

"Wetlands: water, life, and culture"
8th Meeting of the Conference of the Contracting Parties
to the Convention on Wetlands (Ramsar, Iran, 1971)
Valencia, Spain, 18-26 November 2002

Resolution VIII.13

Enhancing the information on Wetlands of International Importance (Ramsar sites)

1. RECALLING that in Recommendation 4.7 the Contracting Parties established that the “data sheet developed for the description of Ramsar sites be used by Contracting Parties and the Bureau in presenting information for the Ramsar database, and as appropriate in other contexts”, and approved the Ramsar “Classification system for wetland type” to be used in describing sites being designated as Wetlands of International Importance;
2. ALSO RECALLING that the Contracting Parties, in Resolution 5.3, confirmed that a completed “Ramsar datasheet” and site map should be provided upon designation of a Wetland of International Importance (Ramsar site) for the Ramsar List, and that this was reaffirmed in Resolutions VI.13, VI.16, and VII.12;
3. FURTHER RECALLING that the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance* (Resolution VII.11) includes a long-term target to have included in the Ramsar List at least one suitable representative of each wetland type according to the Ramsar Classification System in each biogeographic region;
4. AWARE that in Resolution VI.13 the Contracting Parties resolved to give priority to providing updated maps and completed “Information Sheets on Ramsar Wetlands” (RISs) and to revise the data at least every six years;
5. RECALLING that the Contracting Parties adopted Criteria for Identifying Wetlands of International Importance through Recommendation 4.2 and supplied additional criteria based on fish through Resolution VI.2, and that substantially revised Criteria, together with detailed guidance for their application, were adopted by Resolution VII.11 in the *Strategic framework and guidelines for the future development of the List of Wetlands of International Importance*;
6. CONCERNED that the Contracting Parties are continuing to submit to the Ramsar Bureau RISs which do not adequately apply the Criteria for Identifying Wetlands of International Importance as adopted by Resolution VII.11, and CONCERNED AS WELL that information compiled by those submitting a Ramsar site for inclusion in the Ramsar List is often provided inconsistently in the different sections of the RIS;
7. AWARE that in Action 6.3.1 of Ramsar’s Strategic Plan 1997-2002 the Scientific and Technical Review Panel (STRP) of the Convention is requested to keep under review the criteria and guidelines for the identification and designation of Ramsar sites; and FURTHER AWARE that the STRP has recommended that a section be added to the RIS concerning biogeographic regionalisation in the application of Criteria 1, 2 and 3 for the identification and designation of Wetlands of International Importance, and that the

Explanatory Note and Guidelines for completing the Information Sheet on Ramsar Wetlands be revised and clarified, including the addition of guidance on the provision of suitable maps including in digital formats; and ALSO AWARE that this meeting has adopted Resolution VIII.21 concerning defining Ramsar site boundaries more accurately in Ramsar Information Sheets; and

8. CONSIDERING that the Wetlands of International Importance designated under the Ramsar Convention are being considered more and more by the international community as a significant component of the collective efforts to safeguard the environment and to make wise use of its resources, and that, consequently, there is an increasing interest in, and need for, ensuring access to more complete and accurate data about these sites;

THE CONFERENCE OF THE CONTRACTING PARTIES

9. APPROVES the revised Information Sheet on Ramsar Wetlands (RIS) and *Explanatory Note and Guidelines for completing the Information Sheet on Ramsar Wetlands (RIS)* annexed to this Resolution;
10. URGES all Contracting Parties preparing a RIS for the designation of a new site for the Ramsar List and for updating of the RIS for designated sites, in line with Resolution VI.13, to submit this information to the Ramsar Bureau in this revised format;
11. REQUESTS the Ramsar Bureau and Wetlands International, working with interested Contracting Parties, to develop protocols for the electronic submission of RISs, where this is possible and desirable, so as to facilitate the supply of data from the information systems of Contracting Parties to the Ramsar Sites Database;
12. REQUESTS the Bureau and Wetlands International to maintain the Ramsar Sites Database with the RIS data supplied by Contracting Parties; and to manage other relevant data on Ramsar sites, including that supplied by Contracting Parties in addition to the RIS, so that this data can be made publicly available, subject to consultation with the Contracting Party concerned;
13. FURTHER REQUESTS the Bureau and Wetlands International to continue the development of the Ramsar Sites Database so as to reflect the information provided in the RIS as revised by this Resolution, and linked to relevant supplementary data in line with paragraph 12 above, and to make arrangements for the Ramsar Sites Database to be accessible through the World Wide Web, including the inclusion of a regularly updated version of the Ramsar Sites Database for incorporation into the Ramsar Wetland Data Gateway developed by the Centre for International Earth Science Information Network (CIESIN);
14. INSTRUCTS the STRP to provide further guidance on: (i) where the additional information called for in paragraphs 14-16 of Annex III to the RIS *Explanatory Notes and Guidelines* would be incorporated into the RIS; (ii) the value and feasibility of supplying digital mapping (called for in paragraphs 17-22 of Annex III); (iii) the compatibility of such data at a global scale; (iv) the use of such data by third parties; and (v) issues of data licensing, copyright, access and fees;

