

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: 05 January 1976

3. Country:

UK (Scotland)

4. Name of the Ramsar site:

Loch Leven

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):

56 11 48 N 03 22 30 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: Kinross

The loch is adjacent to the town of Kinross and the M90 motorway, in an open catchment of predominantly farmed land.

Administrative Region: Perth and Kinross

Administrative region: Perth and Kinross

10. Elevation (average and/or max. & min.) (metres): 11. Area (hectares): 1611.8

Min.	106
Max.	109
Mean	108

12. General overview of the site:

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

Loch Leven is the largest naturally eutrophic loch in the British Isles. It is relatively shallow and is surrounded by farmland, with a diverse aquatic flora and shoreline vegetation. The site supports internationally important wintering populations of pink-footed geese and shoveler, as well as an assemblage of over 20,000 wintering waterfowl.

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).

1, 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 1

A particularly good example of a naturally eutrophic loch. The largest loch of its kind in Britain, being both large and shallow with only rare stratification. It supports characteristic flora and fauna, including the nationally rare invertebrates *Macroplea appendiculata*, *Thanatophilus dispar* and *Saldula fucicola*.

Ramsar criterion 5

Assemblages of international importance:

Species with peak counts in winter:

18463 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:

Great crested grebe , <i>Podiceps cristatus cristatus</i> , NW Europe	130 individuals, representing an average of 0.8% of the GB population (5 year peak mean 1998/9-2002/3)
Northern shoveler , <i>Anas clypeata</i> , NW & C Europe	406 individuals, representing an average of 1% of the 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:

Mute swan , <i>Cygnus olor</i> , Britain	442 individuals, representing an average of 1.1% of the population (5 year peak mean 1998/9-2002/3)
Eurasian teal , <i>Anas crecca</i> , NW Europe	4105 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Pink-footed goose , <i>Anser brachyrhynchus</i> , Greenland, Iceland/UK	14646 individuals, representing an average of 6% of the population (5 year peak mean 1997/8-2001/2)
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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 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):

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	sand, mud, sedimentary, sandstone
Geomorphology and landscape	lowland, island
Nutrient status	highly eutrophic
pH	no information
Salinity	fresh
Soil	mainly mineral
Water permanence	usually permanent
Summary of main climatic features	Annual averages (Edinburgh, 1971–2000) (www.metoffice.com/climate/uk/averages/19712000/sites/leuchars.html) Max. daily temperature: 12.2° C Min. daily temperature: 5.1° C Days of air frost: 54.5 Rainfall: 676.2 mm Hrs. of sunshine: 1405.8

General description of the Physical Features:

Loch Leven is about 3x5 km in extent and is the largest naturally eutrophic loch in Britain and Ireland. It is relatively shallow and is surrounded by farmland, with a diverse aquatic flora and shoreline vegetation. The loch contains several islands, the largest of which, St Serf's Island, has an area of about 46 ha.

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).

Loch Leven is one of the largest inland lakes in the UK, covering an area of 13.3 km². During the period 1830-2, the water level of Loch Leven was lowered by about 1.5 metres, reducing the surface area of the loch to about three-quarters of its original size. Most of the loch is now very shallow with an average depth of about 3.9 metres. The loch has a catchment area of 145 km² and is fed by four streams, namely the North and South Queich (Ochil Hills), the Gairney Water (Cleish Hills) and the Pow Burn (Lomond Hills). The loch's only outflow is the River Leven, canalised in the 1830s, which flows from the south-eastern corner of the loch.

18. Hydrological values:

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

No special values known

19. Wetland types:

Inland wetland

Code	Name	% Area
O	Freshwater lakes: permanent	76
Other	Other	16
Tp	Freshwater marshes / pools: permanent	8

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.

Swamp and reed beds - *Phragmites australis* and *Phalaris arundinacea*

Tall herb fen - *Phalaris arundinacea* dominates.

Open water and submerged macrophytes *Potamogeton pectinatus* and charophytes dominate.

Grasslands - *Arrhenatherum elatius* grassland, and *Festuca ovina* and *Agrostis capillaris* grassland.

Rush pasture - *Juncus effusus* and *Juncus acutiflorus* are typical species.

Mire - *Filipendula ulmaria* and *Angelica sylvestris* characterise this community.

Woodland /Scrub - *Alnus glutinosa* and *Urtica dioica*, with *Ulex europaeus* and *Rubus fruticosus*.

