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Creation and Management of Marine Protected Areas in Northern Ireland

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Creation and Management of Marine Protected Areas in Northern Ireland

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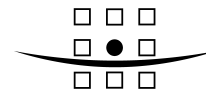
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Creation and Management of Marine Protected Areas in Northern Ireland

5th May 2005
Final Report
9R0164

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EXECUTIVE SUMMARY

As part of its continuing commitment to “protect and conserve the natural and built environment and to promote its appreciation for the benefit of present and future generations”, the Environment and Heritage Service of Northern Ireland commissioned Royal Haskoning to produce a report that provides recommendations relating to the creation and management of Marine Protected Areas (MPA’s).

MPA’s are widely regarded as one of the most efficient mechanisms for protecting biodiversity and ensuring the sustainable use of natural resources in the marine environment. They are especially useful where there is a need to manage multiple, ongoing activities that could potentially impact the marine environment.

This report introduces the concept of MPA’s, their structure, form and function and the various constraints and opportunities they present. Building from this, the report considers the lessons that can be learnt from the MPA designation process in the UK and abroad. The report goes on to discuss the tools (both required and readily available) that will facilitate MPA designation in Northern Ireland (summarised in **Appendix 1**). It should be noted that at present, there is no specific legislative mechanism that enables actual MPA designation within Northern Ireland. As such, this report considers that one way forward in the short term, would be to create an initial list of pilot MPA’s (referred to as “Stage 1”) that could be designated as Marine Nature Reserves (MNR) under the Nature Conservation and Amenity Lands (Northern Ireland) Order 1985. It is however, recognised that a MNR is not likely to be the most applicable mechanism to protect the full range of natural, social and cultural resources that fall within the scope of an MPA. However, MNR’s allow for the use of byelaw powers to enable multisectoral nature conservation management out to the 3 nautical mile (nm) limit. The sites considered for inclusion in Stage 1 are discussed in **Appendix 2**. To date only one MNR has been established at Strangford Lough, and the effectiveness of MNR designation has been questioned in this respect. However, before the use of MNR’s as a primary and immediate tool can be dismissed further study is required to establish if the designation could be more effective in areas with simpler management issues or a more singular nature conservation focus. Following on from Stage 1, the report provides a potential structure for “Stage 2”, which involves either amending existing legislation or formulating a new instrument, through the Assembly, that will allow the designation of a multiple use MPA in line with the definition adopted by the World Conservation Union (IUCN).

The key recommendations of this report are as follows:

1. The broad process for MPA designation in Northern Ireland should follow a range of functional methodologies including multiple use based MPA’s and No Take Zone MPA’s;
2. The designation of a pilot suite of MPA’s, underpinned by MNR’s should be evaluated as soon as possible; and
3. Existing legislation is amended, or new legislation developed to allow for the designation of MPA’s, aimed at preserving or enhancing ecological, social and/or economic marine values, while enabling the sustainable management of marine resources.

1 INTRODUCTION

There are increasing demands on the marine environment, many of which could cause widespread declines in ocean health. As a result of this, many nations are taking up the initiative of designating networks of marine areas in order to protect their most important marine habitats, species and cultural heritage sites.

Within Europe, one of the most significant drivers for the setting up of an integrated network of marine areas is EU legislation that provides for the designation of Special Areas of Conservation (SAC). This has enabled sites to be designated in order to protect specific habitats and species. The difference between SACs and the concept of Marine Protected Areas (MPA) is that an MPA could be designated for a broad variety of reasons and to protect a number of different characteristics, including natural and heritage value. The provision of an MPA can also allow for the creation of specific management bye-laws (depending on source legislation). SAC management is largely based on the control of “permitted” activities which may have a significant effect on a specific species or habitat. The Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention) is the current instrument guiding international cooperation on the protection of the marine environment of the North-East Atlantic and one of the strategies of the OSPAR Convention is the Protection and Conservation of Marine Biodiversity and Ecosystems. This strategy includes the creation of an ecologically coherent network of well managed Marine Protected Areas. In a Northern Ireland context the concept of MPA’s is supported through one of the recommendations within the Northern Ireland Biodiversity Strategy, which is to ‘set up appropriate new bodies for MPA’s to ensure more effective management’. MPA’s are effectively specific areas that are given a higher level of protection than the surrounding environment. In this way their ecological, social and economic values are afforded conservation measures and are protected from specific activities that could cause their loss or decline.

The use of MPA’s is widely regarded as one of the most efficient mechanisms for protecting biodiversity and ensuring that the use of natural resources is sustainable. MPA’s are also highly effective where there is a need to manage multiple, ongoing pressures on the ecology of a defined area. The many functions of MPA’s can be listed as follows:

- Conservation of biodiversity;
- Sustainable management of natural resources;
- Protection of endangered species and habitats;
- Reduction of conflicts between various users;
- Provision of an educational resource;
- Provision of research opportunities;
- Enhancing commercial and recreational activities;
- Enhancing tourism potential of an area;
- Protection and management of areas of significance within the lifecycles of economically important species;
- Prevention of damage to key resources from outside activities;
- Provision of areas for the continued welfare of people affected by the creation of MPA’s;
- Preservation of historical and cultural sites; and

- Management of landscape and visual amenity values of the coast and coastal waters.