15. ALSO REQUESTS Wetlands International to continue to prepare site entries for the Ramsar Sites Directory, derived from information provided by Contracting Parties and relevant supplementary data in line with paragraph 12 above, to make these available through the World Wide Web, and to make available, resources permitting, an updated Ramsar Sites Directory to each meeting of the Conference of the Parties;
16. ENCOURAGES all those responsible for compiling an RIS to apply fully the guidance offered in the *Explanatory Note and Guidelines for completing the Information Sheet on Ramsar Wetlands (RIS)*, in order to ensure that the information is submitted correctly in each section of the RIS, and CALLS UPON Contracting Parties to verify that this has been done before submitting RISs to the Ramsar Bureau;
17. URGES Contracting Parties to prepare and supply suitable maps, following the additional guidance in the *Explanatory Note and Guidelines for completing the Information Sheet on Ramsar Wetlands (RIS)*, and taking note of Resolution VIII.21 concerning defining Ramsar site boundaries more accurately in Ramsar Information Sheets, and wherever possible to submit maps in an appropriate digital format;
18. REQUESTS the Ramsar Bureau and Wetlands International to make arrangements to hold digital maps as part of the Ramsar Sites Database, and to make available, as appropriate and taking account of copyright issues and national regulations, such maps for inclusion, *inter alia*, in the further development of the Web presentation of the Ramsar Sites Database by Wetlands International, the Ramsar Wetland Data Gateway maintained by CIESIN, and the Global Database of Protected Areas maintained by the World Conservation Monitoring Centre (UNEP-WCMC);
19. REQUESTS the STRP to examine the Ramsar Classification System of Wetland Type with a view to including additional types and, to facilitate this process, to consider allocating an open field in the Ramsar Information Sheet; and
20. FURTHER REQUESTS the STRP to review the multiple sources of information available on Ramsar sites including RISs, the Directory of Wetlands of International Importance, site management plans, and data that might be collected under other international instruments; and to review the needs for such information, their uses and users, and make recommendations to COP9 as to how the supply and international reporting of information on Ramsar Sites might be better harmonized to give possible efficiency and cost savings.

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Annex

Information Sheet on Ramsar Wetlands (RIS)

Categories approved by Recommendation 4.7, as amended by Resolution VIII.13 of the Conference of the Contracting Parties.

Note 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. Once completed, the RIS (and accompanying map(s)) should be submitted to the Ramsar Bureau. Compilers are strongly urged to provide an electronic (MS Word) copy of the RIS and, where possible, digital copies of maps.

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

FOR OFFICE USE ONLY.

2. Date this sheet was completed/updated:

DD MM YY

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Designation date

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Site Reference Number

3. Country:

4. Name of the Ramsar site:

5. Map of site included:

Refer to Annex III of the *Explanatory Note and Guidelines*, for detailed guidance on provision of suitable maps.

a) hard copy (required for inclusion of site in the Ramsar List): *yes* ☐ -or- *no* ☐

b) digital (electronic) format (optional): *yes* ☐ -or- *no* ☐

6. Geographical coordinates (latitude/longitude):

7. General location:

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

8. Elevation: (average and/or max. & min.)

9. Area: (in hectares)

10. Overview:

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

11. Ramsar Criteria:

Circle or underline each Criterion applied to the designation of the Ramsar site. See Annex II of the *Explanatory Notes and Guidelines* for the Criteria and guidelines for their application (adopted by Resolution VII.11).

1 • 2 • 3 • 4 • 5 • 6 • 7 • 8

12. Justification for the application of each Criterion listed in 11. 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).

13. 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:

b) biogeographic regionalisation scheme (include reference citation):

14. 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.

15. Physical features of the catchment area:

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

16. Hydrological values:

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

17. 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 • 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:

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.

18. General ecological features:

Provide further description, as appropriate, of the main habitats, vegetation types, plant and animal communities present in the Ramsar site.

19. Noteworthy flora:

Provide additional information on particular species and why they are noteworthy (expanding as necessary on information provided in 12. Justification for the application of the Criteria) indicating, e.g., which species/communities are unique, rare, endangered or biogeographically important, etc. *Do not include here taxonomic lists of species present – these may be supplied as supplementary information to the RIS.*

20. 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.*

21. Social and 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.

22. Land tenure/ownership:

(a) within the Ramsar site:

(b) in the surrounding area:

23. Current land (including water) use:

(a) within the Ramsar site:

(b) in the surroundings/catchment:

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 Ramsar site:

(b) in the surrounding area:

25. Conservation measures taken:

List national category and legal status of protected areas, including boundary relationships with the Ramsar site; management practices; whether an officially approved management plan exists and whether it is being implemented.

26. Conservation measures proposed but not yet implemented:

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

27. Current scientific research and facilities:

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

28. Current conservation education:

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

29. Current recreation and tourism:

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

30. Jurisdiction:

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

31. 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.

32. Bibliographical references:

scientific/technical references only. If biogeographic regionalisation scheme applied (see 13 above), list full reference citation for the scheme.

Please return to: **Ramsar Convention Bureau, Rue Mauverney 28, CH-1196 Gland, Switzerland**
Telephone: +41 22 999 0170 • Fax: +41 22 999 0169 • e-mail: ramsar@ramsar.org

Annex II

Explanatory Note and Guidelines for completing the *Information Sheet on Ramsar Wetlands (RIS)*

Background and context

Recommendation 4.7 of the Conference of Contracting Parties established that the “data sheet developed for the description of Ramsar sites be used by Contracting Parties and the Bureau in presenting information for the Ramsar database, and as appropriate in other contexts”. The Recommendation listed the information categories covered by the “data sheet”, including the “reasons for inclusion” (the Ramsar Criteria) and the Ramsar “*Classification system for wetland type*”.

Resolution 5.3 reaffirmed that a completed “Ramsar datasheet” and site map should be provided upon designation of a Wetland of International Importance (hereafter referred to as a “Ramsar site”) for the List of Wetlands of International Importance (the Ramsar List). This was subsequently reiterated in Resolutions VI.13, VI.16, and VII.12. This datasheet, formally entitled the *Information Sheet on Ramsar Wetlands* and abbreviated “RIS”, provides a standardized format for recording information and data about the Ramsar site.

