
Information Sheet on Ramsar Wetlands

(RIS) – 2009-2012 version

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:

September 2013

3. Country:

the Netherlands

4. Name of the Ramsar site:

Grevelingen

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

This RIS is for:

- a) Designation of a new Ramsar site ; or
b) 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

The Ramsar site boundary and site area are unchanged:

or

If the site boundary has changed:

- i) the boundary has been delineated more accurately ; or
ii) the boundary has been extended ; or
iii) the boundary has been restricted**

and/or

If the site area has changed:

- i) the area has been measured more accurately ; or
ii) the area has been extended ; or
iii) the area has been reduced**

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:

The Grevelingen lake has been cut off from the North sea by the Brouwersdam in 1971. Since then it has been the largest almost stagnant salt water lake in Europe. Recent years it was noticed that the water below 10 m was void of oxygen at several places and it seems to be getting worse. This causes the death of fauna at the bottom of the lake.

No major changes though, in the application of criteria since last RIS Update. The average peak number (criterion 5) is somewhat lower, though the number of species meeting the 1% threshold (criterion 6) has increased (see 14).

7. Map of site:

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

- i) a hard copy (required for inclusion of site in the Ramsar List):
- ii) an electronic format (e.g. a JPEG or ArcView image)
- iii) a GIS file providing geo-referenced site boundary vectors and attribute tables

b) Describe briefly the type of boundary delineation applied:

Ramsar site Grevelingen has also been designated as the European Natura 2000-site Grevelingen. For this RIS-version, the new Ramsar site boundary has therefore been adjusted to the (proposed) Natura 2000-boundary.

Some marina's, recreational area's, road and agricultural land, mainly in the south-east corner has been excluded or exclavated from the Ramsar site.

In total this new boundary resulted in a decrease of -78,0 ha.

8. Geographical coordinates (latitude/longitude, in degrees and minutes):

51°45'N - 04°00'E

9. General location:

Provinces of Zuid-Holland and Zeeland. Small villages, like Brouwershaven are bordering the lake. The nearest town at approx.. 7.5 km is Zierikzee, which lies in the municipality Schouwen-Duiveland (population 34.040 per 1-1-2013; source CBS, Netherlands Statistics).

10. Elevation: (min & max)

NAP -18 / 0 m

11. Area: (in hectares)

13.752,8 ha

12. General overview of the site:

The Grevelingenmeer is a former estuary, 18 km in length, which was dammed from the North Sea in 1971 and from the Oosterschelde and rivers in 1965, to become the largest salt water lake in Europe. Refreshment of salt water permanently (though slightly) occurs through a sluice in the dam.

The area is characterised by clear water, islands and extensive shores, among which the Slikken van Flakkee. Salt tolerant pioneer vegetations can be found near the waterline. Dune slacks with species rich

vegetations can be found on the islands and on the shores further inland from the waterline. The extensive mud flats, sandbanks and salt marshes of the past are now covered with grasslands, scrub and forest.

The area is especially important for a great number of water bird and wader species.

13. Ramsar Criteria:

1 • 2 • 3 • 4 • 5 • 6 • 7 8 • 9

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

The Ramsar site Grevelingen, has been designated under Natura 2000 as well. Natura 2000 is the centrepiece of EU nature & biodiversity policy. It is an EU-wide network of nature protection areas which aims to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPAs) designated under the Birds Directive. Natura 2000 applies to SACs and SPAs which are divided into biogeographical regions. The Ramsar site Grevelingen applies to both and the justification for the application of each Ramsar criterion below, greatly refers to its designation as a SAC and SPA.

Justification criterion 2

The table below shows Annex II species (HD) and Annex I species (BD) for which the site has been designated as a SAC and SPA respectively, as well as their current status on the National Red List. Some other threatened species of the National Red Lists have also been added to the table.

