

# Information Sheet on Ramsar Wetlands (RIS) – 2009-2012 version

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

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Designation date

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Site Reference Number

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**2. Date this sheet was completed/updated:**

September 2013

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**3. Country:**

the Netherlands

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**4. Name of the Ramsar site:**

Krammer-Volkerak

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**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

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**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\*\*

\*\* **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:**

Nothing particular, though the average peak number (criterion 5) and the number of species meeting the 1%-threshold (criterion 6) has increased (see 14).

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

Nature development areas along the Schelde-Rijn canal in the southwest are now included within the Ramsar site. In total this new boundary resulted in an increase of +81 ha.

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

51°39'N - 04°15'E

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**9. General location:**

Provinces of Zuid-Holland, Noord-Brabant and Zeeland, ca. 20 km north of Bergen op Zoom (population 66.287 per 1-1-2013; source CBS, Netherlands Statistics).

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**10. Elevation:** (minimum & maximum)

Average 6 m. Max/Min NAP -20 / -1 m

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**11. Area:**

6159 ha

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**12. General overview of the site:**

A former tidal estuary of the Rhine/Maas river system, closed off from the Oosterschelde in 1987. It also adjoins Grevelingen in the west, Haringvliet/Hollands Diep in the north, and is linked with the Zoommeer via the Schelde–Rhine river connection (shipping lane to Antwerp). The 20-km long stagnant freshwater lake includes some islets. The Krammer-Volkerak is the original name before the area that was closed off from the sea. Some years after its designation the site was renamed as "Volkerakmeer" ("meer" is lake in Dutch). The marine tidal environment changed into a freshwater environment without tidal influences. The lowest parts are permanently under water, the higher parts are permanently dry. However in the Volkerakmeer many of the characteristics of the former tidal estuary are still present, such as the deep central

channel with steep slopes and adjacent shallow waters with less steep slopes and shallow submerged sand and mud flats.

### 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 Krammer-Volkerak 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 Krammer-Volkerak 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, V (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 marked with an \* are priority species.*

Species(group)	Species code	HD Annex	BD Annex	National RL category
<b>Vascular plants</b>				(2004)
Parsley Water-dropwort <i>Oenanthe lachenalii</i>	-	-	-	VU
Marsh Helleborine <i>Epipactus palustris</i>	-	-	-	VU
Early Marsh-orchid <i>Dactylorhiza incarnata</i>	-	-	-	VU
<b>Mammals</b>				(2009)
*Root Vole <i>Microtus oeconomus arenicola</i>	H1340	II, VI	-	VU
<b>Non-breeding birds</b>				
Horned Grebe <i>Podiceps auritus</i>	A007	-	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	-
Osprey <i>Pandion haliaetus</i>	A094	-	I	-
Peregrine Falcon <i>Falco peregrinus</i>	A103	-	I	-
Avocet <i>Recurvirostra avosetta</i>	A132	-	I	-
<b>Breeding birds</b>				(2004)
Eurasian Spoonbill <i>Platalea leucorodia</i>	A034	-	I	LC
Western Marsh Harrier <i>Circus aeruginosus</i>	A081	-	I	LC
Avocet <i>Recurvirostra avosetta</i>	A132	-	I	LC
Kentish Plover <i>Charadrius alexandrinus</i>	A138	-	I	EN
Mediterranean Gull <i>Larus melanocephalus</i>	A176	-	I	LC
Little Tern <i>Sterna albifrons</i>	A195	-	I	VU
<b>Molluscs</b>				(2004)
<i>Assiminea grayana</i>	-	-	-	EN

### Justification criterion 3

The Krammer-Volkerak 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 colonising mud and sand
H1330	Atlantic salt meadows ( <i>Glauco-Puccinellietalia maritima</i> )
H2190	Humid dune slacks
H6430	Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels
*H91E0	Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> ( <i>Alno-Padion</i> , <i>Alnion incanae</i> , <i>Salicion albae</i> )

*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
<b>Non-breeding birds</b>		
Great Crested Grebe <i>Podiceps cristatus</i>	A005	-
Great Cormorant <i>Phalacrocorax carbo</i>	A017	-
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 Teal <i>Anas crecca</i>	A052	-
Northern Pintail <i>Anas acuta</i>	A054	-
Northern Shoveler <i>Anas chrypeata</i>	A056	-
Common Pochard <i>Aythya ferina</i>	A059	-
Tufted Duck <i>Aythya fuligula</i>	A061	-
Goldeneye <i>Bucephala clangula</i>	A067	-
Red-breasted Merganser <i>Mergus serrator</i>	A069	-
Common Coot <i>Fulica atra</i>	A125	-
Common Ringed Plover <i>Charadrius hiaticula</i>	A137	-
Black-tailed Godwit <i>Limosa limosa</i>	A156	-
Common Redshank <i>Tringa totanus totanus</i>	A162	-
<b>Breeding birds</b>		
Common Ringed Plover <i>Charadrius hiaticula</i>	A137	(2004) VU
Lesser Black-backed Gull <i>Larus fuscus [graellsii]</i>	A183	LC
Common Tern <i>Sterna hirundo</i>	A193	VU