Resolution 5.3 also stressed that information concerning criteria for inclusion (on the Ramsar List), the functions and values (hydrological, biophysical, floral, faunal, social and cultural) of the site, and conservation measures taken or planned were particularly important categories of information; and it emphasized the importance of applying the Ramsar *Classification system for wetland type* when describing the wetland in the RIS.

Criteria for Identifying Wetlands of International Importance were first adopted in 1974 and refined by subsequent meetings of the Conference of the Parties. The form of the present Criteria was established by Recommendation 4.2 (1990), with additional criteria based upon fish adopted by Resolution VI.2. The Criteria were again substantively revised and, together with detailed guidance for their application, adopted by Resolution VII.11 as part of the *Strategic Framework and guidelines for the future development of the List of Wetlands of International Importance*. These Criteria and guidelines are included as Annex II of this Explanatory Note.

The *Information Sheet on Ramsar Wetlands (RIS)* is completed and supplied to the Ramsar Bureau when a Ramsar site is designated by a Contracting Party. In recognition that the status of designated Ramsar sites can and does change, both in terms of their ecological character, the threats to this character, and the conservation management process and actions underway, Resolution VI.13 has urged Contracting Parties to revise the data provided in the RIS at least every six years.

The RISs and their accompanying maps are held by the Ramsar Bureau. The information provided by Contracting Parties in the RIS is used as the basis for entering data and information into the Ramsar Sites Database, managed on behalf of the Convention by Wetlands International under contract from the Ramsar Bureau. The Database is managed so as to provide an information service on Ramsar sites, including undertaking analysis and reporting to meetings of the Conference of the Parties on progress in implementing the Strategic Framework and Vision

for the List of Wetlands of International Importance (Resolution VII.11) and other Resolutions of the Conferences of the Parties.

The information provided by Contracting Parties in the RIS, including any supplementary information provided, and held in the Ramsar Sites Database is also used by Wetlands International to compile the Ramsar Sites Directory for each meeting of the Conference of the Parties. This Directory provides a publicly-accessible standardised summary of the features and conservation status of each designated Ramsar site, and is now also available on Wetlands International's Web site (<http://www.wetlands.org>).

General guidance

The RIS must be completed in one of the Convention's three working languages, namely English, French, or Spanish. The RIS and this accompanying *Explanatory Note and Guidelines* are available in each of the three working languages.

The information provided in the RIS should be clear and succinct, and the total length of a completed RIS should not normally exceed 12 pages.

In the case of a wetland which has been well-studied and well-documented, or which is the subject of special field investigations, far more information may be available than can be accommodated in the RIS. Additional information, such as taxonomic lists of species' status, management plans, copies of published papers or photocopied reports on the site, should be appended to the RIS and are treated as part of the official record of the site. Photographs (prints, transparencies or electronic images) of the wetland are also especially welcome. It is essential that the source providing any such additional information be noted.

Where the Ramsar site being designated is a very large and complex wetland system, or consists of a suite of separate sub-sites, two levels of approach may be advisable: a broad approach for the system as a whole, and a more detailed approach for each key locality or sub-site within the system. Thus for a particularly large wetland complex it may be appropriate to complete an overall RIS for the whole site and a series of separate RIS datasheets for each key area or sub-site within the complex.

Resolution VI.1 highlights the importance of clearly defining the ecological character of Ramsar sites as the basis for monitoring these wetlands in order to maintain their ecological character. Key features of the ecological character of the site which should be maintained should include those identified as the justification for designation under each Ramsar Criterion applied to the designation. Further guidance on defining and describing ecological character features is provided in the *New Guidelines for management planning for Ramsar sites and other wetlands* (Resolution VIII.14).

Where a management plan has been prepared for the site being designated, the information provided in the RIS should be consistent with the plan's description of ecological character features, the values and functions of the wetland, the factors affecting or likely to affect its character, values and functions, and the management planning process, including monitoring.

When a management plan is prepared as part of the management planning process for the site after it has been designated as a Ramsar site, the information in the RIS should be checked and, if necessary, a revised RIS should be completed and sent to the Ramsar Bureau.

The annex to Resolution VI.1 notes that there is a need to increase the value of the information collected for describing and assessing the ecological character of listed sites, and that emphasis should be given to:

- establishing a baseline by describing the functions, products and attributes of the site that give it benefits and values of international importance (necessary because the existing Ramsar Criteria do not cover the full range of wetland benefits and values which should be considered when assessing the possible impact of changes at a site) -sections 12, 14, 16, 17, 18, 19, 20 and 21 of the RIS apply;
- providing information on human-induced factors that have affected or could significantly affect the benefits and values of international importance - section 24 of the RIS applies;
- providing information on monitoring and survey methods in place (or planned) at the site - sections 25 and 26 of the RIS apply; and
- providing information on the natural variability and amplitude of seasonal and/or long-term “natural” changes (e.g., vegetation succession, episodic/catastrophic ecological events such as hurricanes) that have affected or could affect the ecological character of the site - sections 16 and 24 of the RIS apply.

Guidance on information to provide in each numbered section of the *Information Sheet on Ramsar Wetlands (RIS)*

1. **Name and address of the RIS compiler:** The full name, institution/agency, and address of the person who compiled the RIS, together with any telephone and fax numbers and e-mail address.
2. **Date:** The date on which the RIS was completed (or updated). Please use the *name* of the month, not its numerical equivalent. For example use 6 March [year] or March 6 [year] rather than 6/3/year or 3/6/year so as to avoid confusion arising from commonly used but differing formats for expressing dates.
3. **Country:** The official (short) version of the Contracting Party/country name.
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 brackets after the precise name. Ensure that the site name used is the same in this section and on the maps provided. This name will be used precisely as given when the site is added to the Ramsar List.
5. **Map of the Ramsar Site:** The most up-to-date available and suitable map of the wetland should be appended to the RIS (in hardcopy and, if possible, also in digital format). At least a hardcopy map is required for the inclusion of the site in the List of Wetlands of International Importance. Indicate whether or not a map accompanies the RIS by ticking the appropriate *yes* or *no* boxes. The map must clearly show the boundary of the designated Ramsar site. Annex III provides detailed guidance on the provision of suitable Ramsar site

maps and other spatial data. A list of the maps supplied and any other relevant maps of the Ramsar site that are available should be included in a note annexed to the RIS.