*Species of Annex II of the European Habitat Directive (HD) and Annex I of the European Bird Directive for which the site has been designated as a SAC and SPA respectively, as well as species of annex IV (HD) and some threatened species of the National Red Lists (- = Not Applicable; * = priority species). Year of adoption of the National Red List in parentheses.*

Species(groups)	Species code	HD Annex	BD Annex	National RL category
Vascular plants				(2004)
Fen Orchid <i>Liparis loeselii</i>	H1903	II, IV	-	EN
Grass-of-parnassus <i>Parnassia palustris</i>	-	-	-	VU
Parsley Water-dropwort <i>Oenanthe lachenalii</i>	-	-	-	VU
Marsh Helleborine <i>Epipactus palustris</i>	-	-	-	VU
Early Marsh-orchid <i>Dactylorhiza incarnate</i>	-	-	-	VU
Mammals				(2009)
*Root Vole <i>Microtus oeconomus arenicola</i>	H1340	II, IV	-	VU
Non-breeding birds				
Horned Grebe <i>Podiceps auritus</i>	A007	-	I	-
Little Egret <i>Egretta garzetta</i>	A026	-	I	-
Eurasian Spoonbill <i>Platalea leucorodia</i>	A034	-	I	-
Bewick`s Swan <i>Cygnus bewickii</i>	A037	-	I	-
Barnacle Goose <i>Branta leucopsis</i>	A045	-	I	-
Peregrine Falcon <i>Falco peregrinus</i>	A103	-	I	-
Avocet <i>Recurvirostra avosetta</i>	A132	-	I	-
Kentish Plover <i>Charadrius alexandrinus</i>	A138	-	I	-
Eurasian Golden Plover <i>Pluvialis apricaria</i>	A140	-	I	-
Bar-tailed Godwit <i>Limosa lapponica</i>	A157	-	I	-
Breeding birds				(2004)
Western Marsh Harrier <i>Circus aeruginosus</i>	A081	-	I	LC
Avocet <i>Recurvirostra avosetta</i>	A132	-	I	LC

Sandwich Tern <i>Sterna sandvicensis</i>	A191	-	I	EN
Common Tern <i>Sterna hirundo</i>	A193	-	I	VU
Little Tern <i>Sterna albifrons</i>	A195	-	I	VU
Molluscs				(2004)
Dun Sentinel <i>Assiminea grayana</i>	-	-	-	EN

Justification criterion 3

The Grevelingen is designated as a Natura 2000 site (both SAC and SPA) and can therefore be considered important for maintaining the biodiversity of the Atlantic biogeographic region. Besides the species mentioned under criterion 2, the site has also been designated as a SAC for a range of habitat types (Annex I of HD) and SPA for a number of bird species that are not on Annex I of the BD. See the tables below.

*Habitat types (according to interpretation manual of EU-Habitat Directive; * = priority habitat type) for which the site has been designated as a SAC.*

Habitat code	Habitat type
H1310	<i>Salicornia</i> and other annuals colonizing mud and sand
H1330	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)
H2130	*Fixed coastal dunes with herbaceous vegetation ("grey dunes")
H2160	Dunes with <i>Hippophaë rhamnoides</i>
H2170	Dunes with <i>Salix repens</i> ssp. <i>Argentea</i> (<i>Salicion arenariae</i>)
H2190	Humid dune slacks
H6430	Hydrophilous tall herb fringe communities of plains

Bird species (not on Annex I of the BD) for which the site has been designated as a SPA as well as their status on the National Red List (2004).

Species	Species code	National RL category
Non-breeding birds		
Little Grebe <i>Tachybaptus ruficollis</i>	A004	-
Great Crested Grebe <i>Podiceps cristatus</i>	A005	-
Black-necked Grebe <i>Podiceps nigricollis</i>	A008	-
Great Cormorant <i>Phalacrocorax carbo</i>	A017	-
White-fronted Goose <i>Anser albifrons</i>	A041	-
Greylag Goose <i>Anser anser</i>	A043	-
Brent Goose <i>Branta bernicla</i>	A046	-
Common Shelduck <i>Tadorna tadorna</i>	A048	-
Eurasian Wigeon <i>Anas [Mareca] penelope</i>	A050	-
Gadwall <i>Anas strepera</i>	A051	-
Common eal <i>Anas crecca</i>	A052	-
Mallard <i>Anas platyrhynchos</i>	A053	-
Northern Pintail <i>Anas acuta</i>	A054	-
Northern Shoveler <i>Anas chrypeata</i>	A056	-
Common Goldeneye <i>Bucephala clangula</i>	A067	-
Red-breasted Merganser <i>Mergus serrator</i>	A069	-
Common Coot <i>Fulica atra</i>	A125	-
Eurasian Oystercatcher <i>Haematopus ostralegus</i>	A130	-
Common Ringed Plover <i>Charadrius hiaticula</i>	A137	-
Grey Plover <i>Pluvialis squatarola</i>	A141	-
Dunlin <i>Calidris alpina schinzii</i>	A149	-
Eurasian Curlew <i>Numenius arquata</i>	A160	-
Common Redshank <i>Tringa totanus totanus</i>	A162	-
Turnstone <i>Arenaria interpres</i>	A169	-

