

Prepared by Dr Mike Moser
and Eng. A. Lotfi



A Conservation

Guideline

Zoning for wetland

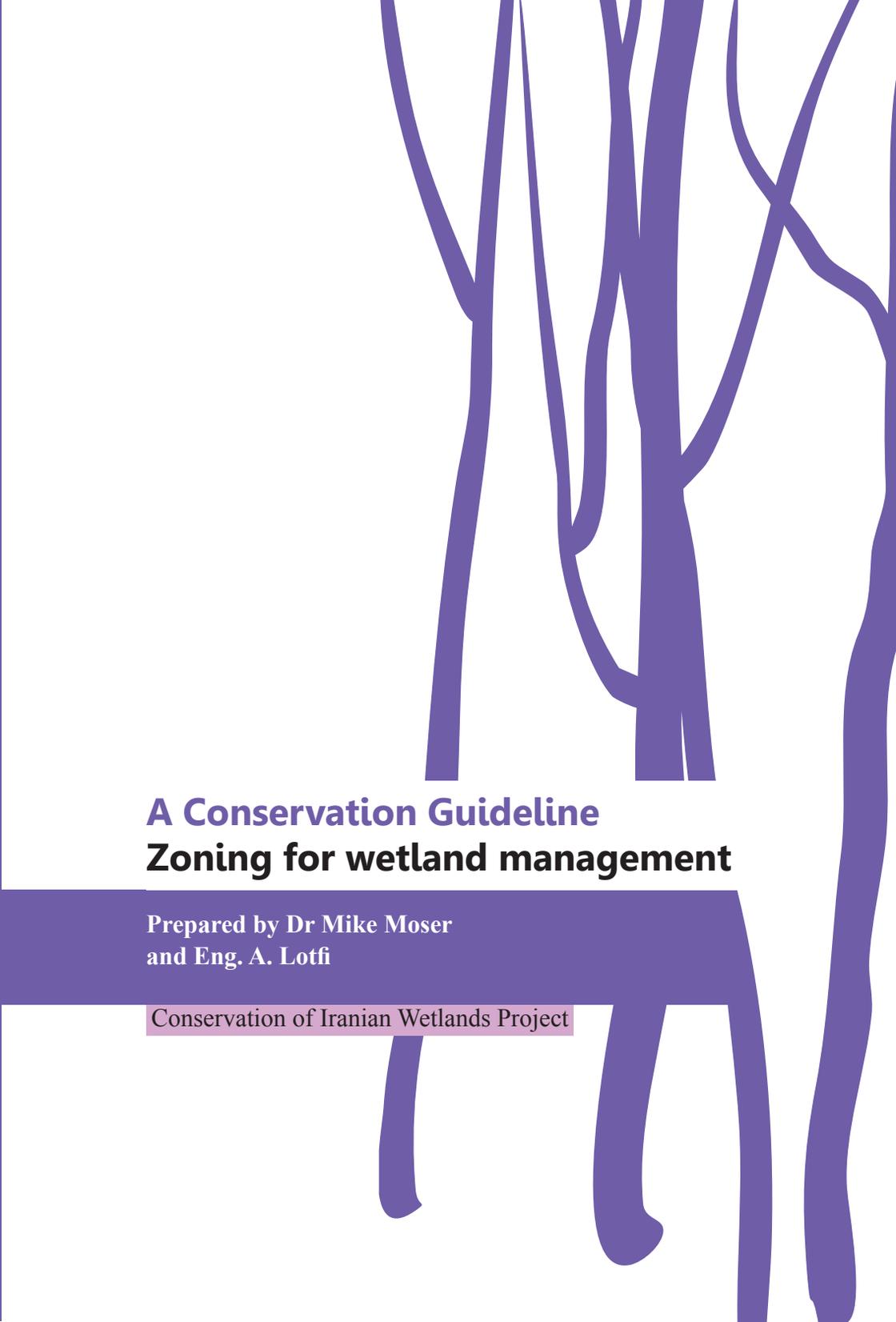
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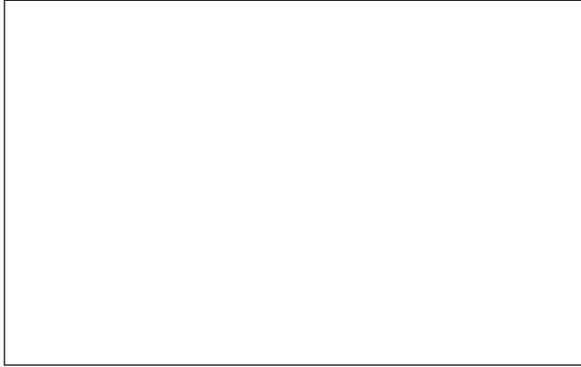