6. **Geographical coordinates:** The geographical coordinates of the *approximate* centre of the site expressed in *degrees, minutes and seconds of latitude and longitude* (e.g. in the format: 01°24'15"S 104°16'01"E or 010°30'00"N 084°51'45"W). If relevant, specify the number of discrete units forming the site. If any disjunct units are situated at least 1.6 km* apart, the coordinates of the approximate centres of each of these units should be given separately (along with individual names or differentiating labels, e.g. "A, B, C"... , etc.). Any discrete units so identified in an RIS should also be clearly labelled on the site map(s). A single site occupying less than 1,000 hectares needs only one central set of coordinates. Location information on larger areas should be supplemented by providing the coordinates of the southwest and northeast corners of the Ramsar site. (See also sections 5. Map and 9. Area).

*This is approximately equivalent to one (1) minute of latitude or longitude (at the equator, in the case of longitude).

If the site is shaped in such a way that the approximate centre point cannot be easily specified, or if such a point falls outside the site or within a very narrow portion of the site, please explain this with a note, and provide the coordinates for the approximate centre point of the largest part of the site.

7. **General Location:** A description of the general location of the wetland. This should include the name of the large administrative region(s) (i.e., state, province, territory, canton, etc.) within which the site lies (e.g., Alberta, Canada; Punjab, Pakistan; Andalucía, Spain) and the site's distance (as either a straight line distance or distance by road) and compass bearing from the nearest "provincial", "district" or other significant administrative centre, town, or city. The human population of the listed centre and its administrative regions (if possible, including at least two levels of administration/ jurisdiction) should also be stated.
8. **Elevation:** The average and/or minimum and maximum elevation of the wetland in metres above mean sea level. Clearly label each elevation provided, with e.g. "average", "maximum" or "minimum").
9. **Area:** The total area of the designated 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 (see also section 5. Map).
10. **Overview:** A brief paragraph about the wetland, providing a 'word picture' of the type of wetland and its importance, its main physical and ecological character features, its most important values and functions, and any particularly interesting features. Note also the most significant wetland types, especially if they are the most dominant as identified in 17 b).
11. **Ramsar Criteria:** Circle or underline the code for each *Ramsar Criterion for identifying wetlands of international importance* that is being applied to the designation of the site. Refer to Annex II of these guidelines for the Criteria and the detailed guidance provided for their application established by Resolution VII.11.

Note that many sites qualify for designation under more than one Criterion: be thorough and precise in selecting all of the Criteria that apply. The specific reasons justifying the application of each Criterion selected should be provided in section 12. Justification of Criteria selected under section 11.

- 12. Justification for the application of each Criterion listed in 11. above:** For each Criterion selected under section 11. Ramsar criteria above, a specific individual explanation of how that Criterion applies to the site. This section of the RIS is central to the concept of “**international importance**”. The Criteria codes alone do not convey information on the specific way in which each Criterion applies to a particular site – therefore it is essential to provide sufficient precise description to explain and support each of the Ramsar Criteria codes selected. This text must not just restate the Criterion, but should provide the necessary details to describe the way in which a particular Criterion applies specifically at the site being designated. Refer to Annex II for the detailed guidance for the application of the Criteria (adopted by Resolution VII.11)

A number of points concerning the correct use of specific Criteria and the Guidelines for their application should be particularly taken into account when preparing the justification for the application of the Criteria selected for designation:

- i) The guidelines for the application of **Criteria 1 and 3** stress that these Criteria should be applied to a wetland in the context of the biogeographic region within which it occurs, but recognises that biogeographic regions can differ between wetland types. The biogeographical region context can also apply to certain reasons for the designation of threatened ecological communities under **Criterion 2**. The biogeographic region encompassing the Ramsar site and the biogeographic regionalisation scheme applied should be provided in section 13. Biogeography;
- ii) Concerning **Criterion 5** the guidelines indicate that the actual total number of waterbirds should be stated, and preferably, when available, the average total number from several recent years. It is not sufficient simply to restate the Criterion, i.e., that the site supports >20,000 waterbirds;
- iii) For justification of designation under **Criterion 6** it is particularly important to recognise that this Criterion must be applied to the regular occurrence of >1% of a biogeographic population of a species or subspecies of waterbird, and to recognise that in most cases the biogeographic range of waterbird populations is larger than the territory of one Contracting Party. For each population listed under Criterion 6 the name of the biogeographic population, as well as the number of birds of this population regularly occurring in the site, should be listed. Recommended 1% thresholds for the application of Criterion 6 are provided by Wetlands International's publication *Waterbird Population Estimates 3rd Edition* (2002), which also provides a description of the biogeographic range of each population. Note that this Criterion should be applied only to those waterbird populations for which a 1% threshold is available. However, for populations of waterbird species in taxa not presently covered by *Waterbird Population Estimates 3rd Edition*, the guidelines indicate that this Criterion may be applied if a reliable population estimate and 1% threshold is available from another source, and that in such cases the information source must be clearly specified. It is not sufficient simply to restate the Criterion, that the site

supports >1% of a population, nor is it a correct justification to list populations with numbers in the site >1% of their *national* population, except when the population is endemic to that country.