Breeding birds		(2004)
Common Ringed Plover <i>Charadrius hiaticula</i>	A137	VU
Kentish Plover <i>Charadrius alexandrinus</i>	A138	EN

Justification criterion 4

The site is of particular importance for many breeding and non-breeding bird species (see criterion 2, 3 and 6), of which several species gather in relatively small areas like shallow waters for resting during the migration and wintering periods or breeding colonies of Herring Gull *Larus argentatus*, Avocet *Recurvirostra avosetta*, Little Tern *Sterna albifrons*, Common Tern *Sterna hirundo*, and Sandwich Tern *Sterna sandvicensis*.

Justification criterion 5

The site regularly supports more than 20,000 wintering waterbirds: the average peak number was 67.450 for the period 2005/2006-2009/2010, which is less than the average peak number of 78,231 for the period 1999/2000-2003/2004 (Source: Sovon, Dutch Centre for Field Ornithology).

Justification criterion 6

Species meeting the 1% threshold (WPE-4, Wetlands International 2006; Source: Sovon, Dutch Centre for Field Ornithology). (NB = nonbreeding, BR = breeding period 2006-2010).

Species (UK)	Species	NB/ BR	Biogeographic population	1% threshold	Average number between 2006-2010	% at site
Gadwall	<i>Anas strepera</i>	NB	NW-Europe	600	1229	2.0
Brent Goose	<i>Branta bernicla bernicla</i>	NB	W-Siberia/ W-Europe	2000	5480	2.7
Barnacle Goose	<i>Branta leucopsis</i>	NB	Russia/ Germany/ Netherlands	4200	10983	2.6
Herring Gull	<i>Larus argentatus</i>	BR		5900	6975	1.2
Red-breasted Merganser	<i>Mergus serrator</i>	NB	NW/ Central Europe	1700	5642	3.3
Eurasian Spoonbill	<i>Platalea leucorodia</i>	NB	Eastern Atlantic	110	352	3.2
Golden Plover	<i>Pluvialis apricaria</i>	NB	NW-Europe (breeding)	7500	7576	1.0
Horned Grebe	<i>Podiceps auritus</i>	NB		55	122	2.2
Great Crested Grebe	<i>Podiceps cristatus</i>	NB	NW-Europe (wintering)	3600	3891	1.1
Black-necked Grebe	<i>Podiceps nigricollis</i>	NB	Western Palearctic	2200	5228	2.4
Avocet	<i>Recurvirostra avosetta</i>	BR	W.-Europe/ W-Med. (breeding)	730	978	1.3
Little Tern	<i>Sterna albifrons</i>	BR	W-Europe	490	546	1.1
Common Tern	<i>Sterna hirundo</i>	BR	SW-Europe	1900	2244	1.2

Compared to the period of 1992-98 (previous updated version) the species Sandwich Tern *Chlidonias sandvicensis* (BR) and Common Goldeneye *Bucephala clangula* (NB) do not meet the 1%-standard anymore, while Golden Plover *Pluvialis apricaria* (NB), Herring Gull *Larus argentatus* (BR), Common Tern *Sterna hirundo* (BR), Little Tern *Sterna albifrons* (BR), Horned Grebe *Podiceps cristatus* (NB) and Gadwell *Anas strepera* (NB) now do meet the 1%-standard.

15. Biogeography

a) biogeographic region:

The Ramsar site belongs to the Atlantic biogeographical region.

b) biogeographic regionalisation scheme:

The bio-geographic regions dataset used, contains the official delineations used in the Habitats Directive (92/43/EEC) and for the EMERALD Network set up under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention)

16. Physical features of the site:

Originally the Grevelingen was a tidal area, part of the estuary of the rivers Rhine and Meuse. The connection with the Oosterschelde in the eastern part was closed by the Grevelingendam in 1965. Subsequently, the site was cut off from the North Sea by the closure of the Brouwershavense Gat in 1971. The original plan was to make a stagnant freshwater lake of the Grevelingen. Since 1985 sea water was let in during winter as the result of the general wish to retain the saline character of the lake. Since 2004 there is a year round influx of sea water. The water level is kept on NAP – 0.20 m, but can vary between -0.10 and -0.30 depending on the wind strength.