A Conservation Guideline **Zoning for wetland management**

**Prepared by Dr Mike Moser
and Eng. A. Lotfi**

Conservation of Iranian Wetlands Project



A Conservation Guideline

Zoning for wetland management

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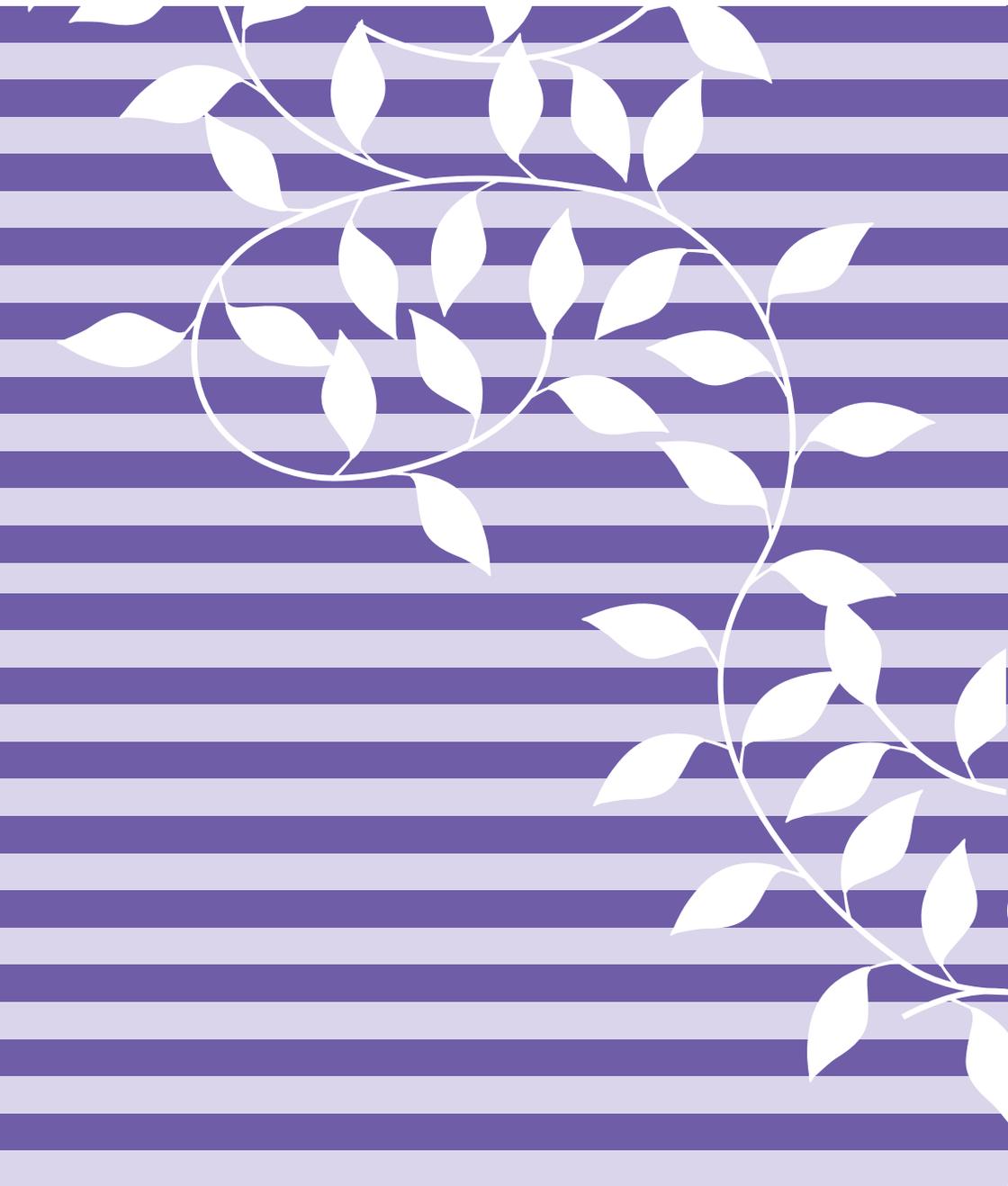


Department of the Environment



Conservation of
Iranian Wetlands Project





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1 INTRODUCTION

Wetlands ecosystems provide exceptionally valuable goods and services for human development, but they are also the most threatened type of ecosystem¹. This paradox arises because wetlands provide rich opportunities for exploitation for agriculture and fisheries as well as flat land for urban and industrial development; they are also extremely vulnerable from human impacts on their upstream water resources (dam building, water abstraction). As a result, there have been large-scale losses and degradation of wetlands, worldwide.

Historical approaches to conserving wetlands focused on the creation of protected areas to safeguard sensitive habitats and species. These have been only partially successful. More recently, the Ecosystem Approach of the Convention on Biological Diversity (CBD) has shifted this focus to promote a balance of conservation and sustainable use, recognising that wetland biodiversity will only be conserved for future generations if humans use environmental resources sustainably. The main differences between the ecosystem approach and the more traditional approach to environmental management are that it:

- Puts people (rather than biodiversity) at the heart of natural resource management

1 Millennium Ecosystem Assessment

- Extends biodiversity management beyond protected areas, to whole ecosystems
- Engages the full range of sectoral interests in an integrated way
- Decentralises management and governance to the lowest appropriate level
- Integrates conservation and sustainable use
- Recognises that (climate) change is inevitable, and promotes adaptation strategies to deal with change

Engaging stakeholders (local communities, resource users, decision-makers etc.) in wetland management is a challenging process, and the most effective way to achieve this is through integrated management planning. This process engages all the main stakeholders to agree common management objectives, and agrees the share or responsibilities for delivering those objectives. The process is usually captured in an integrated Management Plan, which is then approved for implementation by the high level stakeholders. Importantly, such management plans need to account for activities occurring in the wetland's river basin – particularly the management of water resources.

A key element of integrated management planning concerns the spatial utilisation of resources, since regulating the extent and intensity of use provides a valuable tool for achieving sustainability, or even recovery of degraded resources. This guideline addresses the use of zoning, as a tool in wetland management, and provides practical guidance for applying zoning within an integrated management plan. While there are existing guidelines from IUCN¹ and the Ramsar Convention² for preparing management plans, far less attention has been given to zoning, even though it is one of the most important tools available.

1 <http://data.iucn.org/dbtw-wpd/edocs/PAG-010.pdf>;

2 http://www.ramsar.org/cda/ramsar/display/main/main.jsp?zn=ramsar&cp=1-31-105^20857_4000_0__



2 WHAT IS ZONING?

In large and complex ecosystems, like many wetlands in Iran, human activities need to be managed to ensure that use of natural resources is sustainable. Sensitive habitats and species and important natural processes need to be safeguarded and degraded areas restored. Uncontrolled use will inevitably lead to degradation of the resource and increasing levels of conflict between users, as has often been observed.

Zoning, as a tool for managing wetlands, is similar to a land-use or urban planning scheme – it defines geographical areas within which similar levels of use are permitted and different uses segregated. Zoning is a widely used technique for guiding management approaches spatially and in a structured way. It involves the spatial delineation of different areas within and around a wetland, together with the development of regulations or “codes of practice” which define what activities may or may not be undertaken within each zone. Together, these elements comprise a Zoning Plan which is usually an important component of an integrated management plan

The size of a wetland and the objectives chosen will determine whether an area can be

managed as a single entity, or whether a system of zoning should be used, permitting

different activities in specified parts or zones. In most large wetlands which are used by people for different purposes there will be objectives which cannot be applied uniformly to the whole wetland. A zoning plan will therefore be needed.

2.1 WHAT TYPES OF ZONES ARE THERE?

Zones are used to conserve or manage different natural features and/or human uses of a wetland. Thus zones may be created to protect a particularly sensitive habitat type or species, or to define areas where eg recreational fishing or eco-tourism are allowed.

Zones are established primarily to manage human use, and may therefore vary from strictly protected areas where no human use is allowed, to multiple use areas where a range of sustainable human activities are permitted. The types and extent of use will be defined in Codes of Practice.

Zoning is usually applied throughout the year, but may also be invoked on a temporal basis where an area is managed according to the time of day, days of the week or months of the year, for example to allow for breeding seasons of birds or fish, or cultural events.