- iv) For all or some applications of **Criteria 2, 3, 4, 5, 6, 7 and 8**, the name(s) of the species concerned (scientific name and vernacular name in English, French or Spanish) should be provided in the justification.
- v) The Guidelines for the application of **Criterion 7** concerning fish and shellfish diversity indicate that a species list alone is not sufficient justification for the use of this Criterion, and that other features of high diversity, including life-history stages, species interactions, and level of endemism are required for the application of this Criterion.

- 13. Biogeography:** The *biogeographic region* encompassing the Ramsar site and the *biogeographic regionalisation scheme* applied (with full reference citation) should be provided. Biogeographical specification is essential for the correct application of Criteria 1 and 3 and certain applications of Criterion 2 (see also sections 11. Ramsar Criteria and 12. Justification of Criteria). In this context the guidelines for the application of the Ramsar Criteria (see Annex II) define “bio(geographic) region” as “a scientifically rigorous determination of regions as established using biological and physical parameters such as climate, soil type, vegetation cover, etc.” Note that for non-island Contracting Parties, in many cases biogeographic regions will be transboundary in nature and will require collaboration between countries to establish the locations of representative, rare or unique examples of different wetland types. It is also recognised that the nature of biogeographic regionalization may differ between wetland types according to the nature of the parameters determining natural variation (see Annex II of this *Explanatory Note and Guidelines*).

There are a variety of different global and supranational/regional biogeographic schemes in use. No single scheme may be universally appropriate or acceptable and Contracting Parties are urged (in the annex to Resolution VII.11) to apply a regionalization scheme which they determine to be the most appropriate and scientifically rigorous approach available.

- 14. Physical features of the site:** A succinct description of the principal physical characteristics of the site covering the following features (where relevant):
- Geology and geomorphology (general features);
 - Soil type and chemistry range (Soil family name(s); indication of mineral vs. organic content; typical pH range of soil);
 - Sediment characteristics;
 - Origins (natural or artificial);
 - Hydrology (including seasonal water balance, inflow, infiltration and outflow, salt-water intrusion). Further detail, notably the hydrological values and functions of the site should be included in section 15. Hydrological values;
 - Water quality (typical physico-chemical characteristics);
 - Depth, fluctuations and permanence of water;
 - Tidal range and variations;

- Downstream area (especially in the case of wetlands that are important in flood control);
 - Climate – include here only the most significant regular climatic features, e.g., annual rainfall and average temperature range, distinct seasons, typical flooding and drought periods, and any other normal climatic factors affecting the wetland. Recent major or extreme climate events, e.g. flood, drought, hurricane, cyclone or other storm, atypical period of extreme temperatures, etc, that have had an adverse impact on the site should be detailed under section 24. Factors adversely affecting the site's ecological character).
15. **Physical features of the catchment area:** A succinct characterisation of the catchment area, covering:
- surface area;
 - general geology and geomorphological features;
 - general soil types
 - general land use
 - climate (including characterisation of climate type);
16. **Hydrological values:** A description of the principal hydrological *values* of the wetland, for example, the ecosystem services that they provide to people. This may include, but not necessarily be limited to, its role in flood control, groundwater replenishment, shoreline stabilization, sediment & nutrient retention and export, climate change modification, and water purification and maintenance of water quality. Hydrology of the site (as opposed to its hydrological values and functions) should be covered under section 14. Physical features.
17. **Wetland Type:** In this section first list, by circling or underlining, the full range of wetland types occurring within the site, and then list the wetland types selected in order of their dominance (by area) starting with the wetland type with the largest area. The Ramsar Classification System for Wetland Type (see Annex I of this *Explanatory Note and Guidelines*) provides the description of what types of wetland are covered by each of the wetland type codes. Note that the wetland types are grouped in three major categories: marine-coastal, inland, and human-made wetlands, and that wetland types under two or more of these categories may be present within a Ramsar site, particularly if it is large.

Since some Marine/Coastal wetland types (e.g. Estuarine waters (type *F*) or Intertidal Forested Wetlands (type *I*)) can occur far inland from the coastline, and conversely Inland Wetlands types can occur close to the coastline, please also indicate with additional text in this section the general geographical location of the site relative to the coastline, as either inland or marine/coastal.

When listing the areal dominance of the wetland types, if possible provide the area or percentage of the total area of the designated site composed of each wetland type, although it is recognised that this may be difficult for large sites with a wide variety of wetland types. If the site is composed of more than one discrete unit and different wetland types or different dominance of types occur in different site units, also list the wetland type dominance for each unit (see also the guidance on sections 5. Map, 6. Geographical coordinates, and 9. Area).

If the designated site includes areas of non-wetland habitat, for example where such parts of a catchment are included, it is helpful here to also list the area, or percentage of the total area, of the site formed of these habitats.

18. **General ecological features:** A description of the main habitats and vegetation types, listing the dominant plant communities and species, and describing any zonation, seasonal variations, and long-term changes. Include a brief note on the native natural plant communities in adjacent areas, as well as the present plant communities (including cultivation) if different from the native vegetation. Information on specific food chains should be included in this section.
19. **Noteworthy flora:** Additional/supplemental information on plant species or communities for which the wetland is particularly important or significant should be provided here. **Do not duplicate** information that has already been provided in support of the site's international importance (in section 12. Justification of Criteria) or in section 18. General ecological features. Specify *why* each species or community listed is considered noteworthy (e.g., if it is an economically important species).

Endemic plant species, if they have not been considered towards the application of Criterion 3 at the site (e.g., if the *number* of endemic species was not considered "significant", following the guidance for that Criterion) can be listed here.

Also list here plant species that have been introduced (accidentally or intentionally) and/or those that are invasive. (Description of the impacts by invasive and/or alien species on the site should be provided in section 24. Factors adversely affecting the site's ecological character).

