average and/or max. & min.) (metres): **11. Area** (hectares): 6806.3

Min.	-2
Max.	16
Mean	0

12. General overview of the site:

Provide a short paragraph giving a summary description of the principal ecological characteristics and importance of the wetland.

Duddon Estuary is formed by the River Duddon and the smaller Kirkby Pool opening into the Irish Sea in south-western Cumbria. Most of the site consists of intertidal sand and mudflats, important for large numbers of wintering and passage waterfowl. A range of grazed and ungrazed saltmarsh habitats occur around the edge of the estuary, especially the sheltered inner section. The site is the most important in Cumbria for sand-dune communities including large areas of calcareous dunes at Sandscale and Haverigg Haws and contrasting acid dunes on North Walney. Artificial habitats include slag banks and a flooded mine working known as Hodbarrow Lagoon, the largest coastal lagoon in north-west England.

13. Ramsar Criteria:

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

2, 4, 5, 6

14. Justification for the application of each Criterion listed in 13 above:

Provide justification for each Criterion in turn, clearly identifying to which Criterion the justification applies (see Annex II for guidance on acceptable forms of justification).

Ramsar criterion 2

Supports nationally important numbers of the rare natterjack toad *Bufo calamita*, near the north-western edge of its range (an estimated 18-24% of the British population). Supports a rich assemblage of wetland plants and invertebrates - at least one nationally scarce plant and at least two British Red Data Book invertebrates.

Ramsar criterion 4

The site supports nationally important numbers of waterfowl during spring and autumn passage.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

26326 waterfowl (5 year peak mean 1998/99-2002/2003)

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

Qualifying Species/populations (as identified at designation):

Species with peak counts in winter:

Northern pintail , <i>Anas acuta</i> , NW Europe	687 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
Red knot , <i>Calidris canutus islandica</i> , W & Southern Africa (wintering)	749 individuals, representing an average of 0.2% of the GB population (5 year peak mean 1998/9-2002/3)
Common redshank , <i>Tringa totanus totanus</i> ,	2197 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

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

See Sections 21/22 for details of noteworthy species

Details of bird species occurring at levels of National importance are given in Section 22

15. Biogeography (required when Criteria 1 and/or 3 and /or certain applications of Criterion 2 are applied to the designation):

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

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

16. Physical features of the site:

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

Soil & geology	acidic, basic, shingle, sand, mud, alluvium, metamorphic, limestone, slate/shale, sandstone/mudstone, limestone/chalk
Geomorphology and landscape	lowland, coastal, barrier beach, intertidal sediments (including sandflat/mudflat), open coast (including bay), estuary, lagoon
Nutrient status	
pH	no information
Salinity	saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Blackpool, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/blackpool.html) Max. daily temperature: 12.9° C Min. daily temperature: 6.4° C Days of air frost: 40.3 Rainfall: 871.3 mm Hrs. of sunshine: 1540.3

General description of the Physical Features:

The Duddon Estuary is formed where the River Duddon and the smaller Kirkby Pool opens into the Irish Sea. It is a complex site, mostly consisting of intertidal sand and mudflats. A range of grazed and ungrazed saltmarsh habitats occurs around the edge of the estuary, especially the sheltered inner section. The site is the most important in Cumbria for sand-dune communities including large areas of calcareous dunes at Sandscale and Haverigg Haws and contrasting acid dunes on North Walney. There are a number of settlements and industrial areas on the periphery of the site. Artificial habitats include slag banks, and a flooded iron-ore working known as Hodbarrow Lagoon forms the largest coastal lagoon in north-west England.

