Information Sheet on EAA Flyway Network Sites (SIS) – 2017 version

Available for download from http://www.eaaflyway.net/about/the-flyway/flyway-site-network/

Categories approved by Second Meeting of the Partners of the East Asian-Australasian Flyway Partnership in Beijing, China 13-14 November 2007 - Report (Minutes) Agenda Item 3.13

Notes for compilers:

1. The management body intending to nominate a site for inclusion in the East Asian - Australasian Flyway Site Network is requested to complete a Site Information Sheet. The Site Information Sheet will provide the basic information of the site and detail how the site meets the criteria for inclusion in the Flyway Site Network. When there is a new nomination or an SIS update, the following sections with an asterisk (*), from Questions 1-14 and Question 30, must be filled or updated at least so that it can justify the international importance of the habitat for migratory waterbirds.

2. The Site Information Sheet is based on the Ramsar Information Sheet. If the site proposed for the Flyway Site Network is an existing Ramsar site then the documentation process can be simplified.

3. Once completed, the Site Information Sheet (and accompanying map(s)) should be submitted to the Flyway Partnership Secretariat. Compilers should provide an electronic (MS Word) copy of the Information Sheet and, where possible, digital versions (e.g. shapefile) of all maps.

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1. Name and contact details of the compiler of this form*:

Full name: Greg Miller

Institution/agency: EPA, Planning Division, Resource Assesment Unit

Address : PO Box 15155, CITY EAST, QLD 4002

Telephone:

Fax numbers:

E-mail address:

EAAF SITE CODE FOR OFFICE USE ONLY:

E	A	A	F	0	9	2

2. Date this sheet was completed*:

DD/MM/YYYY

xx/07/2005

3. Country*:

Australia

4. Name of the Flyway Network site*:

Accepted English transcription of the Site's name.

Great Sandy Strait

5. Map of site*:

The most up-to-date available and suitable map of the wetland should be appended to the SIS (only in digital format and shape file). The map must clearly show the boundary of the site. Please refer to the "Digitising Site Boundaries in Google Earth" file linked here.

6. Geographical coordinates (latitude/longitude, in decimal degrees)*:

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 centroid is situated 20km east southeast of Maryborough at -25.479444, 152.9025

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

Marine, estuarine, intertidal wetlands and salt pans -6m to highest astronomical tide on the western and southern area of the Strait but to 2m above sea level for selected areas on the eastern (Fraser Island) side of the Strait.

8. Area*:

The total area of the site, in hectares. If the areas of discrete site units are known, please also list each of these together with the names (or labels) used to identify and differentiate these units.

93,160 ha

9. General overview of the site*:

A brief (two sentences) summary of the site, mentioning principal physical and ecological functions, and its importance for migratory waterbirds.

The area is the Great Sandy Strait Ramsar Site. The Great Sandy Strait is bordered by mainland to the west and Fraser Island to the east. The Strait is a double-ended sand passage, 70 km long north to south and 5 to 15 km wide east to west. The area includes permanent shallow marine water, wide channels, open water, extensive seagrass beds, mangrove forests, intertidal sand and mud flats, tidal rocky areas, island and mainland shorelines, salt flats and salt marshes

together with freshwater lagoons, marshes, forested wetlands and patterned fens. The site four local government and several protected area jurisdictions. Management issues include numerous recreational activities, commercial fishing and tourism, and increasing threats associated with urban and agricultural development.

10. Justification of Flyway Site Network criteria*:

Please provide waterbird count information (with year of latest count) that demonstrates that the site meets the criteria of the Flyway Site Network (Annex 1). That is:

- it regularly supports > 20 000 migratory waterbirds; or,
- it regularly supports > 1 % of the individuals in a population of one species or subspecies of migratory waterbird; or,
- it supports appreciable numbers of an endangered or vulnerable population of migratory waterbird
- it is a "staging site" supporting > 5 000 waterbirds, or > 0.25% of a population stage at the site.

A listing of the populations of migratory waterbirds covered by the East Asian – Australasian Flyway Partnership and the 1% thresholds is attached (Annex 3).

The "staging site" criterion is particularly difficult to apply and application of this should be discussed with the Secretariat. Also note that some species have several populations that are very difficult to distinguish in the field.

The remote location and large area of this site make regular counting difficult, but also contribute to continued habitat health. Therefore, whilst several published counts are over 10 years old and few repeat counts are available, it is assumed that the site does regularly support similar numbers of the species listed below.