2.2 WHAT ARE THE BENEFITS OF ZONING

Zones identify where various strategies for management and use will best accomplish management objectives to achieve the Vision for the future of the wetland. Typically zoning will be used to protect the natural and/or cultural qualities while allowing a



spectrum of sustainable human uses by:

- providing protection for critical or representative habitats, species and ecological processes (eg breeding colonies of birds, spawning areas and nursery grounds of fish);
- separating conflicting human activities (eg birdwatching and hunting);
- enabling (often traditional) human activities that rely on the health of the wetlands, such as fishing, reed harvesting or ecotourism, to continue thereby providing social and economic benefits to local communities and the wider economy.
- enabling damaged or depopulated areas to be set aside to recover or be restored.

By providing control over areas designed to meet different conservation and use

objectives, zoning is a widely used and useful tool. However, zoning of a protected area is not always required - it should simplify not complicate management.

2.3 HOW EFFECTIVE IS ZONING?

Several research programmes have examined the effectiveness of zoning in different types of ecosystems and on different taxonomic groups. However, the effectiveness of zoning will very much depend on the type and effectiveness of the management system in the country concerned. For example if zoning is imposed in a top-down manner, without consultation and inputs of local communities, then it is unlikely that those communities will accept the zoning. Thus, zoning must be considered as part of an overall participatory management approach.

With effective management, there is evidence that zoning can deliver benefits both to biodiversity and to sustainable use.

FISH IN COASTAL/MARINE WETLANDS:

Globally, no-take zones (particularly in coastal and marine environments and large lakes) have been found to ¹, ²

- Minimise damage to important habitats (from aggressive fishing equipment (eg bottom trawls)
- Provide refuge for protected species, such as turtles and dugongs
- Boost species numbers, which helps the food web as a whole
- Increase the abundance of fish
- Build the resilience against threats such as climate change and water pollution.

There is documented evidence that zoning can increase the number and average size of fish and crustaceans (such as lobsters) in “no-take” zones

- Research conducted by the Australian Institute of Marine Science, on offshore reefs from Cairns to Gladstone, found coral trout is now about 50 per cent more abundant in Marine National Park (Green) Zones.
- James Cook University research in the Whitsunday Islands (New Zealand) found numbers of both coral trout and stripey sea perch were more than 1.7 times higher and average fish size was larger.

WATERBIRDS IN HUNTED WETLANDS:

There is evidence that the numbers of waterbirds using wetlands can be increased by the establishment of no-hunting / disturbance free areas³. This can also benefit humans by improving areas for birdwatching and ecotourism, but may also increase the quality of hunting in adjacent areas.

1 <http://www.coralcoe.org.au/research-tools/qpwstalks/NO-TAKE%20ZONES.pdf>

2 <http://www.jncc.gov.uk/page-1572>

3 <http://www.sns.dk/udgivelses/1999/birds/kap01.htm>

SEPARATING CONFLICTING HUMAN USES

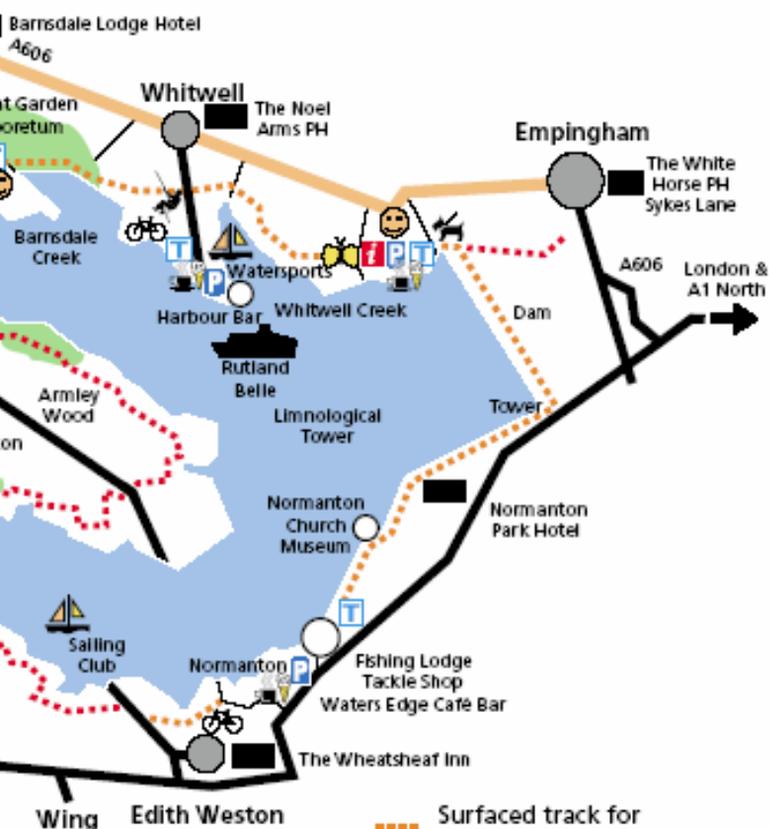
There are numerous examples from wetlands around the world where conflicts between users have been minimised by establishing zonation systems to separate different (conflicting) human uses. A good example is provided by Rutland Water (UK), an artificial lake/water supply reservoir of 1215ha. This lake was recognised to have important values for water supply, recreation, nature, archaeology and landscape. As a result, a simple zoning system was designed to:

- Conserve nature
- Provide opportunities for recreation
- Reconcile reservoir with surrounding landscape
- Conserve archaeological features
- Address issue of exposed shoreline due to draw down of water for supply
- Stimulate the rural economy

The zoning system recognized the potential of different parts of the lake (deep and shallow areas, the shoreline) and provided for separation of activities that depended on low levels of disturbance (eg. birdwatching, walking), from those that caused more disturbance (eg. boating). As a consequence, a wide range of sustainable uses and high value wildlife areas can coexist, and good interpretation facilities ensure that different interests understand the needs of each other. Rutland Water has now developed into a major recreation and tourism destination which delivers significant income generation for the local economy.

Figure 1. Zoning map for Rutland Water, UK





Watersports & Sales

Car parking

Dog walking

Children's play area

Woodland & Nature Reserve

Toilets

Climbing Centre & Sales

Surfaced track for 2004 completion

Footpaths & cycleways

Bird hides

Information Centre

Cycle hire & sales

Butterfly & Aquatic Centre

Rutland Belle

Refreshment Kiosks



3 ZONING: INTERNATIONAL POLICIES

The concept of zoning as a management tool has been promoted under a number of international mechanisms, but most particularly UNESCO Biosphere Reserves, Ramsar sites and IUCN protected area categories.