MPA's can be a very useful tool but their effectiveness is dependent on the implementation process and whether they are supported by effective legislation. They can also be designated to cover a very broad requirement but also can be specific for a certain species or habitat, for example. However, it is important to realise that MPA's alone cannot protect the marine environment and that it is also necessary to manage the areas outside of the MPA to ensure that MPA's do not become islands protected within a degraded environment.

2 SCOPE OF STUDY

The overall aim of the study has been to produce a report providing recommendations relating to the creation and management of Marine Protected Areas (MPA's) in Northern Ireland. The desk-top study entailed reviewing existing management structures and instruments in relation to the marine environment including those for Northern Ireland as well as those implemented within a European and global context.

The key outputs of the study were to:

- Identify areas that could qualify as MPA's within Northern Ireland;
- Report on current structures and instruments for managing MPA's in Northern Ireland and their effectiveness;
- Provide recommendations for the establishment of an effective management framework for MPA's in Northern Ireland; and
- Recommend available management measures.

3 CONCEPT OF MPA'S

MPA's are not a new concept. The term MPA has been in general use for over two decades in countries such as the United States of America. However, the meaning of MPA varies considerably between nations and people. Some consider them to be sheltered reserves, free from human disturbance. Others believe they should be specially managed areas, designed to enhance sustainable ocean use. The most commonly adopted definition of an MPA is that of the World Conservation Union (IUCN):

“any area of intertidal or subtidal terrain, together with its overlying water and associated flora, fauna, historical and cultural features, which has been reserved by law or other effective means to protect part or all of the enclosed environment”.

For the purposes of this document, the above definition is used whenever reference is made to an MPA. The adoption of the IUCN definition has meant that, in those countries that have established an MPA network, there are many different types of MPA that have vastly differing goals and management priorities (i.e. *inter alia* marine sanctuaries, fishery management areas, national parks, protected monuments and cultural sites). In approaching this project, it will be crucial to develop criteria for the identification, establishment and management of MPA's in Northern Ireland that is based on a “common language” approach that will avoid the inevitable confusion that arises as a result of the use of a term that means different things to different people.

There are many challenges faced by those during the MPA designation process. These include the following aspects:

- A general lack of information on the marine environment. This relates to the relative lack of accessibility to the marine environment compared to the terrestrial environment. This means that data is lacking for many sites in order to define the full attributes of any given area;
- Knowledge of the actual impact of certain activities on a given resource. Although this information is growing all the time with appropriate research aimed at better definition of effects and their scale of influence there are limitations to this knowledge; and
- The need for a widely accepted ‘common language’ approach to MPA's and guiding principles thus ensuring an effective network of protected sites. A co-ordinated approach is necessary for the future to ensure that this approach can be effective for marine conservation at a local, regional and national level.

Despite these challenges MPA's have been set up all over the world and have provided effective protection for many areas thus conserving core values of areas under threat from human activity.

The following sections describe the structure, form and function of MPA's and also outlines some of the key points to come out of past experiences involving the setting up of MPA's. Examples of good, and bad, practice are also highlighted. It is hoped that in this way instigators of MPA's can learn from the experience of others thus enabling a smoother process of designation.

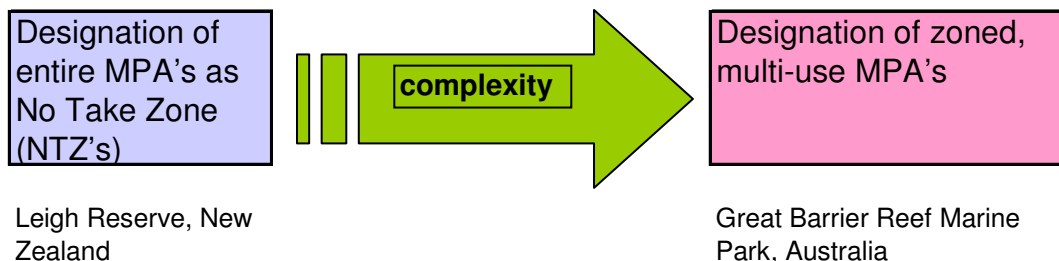
4 MPA STRUCTURE, FORM AND FUNCTION

MPA's are best described as a concept rather than a specific singular tool for marine resource management. Under the umbrella of marine areas around the world referred to as MPA's a wide variety of differing types of reserve can be found. For the purposes of explaining the scope of flexibility in MPA designation, MPA options are described in terms of structure, form and function see **Box 4.1**

Box 4.0 MPA structure, form and function		
	MPA	Example
Structure	broad approach taken to MPA designation	Simple NTZ or multiple use reserve
Form	the specific mechanisms chosen	Size, extent of features included
Function	the intended impact of the MPA	Nature conservation, cultural heritage

4.1 MPA structure

Approaches to MPA designation and management, vary from simple management agreements to complex multiple use reserves such as the Great Barrier Reef Marine Park in Australia (http://www.gbrmpa.gov.au/corp_site/management/zoning/index.html) (see **Appendix 3** for more detail). Broadly speaking however, the form of MPA designations around the world, fall somewhere within a sliding scale of complexity ranging from:



The key to successfully managing an area as an MPA is dependent on the provision of an appropriate level of effective management, which is acceptable in a social and political sense and yet also ensures that ecological or cultural values are not compromised. Whilst the provision of large NTZ's may initially seem to offer the highest degree of protection to an area, it should also be considered that such mechanisms can only be utilised where there is extensive political and community support for such initiatives. The pursuit of large NTZ's in areas where the local economy is currently dependent on marine resource extraction or where there is a strong historical precedent of access to the area in question, can lead to the exclusion of the local community from the initiative of MPA creation. Large NTZ's may also provide a level of management which is unnecessary for the protection of the areas key values, given existing or emerging levels of extraction or use. At the other extreme, overly complex, multiple use, intricately zoned reserves, can lead to confusion amongst stakeholders regarding what the objectives of the MPA actually are and can be expensive and/or impossible to enforce compliance with the zoning obligations.