General species (occurrence) lists should not be included here or under other RIS sections, but such lists (properly labelled with site details) should be appended to the RIS when they are available.

20. **Noteworthy fauna:** Additional/supplemental information on animal species or communities for which the wetland is particularly important or significant should be provided here. **Do not duplicate** information that has already been provided in support of the site's international importance (in section 12. Justification of Criteria) or in section 18. General ecological features. Specify *why* each species or community listed is considered noteworthy (e.g., if it is an economically important species, or a "keystone" species, or a species associated with high wetland biodiversity values, e.g., turtles, crocodiles, otters, dolphins).

Endemic animal species that have not been considered towards the application of relevant Criteria at the site (e.g., because either the number of endemic species was not considered "significant" (Criterion 3) or the percentage of endemic fish did not reach the threshold *percentage* for the application of Criterion 7) should be listed in this section. Noteworthy zoogeographical features (relict populations, unusual range extensions, etc.) should be noted here.

Also list here animal species that have been introduced (accidentally or intentionally) and/or those that are invasive. (Description of the impacts by invasive and/or alien

species on the site should be provided in section 24. Factors adversely affecting the site's ecological character).

General species (occurrence) lists should not be included here or under other RIS sections, but such lists (properly labelled with site details) should be appended to the RIS when they are available.

21. **Social and cultural values:** An account of the site's principal social and economic values and functions and "wise use" features presented in Ramsar Handbooks 1 to 6 (e.g., tourism, outdoor recreation, education and scientific research, agricultural production, grazing, water supply, fisheries production) and cultural values and functions (e.g., archaeological sites, historical associations and/or religious significance including its significance to indigenous peoples). For more information see the *Guiding principles for taking into account the cultural values of wetlands for the effective management of sites*, annexed to Resolution VIII.19. Whenever possible, indicate which of these values are consistent with the maintenance of natural wetland processes and ecological character. Details about values derived from non-sustainable exploitation or which result in detrimental ecological changes should be described in section 24. Factors adversely affecting the site's ecological character.
22. **Land tenure/ownership:** Details of ownership/tenure both of the Ramsar site and of the areas surrounding the site. If possible, express different tenure/ownership categories as the percentage of the site to which each applies (e.g., "50% state-owned"). Explain any complex tenure arrangements or formulas. Also explain terms which have a special meaning in the country or region concerned. In the next section (23. Current land use), describe the linkages between the different land tenures described in this section and specific land uses.
23. **Current land (including water) use:** All of the principal human activities in (a) the Ramsar site itself and (b) in the surroundings and catchment. Give information on the human population in the area, with a description of the principal human activities and main forms of land and water use at the wetland, e.g., water supply for domestic and industrial use, irrigation, agriculture, livestock grazing, forestry, fishing, aquaculture and hunting. Also mention here activities and uses related to research, education and recreation/tourism at the site, but provide the details about each of these in sections 27, 28 and 29, respectively). Some indication of the relative importance, scale and trend of each land and water use should be given whenever possible. Make note if activities or uses are restricted to certain distinct parts of the site (e.g., in only part of a large site or in distinct zones or within particular wetland types). In (b), summarize land and water use in the areas surrounding the site and in its greater catchment that may directly or indirectly affect the status of the designated wetland, and any land uses in downstream areas likely to be affected by the wetland. For further reference on water use, see the *Guidelines for the allocation and management of water for maintaining the ecological functions of wetlands* adopted by Resolution VIII.1.
24. **Factors (past, present or potential) adversely affecting the site's ecological character, including changes in land (including water) use and development projects:** The human and natural factors affecting the ecological character of the site, from both within and around the site (including the greater catchment, if relevant). These may include new or changing activities/uses, major development projects, etc., which have had,

are having, or may have a detrimental effect on the natural ecological character of the wetland. For all adverse and change factors reported, supply measurable/quantifiable information (when such data exist), as well as information on the scale, extent and trend of the change factor and its impact: this information should provide a basis for monitoring of ecological character of the site.

It is important to specify both the agent for the change (e.g., diversion of water, drainage, reclamation, pollution, over-grazing, excessive human disturbance, or excessive hunting and fishing, etc.) and the resulting change and its impact (e.g., siltation, erosion, fish mortality, change in vegetation structure, habitat fragmentation, disturbed reproduction of species, physical or ecological change due to climate change, etc.). It is also important to differentiate between factors coming from within the site itself and those factors emanating from outside the site, but which are having or may have an impact on the site. One should also distinguish between potential and existing adverse factors.

When reporting on pollution, special notice should be taken of toxic chemical pollutants and their sources. These should include industrial and agricultural-based chemical effluents and other emissions.

Natural events, including episodic catastrophes (e.g., an earthquake or volcanic eruption) or natural vegetative succession which have had, are having, or are likely to have an impact on the ecological character of the site should be detailed, in order to facilitate monitoring.

Provide information on the history of introductions (accidental or deliberate) of invasive and/or alien species identified in sections 19. Noteworthy flora and 20. Noteworthy fauna and the impacts of any invasions.

25. **Conservation measures taken:** Details of any nationally relevant protected area status, international conservation designations (in addition to Ramsar site status), and, in the case of transboundary wetlands, bilateral or multilateral conservation measures which pertain to all or part of the site. If a reserve has been established, give the date of establishment and size of the protected area. If only a part of the wetland is included within a protected area, the area of wetland habitat that is protected should be noted. Also describe any other conservation measures taken at the site, such as restrictions on development, management practices beneficial to wildlife, closures of hunting, etc.