3.1 UNESCO BIOSPHERE RESERVES

UNESCO (the United Nations Educational, Scientific and Cultural Organisation) coordinates a world network of over 500 Biosphere Reserves in more than 100 countries, including Iran. These are sites recognized under UNESCO's Man and the Biosphere Programme, which innovate and demonstrate approaches to conservation and sustainable development. They are vehicles for knowledge-sharing, research and monitoring, education and training, and participatory decision-making. Biosphere Reserves remain under national sovereign jurisdiction, yet share their experience and ideas nationally, regionally and internationally within the world network of Biosphere Reserves.

Modern Biosphere Reserves are “living laboratories” for testing and demonstrating sustainable development. They have three

functions: Conservation, learning and research, and sustainable development. Zoning is fundamental to the concept of managing modern Biosphere Reserves, which should be designed around:

A core zone – the area(s) of highest biodiversity/natural value (an iconic, world class ecosystem) which should be protected by national legislation.

A buffer zone – an area which supports the core area, where local people can derive direct benefits from the ecosystem (such as through fishing and tourism).

A transition area – where individual and community contributions to sustainable development can greatly enhance environmental quality of the area.

This zoning approach is highly compatible with the ecosystem approach of the CBD, and is particularly relevant to the conservation of wetlands, where the inclusion of the upstream river basins or offshore marine areas in the transition area can be very effective in addressing water resources management issues.

3.2 RAMSAR CONVENTION

The Ramsar Convention considers zoning as an integral part of management planning and recognizes the Biosphere Reserve zonation concept as potentially applicable to all Ramsar sites, particularly where a site is designated as both a Ramsar site and Biosphere Reserve.

Although many Ramsar sites are within protected areas, where the primary land-use within the site is wetland conservation, many are multiple use sites. In the latter, the management objectives for the use of the designated wetland are broadly to ensure that the ecological character of the wetland is maintained or enhanced so as to continue to provide its values and functions for people's livelihoods and for biodiversity conservation. In these cases, zonation will be used to give additional protection to sensitive habitats and species.





Another approach to zonation is that of establishing zonation for a particular use of a site, for example for ecotourism. Here zonation would identify in which parts of a site ecotourism access can occur, where ecotourism infrastructure should be placed (e.g., the sensitive siting of a visitor centre), and from which parts of a site ecotourism should be excluded owing to the sensitivity of those parts of the ecosystem to disturbance. Such zonation schemes will generally cut across the core and buffer zones.

The Convention generally recommends establishing buffer zones around the designated wetland area. The buffer zone should be that area surrounding the wetland within which land use activities may directly affect the ecological character of the wetland itself. The objective for land use within the buffer zone should be one of sustainable use through ecosystem management, consistent with the maintenance of the ecological character of the wetland.

The dependence of wetlands on water supply from outside the wetland means that the river basin or catchment area of the coastal zone should be viewed in effect as a buffer zone, since water and land-use in these extended areas indirectly affect the ecological character of the wetland. However, particularly in the case of a wetland within a very large river basin, basin-scale or coastal zone management may be seen as a third, outer zone for management purposes, and a more limited buffer zone immediately surrounding the wetland may still be a necessary management planning tool.

The Ramsar Convention identifies some general rules that should be applied when establishing zones, regardless of their type and purpose:

- i) zonation should be established with the full involvement of stakeholders, including local communities and indigenous peoples;

- 
- ii) a full and detailed rationale should be made to explain the basis for establishing and delineating zones, and this is particularly important when establishing the limits of buffer zones;
 - iii) a concise description of the functions and/or restrictions applied within each zone must be prepared as part of the management plan;
 - iv) zones should be identified with a unique and, if possible, meaningful code or name: but in some cases, a simple numerical code may be adequate;
 - v) a map showing the boundaries of all zones must be prepared;
 - vi) where possible, zone boundaries should be easily recognizable and clearly identifiable on the ground: physical features (for example, fence lines and roads) provide the best boundaries, and boundaries based on dynamic features, such as rivers, mobile habitats, and soft coastlines, must be identified with some form of permanent marker; and
 - vii) on large, uniform sites, or in areas of homogeneous habitat crossed by a zone boundary, fixed permanent markers with locations mapped using a Global Positioning System (GPS) should be used.

3.3 IUCN PROTECTED AREA GUIDELINES

IUCN recognises zonation as an important tool for planning in protected areas.

The more strictly protected categories of protected area (I-IV), may include the following types of zone:

- Special and/or unique values zone
- Primitive/wilderness zone
- Limited development zone
- Zoning for traditional and indigenous users

Intensive development/services zones are usually avoided inside the more strictly protected area categories. The current trend is to move more intensive development to areas outside the boundary altogether. However, more intensive development within protected areas can also be well founded, particularly where the protected areas are large.

Within protected landscapes and multiple use areas (IUCN Protected Area Categories V and VI) zoning is usually employed to accommodate the varying economic, cultural and resource uses that occur. Zoning in such areas will normally be achieved using land use plans reflecting geographically based policies for different parts of the landscape or seascape. Thus one part of the area may be designated for economic activities and others conserved to protect natural values. A critical factor in the success of zoning plans is to ensure that adequate public consultation has been undertaken in their development and the outcomes are accepted by affected parties.

Zoning is a fundamental planning tool for multiple use Category VI protected areas.

Zoning sets the boundaries for activities permitted within the protected area and as such determines the different patterns of usage. The zones and the policies which apply should be described in full detail in the Management Plan. In large multiple use

protected areas, such as the Great Barrier Reef Marine Park, this part of the Management Plan is of critical importance as it reflects the activities that can be undertaken, eg commercial fishing, tourism and related activities and research.



4 **HOW TO PREPARE A ZONING PLAN**

A zoning plan is the means by which planners and managers define the purposes for

which each part of a wetland (and in some cases the surrounding area) may be used. It may be in the form of a legal document but it must be capable of being understood by those whose actions it seeks to control. Planners and managers should encourage public participation, understanding and support for the management objectives of such plans. The key to this lies in appropriate participation of users in the development of the plan, as well as good communication of the plan.

The format of a zoning plan will depend on its legislative basis and on the procedures

of the agencies responsible for the plan. It could be in the form of a locally adopted

management plan for a small wetland or a nationally endorsed legal instrument, for example for a large integrated coastal zone plan.