17. Physical features of the catchment area:

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

The Duddon Estuary is formed where the River Duddon and the smaller Kirkby Pool opens into the Irish Sea. It is a complex site, mostly consisting of intertidal sand and mudflats. A range of grazed and ungrazed saltmarsh habitats occurs around the edge of the estuary, especially the sheltered inner section. The site is the most important in Cumbria for sand-dune communities including large areas of calcareous dunes at Sandscale and Haverigg Haws and contrasting acid dunes on North Walney. There are a number of settlements and industrial areas on the periphery of the site. Artificial habitats include slag banks, and a flooded iron-ore working known as Hodbarrow Lagoon forms the largest coastal lagoon in north-west England.

18. Hydrological values:

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

Shoreline stabilisation and dissipation of erosive forces

19. Wetland types:

Marine/coastal wetland

Code	Name	% Area
G	Tidal flats	90.4
H	Salt marshes	8

Other	Other	1.4
J	Coastal brackish / saline lagoons	0.2
Tp	Freshwater marshes / pools: permanent	0.01

20. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site, and the ecosystem services of the site and the benefits derived from them.

The majority of the site consists of intertidal sand and mudflats. These support invertebrate populations important for the large numbers of overwintering wildfowl and waders on the site. The mouth of the estuary forms an extensive flat sandplain, with highly mobile sands dissected by constantly-changing tidal channels. More sheltered areas in the inner part of the estuary are composed of finer sands and soft mud.

Extensive areas of saltmarsh occur around the outer edge of the site, especially in the more sheltered inner third of the estuary and around North Walney. There is considerable variation in the saltmarsh communities depending mainly on the intensity of grazing and degree of saltwater inundation. Pioneer saltmarsh occurs at the seaward edge of the marsh, with species such as *Salicornia europaea*, *Suaeda maritima* and *Spartina anglica*. The mid-marsh is dominated by species such as *Puccinellia maritima*, *Festuca rubra* and *Armeria maritima*. *Juncus maritimus* is frequent at the landward side of the marsh. Ungrazed saltmarsh on the east side of North Walney is richer in plant and invertebrate species and is dominated by *Limonium vulgare* and *Atriplex portulacoides*.

The estuary is one of the most important sites in Cumbria for sand dune communities, including areas of calcareous dunes at Sandscale and Haverigg Haws, and contrasting acid dunes at North Walney. A full range of dune types is present, from fore-dunes based on highly mobile sand dominated by *Ammophila arenaria*, to more fixed yellow and grey dunes and dune grasslands. The calcareous nature of the sand has given rise to a very diverse flora with species such as *Viola tricolor*, *Thymus praecox*, *Galium verum* and the local *Vulpia membranacea*. On each of the main dune systems there are areas of dune heath, a rare habitat, with *Calluna vulgaris*, *Erica cinerea*, *E. tetralix* and a mosaic of mosses and lichens. The dune slacks support a diverse flora including *Centaurium littorale*, *Epipactis palustris*, *Corallorhiza trifida*. The wetter slacks are important for natterjack toads.

The strandline communities at North Walney and Haverigg Haws support nationally rare shingle vegetation including species such as *Honkenya peploides*, *Cakile maritima*, *Crambe maritima*.

There are a variety of artificial habitats within the site, including slag banks at Askam Pier and Borwick Rails, which have developed a calcareous flora and are used by breeding terns. Hodbarrow lagoon, a flooded mine working, is used as a roost for wildfowl and for breeding birds. Associated habitats include carr, shingle beach, brackish pools and coastal grassland.

Ecosystem services

21. Noteworthy flora:

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

Nationally important species occurring on the site.

Higher Plants.

Epipactis dunensis, *Limonium humile*, *Centaurium littorale*, *Pyrola rotundifolia*, *Equisetum variegatum*, *Corallorhiza trifida*, *Coincya monensis* ssp. *monensis*.