Describe here the management planning process, including any management plan, for the site, if this has been developed and is being implemented, including whether it has been officially approved. Cite the management plan document(s) in section 32. Bibliographic references, and whenever possible provide a copy of the management plan as supplementary information to the RIS.

Include information here on any monitoring schemes and survey methods in place at the site. Describe any application at the site of the Ramsar *Guidelines for the implementation of the wise use concept* (Recommendation 4.10), *Additional guidance for the implementation of the wise use concept* (Resolution 5.6), or any other instance of the application of other more recently advanced wise use guidelines (“wise use” is a central concept of the Ramsar Convention).

When updating the RIS for an existing Ramsar site, mention if the site is included on, or has been removed from, the Montreux Record and provide details of any Ramsar Advisory Missions that have been undertaken to the site.

Any application of integrated basin-scale/catchment management planning, or integrated coastal/marine zone management planning, involving or affecting the site should be noted. Provide a brief assessment of the effectiveness of protected area legislation or status of any protected areas whenever possible. Involvement of local communities and indigenous people in the participatory management of the site should also be described, in the context of the Ramsar guidelines on this process (Resolution VII.8).

26. **Conservation measures proposed but not yet implemented:** Details of any conservation measures that have been proposed, or are in preparation, for the site, including any proposals for legislation, protection and management

Summarize the history of any long-standing proposals which have not yet been implemented, and differentiate between those proposals which have already been officially submitted to the appropriate government authorities and those which have not as yet received formal endorsement, e.g., recommendations in published reports and resolutions from specialist meetings. Also mention any management plan which is in preparation but has not yet been completed, approved or implemented.

27. **Current scientific research and facilities:** Describe here any current scientific research programmes, including monitoring, and projects taking place in the site, and provide information on any special facilities for research that were mentioned in section 23. Current land (including water) use.
28. **Current conservation education activities related to communications, education and public awareness (CEPA) related to or benefiting the site:** Describe here any existing programmes, activities and facilities for communications, education and public awareness (CEPA), including training, that were mentioned in section 23. Current land (including water) use. Also provide comment on the educational potential of the wetland. For further information on CEPA issues and the Convention on Wetlands, see the Ramsar Web site at http://ramsar.org/outreach_index.htm.
29. **Current recreation and tourism:** Provide details of any present use of the wetland for recreation and tourism that was mentioned in section 23. Current land (including water) use. Provide details of existing or planned visitor facilities or centres for recreation and tourism, and indicate the annual number of tourists visiting the site, if known. Also indicate the type of tourism and whether the tourism is seasonal.
30. **Jurisdiction:** Provide the full name and address of the government authority with a) *territorial jurisdiction* over the wetland, e.g., the state, region or municipality; and b) the name of the authority with *functional jurisdiction* for conservation purposes, e.g., the Department of Environment or Department of Fisheries, etc.
31. **Management authority:** Provide the name and address of the local office(s) of the agency(ies) or organization(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. Also provide details of any special or unique arrangements that pertain to the site's management.

32. **Bibliographical References:** A list of key technical references relevant to the wetland, including management plans, major scientific reports, and bibliographies. Please list any functional/active Web site addresses dedicated to the Ramsar site or which prominently feature the site (e.g., a Web site detailing all of a country's Ramsar sites), 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. Reprints or copies of the most important literature, including a copy of any management plan, should be appended whenever possible.

Annex I

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.

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**; peat swamp 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 II

Criteria and guidelines for Identifying Wetlands of International Importance

Adopted by the 7th Meeting of the Conference of the Contracting Parties (1999), superseding earlier Criteria adopted by the 4th and 6th Meetings of the COP (1990 and 1996), to guide implementation of Article 2.1 on designation of Ramsar sites.

Group A of the Criteria. Sites containing representative, rare or unique wetland types

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 biogeographic region.

Group B of the Criteria. Sites of international importance for conserving biological diversity

Criteria based on species and ecological communities

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

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 biogeographic region.

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.

Specific criteria based on waterbirds

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.

Specific criteria based on fish

Criterion 7: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.

Criterion 8: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Annex III

Additional guidelines for the provision of maps and other spatial data for Ramsar Sites

The following guidance has drawn from the experience of Wetlands International and the Ramsar Bureau, the World Heritage Convention, and the UNEP-World Conservation Monitoring Centre, and also from the guidance provided in: World Heritage Convention. 1999. *Meeting to recommend digital and cartographic guidelines for World Heritage site nominations and state of conservation reports*. In: WHC-99/CONF.209/INF.19. Paris, 15 November 1999. WWW document: <http://www.unesco.org/whc/archive/99-209-inf19.pdf>

1. The provision of a suitable map or maps is a requirement under Article 2.1 of the Convention – it is fundamental to the process of designating a Wetland of International Importance (Ramsar site), and is an essential part of the information supplied in the *Information Sheet on Ramsar Wetlands (RIS)*. Clear mapped information about the site is also vital for its management.
2. This additional guidance recognises that Contracting Parties have increasing capacity to prepare and supply Ramsar site maps in digital formats (for example, through the use of electronic Geographical Information System (GIS) software) and to delineate site boundaries through the establishment of precise Global Positioning System (GPS) way-points.
3. Maps provided by a Contracting Party on designation of a Ramsar site should, as far as possible, and as high priority attributes:
 - i) be prepared to professional cartographic standards: maps not prepared to professional cartographic standards are problematic, since even moderately-opaque hand-drawn site boundaries or cross-hatching (e.g., to indicate zonation) often obscure other important map features. Although coloured annotations may appear distinguishable from the underlying map features on the map original, it is important to remember that most colours cannot be differentiated in any black and white photocopies. Such additional information should be provided on additional outline maps;
 - ii) show the Ramsar Site in its natural or modified environment and should be within the scale ranges specified below, depending upon the size of the site;
 - iii) clearly show the boundary of the Ramsar site, and distinguish this from any existing or proposed buffer zones;
 - iv) if the site is adjacent to, or now includes, a previously designated Ramsar site, the (former or active) boundaries of all of such sites should be shown, making clear the current status of all such previously designated areas;
 - v) include a key or legend that clearly identifies the boundary and each other category of feature shown on the map and relevant to the designation of the site; and
 - vi) show the map's scale, an indication of geographical coordinates (latitude and longitude), an indication of compass bearing (north arrow) and, if possible, information on the

map's projection. The map (or a companion map) should also show the position of several other features if feasible.