There is a clear need therefore, to carefully consider the social setting, management objectives and available resourcing levels in determining the structure chosen for any given MPA. Factors for consideration in this exercise should include an assessment of:

- The extent, type, condition and sensitivity of the resource(s) under threat;
- The extent to which such resources are (or have been) utilised as a social or economic resource; and
- The degree of political and social support for the designation and management of the MPA.

A considered approach to appropriateness of the form of MPA chosen is therefore required to ensure that the option chosen is applicable to the local situation. A simple NTZ may be wholly appropriate in areas that are severely degraded or are of unique ecological importance, however a multiple use based approach may be more appropriate to areas that have been selectively degraded, or experience high levels of commercial and recreational use within specific areas.

4.2 MPA form

In addition to the MPA structure outlined above, an MPA can take many forms dependent on the management tools available and the management requirements of the given area. MPA form can also be said to offer a sliding scale of complexity from intricately zoned expansive areas to a simple small, localised single use area. Again, there is no simple answer to determine the correct approach, it is dependent on the objectives of the site and the legislation and enabling mechanisms available, the social context and the complexity of the management issues faced. The variables that determine the overall form of any MPA relate to the following factors:

Extent

The spatial area covered by an MPA can include a whole range of habitat from terrestrial areas shaped by coastal processes (e.g. sand dunes) to deep water offshore areas. MPA's can be drafted to include a whole range of habitat type from terrestrial areas out to offshore areas or can be confined to selected or singular habitat types. The extent of most MPA's is determined by the need to manage threats to marine resources (which are typically concentrated on the foreshore or inshore areas) and on the mechanisms available from relevant legislation. The extent of any suite of MPA's is also clearly confined by the spatial area available for reservation under the enabling legislation.

Size

Marine reserves vary in size largely according to the distribution of the resources under threat. The Great Barrier Reef Marine Park for example covers an area of over 350,000 square kilometres, whilst the No-Take Zone within the Lundy Marine Reserve is intended to protect localised nationally important communities and covers only 3.3 square kilometres. Clearly the size of any MPA should be established in regard to whether the intent is to protect an entire community, assemblage or other resource or whether the requirement is to protect representative areas of widely distributed resources. Reserve boundaries may also be confined to areas which form a specific ecological function (e.g. spawning grounds) or social resource (e.g. a wreck site).

Zoning Type

As mentioned previously zoning schemes can range in complexity from simple binary zoning structures (a general use area with some generic restrictions on activity, plus a restricted area where specific or all activities may be excluded) to intricately zoned schemes developed according to localised patterns of use and threat to resources. Zones can, in theory and subject to available source legislation, manage or exclude any activity that threatens an identified resource. In addition to the spatial element of zoning, temporal restrictions can also be developed linked to specific zones for critical periods where a resource may be under threat (e.g. fish breeding or spawning cycles or annual aggregations of cetaceans). If the path of selecting a zoned MPA has been taken, there will still typically be areas of the reserve set aside as NTZ's or 'Sanctuary Zones'. The actual size or percentage of the NTZ within the MPA which still serves a valid function has been the source of much debate and is clearly also linked to the specifics of the resource under threat. A generally accepted rule of thumb has been developed by the GBRMPA which recommends that at least 30% of any MPA should be zoned as a NTZ¹. GBRMPA have used this figure in the revision of their zoning scheme.

4.3 MPA function

In a similar fashion to any protected area, MPA's can be established in order to fulfil a range of functions. The IUCN classify protected areas into six broad functional types (IUCN 1994: Guidelines for Protected Area Management Categories) dependent on the primary objective of the reserve. Kelleher and Recchia (Kelleher and Recchia, PARKS Magazine Vol8 No.2) have further developed this classification, to the extent that any MPA can be placed accurately within these categories based on its core objectives. In establishing an MPA it is beneficial to establish the category appropriate to the area in question since this enables a) greater clarity and insight into the vision and purpose of management measures; b) efficient comparison with other global reserves so that best practice can be established and applied; and c) appropriate use of international guidance. It should be remembered that the IUCN listing has been developed for an international application, and so a Canadian National Park, for example, may fall into an entirely different category to a National Park within Northern Ireland. In this respect, the IUCN classification offers a similar universal comparative convenience similar to the use of scientific rather than common names for species. A category IV reserve will have the same objectives in Northern Ireland to the same category of reserve anywhere in the world. In the category listing provided below, Northern Ireland equivalent protected areas are offered where appropriate.