Great Sandy Straits meets the Network criteria in that:

- it regularly[#] supports >20 000 migratory shorebirds, with 35 072 and 24 species in January 2001 and 29 573 and 26 species in January 2002,
- and it regularly[#] supports > 1 % of the individuals in the population of seven species of migratory shorebird. (see Table 1 below)

Table 1. Shorebird counts in the Great Sandy Strait which meet the 1% Criteria for shorebird populations in the East Asian - Australasian Flyway

Popular English Name	Scientific Name	Minimum Populn Estimate*	1% Criteria	Count	Count Date(s) #	Ref.
Far Eastern Curlew	*Numenius madagascariensis*	38 000	380	6 018	01/01/90	Driscoll 1990
				5 909	15/11/97	Driscoll 1998
				4 994	Feb 1995	QWSG 1995

Bar-tailed Godwit**	*Limosa lapponica baueri*	**17 0000	1 700	12 986	01/01/90	Driscoll 1990
				17 992	15/01/01	Driscoll & Cross 2003
				17 575	Feb 1995	QWSG 1995
Grey-tailed Tattler	*Tringa brevipes*	25 000	250	7680	01/01/90	Driscoll 1990
				3 388	15/11/97	Driscoll 1998
				2 322	Feb 1995	QWSG 1995
Whimbrel	*Numenius phaeopus variegates*	55 000	550	3 128	01/01/90	Driscoll 1990
				1 819	Feb 95	Driscoll 1998
				2 728	Feb 1995	QWSG 1995
Mongolian Plover	*Charidrius mongolus*	140 000	1 300	1 430	???	Lane 1987
				1 630	Feb 95	Driscoll 1998
Common Greenshank	*Tringa nebularia*	55 000	550	1 069	01/01/90	Driscoll 1990
				547	Feb 1995	QWSG 1995
Terek Sandpiper	*Tringa cinerea*	50000	500	2 494	01/01/90	Driscoll 1990
				528	15/11/97	Driscoll 1998

* Minimum Population Estimates from Wetlands International (2002).

** The minimum population estimate and 1% threshold quoted here for Bar-tailed Godwit is for the sub-population *Limosa lapponica baueri*, which this count was comprised of.

The majority of sites in the East Asian – Australasian Flyway do not have sufficient count data to meet the Ramsar guidelines for defining the term "regularly supports". Allowance has been made for sites in remote areas where only limited count information is available, and it is accepted that single counts can help establish the relative importance of the site for a species (Ramsar Convention Bureau 2000; Bamford *et al* 2006). Thus for the East Asian – Australasian flyway, Great Sandy Strait is considered to have met the 1% criterion on the basis of single counts.

11. Wetland Types*:

List the wetland types present (see Annex 2). List the wetland types in order of their area in the Flyway Network site, starting with the wetland type with the largest area.

A, B, C, D, E, F, G, H, I, J, K, U, Xf.

12. Jurisdiction*:

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

The Environment Protection Agency is the management agency of the Ramsar Site, and will be the management agency of the proposed Marine Park. Some parts of the Ramsar site are also under jurisdiction of the Department of Defence (Army), Department of Primary Industries and Fisheries (for Fish Habitat Areas), City of Hervey Bay, City of Maryborough, Shire of Tiaro and Shire of Cooloola.

13. 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 and the title and/or name and email address/phone number of the person or persons in this office with direct responsibility for managing the wetland.

Environmental Protection Agency, PO Box 15155, CITY EAST, QLD, 4002

14. Bibliographical references*:

A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies, if such exist. Please list Web site addresses dedicated to the site or which prominently feature the site, and include the date that the Web site was most recently updated. When a large body of published material is available about the site, only the most important references need be cited, with priority being given to recent literature containing extensive bibliographies.

Bamford, M., Watkins, D., Bancroft, W., Tischler, G. And Wahl, J. (In Press). Migratory Shorebirds of the East Asian – Australasian Flyway: Population Estimates and Internationally Important Sites. Wetlands International Global Series, and International Wader Studies. Wetlands International – Oceania. Canberra, Australia.

Hegerl, E. (1993). Unpublished data.

Driscoll, P. (1990). Survey of Shorebird Feeding Areas and High Tide Roosts in the Great Sandy Strait, Summer 1990. A Report for the Queensland Department of Environment and Heritage. 34 pp.