22. Noteworthy fauna:

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

Birds**Species currently occurring at levels of national importance:****Species regularly supported during the breeding season:**

Sandwich tern, *Sterna*
(*Thalasseus*) *sandvicensis sandvicensis*, W Europe 340 apparently occupied nests, representing an average of 3.2% of the GB population (Seabird 2000 Census)

Little tern, *Sterna albifrons albifrons*, W Europe 26 apparently occupied nests, representing an average of 1.3% of the GB population (Seabird 2000 Census)

Species with peak counts in spring/autumn:

Red-breasted merganser, *Mergus serrator*, NW & C Europe 205 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9-2002/3)

Eurasian oystercatcher, *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering 6460 individuals, representing an average of 2% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Sanderling, *Calidris alba*, Eastern Atlantic 498 individuals, representing an average of 2.4% of the GB population (5 year peak mean 1998/9-2002/3)

Dunlin, *Calidris alpina alpina*, W Siberia/W Europe 6176 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)

Eurasian curlew, *Numenius arquata arquata*, N. a. *arquata* Europe (breeding) 2408 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)

Species Information**Nationally important species occurring on the site.****Mammals.**

Lutra lutra.

Amphibians.

Bufo calamita.

Invertebrates.

Colletes cunicularius, *Psen littoralis*, *Hypocaccus rugiceps*.

23. Social and cultural values:

Describe if the site has any general social and/or cultural values e.g. fisheries production, forestry, religious importance, archaeological sites, social relations with the wetland, etc. Distinguish between historical/archaeological/religious significance and current socio-economic values.

Aesthetic
Archaeological/historical site
Environmental education/ interpretation
Fisheries production
Livestock grazing
Non-consumptive recreation

Scientific research
 Sport fishing
 Sport hunting
 Tourism
 Transportation/navigation

b) Is the site considered of international importance for holding, in addition to relevant ecological values, examples of significant cultural values, whether material or non-material, linked to its origin, conservation and/or ecological functioning? No

If Yes, describe this importance under one or more of the following categories:

- i) sites which provide a model of wetland wise use, demonstrating the application of traditional knowledge and methods of management and use that maintain the ecological character of the wetland:
- ii) sites which have exceptional cultural traditions or records of former civilizations that have influenced the ecological character of the wetland:
- iii) sites where the ecological character of the wetland depends on the interaction with local communities or indigenous peoples:
- iv) sites where relevant non-material values such as sacred sites are present and their existence is strongly linked with the maintenance of the ecological character of the wetland:

24. Land tenure/ownership:

Ownership category	On-site	Off-site
Non-governmental organisation (NGO)	+	
Local authority, municipality etc.	+	+
Private	+	
Public/communal	+	

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Tourism	+	+
Recreation	+	
Cutting of vegetation (small-scale/subsistence)	+	
Fishing: (unspecified)	+	
Fishing: recreational/sport	+	
Gathering of shellfish	+	
Bait collection	+	
Grazing (unspecified)	+	
Hunting: recreational/sport	+	
Industry		+
Sewage treatment/disposal	+	
Harbour/port	+	
Flood control	+	
Mineral exploration (excl. hydrocarbons)		+

Oil/gas exploration		+
Oil/gas production		+
Transport route		+
Urban development		+

26. Factors (past, present or potential) adversely affecting the site’s ecological character, including changes in land (including water) use and development projects:

Explanation of reporting category:

1. Those factors that are still operating, but it is unclear if they are under control, as there is a lag in showing the management or regulatory regime to be successful.
2. Those factors that are not currently being managed, or where the regulatory regime appears to have been ineffective so far.

NA = Not Applicable because no factors have been reported.

Adverse Factor Category	Reporting Category	Description of the problem (Newly reported Factors only)	On-Site	Off-Site	Major Impact?
No factors reported	NA				

For category 2 factors only.

What measures have been taken / are planned / regulatory processes invoked, to mitigate the effect of these factors?