4. The most suitable map or set of maps for the designation of a Ramsar site will also clearly show the following, although provision of such information is of lower priority than the attributes listed in paragraph 3 above:
 - i) basic topographical information;
 - ii) the boundaries of relevant protected area designations and administrative boundaries (e.g., province, district, etc.);
 - iii) clearly delineated wetland and non-wetland parts of the site, and depiction of the wetland boundary with respect to the site's boundary, especially where the wetland extends beyond the site being designated. Where available, information on the distribution of the main wetland habitat types and key hydrological features is also useful. Where there is substantial seasonal variation in the extent of the wetland, separate maps showing the wetland extent in the wet and in the dry seasons are helpful;
 - iv) major landmarks (towns, roads, etc.); and
 - v) distribution of land uses in the same catchment.
5. A general location map, showing the location of the Ramsar site within the territory of the Contracting Party, is also extremely useful.
6. Maps should not be trimmed, so that data managers and Ramsar Bureau staff can consult any printed marginal notes or coordinate tick marks.
7. A map having all the above attributes, including being at the appropriate scale (see guidance below), will facilitate digitization of maps for inclusion in a Geographic Information System (GIS) if the map (or maps) are supplied only in printed form (i.e., when no digital coordinates are available).
8. To allow for subsequent digitization to be undertaken accurately and without distortion, the map should be an original print (two copies of which should be supplied) and not a photocopy,
9. Additionally, to facilitate copying and presentation, it is extremely helpful to include two other versions of the principal map(s):
 - i) a colour photocopy of the map reduced to A4 size; and
 - ii) a TIFF file or other digital image file (e.g., JPEG, PDF).

Scale of maps

10. The optimum scale for a map depends on the size of the site depicted. The optimal scales of maps for different sizes of Ramsar sites are:

Size of site (ha)	Preferred (minimum) scale of map
> 1,000,000	1:1,000,000
100,000 to 1,000,000	1:500,000
50,000 to 100,000	1:250,000
25,000 to 50,000	1:100,000
10,000 to 25,000	1:50,000
1,000 to 10,000	1:25,000
< 1,000	1:5,000

11. In summary, the map should be of suitable scale to depict the detail necessary to clearly indicate the features of the site described in the RIS and, particularly, to show a precise boundary.
12. For moderate to large sites, it is often difficult to show sufficient detail on standard A4 (210mm x 297mm) or Letter-format (8.5" x 11") sheets at the desired scale, so generally a sheet larger than this format is more appropriate. However, whenever possible, each map should be no larger than A3 (420mm x 297 mm) as larger formats present difficulties for subsequent copying.
13. When the site is large or complex and/or when it is composed of several sub-sites with discrete boundaries, a larger-scale map of each section or sub-site should be provided, accompanied by a smaller scale location map of the whole site which indicates the location of each sector or sub-site relative to the others. All such maps should follow the scale guidance above.

Boundary description (text)

14. When detailed topographical maps are not available, a description of the boundaries of the site should be provided to accompany the map(s), indicating topographic and other legally defined national, regional, or international boundaries followed by the site boundaries, together with the relationship of the Ramsar site boundary with the boundaries of any other existing protected area designations which cover part or all of the Ramsar site.
15. If the precise position of the site boundary has been determined using a Global Positioning System (GPS), Contracting Parties are encouraged to include an electronic or paper file listing each GPS latitude/longitude way-point determined and identifying these on a printed copy of the site map.
16. Where a revision to the boundary of a designated Ramsar site is being made in accordance with Resolution VIII.21, *Defining Ramsar site boundaries more accurately in Ramsar Information Sheets*, under the following circumstances:
 - a) the site boundary has been drawn incorrectly and there has been a genuine error; and/or
 - b) the site boundary does not accurately match the description of the boundary as defined in the RIS; and/or
 - c) technology allows for a higher resolution and more accurate definition of the site boundary than was available at the time of Listing;

any change should be made clear in the revised RIS and/or on the site map, and the reasons for such refinement should be documented in the RIS.

Boundary description (digital)

17. Contracting Parties are encouraged, where possible, to submit geographic information about the Ramsar site in digital form, suitable for incorporation into a Geographic Information System (GIS).
18. For boundary and buffer zone delineation, data should be presented in vector form, prepared at the largest scale.
19. Other information, for example on wetland types and land uses, whether vector- or raster-based, should be submitted on one or more separate layers at the largest scale possible.
20. Metadata concerning the digitised formats should accompany the digital map(s) and should include digitising scale, projection system, attribute tables for each map layer, file format(s), and layering conventions used to prepare the data layers.
21. The primary native format files generated by the “Arc-Info” family of GIS (ESRI Corporation) or by “MapInfo” (Corporation) GIS enjoy increasingly wide use and can be imported and used by many GIS applications.
22. The Open GIS Consortium (OGC), a large group of GIS organizations including industry leaders, is addressing the issue of incompatible standards in geographic information technology. Progress on GIS standards, compatibility, and interoperability achieved under the OGC initiative should be noted and will be considered in the preparation of any updated advice on GIS file specifications for provision of digital maps for Ramsar sites.