

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

Available for download from http://www.ramsar.org/ris/key_ris_index.htm.

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 and guidelines for the future development of the List of Wetlands of International Importance* (Ramsar Wise Use Handbook 14, 3rd edition). A 4th edition of the Handbook is in preparation and will be available in 2009.
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:

6. February 2013.

3. Country:

Iceland

4. Name of the Ramsar site:

The precise name of the designated site in one of the three official languages (English, French or Spanish) of the Convention. Alternative names, including in local language(s), should be given in parentheses after the precise name.

Gudlaugstungur Nature Reserve (Friðland í Guðlaugstungum)

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

This RIS is for (tick one box only):

- 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**

** **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:

Refer to Annex III of the *Explanatory Note 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) a hard copy (required for inclusion of site in the Ramsar List): X;

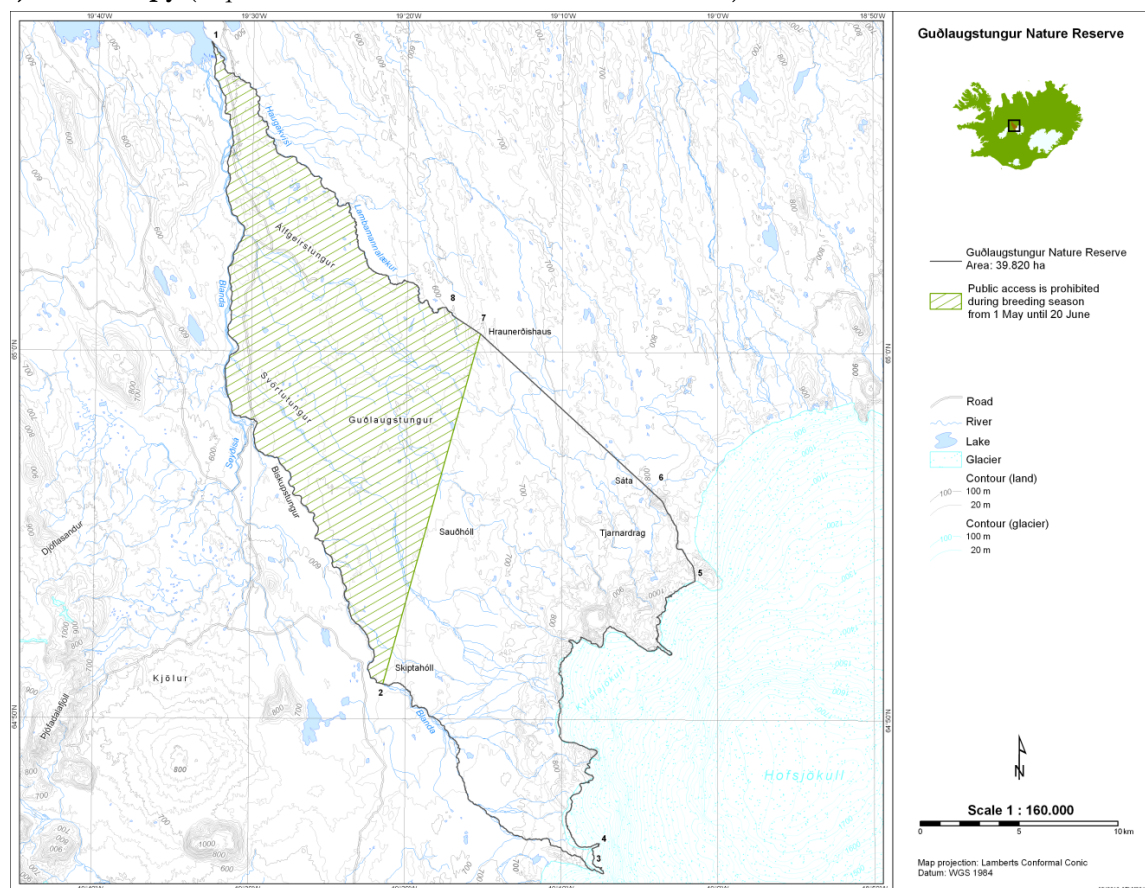


Fig 1. Map showing the boundaries, black line through points 1–8, of Guðlaugstungur Nature Reserve in central Iceland. Public access is prohibited north and west of the line drawn between points 2 and 7 during the breeding season from 1 May until 20 June.

