

Information Sheet on Ramsar Wetlands (RIS)

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

Note for compilers:

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

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

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Designation date

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Site Reference Number

2. Date this sheet was completed/updated:

Designated: 02 February 2000; updated 12 May 2005

3. Country:

UK (Scotland)

4. Name of the Ramsar site:

Firth of Tay & Eden Estuary

5. Map of site included:

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

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

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

6. Geographical coordinates (latitude/longitude):

56 24 30 N

03 05 00 W

7. General location:

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

On the east coast of Scotland, immediately adjacent to Dundee, Broughty Ferry, St Andrews and 10 km east of Perth.

Administrative region: Angus; City of Dundee; Fife; Perth & Kinross

8. Elevation (average and/or max. & min.) (metres):	9. Area (hectares): 6918.42
Min. -2	(2005 calculation, no boundary change)
Max. 5	
Mean 0	

10. Overview:

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

The Firth of Tay and Eden Estuary is a complex of estuarine and coastal habitats in eastern Scotland. The site includes extensive invertebrate-rich intertidal mudflats and sandflats created by the massive

sediment load deposited by the River Tay. Also present are large areas of reedbed and sand-dune and a small amount of saltmarsh. The site supports an internationally important assemblage of wintering waterfowl including internationally important populations of several species. Fourteen species of bird breed in nationally important numbers. Abertay Sands are also important as a major haul-out site for both grey seals *Halichoerus grypus* and breeding common seals *Phoca vitulina*.

11. Ramsar Criteria:

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

5, 6

Secretariat comment: The RIS provides information requiring the application of Criterion 4. This needs to be included in the next update.

12. Justification for the application of each Criterion listed in 11. above:

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

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

27028 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 spring/autumn:

Species with peak counts in winter:

Pink-footed goose, <i>Anser brachyrhynchus</i> , Greenland, Iceland/UK (br)	6315 individuals, representing an average of 2.6% of the flyway population (5 year peak mean 1997/8-2001/2)
Greylag goose, <i>Anser anser anser</i> , Iceland/UK, Ireland (br)	1883 individuals, representing an average of 1.8% of the flyway population (5 year peak mean for 1996/7-2000/01)
Bar-tailed godwit, <i>Limosa lapponica lapponica</i> , W Palearctic (br)	1809 individuals, representing an average of 1.5% of the flyway 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.

Details of bird species occurring at levels of National importance are given in Section 20

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

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

a) biogeographic region:

Atlantic

b) biogeographic regionalisation scheme (include reference citation):

Council Directive 92/43/EEC

14. Physical features of the site:

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

Soil & geology	mud, alluvium, igneous, basalt, sandstone, sedimentary, peat, sand, shingle, biogenic reef
Geomorphology and landscape	lowland, coastal, subtidal sediments (including sandbank/mudbank), intertidal sediments (including sandflat/mudflat), open coast (including bay), estuary, lagoon, intertidal rock
Nutrient status	eutrophic, mesotrophic
pH	no information
Salinity	saline / euhaline
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Leuchars, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/leuchars.html) Max. daily temperature: 12.2° C Min. daily temperature: 4.9° C Days of air frost: 59.7 Rainfall: 653.9 mm Hrs. of sunshine: 1523.2

General description of the Physical Features:

The two estuaries are integral components of a large, geomorphologically complex area that incorporates a mosaic of estuarine and coastal habitats. The Tay is the least-modified of the large east coast estuaries in Scotland, while the Eden estuary represents a smaller ‘pocket’ estuary. The inner parts of the estuaries are largely sheltered from wave action, while outer areas, particularly of the Tay, are exposed to strong tidal streams, giving rise to a complex pattern of erosion and deposition of the sandbank feature at the firths’ mouth. The sediments within the site support biotopes that reflect the gradients of exposure and salinity, and are typical of estuaries on the east coast of the UK.

The site stretches for some 35 km along the Tay estuary from near Newburgh to the estuary mouth. For much of its length the main channel of the estuary lies close to the southern shore and the most extensive intertidal flats are on the north side, west of Dundee. In Monifieth Bay, to the east of Dundee, the substrate becomes sandier and there are also mussel *Mytilus edulis* beds. The south shore consists of fairly steeply-shelving mud and shingle. The Inner Tay Estuary is particularly noted for the continuous dense stands of common reed *Phragmites australis* along its northern shore. These reedbeds, inundated during high tides, are amongst the largest in Britain. Eastwards, as conditions become more saline, there are areas of saltmarsh, a relatively scarce habitat in eastern Scotland.