Is the site subject to adverse ecological change? NO

27. Conservation measures taken:

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

Conservation measure	On-site	Off-site
Site/ Area of Special Scientific Interest (SSSI/ASSI)	+	
National Nature Reserve (NNR)	+	
Special Protection Area (SPA)	+	
Land owned by a non-governmental organisation for nature conservation	+	
Management agreement	+	
Other	+	
Special Area of Conservation (SAC)	+	
Management plan in preparation	+	

b) Describe any other current management practices:

The management of Ramsar sites in the UK is determined by either a formal management plan or through other management planning processes, and is overseen by the relevant statutory conservation agency. Details of the precise management practises are given in these documents.

28. Conservation measures proposed but not yet implemented:

e.g. management plan in preparation; official proposal as a legally protected area, etc.

No information available

29. Current scientific research and facilities:

e.g. details of current research projects, including biodiversity monitoring; existence of a field research station, etc.

Contemporary.

Fauna.

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

Breeding birds: Site managers for the NNR, NT, RSPB reserves carry out monitoring.

Breeding natterjack *Bufo calamita*: Site managers and volunteers carry out monitoring of the breeding success of natterjacks annually.

Habitat.

Marine survey work currently underway for the marine habitats included within the Morecambe Bay candidate SAC.

Flora.

Scarce plants: Monitored by site managers on the reserves.

Completed.

Flora.

Vegetation: Sand dunes have been surveyed to NVC standard. Saltmarshes have been surveyed but not to NVC standard.

Fauna.

Invertebrates (terrestrial): Entomological records are detailed for parts of the site (Sandscale and North Walney) and less detailed for others.

30. Current communications, education and public awareness (CEPA) activities related to or benefiting the site:

e.g. visitor centre, observation hides and nature trails, information booklets, facilities for school visits, etc.

Existing Programmes: The National Trust, RSPB and English Nature wardens lead guided walks onto their respective sites (Sandscale, Hodbarrow, North Walney).

Interpretation facilities: The site is provided with fixed interpretation panels at Sandscale (NT) and North Walney NNR. Wardens also lead school visits.

31. Current recreation and tourism:

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

Activities, Facilities provided and Seasonality.

Land-based recreation:

Walking, including dog-walking, bathing and beach recreation occurs throughout the site but particularly adjacent to the urban areas of Barrow-in-Furness, Askam, Millom and Haverigg. There is unauthorised mountain bicycle and motorbike access to some of the sand dune areas but particularly North Walney. Birdwatchers visit the site but mainly go to the nature reserves and where there is easy access. Adjacent to the SSSI at Barrow, derelict land is being developed for amenity. Most of the golf course at Dunnerholme near Askam is included within the site. All year.

Water-based recreation:

A water-skiing development occupies part of Hodbarrow Lagoon. Its operations are controlled. Otherwise power-boating, waterskiing, jet-skiing, wind surfing and canoeing are still relatively uncommon. There are several angling clubs activities in the estuary, mainly April to September.

Airborne recreation

There is a small airstrip used by light aircraft and commercial flights (BAE) adjacent to North Walney. At present usage (low) disturbance to waterfowl does not appear to be a problem. All year.

Wildfowling

Wildfowling is controlled by private agreement with estates and private owners. Clubs operate under strict rules.

Infrastructure developments

There are a number of caravan sites adjacent to the site at Haverigg and Askam and several non-marina moorings throughout the site, used mainly April to September.

32. Jurisdiction:

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

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

33. Management authority:

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

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

34. Bibliographical references:

Scientific/technical references only. If biogeographic regionalisation scheme applied (see 15 above), list full reference citation for the scheme.