ii) an electronic format (e.g. a JPEG or ArcView image) X;
JPEG file is provided.

iii) a GIS file providing geo-referenced site boundary vectors and attribute tables .

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 boundary of the nominated Ramsar site is the same as the boundaries of the Nature Reserve and encapsulates the wetland area between two major glacial rivers from the glacier Hofsjökull in the central highlands of Iceland to the point where they meet at the Blöndulón reservoir.

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

Provide the coordinates of the approximate centre of the site and/or the limits of the site. If the site is composed of more than one separate area, provide coordinates for each of these areas.

The coordinates of the centre of the site is N64° 57", W19° 16".

The boundaries are drawn through points 1–8, the coordinates of the points are following, see figure 1:

Point 1 N65 08 W19 32

Point 2 N64 50 W19 21

Point 3 N64 45 W19 08

Point 4 N64 45 W19 07

Point 5 N64 53 W19 01

Point 6 N64 55 W19 03

Point 7 N65 00 W19 15

Point 8 N65 01 W19 16

All hunting is prohibited in the Nature reserve and public access is prohibited during the breeding season from 1 May until 20 June north and west of a line drawn between points 2 and 7.

9. General location:

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

Gudlaugstungur Nature Reserve is located in the north-western part of the Central Highlands of Iceland northwest of the glacier Hofsjökull. Gudlaugstungur is within the municipality of Húnavatnshreppur, with a population of just over 400 inhabitants. The nearest town is Blönduós at bay Húnaflói.

10. Elevation: (in metres: average and/or maximum & minimum)

The minimum elevation is 478 meters and the maximum height of the reserve is 1140 meters above sea level.

11. Area: (in hectares)

The total area protected within the Nature reserve is 40,160 hectares (401.6 km²).

12. General overview of the site:

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

The Guðlaugstungur-wetland is an extensive mosaic of sedge fens and palsa mires and drier heathland in the lower part of the reserve. The wetland is cut by small streams and glacial rivers, small ponds are abundant. The wetland area is surrounded by species rich dwarf willow scrub heathland with high cover of mosses and lichens. In the upper part of the reserve, above the wetland area, there are mostly glacial moraines of gravelly flats with sparse vegetation. The wetland is fed by the glacial rivers and groundwater seepage draining from the glacier through the highland plateau towards the northern lowlands. The Guðlaugstungur-wetland is one of the most extensive wetland areas in the central highlands of Iceland. The richness of palsas in the area adds to the heterogeneity of the wetland and creates diverse habitats for plants and animals, especially birds. There are no major man-made structures within the reserve area, with the exception of a gravel road and a mountain cabin in the north-western part of the reserve. Other parts of the area have not been disturbed, apart from its traditional use as a summer range for livestock.

Recent research (Guðmundsson et al. 2009) has shown that the Guðlaugstungur-wetland harbours the largest breeding colony of the pink-footed goose (*Anser brachyrhynchus*) in the world, estimated as 13.600 pairs in 2002 or over 25% of the national and 18-21% of the world population of this species. Preliminary analysis of a census conducted in 2010 suggests that the current population in Guðlaugstungur is at least 20,000 breeding pairs (Icelandic Inst. Nat. Hist., unpubl data). The birdlife of the wetland and adjacent heathlands is diverse and large populations of e.g. golden plover (*Pluvialis apricaria*) dunlin (*Calidris alpina*), meadow pipit (*Anthus pratensis*) and snow bunting (*Plectrophenax nivalis*) breed in the area.