Driscoll, P.V. (1998). Summary report of wader surveys 1989 to 1997 in the Great Sandy Strait. Report to Qld Dept. Environment. 27pp.

Driscoll, P.V. and Cross, L. (2003). Report on waders and waterbird surveys 2001 to 2002 in the Booral area. Report to Qld Parks and Wildlife Service 38 pp.

Fraser Island World Heritage Area Scientific Advisory Committee (FIWHASAC), (2004). *Fraser Island World Heritage Area, Review of Outstanding Universal Value"* Environmental Protection Agency, Brisbane.

Lane, B. (1987). Shorebirds in Australia. Nelson Publishing, Melbourne. 187pp.

QWSG. (1995). Queensland Wader, Newsletter of the Queensland Waders Study Group. Issue No. 12, March 1995.

Ramsar Convention Bureau. (2000). Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance of the Convention on Wetlands. Ramsar Convention Bureau, Gland. www.ramsar.org/key_guide_list_e.htm

Wetlands International (2002). Waterbird Population Estimates – Third Edition. Wetlands International Global Series No.12, Wageningen, The Netherlands. 226pp.

15. 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.

Soils are mostly modern fluvial (Mary River) sediments –fine to medium grained felspathic sands with three to six percent mud content. Most of the area lies within the 1 200 mm isoheyt.

16. Physical features of the catchment area:

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

17. Hydrological values:

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

Great Sandy Strait is a double-ended sand passage estuary. Currents within Great Sandy Strait are tidal with essentially 180 degree reversal in direction between ebb and flow tides, and may exceed 0.8m/s. Tidal variation can be up to 2.5m. An appreciable saline 'wedge' has been detected in Tin Can Inlet, and the southern waters of the estuary were of lower salinity than those adjacent to Tin Can Bar (Dredge, Kirkman and Potter 1977). In the rest of the estuary, water exchange rates with the open ocean are rapid, owing to the presence of a deep main channel and the absence of mobile, unstable sand bars. A tidal interface exists within the Strait at approximately the position of the Moonboom Islands. The Great Sandy Straits is mostly a saline water system. The major freshwater and sediment flow, the Mary River, discharges $2.3X10^6$ ML/annum into the Great Sandy Straits system. Various smaller permanent or seasonal freshwater creeks also flow to the straits. Most flow is during the wet summer months. Some freshwater is present in swamps behind mangroves. A unique feature is the presence of a patterned fen behind the mangroves. They are globally the only sub-tropical patterned fens flowing into tidal wetlands (FIWHASAC 2004) and are recorded on western Fraser Island behind tidal wetlands east of Moon Point , near Urang Creek and Ungowa, as well as other areas on Fraser Island and in the Cooloola area some 50km to the south. Water quality is generally good although inputs of sewage, stormwater, agriculture and urban development runoff may cause decline in quality.

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Flyway Network site, and the ecosystem services of the site and the benefits derived from them.

The strait is substantially surrounded by mangrove forests and contain intertidal and sub-tidal seagrass beds. Extensive intertidal sand and mud flats support a rich invertebrate population.

These three habitats (mangroves, seagrass and tidal flats) support the fish, dugong, three species of dolphin and shore bird populations present within the area.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy 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 SIS.*

(Please add here the species which do not come under sec no 14)

Wetlands are the dominant intertidal habitat of Great Sandy Strait and Tin Can Inlet. Major habitat types include mangrove forests (9spp –15 500ha), intertidal and sub-tidal seagrass beds (6spp –12 300ha), saltmarshes (2,800ha), unvegetated mud, sand and salt flats, and estuarine and channel waters of varying depth and width. Extensive seagrass beds also occur in the southern part of Hervey Bay. The seagrass is subject to rapid change due to influx of fresh water associated with the periodic flooding from the Mary River, and any associated pollutants and turbidity. Generally, unvegetated saline flats or saltmarshes fringe their western shoreline. In contrast, on the eastern side of the Strait, freshwater swamps merge in many places with the mangroves (Hegerl 1993). The hydrological and nutrient flows between fresh and marine wetlands are highly significant to flora and fauna and contribute to the numbers and diversity of species. Several coral reefs and bommies occur in the shallow waters of the northern part of the Strait.