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:

Juncus filiformis, *Hierochloa odorata*

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:

Black-headed gull , <i>Larus ridibundus</i> , N & C Europe	6864 apparently occupied nests, representing an average of 5.3% of the GB population (Seabird 2000 Census)
Lesser black-backed gull , <i>Larus fuscus graellsii</i> , W Europe/Mediterranean/W Africa	1103 apparently occupied nests, representing an average of 1% of the GB population (Seabird 2000 Census)

Species with peak counts in spring/autumn:

Gadwall , <i>Anas strepera strepera</i> , NW Europe	447 individuals, representing an average of 2.6% of the GB population (5 year peak mean 1998/9-2002/3)
Common pochard , <i>Aythya ferina</i> , NE & NW Europe	1398 individuals, representing an average of 2.3% of the GB population (5 year peak mean 1998/9-2002/3)
Tufted duck , <i>Aythya fuligula</i> , NW Europe	3618 individuals, representing an average of 4% of the GB population (5 year peak mean 1998/9-2002/3)
Common coot , <i>Fulica atra atra</i> , NW Europe	2242 individuals, representing an average of 1.2% of the GB population (5 year peak mean 1998/9-2002/3)
Ruff , <i>Philomachus pugnax</i> , Europe/W Africa	16 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/9-2002/3)

Species with peak counts in winter:

Great cormorant , <i>Phalacrocorax carbo carbo</i> , NW Europe	513 individuals, representing an average of 2.2% of the GB population (5 year peak mean 1998/9-2002/3)
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Whooper swan , *Cygnus cygnus*,
Iceland/UK/Ireland

141 individuals, representing an average of 2.4% of the GB population (5 year peak mean 1998/9-2002/3)

Common goldeneye , *Bucephala clangula clangula*, NW & C Europe

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

Species Information

Nationally important species occurring on the site

Invertebrates:

Thanatophilus dispar, *Macrolea appendiculata*, *Saldula fucicola*

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
- Forestry production
- Livestock grazing
- Non-consumptive recreation
- Scientific research
- Sport fishing
- Sport hunting
- Tourism

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)	+	
National/Crown Estate	+	
Private	+	+

25. Current land (including water) use:

Activity	On-site	Off-site
Nature conservation	+	
Tourism	+	
Recreation	+	
Current scientific research	+	
Commercial forestry	+	
Fishing: recreational/sport	+	
Grazing (unspecified)	+	
Hunting: recreational/sport	+	
Sewage treatment/disposal	+	

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)	+	
Management agreement	+	
Site management statement/plan implemented	+	

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.

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.

Ornithology: Geese and agriculture, cormorant/fishery interactions. Breeding wildfowl monitoring.

Fisheries research:

Population size and distribution.

Flora:

Monitoring of aquatic macrophytes and emergent vegetation

Miscellaneous:

The management plan for Loch Leven includes prescriptions for the following research:

Water Quality Monitoring: algal and zooplankton communities, water chemistry, part of European LIFE Project.

Facilities include a small laboratory, boats and essential equipment.

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.

The RSPB have a nature reserve and visitor centre at Vane Farm, providing interpretation and birdwatching facilities. SNH have an office at Kinross Pier and employ a warden to both monitor and provide information about the site.

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:

SNH keep records of numbers of wildfowl shot on the estate to prevent excessive shooting or disturbance.

The Vane Farm RSPB Reserve is a popular location for birdwatchers, and provides educational and recreational facilities with the minimum disturbance to birds.

There are three areas of the loch's shore open to public access. These areas are situated where the impact of visitors is minimal.

Fishing from boats is a popular pursuit on the loch, and is controlled to minimise any impacts to bird populations.

32. 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

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.

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

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

- Anon. (ed.) (1974) *The Loch Leven I.B.P. Project. A symposium sponsored by the Royal Society of Edinburgh at the University of Stirling on 11–13 June 1973. Proceedings of the Royal Society of Edinburgh*, **74B**
- Anon. (n.d.) *Wildlife of Loch Leven*. Royal Society for the Protection of Birds
- Bailey-Watts, AE & Kirika, A (2000) Loch Leven 2000: physical, chemical and algal aspects of water quality. *Scottish Natural Heritage Commissioned Report*, No. F99LH08
- Carvalho, L & Kirika, A (2002) Loch Leven 2001: physical, chemical and algal aspects of water quality. *Scottish Natural Heritage Commissioned Report*, No. F01LH03
- Carvalho, L & Kirika, A (2005) Loch Leven 2003: physical, chemical and algal aspects of water quality. *Scottish Natural Heritage Commissioned Report*, No. **114** (ROAME No. F01LH03d)
- Carvalho, L, Kirika, A & Gunn, I (2004) Long-term patterns of change in physical, chemical and biological aspects of water quality at Loch Leven. *Scottish Natural Heritage Commissioned Report*, No. **031** (ROAME No. F01LH03)
- Greenhalgh, M (2000) Wild trout in the British Isles – their variety and conservation. *British Wildlife*, **12**(2), 114-121
- Kirika, A & Carvalho, L (2004) Loch Leven 2002: physical, chemical and algal aspects of water quality. *Scottish Natural Heritage Commissioned Report*, No. **030** (ROAME No. F01LH03B)
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www.wwt.org.uk/publications/default.asp?PubID=14
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- 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.)
- Scottish Natural Heritage (2002) *Loch Leven NNR. 'A natural place in history'*. Scottish Natural Heritage, Kinross (leaflet).
www.nnr-scotland.org.uk/publications_detail.asp?pubID=4
- 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
- Stroud, DA, Mudge, GP & Pienkowski, MW (eds.) (1990) *Protecting internationally important bird sites: a review of the EEC Special Protection Area Network in Great Britain*. Nature Conservancy Council, Peterborough

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