13. Ramsar Criteria:

Tick the box under 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). All Criteria which apply should be ticked.

1	•	2	•	3	•	4	•	5	•	6	•	7	•	8	•	9
x		x		x		x		x		x		<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>

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).

Criterion 1: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeography region

Justification for criterion 1:

Palsa mires (ca 12 km² within the reserve + 3 km² in adjacent area) are a relatively rare wetland type in Iceland with total cover of <50 km² and are only found in several locations in the mid highlands. Continued global warming is likely to affect permafrost and palsa formation in the area and lead to a reduction in the extent. Guðlaugstungur is a breeding area for ca. 20% of the world population of pink-footed geese (see below).

In the Arctic and Subarctic region there are some of the most extensive wetlands in the world, e.g. within Alaska, Canada, Sweden, Finland, Russia and Siberia. These include bogs, fens and palsa mires. Permafrost is widespread. The wetlands in the highlands of Iceland are only a minor proportion of the circumpolar wetlands.

Criterion 2: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities

Justification for criterion 2:

The white-tailed eagle (*Haliaeetus albicilla*), listed in Appendix I under the CITES Convention, is a regular non-breeding visitor to the area.

Criterion 3: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeography region.

Justification for criterion 3:

Although the area has diverse habitat types it can hardly be considered as a “hot spot” of biological diversity, neither on a national nor an international scale, nor does it contain species endemic to Iceland.

As previously stated the Guðlaugstungur-wetland is an extensive mosaic of sedge fens and palsa mires and drier heathland in the lower part of the reserve. The richness of palsas in the area adds to the heterogeneity of the wetland and creates diverse habitats for plants and animals, especially birds. Within the reserve area there are over 20 habitat- and land types, 12 of them with an area extent of over 500 ha (Magnússon et al. 2009).

Iceland is on the southern fringe of the permafrost zone, hence only scattered palsa areas are found in the highland wetlands which are not extensive. These wetland areas are most often associated with glacial plains and rivers. The wetlands can be described as islands of life in otherwise barren and poor environments that characterize large parts of the Icelandic highlands. Palsa mires are known for their diverse habitats and associated richness in flora and fauna. They are therefore of great national importance and have a high national conservation status.

Criterion 4; A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Justification for criterion 4: The area supports pink-footed geese during the breeding season and has in recent decades become the largest breeding colony of pink-footed geese in Iceland, with 13.600 pairs estimated from field surveys in 2002. (corresponding to over 50,000 geese in late summer) and at least 20,000 pairs in 2010 (corresponding to over 60,000 in late summer).

5; A wetland should be considered internationally important if it regularly supports 20,000 or more water birds.

Justification for criterion 5:

The area is considered to be of international importance as it regularly supports annually over 10.000 pairs of pink-footed geese, the largest breeding colony of pink-footed geese in Iceland, with 13,600 pairs estimated from field surveys in 2002 (corresponding to over 50,000 geese in late summer) and at least 20,000 pairs in 2010 (corresponding to over 60,000 in late summer).

6; A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of water bird.

Justification for criterion 6:

The population of geese that breeds in the area is estimated to be at least 15 % of the world population and golden plovers >1% of the world population of *Pluvialis apricaria altifrons*. The wetland area and adjacent heathlands also supports diverse birdlife and large breeding populations of e.g. golden plover (*Pluvialis apricaria*), dunlin (*Calidris alpina*) and snow bunting (*Plectrophenax nivalis*); thousand pairs each. The wetlands are also a habitat of large populations of waders e.g. 5000 pairs of golden plover and 2500 pairs of dunlin).

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:

Arctic biogeographical region (EEA).

b) biogeographic regionalisation scheme (include reference citation):

<http://www.eea.europa.eu/data-and-maps/figures/biogeographical-regions-in-europe-1>

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.