20. Noteworthy fauna:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 10. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the SIS.*

(Please add here the species which do not come under sec no 14)

The coastal wetlands of Great Sandy Strait are of international significance for migratory shorebirds. The Area is designated as a Ramsar Site, under the Japan Australia Migratory Bird Agreement (JAMBA) and the China Australia Migratory Bird Agreement (CAMBA) and is being nominated as a Marine Park. Eighteen of the 26 Australian species listed in the “Minimum Population Estimates and 1% Criteria” table are commonly present in the Straits. More than 21 000 birds were counted at roosting sites during January-February 1990 and 13 700 during April-May 1989. (Driscoll 1989,1990). More recently the Queensland Wader Study Group’s counts list 35 072 in January 2001 and 29 573 in January 2002. There is evidence that the Strait is of critical importance for non-breeding yearling birds that do not return to the northern hemisphere until the following year. Wetlands along Great Sandy Strait regularly support more than 1% the total flyway population of the following species: eastern curlews *Numenius madascariensis* (23.8%), grey-tailed tattlers *Tringa brevipes* (9.3%), lesser sand plovers *Charadrius mongolus* (19.65%), whimbrels *Numenius phaeopus* (6.8%), bar-tailed godwits *Limosa lapponnica* (9.76%)

and common greenshanks *Tringa nebularia* (1.4%). The wetlands also support substantial numbers of other shorebird species, including the grey-tailed Tattler (2 322), eastern curlew (4 994), and bar-tailed godwit (17 575). The rare little tern *Sterna albifrons* has also been recorded in the area. Numerous other waterfowl, including several species of ducks, black swans, herons, ibis and brolgas have also been recorded (G. Brooks pers. comm.).

A regionally important population of dugongs is resident in the Great Sandy Straits and feeds on seagrasses, which occur over the intertidal areas shared by shorebirds. The dugong (*Dugong dugon*) is listed as threatened by the IUCN.

21. Social, economic and cultural values:

a) *Describe if the site has any general social, economic 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:*

Both Indigenous and non-indigenous historical significance is attached to much of the Great Sandy Straits area. Evidence dates indigenous presence to at least 5 500 years before present. The Great Sandy Straits are valued by fishermen both commercial and recreational as well as by those pursuing a nature based activities. The area contains opportunities for research of the many species, communities and processes operating in this unique environment.

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?* (Double-click the checkbox to check and choose “Checked” under “Default Value” from “Check Box Form Field Options” window)

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: ☐

22. Land tenure/ownership:

a) Within the Flyway Network site:

The eastern shore is the Great Sandy National Park, including Fraser Island and the Inskip Point Recreation Area and also a few small freehold and leasehold. National Park

and Conservation status is confirmed on several of the Great Sandy Strait islands. The eastern (mainland) side is mainly freehold and leasehold in the north, national park and state forest in the central area and forest and the Wide Bay Military Training Area in the south. The City of Hervey Bay is the extreme north and villages of River Heads, Maaroom, Boonooroo, Poona Point, Tawan and Tinnanbar occur on the western side of the Strait, while Tin Can Bay, Toolara and areas of the township of Rainbow Bay lie adjacent to Tin Can Inlet.

Though not a form of land tenure, Queensland Department of Primary Industry Fish Habitat Areas cover significant areas in the central and far southern portions.

b) In the surrounding area:

The Hervey Bay Marine Park occurs to the north of the site in Hervey Bay on the western side of Fraser Island and the Great Sandy Strait Marine Park is being developed. The Fraser Island World Heritage listing includes the area to 500m offshore of Fraser Island.

23. Current land (including water) use:

a) Within the Flyway Network site:

Major uses include commercial fishing, recreational fishing and boating, effluent disposal, and conservation, minor uses are food/bait collection, urban development, four wheel driving and shipping.

b) In the surroundings/catchment:

Major uses include plantation forest, urban development, military training, recreation (swimming, boating, fishing, walking, four wheel driving), agriculture and grazing. Minor uses are transport, irrigation and native forestry.

24. 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 Flyway Network site:

Current: Vegetation change through clearing of mangroves and disturbance to intertidal seagrass beds is a major concern in some parts of the wetland. Pollution and contamination from herbicides, pesticides, fertilisers and sewage/stormwater effluent pose a moderate threat to the wetland. Increasing recreational and commercial boating, including jet-skis and hovercraft, and fishing may be damaging seagrass, affecting dugongs, reducing fish stocks and adding to the human waste and litter problems.

Potential: Increasing urban and agricultural development may increase the levels of chemical pollutants and turbidity/siltation in the system.

b) In the surrounding area:

25. Conservation measures taken:

a) List national and/or international category and legal status of protected areas, including boundary relationships with the Flyway Network 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.