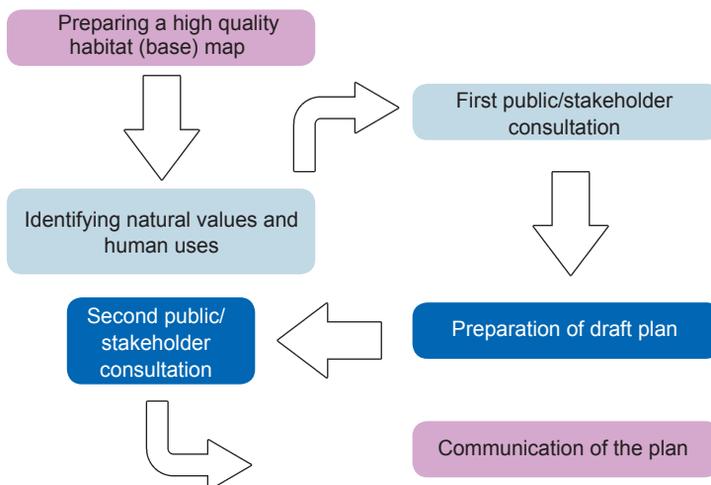
Generally, work on developing a zoning plan will only begin once the overall process of developing an integrated management plan is well under way. This means that already the

key stakeholders will have been identified, a common “Vision” for the wetland will have been identified, the values and threats of the wetland will have been assessed, and specific objectives for the management will have been defined.

4.1 THE PROCESS

There is no standard model for preparing a zoning plan which would be appropriate for all wetlands. The approach will vary depending on the size and complexity of the wetland, the detail of information available, and particularly on the level of human use. Usually this work would be undertaken as part of the management planning process, and the zoning plan would be an annex to the adopted management plan. The essential points are that the usage patterns, expectations, attitudes and local knowledge of users should be determined in the planning stage and that planning should not be allowed to become the task of remote experts with no direct contact with or understanding of local issues.

A possible model for preparing a zoning plan, appropriate for a large, nationally significant wetland with substantial government and local community involvement, might include the following six steps:



4.2 STEP 1 PREPARING THE HABITAT MAP

Preparing a high quality base map including detailed mapping of habitats within a wetland is a pre-requisite to zoning. Indeed zoning is based on identifying habitats, and separating them according to their significant attributes and uses. By using appropriate satellite image and basic knowledge of the target wetland, the different habitats within a wetland can be identified and a first draft map of habitats prepared. This draft map needs to be verified and adjusted according to the field conditions. This is a critical step and requires careful attention.

BASIC INFORMATION REQUIRED FOR PREPARING HABITAT MAPS

A habitat map is expected to delineate and describe the different habitats within a wetland. Therefore the first step towards preparing a habitat map is to identify / recognize the different habitats which exist in a wetland and the key attributes they have. Considering that zoning is an advanced step towards planning for management of a wetland, one should initially expect that adequate baseline information on the habitats is available. However if this is not the case, a field study to collect adequate information would be required.

SOURCES FOR PREPARING HABITAT MAPS:

Satellite images provide the easiest available and most accurate tool for mapping habitats of a wetland. With back-up field work for ground-truthing, satellite images can easily be processed and converted into a GIS based habitat map. Aerial photos can also be used to prepare a habitat map. This would require much more processing works before converting into a habitat map. Sometimes existing topographical maps provide adequate base for preparing a habitat map. Such maps however need extensive field works for plotting different habitats.

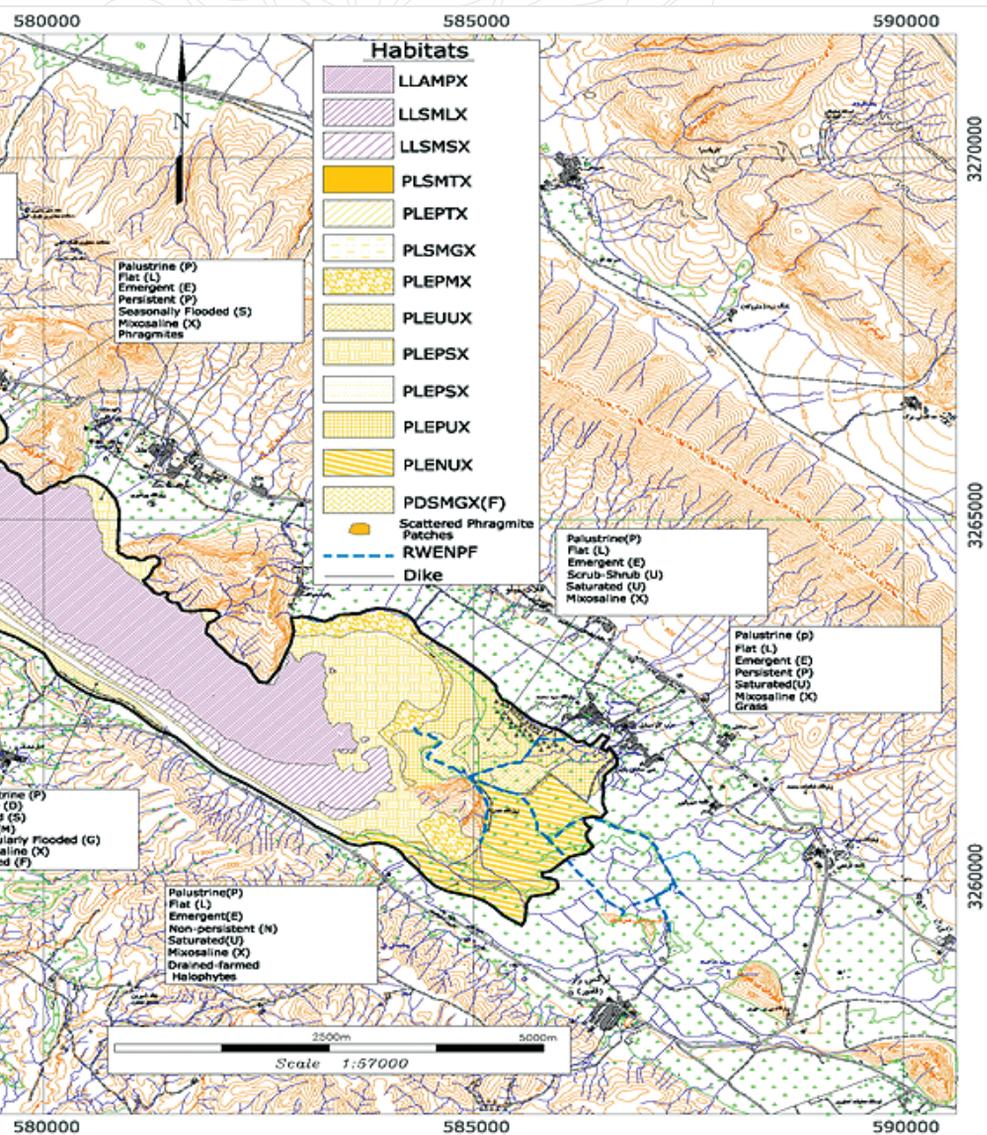
SCALE AND FORMAT OF HABITAT MAPS:

Habitat map needs to be of appropriate scale such that a target parcel of habitat could be accurately delineated. As a rule of thumb, the area to be delineated on the map should have a minimum dimension of 1.5cm. Given the actual size of the parcel of the wetland, the appropriate scale of the map could be selected. For example if the smaller dimension of the actual habitat is 200m, the scale of map should preferably be 1:10,000 and not less than 1:15,000.