Geology & Geomorphology: The area is a highland plateau descending from the Hofsjökull glacier. The bedrock in the uppermost part are basic and intermediate hyaloclastite, pillow lava and associated sediments from the upper Pleistocene. In the lower part of the reserve there are basic and intermediate interglacial and supraglacial lavas with intercalated sediments, also from the upper Pleistocene (Jóhannesson & Sæmundsson 1989).

Soil type: In the barren areas of the upper part of the reserve gravelly and sandy vitrisol is the dominant soil type, with organic Carbon generally lower than 1.5%, with a pH of ~7. In the wetland area gleyic andosol is the dominant soil type, with organic C generally lower than 12% and pH in the range of 6 – 7. In the drier heathland part brown andosol is the dominant soil type, with organic C ~ 5% and a pH of ~6,5 (Arnalds & Óskarsson 2009, Magnússon et al. 2009).

Sediment characteristics: Not relevant.

Origins: a natural wetland, that has not been disturbed and is not managed.

Hydrology: The wetland is fed by surface and subsurface water seepage from the glacier down through the plateau area below. It is also, but to a lesser extent fed by precipitation, mainly falling as snow in the area and melting in spring giving rise to high water table in the wetlands in early summer.

Water quality: high, glacial outwash and freshwater streams and ponds, undisturbed by human activity or contamination.

Depth, fluctuations and permanence of water: This has not been studied in the Guðlaugstungur wetland. However, judging from other similar areas, the water table is high throughout the year with annual fluctuations of < 1 m. Water level is highest after snowmelt in spring and lowest at the end of the growing season in late summer.

Tidal range and variation: Not relevant.

Downstream area: Not actual for the description of the Ramsar area.

Climate: The climate in the area is cool and relatively dry. The mean annual temperature is in the range of $\pm 2 - 0$ °C and the annual precipitation for the area is estimated as 600 – 1500 mm, being highest in the uppermost part (Björnsson 2003, Crocket et al. 2007). The mean monthly temperature in the wetland area is above freezing from May – September, with the growing season extending between June and August. The area is windy, dominated by southerly and northerly winds. Extreme climatic events are not known to affect the area. Continued global warming is likely to affect permafrost and palsa formation in the area and lead to a reduction in the extent.

17. Physical features of the catchment area:

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

A relatively flat, highland plateau with a wetland on a glacial outwash plain. Organic gleyic andosol is dominant in the wetland with a relatively high pH and low organic matter content for a wetland soil. Subarctic climate, with a Mean Annual Temperature below 0 °C.

18. Hydrological values:

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

The wetland is in a remote highland area, it's hydrological effects in lowland areas are probably rather limited. North of the Nature reserve, the tentative Ramsar site, is a hydroelectrical reservoir that is fed by the water that runs through the reserve. The most important ecosystem service value to people is probably that the wetland and heathland within the reserve is an important source of grazing for livestock (sheep) during summer.

19. Wetland Types

a) presence:

Circle or underline the applicable codes for the wetland types of the Ramsar "Classification System for Wetland Type" present in the Ramsar site. Descriptions of each wetland type code are provided in Annex I of the *Explanatory Notes & Guidelines*.

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

Inland: L • M • N • Q • 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:

List the wetland types identified in a) above in order of their dominance (by area) in the Ramsar site, starting with the wetland type with the largest area.

M – permanent rivers/streams/creeks

O – permanent freshwater lakes

U – Non-forested peat lands. Poor and rich sedge fens are the dominant type with large tracts of

Vt – tundra wetlands with frozen palsas and open pools within the sedge fens.

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.

Barren land types (227 km²) are dominant within the reserve area and are mainly found in the higher uplands above the main wetland area (see: Habitat map, Table 1). Moss heaths and heathlands are also extensive (104 km²) with dwarf willow scrub and sedge heath as the dominant habitat types. The wetland area of the reserve covers 67 km² including rivers and lakes. The dominant habitat types of the wetland are: short sedge fens (32 km²), palsa mires (12 km²) and tall sedge fens (11 km²). Extensive wetlands (20 km²) are also found in the area adjacent to the reserve, mainly short sedge fen and palsa mires. They are part of the same complex of wetlands found in the Guðlaugstungur highland area.