In determining the classification of a reserve type, consideration must also be given to any zoning regime. For example the Great Barrier Reef Marine Park is defined as VI (Ia, Ib, II, III, IV) – which would indicate the MPA as a whole falls within category VI, whilst specific zones may fall within other categories.

¹ http://www.gbrmpa.gov.au/corp_site/management/zoning/documents/93_jagob.pdf

IUCN RESERVE CLASSIFICATION

1. Areas managed mainly for science or wilderness protection
Typical Area Type: Wilderness Area

1a – Area possessing some outstanding or representative ecosystems, geological or physiological features and/or species.

Intent – Scientific research or monitoring.

1b – Large area of unmodified or slightly modified land, and/or sea, retaining its natural character or influence without permanent or significant habitation.

Intent – preservation of the natural condition.

2. Areas managed mainly for ecosystem protection and recreation
Northern Ireland Protected Area Type: National Nature Reserve

Natural area of land and/or sea, designated to (a) protect the ecological integrity or one or more ecosystems (b) exclude exploration or occupation to the purposes of designation of the area and (c) provide a foundation for educational, scientific, recreational opportunities all of which must be environmentally and culturally compatible.

3. Areas managed mainly for conservation of specific natural features
Typical Area Type: Natural Monument

Area contained in one or more, specific natural or cultural features which are either outstanding or unique value because of their inherent rarity, representative or aesthetic qualities or cultural significance.

4. Areas managed mainly for conservation through management intervention
Typical Area Type: ASSI, SPI, SAC, SPA, Ramsar, MNR

Area of land / or sea subject to active intervention for management purposes so as to ensure the maintenance of habitats and/ or meet the requirements of specific species.

5. Areas managed mainly for landscape and seascape conservation and recreation
Northern Ireland Protected Area Type: National Park

Area of land with the coast and sea as appropriate, where the interaction of people and nature over time has produced an area of distinct character with significant aesthetic, ecological and/ or cultural value, and often with high biological diversity. Safeguarding the integrity of this traditional interaction is vital to the protection, maintenance and evolution of such an area.

6. Areas managed mainly for the sustainable use of natural ecosystems.
Typical Area Type: Managed Resource Protected Area

Area contained in predominantly unmodified natural systems, managed to ensure long term protection and maintenance of biological diversity, while providing at the same time a substantial flow of natural products and services to meet community needs.

5 LESSONS LEARNT AND KEY POINTS

5.1 Introduction

The following key points are selected in order to provide guidance for the future when defining the framework necessary for implementation of MPA's within Northern Ireland. Many of the key points are extracted from case studies that have implemented MPA's throughout the world.

5.2 The role of science in the MPA designation process

The importance of good science in achieving protection of marine areas is without doubt. It is essential to understand the existing natural environmental characteristics of an area before trying to define its sensitivity to particular threats. It is also essential to understand the social science of an area (i.e. the requirements of the local community and other users of the marine environment) in order to fully understand their needs and reliance on marine resources. From collating this information it is possible to gain an understanding of the vulnerability of the marine environment and, from this, stems the identification of appropriate management and protection for the valued resources.

It is acknowledged that it is not always possible, due to financial and often logistical burdens, to acquire the level of knowledge that enables a full understanding to be achieved. But it is also important to realise that steps can be taken to achieve specific actions based on available information as long as the facilitators appreciate the limitations and can gain an understanding of the site and its interactions. It is important, in this respect to list any assumptions made and to define the data gaps for prioritisation for research at a later date.

The inclusion of social sciences in this respect is something that is often limited during the MPA designation process. MPA news (February 2004) discusses the issue relating to the use of science for MPA's and states that "Regrettably, studies on social dimensions of MPA's have been uncommon." This could be a factor influencing the acceptability of the MPA for many of the users.

5.3 Effective Consultation and understanding

Good practice in terms of the establishment of MPA's stems from good consultation throughout the designation process. The role of consultation is one of the most important parameters and if undertaken effectively can have considerable influence on the successful outcome of the process.

Effective consultation relies on involving local communities and stakeholders at an early stage of the process and ensuring that all viewpoints are considered. It is only with the support of local communities, users and stakeholders that a MPA can be successful. The transparency of the process is therefore crucial with a need for clear definition of the role of the consultation process and the establishment of an effective decision-making authority. It is important, both for the facilitators and for the consultees, that the whole process required for MPA designation is clear from the start. That is not to say that the process cannot be flexible but that the steps to be followed are set out in advance and that any changes are justifiable and have been adapted due to the needs of the designation process.

A document produced for The National Marine Protected Areas Center NOAA in 2004, outlines a number of lessons learned from several case studies (Bernstein *et al*, 2004). Of these lessons, the first one relates to ‘setting the stage’. The evaluation of the case studies revealed that avoidable challenges arose when process managers failed to take time to fully understand the social, political and ecological landscape that informs the designation process. This can be avoided through effective consultation with user groups and ensuring a clear understanding of the consequences of the actions that may occur as a result of the MPA. Another clear lesson from these case studies is the importance of using facilitators who are experienced in relevant fields and have the necessary skills to carry out effective conflict management. One of these case studies, for the San Juan County/Northwest Straits bottom fish recovery zones (Berstein *et al*, 2004), revealed a number of lessons including one stemming from the fact that there was a perception among participants that federal and state officials charged with responsibility over the sanctuary effort did not have a firm understanding of the affected communities or the local challenges they faced. There was therefore a fear that ill-informed “outsiders” were attempting to push an agenda on communities they had no connection to or stake in.