The habitat maps should preferably be prepared in a GIS format. This will facilitate easier data gathering, data banking and faster referencing. Electronic dissemination / communication of such information is another important advantage of preparing maps in GIS format.

GUIDELINES FOR PREPARING A HABITAT MAP:

MedWet has published a well elaborated guideline for classification and mapping of wetlands and their habitats (Mediterranean Wetland Inventory, 4 volumes¹). Although it is basically developed for Mediterranean regions, it is well adaptable to the classification and mapping of wetlands all over the country. A summarized Farsi translation of this guideline is published by DOE. The MedWet Habitat Classification guidelines provide detailed instructions and criteria for preparing a habitat map on the basis of habitat attributes. An example of such a habitat map, prepared for Lake Parishan, is shown below:



4.3 STEP 2 IDENTIFYING THE NATURAL FEATURES AND HUMAN USES

The lead agency, perhaps with the assistance of consultants, should work with local experts and users to assemble, quantify and map information on the natural values and human uses of the wetland. This is usually best addressed in a workshop or series of workshops which bring together the biodiversity experts and users, so that they develop a common understanding.

NATURAL FEATURES

The work can begin by developing a list of the most important natural features of the wetland, including habitats, species, landscape features, archaeology and cultural sites. These should then be marked on the base map. Once this summary map has been prepared, a sensitivity map can be drawn, classifying the features into High, Medium and Low Sensitivity areas by the use of different colour.

- **HIGH SENSITIVITY:** Areas where human disturbance and use must be strictly limited in order to meet the objectives of the management plan. These might include critical waterfowl breeding and feeding grounds, locations used by globally threatened species, as well as fish spawning areas.
- **MEDIUM SENSITIVITY:** Areas where a limited range of human activities might be possible while still meeting the objectives of the management plan. Often, Medium sensitivity zones included other sections of the wetland that have not been classified as of High or Low (see below) Sensitivity.

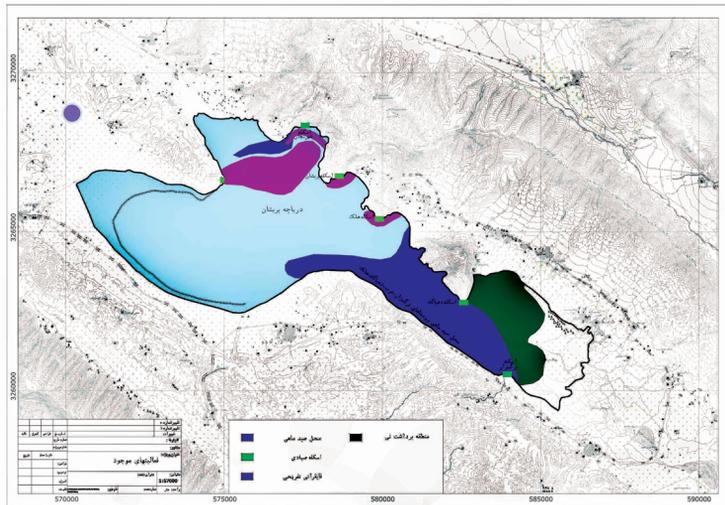
- **LOW SENSITIVITY:** Areas where a wide range of sustainable human activities can proceed while still meeting the objectives of the management plan.

In addition, the needs for, and boundaries of, a BUFFER ZONE surrounding the wetland, should be identified for inclusion in the zoning plan and codes of practice, because activities in this zone could have a direct impact on the condition of the wetland. Key risks to consider in delineating the buffer zone include: human disturbance, construction of infrastructure, inputs of agro-chemicals, etc.. Buffer zones may be of fixed width around the wetland boundary, or may vary in width eg in relation to topography.

HUMAN USES

Using the same approach as for the natural features, a list of the main human uses of the wetland and its immediate surroundings should be drawn up (eg Fishing, Recreational angling, birdwatching, reed harvesting etc.). Each of these uses can then be marked on the base map, using as much local knowledge as possible (fishermen know a lot more about fishing than do consultants!). If necessary, the extent of use can be divided into High, Medium and Low importance.

Figure 3 Map of Human uses for Lake Parishan



4.4 STEP 3 FIRST PUBLIC/STAKEHOLDER CONSULTATION

The lead agency should seek public comment on the accuracy and adequacy of review materials and suggestions for content of the proposed zoning plan. Therefore, once the basic data on natural features and human uses has been gathered, it should be prepared in attractive, user-friendly maps, together with an explanation of the purpose and process for preparing the zoning plan. This should then be distributed widely to key stakeholders for comment. Different mechanisms may be used for this, including mailings, noticeboards, bilateral sessions with different stakeholder groups and the possibility of holding public engagement meetings in local villages and towns. The use of a short, structured questionnaire to gather feedback from the consultations may be very useful.

The results of these consultations should be used to amend the baseline information on natural values and human uses, and to inform the process that will be used to finalise the plans. Often,

such consultations will identify issues and conflicts that will need to be accounted for in the zoning.



Zoning workshops “participatory discussions”

STEP 4 PREPARATION OF THE DRAFT ZONING PLAN

In workshops with representatives of the main stakeholders, the lead agency should prepare a draft zoning plan and materials explaining the plan for the users, public or appropriate representatives.

DEFINING THE OBJECTIVES

The first step is to define the specific objectives for each zone. In generic terms these might follow the list below, but in each case the specific attribute or human activity concerned should be detailed:

- To provide protection for critical or representative habitats, ecosystems and ecological processes;
- To separate conflicting human activities;
- To protect the natural and/or cultural qualities of the wetland while allowing a spectrum of reasonable human uses;
- To reserve suitable areas for particular human uses, while minimizing the effects of those uses on the wetland; and
- To preserve some areas of the wetland in their natural state undisturbed by humans except for the purposes of scientific research or education.