### 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 high numbers and relatively small areas during wintering and/or migration periods like ducks and geese or breeding periods like breeding

colonies of Eurasian Spoonbill *Platalea leucorodia*, Common Tern *Sterna hirundo*, Little tern *Sterna albifrons*, Avocet *Recurvirostra avoetta*, Mediterranean gull *Larus melanocephalus* and Lesser Black-backed Gull *Larus fuscus* [*graellsii*].

#### Justification criterion 5

The site regularly supports more than 20,000 wintering waterbirds: the average peak number was 52.169 for the period 2005/2006-2009/2010, which is more than the average peak number of 33.000 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
Northern Pintail	<i>Anas acuta</i>	NB	NW Europe	600	817	1.4
Northern Shoveler	<i>Anas chipeata</i>	NB	NW/ Central Europe	400	1393	3.5
Gadwall	<i>Anas strepera</i>	NB	NW. Europe	600	1575	2.6
Greylag Goose	<i>Anser anser</i>	NB	NW. Europe/ SW. Europe	5000	6729	1.3
Tufted Duck	<i>Aythya fuligula</i>	NB	NW-Europe	12000	14770	1.2
Barnacle Goose	<i>Branta leucopsis</i>	NB	Russia/ Germany/ Netherlands	4200	7028	1.7
Eurasian Spoonbill	<i>Platalea leucorodia</i>	NB	Eastern Atlantic	110	195	1.8
Avocet	<i>Recurvirostra avoetta</i>	NB	West Europe/ W. Med (breeding)	730	793	1.1

Compared to the period of 1992-98 (previous updated version) the species Avocet *Recurvirostra avoetta* (BR) does not meet the 1%-threshold anymore, while Northern Pintail *Anas acuta* (NB), Tufted Duck *Aythya fuligula* (NB) and Barnacle Goose *Branta leucopsis* (NB) do.

## 15. Biogeography

### a) biogeographic region:

The Ramsar site belongs to the Atlantic biogeographical region.

### b) biogeographic regionalisation scheme (include reference citation):

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:

Lake Volkerakmeer forms a hydrological unit with Ramsar site Zoommeer. The lakes Volkerak and Zoommeer were created in 1987 with the construction of the Oesterdam and Philipsdam. As a result the area changed from a saltwater and tidal estuary into a freshwater lake with a more or less stable water table. The water level fluctuates with rain, river discharges and evaporation between NAP - 0,10 m in summer and NAP + 0,15 m in winter. The maximum depth of the site is 24 m. The morphology of the site still has the typical characteristic of a tidal system. Since the damming of the site three stages in the development of the ecosystem can be distinguished:

- 1987-1990. Fauna and flora characteristic for marine circumstances disappear and are slowly substituted by freshwater species;
- 1990-1996. Increase of the fish population and decrease of the mean transparency of the water;
- 1996-2006. Speeding up of the process of decreasing of the mean transparency of the water.
- 2006-now: Decrease of algal bloom, increase of transparency thought to be linked to the increase of the invasive exotic species Quagga Mussel.

The erosion of the shores, a result of the fixed water table, was stopped by the creation of foreshore protection structures (“vooroevers”) and in 1989-99 some forty islands were constructed, with a total surface of around 80 ha.

Except for periods of drought, the Volkerakmeer no longer receives substantial amounts of water from the Hollands Diep. Most of the water now comes from small rivers from Noord-Brabant (Mark and Dintel).

### 17. Physical features of the catchment area:

This wetland is part of the catchment area of the river Meuse. The surface area of the catchment is 33.000 km<sup>2</sup>. Geologically and geomorphologically it consists mainly of Quaternary and Mesozoic sediments and Paleozoic (eroded) mountains. The general soil types are: Alluvial, Brown forest soils and montane soils. The general land use is pasture farming, arable farming and forestry. The climate according to Köppen is rainy (Cbf).

### 18. Hydrological values:

The Hydrological value of the Volkerakmeer includes flood control. Discussions are ongoing if and to what extent the former tidal system of all dammed arms of the sea in this part of the Netherlands should be restored.