The area is a Ramsar Site (1999) and now a proposed Marine Park. Woody Island and Great Sandy Strait (Fraser Island) National Parks to the north of the wetland. The Maroom Fish Habitat Reserve protects (in part) a large area in the centre of the strait, While Kaui Creek and Tin Can Bay Fish habitat Reserves protect smaller but significant areas in the south. The Fraser Island section abutting the proposed flyway site is part of the Great Sandy National Park and a World Heritage Site.

b) If appropriate, list the IUCN (1994) protected areas category/ies which apply to the site (tick the box or boxes as appropriate, see Annex 3):

Ia ☐; Ib ☐; II ☐; III ☐; IV ☐; V ☐; VI ☐; N/A ☐

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

If yes, is it being implemented?: If no, is one being planned?

d) Describe any other current management practices:

26. Conservation measures proposed but not yet implemented:

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

A marine park is being created to cover all appropriate tidal waters in the Great Sandy Strait region and is managed from The Queensland National Parks and wildlife Service office in Maryborough.

27. Current scientific research and facilities:

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

Queensland National Parks and Wildlife Service with local community groups and Queensland Department of Primary Industries, Fisheries in Cairns monitors seagrass within the area under the Seagrass-Watch Program. The University of the Sunshine Coast operates a research centre in association with the Kingfisher Resort. The Queensland Wader Study Group undertakes twice annual roost site counts, with other counts if required.

28. 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.

QPWS participates in a range of public awareness raising events. The Hervey Bay City Council has an ongoing stormwater quality education program.

29. Current recreation and tourism:

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

Great Sandy Strait is one of very few passage landscapes in Australia that can be associated with wilderness vista and its scenic values are significant. Recreational fishing and boating is of great significance to the region and the area is an important holiday destination. No tourism statistics are available for Great Sandy Strait itself. However statistics for the adjoining Maryborough-Hervey Bay subregion give a good indication of the composition of visitors. Some 55-60 percent of tourists who visit the area live in Queensland, 30 percent are from interstate and 10-15 percent are from overseas (mostly United Kingdom and Europe). Eighty percent of domestic visitors and 90 percent of international visitors are on holiday. Most of the 250 000 visitors who visit Fraser Island annually reach it by boat across Great Sandy Strait using vehicular/passenger barges from Urangan to Moon Point, River Heads to Wangoolba Creek or from Inskip Point to Hook Point. A passenger service also operates from Urangan to Kingfisher Bay Resort and Village, the only major tourism development on western Fraser Island adjacent to the Strait. Nature-based activities including bird watching are conducted by the Resort. Visitation to Fraser Island is highest in July through to October and in January. Christmas, Easter and September school holidays are the traditional peak times. For the Strait itself, other times corresponding to annual fish migrations are important for recreational fishers, though the fishery is productive throughout the year. A considerable number of interstate tourists are believed to visit Great Sandy Straits with the primary aim of recreational fishing. Tourism support Industries, and boating activities associated with recreational fishing in Great Sandy Straits are also estimated to be worth several million dollars to the local economy (QFMA pers. comm.). From August to October approximately 70 000 tourist pass through the northern Great Sandy Straits on whale watching trips.

30. Threats*:

Which of the following threats is present historically – when the threat stopped but the effects are still there (H), currently (C) or potentially (P)?

	Historically	Currently	Potentially
Residential and commercial development			
housing and urban areas	☐	☐	☐
commercial and industrial areas	☐	☐	☐
tourism and recreation areas	☐	☐	☐
Agriculture and aquaculture			
annual and perennial non-timber crops	☐	☐	☐
wood and pulp plantations	☐	☐	☐
livestock farming and ranching	☐	☐	☐
marine and freshwater aquaculture	☐	☐	☐
Energy production and mining			
oil and gas drilling	☐	☐	☐
mining and quarrying	☐	☐	☐
renewable energy	☐	☐	☐
Transportation and service corridors			
roads and railroads	☐	☐	☐
utility and service lines	☐	☐	☐
shipping lanes	☐	☐	☐
flight paths	☐	☐	☐
Biological resource use			
hunting and collecting terrestrial animals	☐	☐	☐
gathering terrestrial plants	☐	☐	☐
logging and wood harvesting	☐	☐	☐
fishing and harvesting aquatic resources	☐	☐	☐
Human intrusions and disturbance			
recreational activities	☐	☐	☐
war, civil unrest and military exercises	☐	☐	☐
work and other activities	☐	☐	☐