17. Physical features of the catchment area:

The Grevelingen is part of the Rhine/Meuse Delta.

- The surface area of the Rhine catchment is 185.000 km². Geologically and geomorphologically it consists mainly of Quarternary, Paleozoic and Mesozoic sediments and Tertiary mountains. The general soil types are: Alluvial, Brown forest soils and montane soils. The climates according to Köppen are rainy (Cbf) and montane (EH).
 - The surface area of the Meuse catchment is 33.000 km². Geologically and geomorphologically it consists mainly of Quarternary and Mesozoic sediments and Paleozoic (eroded) mountains. The general soil types are: Alluvial, Brown forest soils and montane soils. The climate according to Köppen is rainy (Cbf).
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18. Hydrological values:

Superfluous water from one of the surrounding polders is pumped into this salty-water lake.

19. Wetland Types

a) presence:

Marine/coastal: A • B • C • D • E • F • G • **H** • I • **J** • K • Zk(a)

Inland: L • M • N • O • P • Q • R • Sp • Ss • Tp • Ts • U • Va •
Vt • W • Xf • Xp • Y • Zg • Zk(b)

Human-made: 1 • 2 • 3 • **4** • 5 • 6 • 7 • 8 • 9 • Zk(c)

b) dominance:

JH4

20. General ecological features:

The area is characterised by clear salty water, islands and extensive shores. Salt tolerant pioneer vegetations can be found near the waterline. Dune slacks with species rich vegetations can be found on the islands and on the shores further inland from the waterline. The extensive mud flats, sandbanks and salt marshes of the past are now covered with grasslands, scrub and forest. The area is especially important for a great number of water bird and wader species. The ecosystem services mainly refer to the opportunities for water recreation, also diving.

21. Noteworthy flora:

Most noteworthy flora is listed under 14.

22. Noteworthy fauna:

Most noteworthy fauna is listed under 14.

23. Social and cultural values:

a) 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: See 25. Current land use.

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

24. Land tenure/ownership:**a) within the Ramsar site:**

Large part of the site is owned by Staatsbosbeheer (8370 ha); the remainder is state ownership (Dienst der Domeinen, Ministerie van Financiën).

b) in the surrounding area:

The water (Voordelta, Volkerakmeer and Oosterschelde) is state owned, on land several private owners.

25. Current land (including water) use:**a) within the Ramsar site:**

Boating 80%, Tourism and leisure 10%, Commercial fisheries 80%, Conservation and research 100%, Water management 100%.

b) in the surroundings/catchment:

Farming is the main land-use in the surroundings. On the broader scale of the river catchment areas the general land-use for the Rhine-catchment is forestry, pasture farming, arable farming and unproductive land (high mountains), while for the Meuse catchment this is pasture farming, arable farming and forestry. However, the Grevelingen have no immediate influence from the rivers in the hinterland, which makes the influence from the hinterland limited.

Within European Water Directive Framework the Grevelingen is regarded as part of the Schelde catchment area, where the general land-use is arable and pasture farming.

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

a) within the Ramsar site: (A = serious threat covering large part of the area; B = moderate threat or local threat; C = minor threat):

- Industrialization and urbanization (C - wind turbines);
- Recreation/ tourism (B -);
- Pollution (not Industrial discharge) (C -).
- Other: The ecological character of the site has changed after the increase of salinity (by which the

extensive seagrass fields have disappeared). Numbers of piscivorous species like *Podiceps cristatus* and *Mergus serrator* have dropped in recent years.

- Construction (B - Increase of recreational capacity of harbours).
- Oxygen deficiency (A). The lack of tidal fluctuations causes oxygen deficiency in the deeper parts of the Grevelingen, which has a detrimental impact on life forms in these regions. Complete or partly restoration of the tidal dynamics will solve this issue.

b) in the surrounding area:

- Construction (B - Increase of recreational capacity of harbours in the region and potential increase of boating).

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site:

- Special Protection Area (Birds Directive 79/409/EEC, 2000)
- Special Area of Conservation (Habitats Directive 92/43/EEC)
- Natura 2000-site

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site:

Ia ; Ib ; II ; III ; IV ; V ; VI

c) Does an officially approved management plan exist; and is it being implemented?:

The Ramsar site matches 100% with the (proposed) designation for Natura 2000.

The process for the Natura 2000-management plan has been started.

d) Describe any other current management practices:

Large part of the shores and islands are grazed and sometimes mown to slow down succession and maintain the rich vegetation of the site. Water level management is tuned to breeding birds by reducing the water level prior to and during the breeding season and thereby creating a larger breeding area for pioneer bird species.