A further example of the importance of effective consultation is shown in **Box 5.1**, which illustrates the role of the facilitator. The success of this initiative (Chumbe Island Coral Park, Tanzania) appears to be attributed, in some part, to the use of local fishermen as park wardens. Such people would have a clear understanding of the needs and concerns of local users and would be able to talk in the same technical language. This is likely to have been a considerable benefit to this project.

Box 5.1 Chumbe Island Coral Park, Tanzania

Chumbe Island lies 8 miles to the south-east of Zanzibar and covers about 20 hectares. It supports an abundance of coral and fish species. The Chumbe Coral Reef Sanctuary was officially gazetted by the Zanzibar Government in 1994 as a totally closed small MPA (effectively a No-Take Zone).

Several fishermen from neighbouring villages have been trained as park wardens. They patrol the reef and forest, carry out some monitoring operations in the protected area and act as guides for the local population and tourists. They played a particularly important role in raising awareness among fishermen from neighbouring villages, resulting in a more positive attitude towards the park.

Conflicts with the Authorities and fishermen became problematical on several occasions, but the local populations now have considerable respect for the project, thanks to the hard work and patience on the part of the park wardens. Fishermen from neighbouring villages are refraining from fishing inside the park’s boundaries, and are also reporting an increase in catches since the sanctuary was established. Training and education is provided for park wardens, and through them for fishermen, children from neighbouring schools and tourists.

The importance of understanding the requirements of the local community and taking these into account during the development of the MPA to protect the marine values cannot be overstated.

5.4 Necessary Policies and infrastructure

Bernstein *et al.* (2004) in their evaluation of case studies from the U.S. also revealed the central role that authorising statutory or regulatory language plays in determining explicit goals and objectives. If goals and objectives are weak or vague this can lead to ambiguous and conflicting expectations for the MPA. It is therefore important to clearly articulate the authority driving the actions relating to the MPA.

New Zealand also has a relatively long history of management of marine reserves compared to many other countries. It is therefore important to learn from the techniques that have been applied here and to draw from this experience.

One of the key lessons to come out of the NZ experience is that there needs to be a clear policy based on principles that everyone can understand. The aspects included in these policies are shown within **Box 5.2** (Source of information Ballantine, 2004). It should be remembered however, that the principles which underpin any MPA are based on the intent and subsequent structure of the MPA in question. Whilst the New Zealand approach advocated below stresses the need for total protection through No Take Zones (NTZ's), approaches taken elsewhere are based on the principle of multiple use with exclusion from only selective areas of the MPA.

Box 5.2 Principles to Include in Marine Reserve Policy (within the NTZ based model)

- The reserves should be fully protected. All potentially damaging human activities should be banned on principle, as far as is practical and sensible;
- The reserves are permanent. The reasons for reserves are valid for the foreseeable future, and the benefits and values of reserves accumulate over time;
- Each reserve aims for the ability to maintain itself. Single reserves cannot be totally self-sufficient unless enormous, but each should aim for a reasonable degree of ecological variability (i.e. capacity to maintain itself);
- Examples of all major habitats should be included in reserves;
- There should be several spatially separate examples of each habitat (the reasons for this including as an insurance against local scale accidents and a representation of the natural range of variation);
- The reserves should be spread throughout the region, forming a network (this encourages the interchange of drifting eggs and larvae);
- Public interest should be actively encouraged (for all reserves, active measures are taken to provide visual material (photographs, video, film, etc.) and written information (maps, articles, books, websites, etc.). Where it can be arranged with minimal damage, direct public access to reserves should be actively encouraged; and
- An increased level of information about the marine life should be actively sought and made available (to include surveys, research and monitoring in the reserves and comparisons with exploited areas outside). The information should be freely available.

Although many of the broad principles described above equally apply to multiple use MPA's, it is important to consider the scope of the principles and the actual characteristics of such areas. The actual differences in the application of MPA structure, form and function is described in detail in **Section 4** and summarised in **Box 5.3**,

however, the principles of multiple use management, as developed in the USA are described below.

There are six fundamental characteristics for the design and management of MPA's in the US which relate to why a reserve may be created and what it may seek to achieve (National Marine Protected Areas Centre, 2004). These are:

- Primary conservation aim;
- Level of protection – the types of human activity the MPA restricts and the nature of the protection afforded to its natural and cultural resources;
- Permanence of protection;
- Constancy of protection;
- Scale of protection; and
- Allowable extractive activities.

By the very nature of conservation sites, it is expected that MPA's, like MNRs, ASSIs, SACs and SPAs, will have multiple objectives. However, as with the other conservation designations, it is likely that they will be established to achieve a primary, overarching conservation goal, established according to law and management mandate. In the majority of cases it is the primary goal that determines the fundamental character of the site (i.e. location, size, scale and management strategies). Therefore, as part of the development of a management framework, it will be important to firstly define the goal category that the existing site falls into, which can then be applied to the MPA.

Box 5.3 Potential MPA Categories

Natural Heritage MPA – A natural heritage MPA would be one that is established principally to sustain the natural biological communities, ecosystems and processes found within a specific area. A category of this nature could be applied to most MNRs, ASSIs, SACs and SPAs.