IDENTIFYING THE ZONES

Having identified the objectives for the zoning, the next step is to identify the management zones themselves. There is no set formula for achieving this, but the starting point is the management objectives. The zones are identified using the best information available and the professional judgement of the experts and user representatives. Factors to take into account may include:

- protection of exceptional resource values;
- constraints imposed by the landscape and other ecological determinants e.g. slope, soil type and hydrology, landscape values;
- provision of a diverse range of appropriate visitor use experiences;
- elimination or minimisation of uses and activities that

either damage natural re -

sources or create an undue burden on management;

- the capacity of the protected area to support different types of desired uses and development;
- the results of public participation or consultation
- government policy and decisions regarding land use; and
- established uses by local people and communities.

Putting lines on maps can be very controversial, particularly where there are existing conflicts between users. It is important therefore to establish “ground-rules” for the discussion, which might include: a) respect for the opinion of others, b) focus on the Vision and solutions, not problems, c) “park” issues that cannot be resolved at this stage, so that they don’t destroy the whole process. Computer generated zoning scenarios (options) can be a very useful tool where appropriate information is available at the right scale. Different overlays of information can be integrated to help arrive at the optimum balance between conservation and use, thus meeting the objectives established for the wetland.

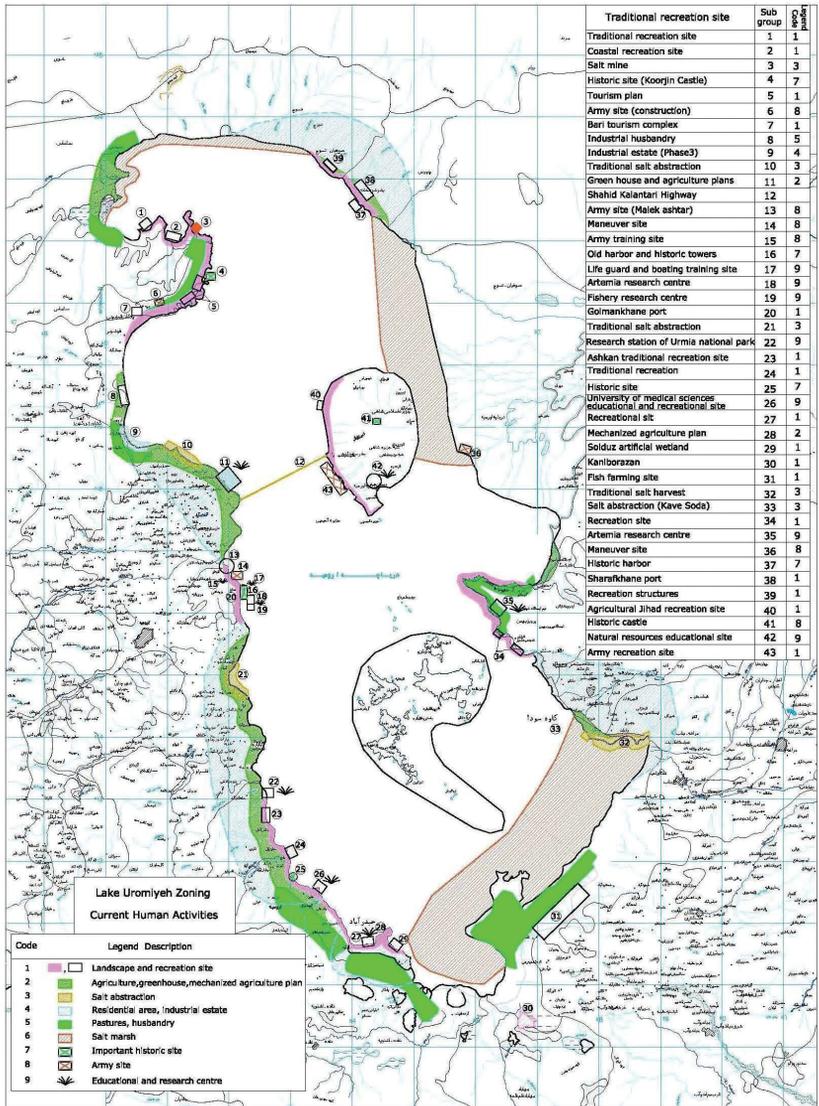
Care should be taken not to create too complex a pattern of zoning. The adoption of

multiple zones with only slight differences between them can be confusing to the public

and management alike. The aim should be to use the minimum number of zones needed

to achieve the management objectives. Where zoning is used, zones should be able to be easily identified by visitors/users and to enable them to know what zone they are in and therefore what constraints apply. This is particularly important for zoning in open waters. The use of natural boundaries (eg tracks, or changes in habitat) will make the zones easier to identify (but see “Boundary marking” below).

An example of a zoning map for LU



CODES OF PRACTICE

Once the zones have been identified, the final step is to agree the Codes of Practice to be followed for each zone. This can take the form of either or both of a) a simple table which shows which activities are allowed in which zone; or b) a more detailed written “Code of Practice” for a certain activity. An example might be “Boating on a lake”, where the code of practice might specify: where the activity is allowed, at what times, how many boats, what type of boats, what speeds, where anchoring is allowed etc etc. Examples of such Codes of practice are shown below:

Sensitivity	Location	Current human activities	Activities that should be allowed
High	Islands	None, except conservation activities	This column to be completed by the working groups
	Satellite wetlands	Grazing, recreation, water ,abstraction Soldouz manmade wetland, mechanized agriculture	
	Estuaries of rivers	<u>Shahrchai and Barandooz estuaries</u> : agriculture <u>Zarinerood and Siminerood estuaries</u> : fish farming <u>Mahabad river</u> : Kaniborazan recreational site <u>Godar river</u> : rangeland	

Table of allowable activities for LU

	Offshore	None	
Medium	Coastal areas	<p><u>East</u>: Sharafkhaneh recreational constructions, recreational site, Ajichai estuary, Ajabshir army manoeuvre site, grazing, culture of Artemia, recreational sites, salt abstraction (traditional and Kave Soda), agriculture, road, army site, natural resources researches, grazing, Agricultural Jihad .recreational site</p> <p><u>West</u>: Education and recreation centre of university of medical sciences, recreational site, Uromiyeh national park research station, traditional salt abstraction, rural wastes landfills, Golmankhaneh recreation centre, Artemia research centre, army bases, greenhouse agriculture, industrial estate (outside boundaries), agriculture, .animal husbandry</p>	
	Islami Island	None	
Low		Bari recreational site, army manoeuvre site, rangeland, coastal recreational site, agriculture	