The short sedge fens are flat expanses of sedge dominated wetlands rich in brown mosses. In the fens there is a mosaic of sedge flats, ponds and drier ridges with heath vegetation. In depressions and around the ponds the fen vegetation is dominant with *Eriophorum angustifolium*, *Carex rariflora*, *C. nigra*, *C. rostrata* and *Calamagrostis stricta* as the main species. On the drier ridges the dominant species are *Salix callicarpaea*, *S. herbacea* and *Bistorta vivipara* (Magnusson et al. 2009). The poor fens are rich of birds and diversity is high. The commonest bird of poor fens in Guðlaugstungur is the pink-footed goose (39 pairs/km²). Densities of golden plover (20 pairs/km²), Dunlin (15) and meadow pipit (7) are high for the central highlands (Gudmundsson et al. 2009).

The palsa mires are diverse wetlands with dry palsa ridges and wetter pond or sedge areas in depressions. The flora is therefore species rich with a mixture of heathland and wetland communities. Lichens are abundant on the palsa ridges. The most common vascular plant species are *Salix callicarpaea*, *Calamagrostis stricta*, *Carex bigelowii*, *Salix herbacea*, *Equisetum arvense*, *Bistorta vivipara*, *Eriophorum angustifolium* and *Carex rariflora* (Magnusson et al. 2009). Palsa mires are rich of birds, but due to their small expanses their relative importance for bird populations is small. The characteristic birds of palsa mires are waterfowl and shorebirds, especially long-tailed duck, dunlin and red-necked phalarope.

The tall sedge fens are flat or gently sloping tall-sedge wetlands with lush vegetation. The sedge expanses are rather uniform, very wet with low ridges, pools and ponds. The tall sedge species, *Carex rostrata* and *Carex lyngbyei*, are dominant in the uppermost strata. Brown mosses and *Sphagna* are common in the sward layer. The vascular flora is rather species poor. Among other common species are *Salix callicarpaea*, *Carex nigra* and *Potentilla palustris*. (Magnusson et al. 2009). The rich fens are not as rich in bird diversity as the poor fens, but densities of several species are very high, e.g. pink-footed goose (70 pairs/km²), dunlin (30), meadow pipit (15) and golden plover (13 pairs/km²; Gudmundsson et al. 2009).

The main ecosystem services:

Being adjacent to the glacier Hofsjökull the area serves as a catchment area and freshwater reservoir for the lowland area and with a number of glacial rivers flowing through the area it mitigates flooding.

The area was in recent decades become the largest breeding colony of pink-footed geese in Iceland (and the world), with 20.000 pairs estimated from field counts in 2010. The wetlands are also a habitat of large populations of waders (e.g. golden plover and dunlin).

The wetland and heathland within the reserve are an important source of grazing for livestock (sheep) during summer.

Table 1. Habitat and land types within the Guðlaugstungur Nature Reserve and in adjacent area. (Ref.: Vistgerðir á miðhálandi Íslands, Kjölur-Guðlaugstundur, Guðmundur A. Guðmundsson et al., NÍ-09016, Reykjavík, desember 2009.