Site-relevant references

- Barne, JH, Robson, CF, Kaznowska, SS, Doody, JP & Davidson, NC (eds.) (1996) *Coasts and seas of the United Kingdom. Region 13. Northern Irish Sea: Colwyn Bay to Stranraer, including the Isle of Man*. Joint Nature Conservation Committee, Peterborough. (Coastal Directories Series.)
- Buck, AL (ed.) (1993) *An inventory of UK estuaries. Volume 3. North-west Britain*. Joint Nature Conservation Committee, Peterborough
- Burd, F (1989) *The saltmarsh survey of Great Britain. An inventory of British saltmarshes*. Nature Conservancy Council, Peterborough (Research & Survey in Nature Conservation, No. 17)
- Covey, R (1998) *Marine Nature Conservation Review Sector 11. Liverpool Bay and the Solway Firth: area summaries*. Joint Nature Conservation Committee, Peterborough (Coasts and seas of the United Kingdom. MNCR series)
- Cranswick, PA, Waters, RJ, Musgrove, AJ & Pollitt, MS (1997) *The Wetland Bird Survey 1995–96: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge
- Duddon Estuary Partnership (1994) *The Duddon estuary – a partnership for progress: technical report*. Duddon Estuary Partnership [includes extensive bibliography]
- Duddon Estuary Partnership (nd) *The Duddon estuary*. Duddon Estuary Partnership. www.duddon-estuary.org.uk/pdf/DuddonEstuary_Booklet.pdf
- Gray, LC (1980) *Environmental bibliography of north-west England (vice-counties 59, 60, 69 and 70) 1850–1979*. University of Lancaster Library, Lancaster (Library Occasional Paper, No. 10)
- Jones, PD & Chambers, RG (eds.) (1997) *The Solway and Cumbrian coasts. A volume based on a local meeting of the Estuarine and Coastal Sciences Association, Penrith, UK, April 1993. Coastal Zone Topics: Process, Ecology & Management, 2*
- McLeod, CR, Yeo, M, Brown, AE, Burn, AJ, Hopkins, JJ & Way, SF (eds.) (2004) *The Habitats Directive: selection of Special Areas of Conservation in the UK*. 2nd edn. Joint Nature Conservation Committee, Peterborough. www.jncc.gov.uk/SACselection
- Mills, DJL (1998) Chapter 11. Liverpool Bay to the Solway (Rhôs-on-Sea to the Mull of Galloway) (MNCR Sector 11). In: *Benthic marine ecosystems of Great Britain and the north-east Atlantic*, ed. by K. Hiscock, 315-338. Joint Nature Conservation Committee, Peterborough. (Coasts and Seas of the United Kingdom. MNCR series)
- Musgrove, AJ, Langston, RHW, Baker, H & Ward, RM (eds.) (2003) *Estuarine waterbirds at low tide. The WeBS Low Tide Counts 1992–93 to 1998–99*. WSG/BTO/WWT/RSPB/JNCC, Thetford (International Wader Studies, No. 16)

- Musgrove, AJ, Pollitt, MS, Hall, C, Hearn, RD, Holloway, SJ, Marshall, PE, Robinson, JA & Cranswick, PA (2001) *The Wetland Bird Survey 1999–2000: wildfowl and wader counts*. British Trust for Ornithology, Wildfowl and Wetlands Trust, Royal Society for the Protection of Birds & Joint Nature Conservation Committee, Slimbridge.
www.wwt.org.uk/publications/default.asp?PubID=14
- Ratcliffe, DA (ed.) (1977) *A Nature Conservation Review. The selection of biological sites of national importance to nature conservation in Britain*. Cambridge University Press (for the Natural Environment Research Council and the Nature Conservancy Council), Cambridge (2 vols.)
- Stroud, DA, Chambers, D, Cook, S, Buxton, N, Fraser, B, Clement, P, Lewis, P, McLean, I, Baker, H & Whitehead, S (eds.) (2001) *The UK SPA network: its scope and content*. Joint Nature Conservation Committee, Peterborough (3 vols.)
www.jncc.gov.uk/UKSPA/default.htm
- Taylor, PM & Parker, JG (eds.) (1993) *The coast of north Wales & north west England. An environmental appraisal*. Hamilton Oil Company Ltd., London
- Weighell, AJ, Donnelly, AP & Calder, K (eds.) (2000) *Directory of the Celtic coasts and seas*. Joint Nature Conservation Committee, Peterborough

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