15. Physical features of the catchment area:

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

The River Tay is the longest river in Scotland, draining much of the southern Highlands. The catchment of the Tay system covers an area of 4970 km², and average annual flow of the River Tay at Perth is about 170 m³/s. Below Perth the Tay becomes tidal and the River Earn flows into the estuary. The largest city on the river, Dundee, lies on the north bank of the Firth of Tay.

The River Eden drains some 400 km² of north Fife, a predominantly low-lying catchment of which approximately 76% is prime agricultural land.

16. Hydrological values:

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

No special values known

17. Wetland types

Marine/coastal wetland

Code	Name	% Area
E	Sand / shingle shores (including dune systems)	25
F	Estuarine waters	19
G	Tidal flats	48
H	Salt marshes	1.2
M	Rivers / streams / creeks: permanent	0.8
Sp	Saline / brackish marshes: permanent	6

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

Invertebrate-rich mudflats comprise the majority of the sites. These include important areas of eelgrass *Zostera* spp. in Tayport Bay. Small areas of saltmarsh can be found in Tayport Bay, Eden Estuary and the Inner Tay Estuary. These are dominated by *Juncus gerardii*, *Scirpus* spp. and *Schoenoplectus* spp. on the Inner Tay and *Puccinellia/Festuca* on the Eden Estuary. Successional sand-dune communities are to be found on Tentsmuir Point which is one of the most extensive dune systems in Scotland. In total 14 NVC communities are found there. The *Phragmites australis* reedbeds (S4 swamp) are the some of the most important in the UK and include the largest continuous stand of reed in the UK.

19. Noteworthy flora:

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

Habitat of National Importance:

Phragmites australis reedbed

Nationally importance species:

Higher Plants:

Oak-leaved goosefoot *Chenopodium glaucum* (nationally scarce).

Baltic rush *Juncus balticus* (nationally scarce),

Seaside centaury *Centaurium littorale* (nationally scarce),

Coral-root orchid *Corallorhiza trifida* (nationally scarce),

Dense-flowered fumitory *Fumaria densiflora* (nationally scarce),

Eelgrass *Zostera marina* (nationally scarce),

Narrow-leaved eelgrass *Zostera angustifolia* (nationally scarce),

Dwarf eelgrass *Zostera noltei* (nationally scarce)

20. Noteworthy fauna:

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

Birds

Species currently occurring at levels of national importance:

Species with peak counts in spring/autumn:

Ringed plover , *Charadrius hiaticula*,
Europe/Northwest Africa

428 individuals, representing an average of 1.3% of the GB population (5 year peak mean 1998/9-2002/3 - spring peak)

Common redshank , *Tringa totanus totanus*,

2145 individuals, representing an average of 1.8% of the GB population (5 year peak mean 1998/9-2002/3)

Common greenshank , *Tringa nebularia*,
Europe/W Africa

13 individuals, representing an average of 2.1% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Common eider , *Somateria mollissima mollissima*, NW Europe

2359 individuals, representing an average of 3.2% of the GB population (5 year peak mean 1998/9-2002/3)

Black

3100 individuals, representing an average of 6.2% of the GB population (5 year peak mean for 1990/91 to 1994/95)

(common) scoter , *Melanitta nigra nigra*,

730 individuals, representing an average of 24.3% of the GB population (5 year peak mean for 1990/91 to 1994/95)

Velvet scoter , *Melanitta fusca fusca*, Baltic/W Europe

Eurasian oystercatcher , *Haematopus ostralegus ostralegus*, Europe & NW Africa -wintering

3653 individuals, representing an average of 1.1% of the GB population (5 year peak mean 1998/9-2002/3)

Grey plover , *Pluvialis squatarola*, E Atlantic/W Africa -wintering

874 individuals, representing an average of 1.6% of the GB population (5 year peak mean 1998/9-2002/3)

Species/populations identified subsequent to designation for possible future consideration under criterion 6.