Cultural Heritage MPA – A cultural heritage MPA would be one that is established principally to protect, understand and study submerged cultural recourses. A category of this nature could be applied to some of Northern Ireland's MNRs and ASSIs, where significant cultural heritage value is recognised.

Sustainable Production MPA – A sustainable production MPA would be established where there is a need to sustainably manage a living resources (e.g. fish, shellfish, plants (maerl), birds etc.) within the MPA by protecting important habitat and spawning, mating or nursery grounds. This also provides benefits outside the MPA boundary.

Secondly, it will be important to define the level of protection that should be provided to the MPA or, in other words, the types and levels of restriction placed upon human activities within the MPA boundary (summarised in **Box 5.4**). Obviously, the level of protection recommended will depend upon the types of natural and cultural resources the MPA is established to protect and the prevailing natural processes that affect the ecosystems that they are located within.

Box 5.4 Potential approaches to management

Multiple Use MPA – A Multiple Use MPA would allow a variety of human activities to occur within the site boundary. These activities would be managed to allow their continuation while also protecting the key habitats and resources for which the MPA is designated. It is crucial that it is considered, on a site by site basis, whether these levels of protection should be uniformly applied or allocated spatially and/or temporally through the use of zoning schemes in order to avoid potential conflict and adverse impact.

No Take MPA's – These would be MPA's, or zones within Multiple Use MPA's, that prohibit all extraction or destruction of natural and/or cultural resources. They can also be applied to restrict access to the site and prohibit potentially damaging activities to occur.

It is important to consider the differences in applying protection to the marine environment in areas such as New Zealand, the U.S. and Canada with the situation in Northern Ireland. In NZ, US and Canada there is scope for larger areas to be defined as 'no take zones' or limited activity zones because there is more scope for these activities to occur elsewhere. In NI the areas that can prohibit specific activities are fewer due to the scale of such areas and greater competition for resources.

It is also important to remember that marine reserves are not a cure-all, nor an alternative. Management of the marine environment must continue outside of the reserves. Marine reserves, and indeed MPA's, cannot operate successfully unless exploitive use outside is kept within reasonable bounds.

5.5 Education and communication

Education is also a very effective tool in the designation process, in particular the use of case studies to show the results of other initiatives throughout the world. This is perhaps one of the most influential tools and can be used to show the benefits of certain aspects of a MPA to different users (including the public, local communities and stakeholders). Certain groups are likely to be wary of MPA's initially and this should be appreciated as one of the main effects is a restriction on specific activities. However, given the results from all over the world it can be shown that such initiatives can actually benefit the users of the marine environment in the long term. The example in **Box 5.5** illustrates the support given by the fishing industry to 'No Take Zones' and how the results are proving to be beneficial, even in the relatively short term period of 18 months.

Box 5.5 Lundy Island, UK

Lundy Island is located in the Bristol Channel, 12 miles off the North Devon coast. It is the only Marine Nature Reserve in England and is also protected through designation as a Special Area of Conservation on account of its reefs, sea caves, subtidal sandbanks and grey seals. The Marine Nature Reserve was designated in 1986 following many years of negotiations and legislative processes to enable the statutory status. A zoning scheme operates within the Reserve to show users where they can undertake activities with minimal impact on the natural features. The zoning scheme covers recreational and commercial activities and collecting (www.lundy.org.uk/inf/zone.html).

In January 2003 it was announced that protection for Lundy Island's sea life had been boosted by the confirmation of the first 'No Take Zone' in the UK (see Appendix 3). This 'No Take Zone' had been jointly proposed by the Devon Sea Fisheries Committee and English Nature and means that no living natural resources can be taken from the area. The No Take Zone has strong support from the local fishermen, along with the Lundy Management and Advisory Groups. This was hailed as a small but highly significant step forward in alleviating the pressure on fish and shellfish stocks and restoring the wildlife value of the marine environment in North Devon.

Reports produced 18 months after the No Take Zone was introduced revealed the success of this initiative. It was reported that 'sea life is flourishing since people were banned from catching fish, lobsters and crabs from an area east of Lundy Island'. Promising results were observed after only 18 months. An English Nature scientist reported that "We have seen a threefold increase in the numbers of landable lobsters within the 'No Take Zone' compared to the control sites outside the zone. This is the first time we have seen this striking difference in the lobster stocks. What we hope now is that not only do the populations in the 'No Take Zone' continue to increase, but that they migrate outside of the zone to the benefit of local fishermen." A local lobster and crab fisherman from Ilfracombe said he welcomed the initial results of the scheme. The fishermen originally found the 'No Take Zone' difficult because they did fish the area in question, but found the initial results "great news".

5.6 Effective goals and objectives

It is essential that clear goals and objectives are developed for a MPA and that the aims of the designation are understood and supported by all facilitators and stakeholders. The early, and open, development of clear goals and objectives provides a forum for discussion and initiates a process whereby changes can be made to benefit the process. Without concrete goals and objectives there is a tendency for suspicion as to the overall aims of designation. In addition, without effective goals and objectives there is no basis for discussion and no definite purpose on which to base answers to questions from stakeholders. That is not to say that the initial goals and objectives cannot be changed throughout the process as there is a need for flexibility to take account of unforeseen hurdles.