28. Conservation measures proposed but not yet implemented:

There are plans to partly open the eight kilometer Brouwersdam between Goeree-Overflakkee and Schouwen-Duiveland in order to partly restore the tidal system, which would improve the water quality and oxygen level of the Grevelingenmeer. This may solve the problems concerning the low level of oxygen and the dying of life in and near the bottom of the lake.

29. Current scientific research and facilities:

Ongoing biodiversity monitoring is one of the obligatory activities in relation to the designated Natura2000 habitat types and species.

Most of the topics studied at in the Wadden Sea (ecology of seals, birds (numbers, distribution, foraging, breeding), fish, invertebrates, seagrass, sediment) are also studied and monitored in the Delta by Rijkswaterstaat, (www.rws.nl), the Center for Marine and Estuarine Ecology (NIOO/CEMO, www.nioo.nl) and IMARES (part of the Wageningen University and Research Centre; www.imares.wur.nl) in Yerseke.

Rijkswaterstaat monitors the presence of water birds on a regular scale. SOVON, the Dutch Bird Research Organisation coordinates a continues national bird monitoring program in which it cooperates with 7000 volunteers, research institutes and organisations in the monitoring of birds throughout the Netherlands (among others the Grevelingen).

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

Grevelingen visitors centre, excursions, hides, information booklet.

31. Current recreation and tourism:

The site is very important for visitors. It has functions for water recreation (diving, sailing, (kite-)surfing, fishing, speed boats etc.) and recreation on land (walking, cycling etc.).

For details on visitor numbers see the recent study of Waterrecreatieadvies (2009).

32. Jurisdiction:

Territorial: Dienst Domeinen (Ministerie van Financiën); Functional jurisdiction (conservation purposes): Ministry of Economic Affairs.

33. Management authority:

Main management authorities:

- Rijkswaterstaat (Ministry of Infrastructure and Environment), Zuid-Holland, Boompjes 200, 3011 XD Rotterdam, P.O. Box 556, 3000 AN Rotterdam, Tel. +31 (0)10 402 62 00, Fax +31 (010) 404 79 27.
 - Staatsbosbeheer, P.O. Box 1300, 3970 BH Driebergen, the Netherlands, tel. +31 (0)30-6926111.
 - Zuid-Hollands Landschap, Nesserdijk 368, 3063 NE Rotterdam, tel. +31 (0)10 272 22 22.
 - Natuur- en Recreatieschap de Grevelingen, Haven 1, 4316 PC Zonnemaire, the Netherlands, tel. +31 111-691553.
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34. Bibliographical references:

The number of scientific/technical references is too extended to list here. For a complete list please surf to the publication lists of the research institutes on the internet. For an arbitrary selection see below:

- BirdLife International, 2004. Birds in Europe, population estimates, trends and conservation status. Cambridge, UK: BirdLife International. (BirdLife Conservation Series No. 12).
 - Hornman, M., Hustings, F., Koffijberg, K., Kleefstra, R., Klaassen, O., van Winden, E., SOVON Ganzen- en Zwanenwerkgroep & L. Soldaat, 2012. Watervogels in Nederland 2009/2010. SOVON-rapport 2012/02, Waterdienst-rapport 12.06. SOVON Vogelonderzoek Nederland, Nijmegen.
 - Janssen, John, A.M. & Joop, H.J. Schaminée, 2009. Europese Natuur in Nederland. Zee en kust Natura 2000-gebieden. KNNV-Uitgeverij. 296p.
 - Ministerie van LNV, 2008. Ontwerp aanwijzingsbesluit Natura-2000 gebied Grevelingen.
 - Van Roomen M.W.J, Boele A., van der Weide M.J.T., van Winden E.A.J, Zoetebier D. 2000. Belangrijke vogelgebieden in Nederland, 1993-97. Actueel overzicht van Europese vogelwaarden in aangewezen en aan te wijzen speciale beschermingszones en andere belangrijke gebieden. SOVON-informatierapport 2000/01. SOVON Vogelonderzoek Nederland, Beek-Ubbergen.
 - Waardenburg 2010. Herintroductie getij in de Grevelingen en de effecten op natuur in Intergetijdengebieden.
 - Waterrecreatieadvies, 2009. Onderzoek vaargedrag Deltagebied.
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Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**
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