Activities	Where	Codes of Practice
Bird-watching Cycling Horseback riding *Boating Hiking/Caving/ Photography Swimming Recreational fishing Camping/picnics *Research	<ul style="list-style-type: none"> ● Buffer area ● Low Sensitivity Zone ● Medium sensitivity zone (by permit and accompanied) 	<p><u>Conditions for visit into the Lake</u></p> <p>Any visit to inside the Lake should be accompanied by a guide who is preferably a DoE guard</p> <p>A minimum distance of 100m should be kept for observing waterfowl in their breeding or feeding grounds (the peak breeding season is from October to March). Flocks should not be put to flight</p> <p>Motor boats to the Lake should be limited in terms of number. To reduce disturbance to the waterfowl the motor size should be less than 25hp and the speed less than 10km/hr</p> <p>Fishing in the lake should be limited to recreational fishing and sustainable fishing (traditional) – See “Codes of Practice for Fishing</p> <p>Night photography forbidden</p> <p>Hunting forbidden</p> <p>Entrance fees should be received from all visitors and the number of visitors should not exceed 100 persons/day</p> <p><u>Disturbance and wastes</u></p> <p>No garbage allowed in and around the Lake</p> <p>No fires allowed in and around the Lake</p>





		Noise/Disturbance to be minimised in and around the Lake No pollution allowed in and around the Lake
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4.5 STEP 5 SECOND PUBLIC/STAKEHOLDER CONSULTATION

The lead agency should seek comment on the draft zoning plan. This second consultation could use any of the mechanisms used during the first consultation. The agency should then prepare a revised (final) zoning plan, which takes account of comments and information received in response to the draft plan.

The final draft plan should then be submitted for formal approval by the relevant authorities. This might occur at a number of hierarchical levels, depending on the importance of the wetland, including a) local Management Committee; b) Provincial Management Committee/authorities; c) National authorities. In many cases, the zoning plan will be approved as an integral component of the overall management plan for the wetland.

Formal approval of the plan should be announced to all local stakeholders, including clear information on when the measures enter into force.

4.6 STEP 6 COMMUNICATION OF THE PLAN

Dissemination of the zoning plan

The zoning plan needs to be communicated very widely to all key stakeholders and users of the wetland, and to be available to anyone who may visit the wetland. In formal terms, the approved

zoning plan will be annexed to the integrated management plan for the wetland. However, more proactive and user-friendly communication mechanisms are needed.

A very useful tool will be a simple colour brochure which describes the zoning plan. This can be distributed widely, and made available at visitor centres, tourist information points etc.. Additionally, the brochure can be displayed on notice boards at relevant locations. Another useful tool for certain stakeholders (eg fishermen) is to make plastic laminated sheets showing the zoning maps and specific codes of practice. These can be pinned up at the mooring points, or even carried in each boat.

Marking the zones

The boundaries of the zones need to be clearly demarcated on the ground so that users and visitors know where they are. Where possible, boundaries will have been chosen to correspond with existing features on the ground (eg roads, habitat boundaries, fences etc). However, where these do not exist, and where there is a need for visible markers, these should be put in place. Note however, the importance of minimising any negative impacts on the landscape, ecology or hydrology of the area (eg digging large ditches/dykes is not usually a good method).

Demarcation could be done in different ways and with the use of different materials. No matter of differences, the markers should be easily visible, stable, durable and cost effective. The markers need to be located in safe locations that do not interfere with public or wildlife passages. Different demarcation tools include: fences, wooden, steel or stone/concrete posts (with, or without flags), or (in water) marker buoys. In the latter case these will need to be secured by chains or ropes to concrete weights that will not move in storms.



The plan for demarcation should be decided in advance on the map. This will save time for field workers for installation of the markers, prevents installing unnecessary markers. Distances between markers is a matter of objectives, material and costs. For example, the distances between markers will often be closer depending for more sensitive habitats. In executing the demarcation plan, adequate reserve of material, equipment and labour should be provided such that the entire work or independent segments of it could be completed without long interruptions.

Accurate locating of the markers is an important step in installation stage. Given the coordinates of each marker, their actual location in the field could be determined using a GPS. The 4m accuracy of GPS will usually be adequate for locating the markers. Sometimes the habitat features (boundaries of vegetation type, water surfaces, etc) could lead to a more accurate locating of the markers. However if more accurate locating of markers is required then more accurate instrumentation should be provided.

Installation of markers needs to be done by a skilful group and markers need to be installed firmly. In habitats with tall vegetations, the markers need to be tall enough such that they can be easily visible.

In sensitive areas, markers should be associated with a notice showing the sensitivity of the habitat, and codes of practice.



Boundary Markers used for Lake Urumiye



5 ENFORCEMENT AND REVIEW

5.1 ENFORCEMENT OF THE ZONING PLAN

The most important point in preparing for the enforcement of the zoning arrangements is that those who are likely to be affected have been fully involved with the preparation of the zoning plan, and have agreed with its measures. In this way, a collegial support for the implementation of the zoning will have been established both within and between stakeholder groups, such that any infringements will reflect irresponsibility by the individual concerned.

Good communications and interpretation materials are also crucial to inform occasional visitors to the wetland, who may not be aware of the zoning arrangements.

Self-enforcement by the different user-groups is a powerful tool. Ecotourism managers, boat operators, fishermen, farmers etc should all be encouraged to regularly review implementation and enforcement through their associations, and to bring improvements to implementation themselves.

Despite all these measures, there will of course be infringements – some uninformed, some unintended and others intentional. An appropriate and proportionate code of response will need to be developed by the enforcement authority, ranging from providing information, to providing warnings, to fines, and arrests. Such measures will require close coordination with, and training of, the police and judiciary.

5.2 MONITORING, EVALUATION AND REVIEW

The effectiveness of the zoning plan should be reviewed regularly – usually by the local management committee. A first review might be made one year after implementation entered into force, and then further reviews be conducted at 5 year intervals – at the same time as the review of the integrated management plan.

The review should be based on a regular monitoring of the implementation of the management plan, and an evaluation of whether the objectives of the zoning are being met. This will require answer to questions such as:

- Are the threatened wildlife species for which the zones have been established showing a positive response to the zonation measures?
- Are the archaeological or cultural sites that have been protected by the zones still being damaged in any way?
- Have the conflicts between the fishermen and the DOE been reduced?

Answers to such questions should be provided through expert studies based upon the results on monitoring at the site.

As a result of these evaluations, the zoning plan may need to be updated or amended, and then re-approved by the relevant authorities.