Habitat- and land types	Reserve area	Outside reserve	Mapped area total
Barren lands	226,73	226,18	452,91
Exposed river beds	25,19	13,05	38,24
Screes/Rocks	0,09	0,23	0,31
Gravelly flats	200,19	212,90	413,09
Sand and tephra fields	1,04	0,00	1,04
Exposed andic soils	0,12	0,00	0,12
Wet bare soils	0,10	0,01	0,11
Moss heaths	31,49	9,31	40,80
<i>Racomitrium eriocoides</i> heath	16,99	6,29	23,28
<i>Anthelia</i> heath	14,50	3,02	17,52
Heathlands	72,27	88,66	160,93
Dwarf willow scrub heath	3,57	5,83	9,40
Dwarf willow scrub heath with gullies	33,04	44,42	77,46
Sedge heath	21,03	22,66	43,70
Lichen heath	1,87	0,51	2,38
Grassy <i>Racomitrium</i> heath	7,00	13,85	20,85
Willowscrub heath	5,76	1,39	7,14
Poor wetlands	51,30	19,81	71,11
Springs and springfens		0,02	0,02
Moist moss heath	3,16	1,30	4,46
Moist sedge heath	2,33	0,29	2,62
Palsa mire	12,41	3,08	15,49
Short sedge fen	32,44	14,40	46,84
Sandy fen	0,96	0,73	1,69
Rich wetlands	11,08	0,72	11,80
Scrub fen		0,04	0,04
Tall sedge fen	11,02	0,68	11,70
<i>Carex nigra</i> fen	0,06	0,00	0,06
Other	5,33	144,85	150,18
Reclaimed grasslands		12,85	12,85
Glaciers	0,27	115,83	116,10
Rivers and lakes	5,06	16,17	21,23
Total	398,20	489,54	887,74

21. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 14, 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.*

Within the reserve a rare wetland moss species *Bryum neodamense* was discovered in 2002, for the first time in Iceland. Since then it has been found in a second nearby Thjórsárver-wetland. Two rare lichen species have also been found within the Guðlaugstungur reserve, *Carbonea supersparsa* and *Micarea cinerea* (Guðmundsson et al. 2009).

The most important plant communities within the reserve are probably those associated with palsas found within the wetland. Palsa mires are rare in Iceland and threatened by the current global warming trend. Besides the nearby Thjórsárver area, to the south of Hofsjökull, the Guðlaugstungur wetland is the main palsa area in Iceland. Palsa mires are known for their diverse habitats and associated richness in flora and fauna.

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.*

The most important bird species in the Guðlaugstungur area is pink-footed goose with estimated 20% of the world population breeding there. The area supports over 1% of the Icelandic breeding population of golden plover. Several pairs of Arctic Fox (*Vulpes lagopus*) den in the area.

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:

The area has a great cultural value as grazing land for sheep and according to the conservation regulation sheep grazing is allowed within the area as before the protection. Another important value stems from the importance for management, control and distribution of water from the glacier Hofsjökull.

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, tick the box and 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:

a) within the Ramsar site:

The Nature Reserve area and surrounding areas are currently in a legal process in accordance with law in order to determine ownership of land in the highlands. The state has claimed ownership of the area but a final decision remains to be seen. According to the protection status of the Nature Reserve the Environment Agency is responsible for conservation and protection of the Nature Reserve.

b) in the surrounding area:

Regarding the ownership, the same applies as for 24.a)

25. Current land (including water) use:

a) within the Ramsar site:

Farmers currently hold traditional grazing and fishing rights. The main land-use is sheep grazing during the summer. The area is uninhabited but receives seasonal tourist traffic in the summer months.

b) in the surroundings/catchment:

The Nature Reserve is bordered to the South by the glacier Hofsjökull. To the North of the nature reserve there is a manmade water reservoir created to supply the Blönduvirkjun power plant. Main land use in other surrounding area is summer grazing.

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:

Severe soil erosion has occurred in the Icelandic highlands during past centuries and has affected the site, especially the heathlands, as in other highland areas (Arnalds et al. 2001). Continued global warming is likely to affect permafrost and palsa formations in the area and lead to a reduction in the extent.

Overgrazing by sheep probably occurred within the area during the last century, with the stocks peaking in 1977. From that time reduction in grazing has occurred with positive effects on range and vegetation condition in the highlands.