Natural system modifications			
fire and fire suppression	☐	☐	☐
dams and water management/use	☐	☐	☐
other ecosystem modifications	☐	☐	☐
Invasive and other problematic species and genes			
invasive non-native/alien species	☐	☐	☐
problematic native species	☐	☐	☐
introduced genetic material	☐	☐	☐
Pollution			
household sewage and urban waste water	☐	☐	☐
industrial and military effluents	☐	☐	☐
agricultural and forestry effluents	☐	☐	☐
garbage and solid waste	☐	☐	☐
air-borne pollutants	☐	☐	☐
excess energy	☐	☐	☐
Geological events			
volcanoes	☐	☐	☐
earthquakes/tsunamis	☐	☐	☐
avalanches/landslides	☐	☐	☐
Climate change and severe weather			
habitat shifting and alteration	☐	☐	☐
droughts	☐	☐	☐
temperature extremes	☐	☐	☐
storms and flooding	☐	☐	☐

Please write here any additional threats and comments/queries you have on the threats.

Annex 1: Criteria for the inclusion of sites in the Flyway Site Network

(From the Partnership Text)

To be considered for inclusion in the Flyway Site Network, this Partnership adopts the following criteria:

a. Convention on Wetlands (Ramsar, Iran, 1971) criteria for internationally important sites for migratory waterbirds. That is:

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

   Criterion 5: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.

   Criterion 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 waterbird.

b. The staging criteria as applied under the Asia - Pacific Migratory Waterbird Conservation Strategy. That is:

   i. A staging site should be considered internationally important if it regularly supports 0.25% of individuals in a population of one species or subspecies of waterbirds on migration.

   ii. A staging site should be considered internationally important if it regularly supports 5,000 or more waterbirds at one time during migration.

c. Under exceptional circumstances a site can be nominated if it supports migratory waterbirds at a level or stage of their life cycle important to the maintenance of flyway populations. Justification of such nominations will be considered by the Partnership on a case by case basis.

Annex 2: Ramsar Classification System for Wetland Type

The codes are based upon the Ramsar Classification System for Wetland Type as approved by Recommendation 4.7 and amended by Resolutions VI.5 and VII.11 of the Conference of the Contracting Parties. The categories listed herein are intended to provide only a very broad framework to aid rapid identification of the main wetland habitats represented at each site.

To assist in identification of the correct Wetland Types to list in section 19 of the RIS, the Secretariat has provided below tabulations for Marine/Coastal Wetlands and Inland Wetlands of some of the characteristics of each Wetland Type.

Marine/Coastal Wetlands

A -- **Permanent shallow marine waters** in most cases less than six metres deep at low tide; includes sea bays and straits.

B -- **Marine subtidal aquatic beds**; includes kelp beds, sea-grass beds, tropical marine meadows.

C -- **Coral reefs**.

D -- **Rocky marine shores**; includes rocky offshore islands, sea cliffs.

E -- **Sand, shingle or pebble shores**; includes sand bars, spits and sandy islets; includes dune systems and humid dune slacks.

F -- **Estuarine waters**; permanent water of estuaries and estuarine systems of deltas.

G -- **Intertidal mud, sand or salt flats**.

H -- **Intertidal marshes**; includes salt marshes, salt meadows, saltings, raised salt marshes; includes tidal brackish and freshwater marshes.

I -- **Intertidal forested wetlands**; includes mangrove swamps, nipah swamps and tidal freshwater swamp forests.

J -- **Coastal brackish/saline lagoons**; brackish to saline lagoons with at least one relatively narrow connection to the sea.

K -- **Coastal freshwater lagoons**; includes freshwater delta lagoons.

Zk(a) – **Karst and other subterranean hydrological systems**, marine/coastal

Inland Wetlands

L -- **Permanent inland deltas**.

M -- **Permanent rivers/streams/creeks**; includes waterfalls.

N -- **Seasonal/intermittent/irregular rivers/streams/creeks**.

O -- **Permanent freshwater lakes** (over 8 ha); includes large oxbow lakes.

P -- **Seasonal/intermittent freshwater lakes** (over 8 ha); includes floodplain lakes.

Q -- **Permanent saline/brackish/alkaline lakes**.