### 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:

O 75%; H 11%; Tp 9%; Xp 5%

### 20. General ecological features:

A former tidal estuary of the Rhine/Maas river system, but nowadays a 20-km long stagnant freshwater lake, including some islets. After the closing off from the sea the salty tidal environment changed into a freshwater environment without tidal influences. The lowest parts are permanently under water, the higher parts are permanently dry. However in the Volkerakmeer many of the characteristics of the former tidal estuary are still present, such as the deep central channel with steep slopes and adjacent shallow waters with less steep slopes and shallow submerged sand and mud flats.

The changes in the abiotic environment have led to big changes in ecological communities. The original vegetations in the water have disappeared. On land, the vegetation succession is still ongoing and despite the slow process of desalination, large parts of the shores of the lake are now devoid of salinity and the plant communities of saline conditions are ever decreasing.

A plant community of European interest that occurs is: *Ranunculo fluitantis-Potametum perfoliati*.

Area of great importance for breeding and migrating birds such as Goldeneye (12% of the national average number), Great crested grebe, Tufted duck and Avocet. Furthermore it is an important breeding area for birds of scarcely covered sand flats (Ringed plover, Kentish plover) and scarcely covered banks with adjacent shallow waters (Avocet). These habitats are also important for gulls and terns (Mediterranean gull, Lesser black-backed gull, Common tern, Little tern). See 22 for details).

Main ecosystem service is the opportunity of the (non-tidal) area for shipping on the route from Antwerp (Belgium) to Rotterdam (NL), the two main ports in the region. Besides there are opportunities for (water) recreation and the ability for agriculture to take fresh water in (for irrigation or livestock drinking water) or drain it off;

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#### **21. Noteworthy flora:**

Most noteworthy flora is listed under no. 14.

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#### **22. Noteworthy fauna:**

Most noteworthy fauna is listed under no. 14.

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#### **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

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#### **24. Land tenure/ownership:**

##### **a) within the Ramsar site:**

The site is partly owned by Staatsbosbeheer (3050 ha), Natuurmonumenten (702 ha) and Zeeuws Landschap (600 ha). The remainder is state (Dienst der Domeinen, Ministerie van Financiën) and private ownership.

##### **b) in the surrounding area:**

Surrounding area: the water (Grevelingen, Haringvliet, Hollands Diep) is state owned, on land several private owners.

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#### **25. Current land (including water) use:**

##### **a) within the Ramsar site:**

Commercial fisheries 35 - 65%, Angling 5 - 35%, Shipping traffic 5 - 35%, Nautical sports 35 - 65%, Water management >95%.

**b) in the surroundings/catchment:**

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**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):

Natural events (A - natural succession);

Pollution (not Industrial discharge) (A - eutrophication); Water recreation (B – disturbance).

**b) in the surrounding area:**

Nothing particular.

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**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, 1995)
- 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 (tick the box or boxes as appropriate):**

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 (to be proposed) designation for Natura 2000.  
The process for developing the Natura 2000 management plan has started.

**d) Describe any other current management practices:**

Nothing particular.

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**28. Conservation measures proposed but not yet implemented:**

The Steering Group Zuidwestelijke Delta aims to partly restore the tidal system at the Krammer-Volkerak before 2015, among others to improve the water quality.

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**29. Current scientific research and facilities:**

Ongoing biodiversity monitoring is one of the obligatory activities in relation to the designated Natura 2000-habitat types and/or species. SOVON, the Dutch Bird Research Organisation, coordinates for instance 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 which the Krammer-Volkerak).

Rijkswaterstaat ([www.rws.nl](http://www.rws.nl)) and Deltares ([www.deltares.nl](http://www.deltares.nl)) are the main institutes doing research within the Krammer-Volkerak.

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

Excursions and hikes

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**31. Current recreation and tourism:**



See 25. Current land use. Number of visitors not known

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### 32. Jurisdiction:

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

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### 33. Management authority:

Main management authorities:

- Rijkswaterstaat (Ministry of Infrastructure and Environment), Dienst Zeeland, PO Box 5014, 4330 KA Middelburg, the Netherlands, +31 118 672200.
  - Staatsbosbeheer, P.O. Box 1300, 3970 BH Driebergen, the Netherlands, tel. +31 (0)30-6926111
  - Natuurmonumenten, P.O. Box 9955, 1243 ZS 's-Graveland, tel. +31 (0)35 655 99 33
  - Het Zeeuwse Landschap, Brugstraat 51, P.O. Box 25, 4450 AA Heinkenszand, tel. +31 (0)113-569110
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### 34. Bibliographical references:

- 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, 2007. Concept gebiedendocument Natura 2000 gebied 114 – Krammer-Volkerak.
  - 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.
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Please return to: **Ramsar Convention Secretariat, Rue Mauverney 28, CH-1196 Gland, Switzerland**

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