Species with peak counts in spring/autumn:

Goosander , *Mergus merganser merganser*,
NW & C Europe (non br)

258 individuals, representing an average of 1.6% of the population (5 year peak mean 1998/9-2002/3)

Species Information

Internationally important species:

Mammals:

Common seal *Phoca vitulina*

Nationally important species:

Invertebrates:

fly *Dialineura anilis* (nationally rare),

fly *Eutropha fulvifrons* (nationally scarce),

Moths:

Cousin German moth *Paradiarsia sobrina* (nationally rare)

Lyme grass *Photedes elymi* (nationally scarce),

Pretty pinion *Perizoma blandiata* (nationally scarce),

Satin lutestring *Tetheella fluctuosa* (nationally scarce),

Regal mantle *Catarhoe cuculata* (nationally scarce),

Lunar yellow underwing *Noctua orbona* (nationally scarce),

Coast dart *Euxoa cursoria* (nationally scarce),

Sand dart *Agrotis ripae* (nationally scarce),

White colon *Sideridis albicolon* (nationally scarce),

Portland moth *Actebia praecox* (nationally scarce)

Mammals:

Grey seal *Halichoerus grypus***21. Social and cultural values:**

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

Aesthetic
Aquatic vegetation (e.g. reeds, willows, seaweed)
Archaeological/historical site
Environmental education/ interpretation
Non-consumptive recreation
Scientific research
Sport fishing
Sport hunting
Tourism
Transportation/navigation

22. Land tenure/ownership:

Ownership category	On-site	Off-site
Local authority, municipality etc.	+	+
National/Crown Estate	+	+
Private	+	+
Public/communal	+	+
Other	+	+

23. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	+
Tourism	+	+
Recreation	+	+
Current scientific research	+	+
Commercial forestry		+
Cutting of vegetation (small-scale/subsistence)	+	
Fishing: commercial	+	+
Fishing: recreational/sport	+	+
Bait collection	+	+
Arable agriculture (unspecified)		+
Permanent arable agriculture		+
Rough or shifting grazing	+	
Permanent pastoral agriculture		+
Hunting: recreational/sport	+	+
Industrial water supply	+	+
Industry	+	+
Sewage treatment/disposal	+	+
Harbour/port		+
Transport route	+	+
Urban development		+
Non-urbanised settlements		+
Military activities	+	+

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

Explanation of reporting category:

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

NA = Not Applicable because no factors have been reported.

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

25. Conservation measures taken:

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

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	+	+
Site management statement/plan implemented	+	+
Other	+	
Special Area of Conservation (SAC)	+	+

26. Conservation measures proposed but not yet implemented:

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

No information available

27. Current scientific research and facilities:

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

EE= Eden Estuary, TP= Tentsmuir Point, IT= Inner Tay Estuary

Birds

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.

- Disturbance and feeding (Eden Estuary)
- Distribution due to disturbance (Eden Estuary)
- Feeding strategies (Eden Estuary)
- Effect of algal mats and feeding (Eden Estuary)
- Reedbed breeding birds monitoring (Inner Tay Estuary)
- Long-term ringing studies

Seals

- Seal movement (Eden Estuary)
- Haulout behaviour and dietary habits (Eden Estuary)
- Underwater recordings of grey seal (Tentsmuir Point)
- Population and breeding monitoring (Tentsmuir Point)

Fish

- Sea trout behaviour and physiology (Eden Estuary)
- Fish population survey (Eden Estuary)

Invertebrates

- Biology of lugworm and ragworm (Eden Estuary)
- Mollusc parasitology (Eden Estuary)
- Butterfly surveys (Tentsmuir Point)

Plants

- Coral-root orchid studies (Tentsmuir Point)
- Vegetation succession (Tentsmuir Point)

Estuarine and geomorphological

- Estuarine energetics (Eden Estuary)
- Recovery of estuary after Effluent Treatment Plant built (Eden Estuary)
- Coastal protection (Eden Estuary)
- Sediment change (Eden Estuary)
- Use of *Scirpus* and *Phragmites* for coastal defence (Eden Estuary)
- Nutrient heterogeneity from shore to forest (Tentsmuir Point)

28. Current conservation education:

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

Students from many universities conduct research on the site. In particular the University of St Andrews has strong links with both the Eden Estuary and Tentsmuir Point NNR where many students carry out fieldwork for undergraduate and postgraduate degrees. Students from Elmwood College in Cupar and Dundee University also visit the site.

29. Current recreation and tourism:

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

The site is used all year round by local people for recreational activities such as walking and birdwatching. Low-level tourist use also occurs.

30. Jurisdiction:

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

Scottish Executive, Environment and Rural Affairs Department

31. Management authority:

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

Scottish Natural Heritage, 2 Anderson Place, Edinburgh, EH6 5NP

32. Bibliographical references:

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

Site-relevant references

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- Booth, A (1991) *Tayport – Tentsmuir Site of Special Scientific Interest management plan*. Unpublished report to Scottish Natural Heritage
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