R -- **Seasonal/intermittent saline/brackish/alkaline lakes and flats**.

Sp -- **Permanent saline/brackish/alkaline marshes/pools**.

Ss -- **Seasonal/intermittent saline/brackish/alkaline marshes/pools**.

Tp -- **Permanent freshwater marshes/pools**; ponds (below 8 ha), marshes and swamps on inorganic soils; with emergent vegetation water-logged for at least most of the growing season.

Ts -- **Seasonal/intermittent freshwater marshes/pools on inorganic soils**; includes sloughs, potholes, seasonally flooded meadows, sedge marshes.

U -- **Non-forested peatlands**; includes shrub or open bogs, swamps, fens.

Va -- **Alpine wetlands**; includes alpine meadows, temporary waters from snowmelt.

Vt -- **Tundra wetlands**; includes tundra pools, temporary waters from snowmelt.

W -- **Shrub-dominated wetlands**; shrub swamps, shrub-dominated freshwater marshes, shrub carr, alder thicket on inorganic soils.

Xf -- **Freshwater, tree-dominated wetlands**; includes freshwater swamp forests, seasonally flooded forests, wooded swamps on inorganic soils.

Xp -- **Forested peatlands**; peatswamp forests.

Y -- **Freshwater springs; oases**.

Zg -- **Geothermal wetlands**

Zk(b) – **Karst and other subterranean hydrological systems**, inland

Note: "**floodplain**" is a broad term used to refer to one or more wetland types, which may include examples from the R, Ss, Ts, W, Xf, Xp, or other wetland types. Some examples of floodplain wetlands are seasonally inundated grassland (including natural wet meadows), shrublands, woodlands and forests. Floodplain wetlands are not listed as a specific wetland type herein.

Human-made wetlands

1 -- **Aquaculture** (e.g., fish/shrimp) **ponds**

2 -- **Ponds**; includes farm ponds, stock ponds, small tanks; (generally below 8 ha).

3 -- **Irrigated land**; includes irrigation channels and rice fields.

4 -- **Seasonally flooded agricultural land** (including intensively managed or grazed wet meadow or pasture).

5 -- **Salt exploitation sites**; salt pans, salines, etc.

6 -- **Water storage areas**; reservoirs/barrages/dams/impoundments (generally over 8 ha).

7 -- **Excavations**; gravel/brick/clay pits; borrow pits, mining pools.

8 -- **Wastewater treatment areas**; sewage farms, settling ponds, oxidation basins, etc.

9 -- **Canals and drainage channels, ditches.**

Zk(c) -- **Karst and other subterranean hydrological systems**, human-made

Annex 3: IUCN Protected Areas Categories System

IUCN protected area management categories classify protected areas according to their management objectives. The categories are recognised by international bodies such as the United Nations and by many national governments as the global standard for defining and recording protected areas and as such are increasingly being incorporated into government legislation.

Ia Strict Nature Reserve

Category Ia are strictly protected areas set aside to protect biodiversity and also possibly geological/geomorphical features, where human visitation, use and impacts are strictly controlled and limited to ensure protection of the conservation values.

Ib Wilderness Area

Category Ib protected areas are usually large unmodified or slightly modified areas, retaining their natural character and influence without permanent or significant human habitation, which are protected and managed so as to preserve their natural condition.

II National Park

Category II protected areas are large natural or near natural areas set aside to protect large-scale ecological processes, along with the complement of species and ecosystems characteristic of the area, which also provide a foundation for environmentally and culturally compatible, spiritual, scientific, educational, recreational, and visitor opportunities.

III Natural Monument or Feature

Category III protected areas are set aside to protect a specific natural monument, which can be a landform, sea mount, submarine cavern, geological feature such as a cave or even a living feature such as an ancient grove. They are generally quite small protected areas and often have high visitor value.

IV Habitat/Species Management Area

Category IV protected areas aim to protect particular species or habitats and management reflects this priority. Many Category IV protected areas will need regular, active interventions to address the requirements of particular species or to maintain habitats, but this is not a requirement of the category.

V Protected Landscape/ Seascape

A protected area where the interaction of people and nature over time has produced an area of distinct charcter with significant, ecological, biological, cultural and scenic value: and where safeguarding the integrity of this interaction is vital to protecting and sustaining the area and its associated nature conservation and other values.

VI Protected area with sustainable use of natural resources

Category VI protected areas conserve ecosystems and habitats together with associated cultural values and traditional natural resource management systems.