Plans have been put forward by parties in northern Iceland to build a highland road between northern and southern Iceland to serve as the main all year transport road between the areas (Halldór Jóhannsson 2006). The road would cross the middle of the reserve from south to north, a few kilometres above the main wetlands. The road would have adverse effects on the reserve area, which is free of all manmade structures. The road would cause disturbance to birdlife, open access for hunters, potential pollution from traffic accidents. The road might also affect flow of surface and groundwater down to and through the Guðlaugstungur-wetlands.

There is a mountain road that crosses the Nature reserve in the northern part and some other tracks mainly used when farmers are rounding up sheep in the highlands, by tourists in the summer and for research purposes. There is a mountain cabin in the area originally built for farmers rounding up sheep. The use of roads and huts will be dealt with in a management plan.

b) in the surrounding area:

Same as above.

In 1991 the glacial river Blanda, which flows in many tributaries through the reserve, was dammed in the highlands below the current reserve area. Upstream from the dam a 53 km² reservoir, Blöndulón (Vilmundardóttir et al. 2009), was created, extending to the northernmost tip of the protected area. Extensive heathland and wetland areas were lost with the creation of the reserve. To compensate for their loss reclamation of barren uplands around the reservoir was started by seeding of grasses and application of fertilizer, which is still in practise in part of the area. One of the reclaimed areas (13 km²) is found to the northwest of the Guðlaugstungur reserve (see: habitat map, Table 1).

A highland road, accessible in summer, between northern and southern Iceland is ~ 2 – 10 km to the west of the nature reserve and to the west of the glacial river Blanda which forms the western boundary of the protected area. The road has limited effects within the nature reserve area.

27. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Ramsar site: In particular, if the site is partly or wholly a World Heritage Site and/or a UNESCO Biosphere Reserve, please give the names of the site under these designations.

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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

Information on IUCN listing is not available for the site, but likely listing is probably category IV, due to the traditional use for sheep grazing.

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

Management plan for the nature reserve is stated in The Ministry for the Environment declaration no. 1150/2005. Management Plan for the area is still in preparation as planned.

d) Describe any other current management practices:

In the summer months the area is supervised by a ranger from the Environment Agency who monitors traffic in the area of hikers, vehicles horse riders etc. No traffic is allowed in the vicinity of geese nesting grounds in the time period from 1 of May until 20 of June. Bird hunting is forbidden in the reserve, but fox and mink hunting is allowed.

28. Conservation measures proposed but not yet implemented:

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

Efforts are underway to further ensure the favourable conservation status of Guðlaugstungur as a nature reserve and their ecological integrity through enlargement of the nature reserve. The main emphasis is to extend the protection to wetland areas and ecosystems sustaining the breeding population of the geese population.

29. Current scientific research and facilities:

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

Pink-footed geese numbers will be estimated using stratified random sampling of most important breeding habitats in 2010, pending on funding from the Ministry for the Environment and Natural Resources.

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

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

The status of the area as a nature reserve was announced in 2005 with public announcement. The Environment Agency's website gives access to information concerning the area. Information signs have been set up on location with general and detailed information on the area as well as issues concerning regulation on land use and public traffic.

31. Current recreation and tourism:

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

The annual number of tourists visiting the site, are not precisely known. The tourism is seasonal and access is highly dependent on the highland road Kjalvegur, which opens in early June and provides access to the area until the winter settles in.

32. Jurisdiction:

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

The Environment Agency is the management authority concerning the Guðlaugstungur nature reserve but the functional jurisdiction is of a management board that handles issues concerning the detailed management of the reserve. The board is supervised by the Environment Agency which appoints its chairman, the other two members are appointed by the local municipality, Húnavatnshreppur. The territorial jurisdiction is currently under supervision of the Hunavatnshreppur municipality but the ownership of the land is as previously stated unresolved.

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.

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34. Bibliographical references:

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

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Vilmundardóttir, O.K., Magnússon, B., Gísladóttir, G. & Thorststeinsson, Th. 2009. Shoreline erosion and aeolian deposition along a recently formed hydro-electrical reservoir, Blöndulón, Iceland. *Geomorphology* 114: 542–555.

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