Box 5.6 illustrates the problems that can occur without adequate definition of aims and objectives at the start of a project.

Box 5.6 San Juan County/Northwest Straits Bottom fish Recovery Zones

One of the case studies reported in the US was for the San Juan County/Northwest Straits bottom fish recovery zones (Bernstein *et al*, 2004). The initial proposal for a marine sanctuary was opposed by county commissions and various users. It was reported that “without a clear understanding of the benefits a sanctuary designation would bring to the area, even supporters began to question the merits of the program and whether they were worth the concepts divisiveness among community members”.

The sanctuary was never designated but following this initiative the development of recovery zones was successfully implemented learning from the lessons generated from previous experience within the area.

5.7 Effective use of mapping tools

The use of mapping as a management tool has many widely applicable functions and provides a valuable tool for defining areas with multiple use functions. Some of the functions of mapping include showing the level of information available for each area, identification of gaps in information, analysis of the implications of specific boundaries and determination of the extent of pressures on a given area.

There are a number of relevant mapping tools that have been designed specifically for use for MPA's to support site definition, zoning, monitoring, or MPA related analysis (e.g., biodiversity or habitat suitability analysis) (National Marine Protected Areas Center, 2004). The above reference lists the tools available and their potential application for the MPA designation process.

5.8 Monitoring and Improving effectiveness

Monitoring is an important tool in any management process. It enables the measurement of the level of achievement of objectives and goals and informs management of where action is required in order to improve the status of the site.

A Document produced by the IUCN World Commission on Protected Areas-Marine, the (US) National Oceanic and Atmospheric Administration (NOAA), and the World Wide Fund for Nature, (2004) aims to provide guidance on measuring the management effectiveness of MPA's. The book aims to help improve management by offering a framework to identify site goals and analyse how well those goals are being achieved.

The guidance reflects the fact that monitoring is essential: within the framework, managers choose, measure, and analyze up to 44 indicators of MPA effectiveness, depending on each site's conditions, goals, and objectives. The indicators are biophysical (like species abundance or water quality), socioeconomic (including local use patterns), and governance-related (including existence of a management plan).

Many MPA's worldwide do not meet their management goals. The reasons for this are several, including ineffective management, lack of funding, and lack of local support. In some nations, the percentage of MPA's that exist only on paper are believed to range as high as 90% (*MPA News* 2:11).

Organizers of the MPA Management Effectiveness Initiative say the mixed success in MPA performance demonstrates a need to help management teams evaluate the effectiveness of their actions and improve the impact and scope of their efforts. Theoretically, when evaluation results are combined with adaptive management, practitioners can demonstrate and provide for long-term positive impacts on biodiversity and human communities.

Box 5.7 provides an account of a discussion held between MPA News and the vice-chair for the IUCN World Commission on Protected Areas; Bob Ehler.

Box 5.7 Convincing managers of the need to measure effectiveness

MPA News: Your initiative has designed a framework to help MPA managers evaluate how well their sites are achieving their goals, and the framework involves monitoring potentially dozens of criteria. Implementing it will require time and money. How would you respond to managers who say they don't have the resources necessary to do this?

Ehler: An MPA manager can use some or all of the tools in the book and gain some insight or benefit. All of the pilot sites that field-tested the guidebook, for example, reported that the exercise of identifying clear and measurable objectives was beneficial in itself, especially since some of the sites had not previously had goals and objectives that were defined adequately. When pilot sites were asked why the guidebook was useful to them, they reported that it was flexible enough to adapt the process and indicators to the particular situation at each of the pilot site MPA's. This was reported even in the case of MPA's that were community-managed and at sites with low to modest financial and technical support.

MPA News: Some managers may feel that an effectiveness evaluation of their MPA is unnecessary, or is even something to be avoided if results could embarrass management. How could you convince these managers that effectiveness evaluation would still be in their interest?

Ehler: We understand that evaluation may not be endorsed by some managers who fear that a "bad" evaluation may put their positions or programs in question. We are not suggesting evaluation for this external purpose. The idea of the guidebook is to help managers improve the effectiveness of their MPA's and facilitate adaptive management. Managing a protected area in the marine environment is challenging and complex. I think few managers would say they have no need to find new ways to spend their scarce resources more efficiently.

6 TOOLS FOR THE ESTABLISHMENT AND MANAGEMENT OF MPA'S

6.1 The role of policy and legislation to MPA creation and management

The creation and management of MPA's is dependent on the provision of:

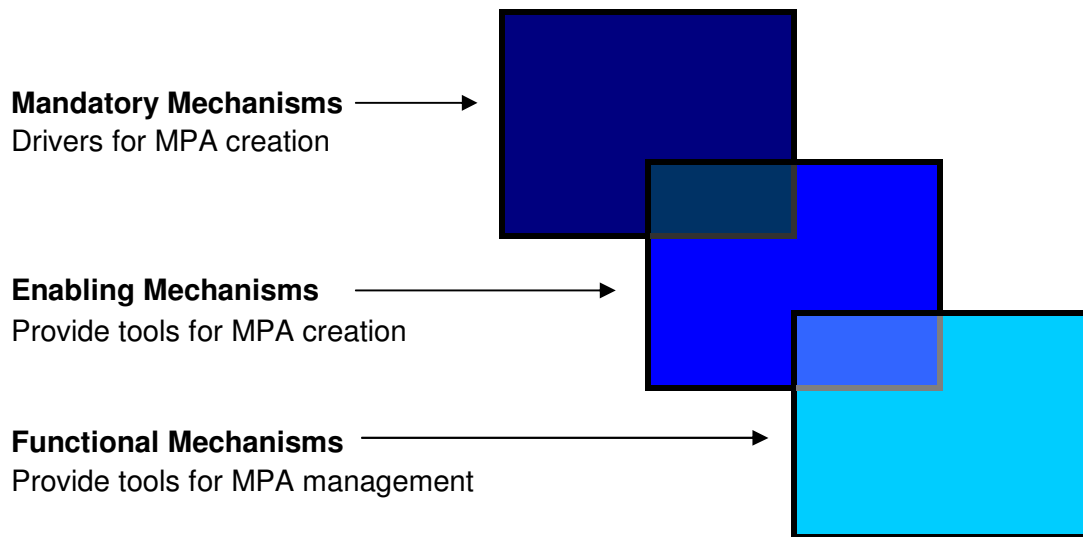
- Political will and supporting high level guidance and agreement;
- Legislation to provide for delineation of MPA spatial areas;
- Legislation to provide the tools for MPA Policy and Regulation;
- Legislation to provide for the enforcement of management measures; and
- Mechanisms and resources to ensure the enforcement of management measures.

Legislation may also simply be able to add a duty of care on to all other regulators to have regard to the aims and objectives of the MPA in the prosecution of their duties. The actual form and extent of such legislation and guidance is also central to establishing the scope of MPA designation and the range of management options available within a given area. MPA's are spatially defined coastal and/or marine areas in which activities are managed to meet a defined set of objectives. In this respect, the well documented similarities between land use planning and marine spatial planning are clearly evident. Land use planning operates primarily on the basis of a spatially based system (town and country planning) which is equipped with numerous tools to control activities on a spatial basis. Typically, the management of the marine environment has evolved on a sectoral approach with no overall central spatial focus to management. MPA designation is one method of addressing this matter, by providing a spatially derived series of management measures, with a view to managing all sectors in response to a set of uniform principles and specific objectives.

An initial and critical step in identifying the options for MPA designation is to clarify if the above requirements (as bulleted) are available and secondly to account for the options such measures provide. An analysis (or stocktake) of the legislative and policy background is central to determining what measures are available for MPA designation and management. This section seeks to clarify and describe the hierarchy of policy and legislation that is applicable to the waters and coastal environment of Northern Ireland and also to classify such legislation according to the role it can play in MPA creation and management. Once this background has been provided, the options available for MPA creation in Northern Ireland can be more accurately described and legislation used in the most efficient and effective manner to protect the values of the marine environment.

Existing legislation and Policy has three key roles in the creation and management of MPA's: a mandatory role which provides the actual impetus for MPA creation; an enabling role which provides the tools for MPA creation and a functional role in providing the tools for the management of MPA's (See **Figure 6.1**).

Figure 6.1 Roles of Key Legislation in MPA Creation and Management



The legislation listed in **Appendix 1**, has been assigned according to which of the three roles (see above) it fulfils. This exercise not only provides a description of the tools available, but also provides an informed position of what options are actually available for MPA designation in Northern Ireland.

6.2 Application of legislative basis for MPA creation and management

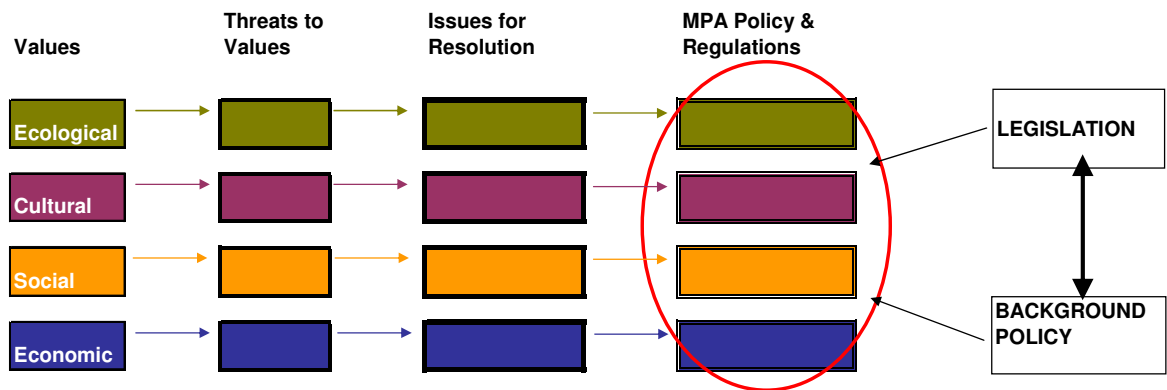
The primary step in this process should be the clarification of the extent of the legislative base in Northern Ireland and also the broader policy framework which provides the context to apply such legislation. From this the roles of each element of legislation can be determined and the options available for MPA creation and management specified.

Once the range of management tools/options available has been clarified, the task of applying policy or legislation within an MPA network can then be considered. The resolution of management issues in a structured fashion is central to good management practice within MPA's and provides for output driven, measurable management. In addition to the legislative basis, the key factors which should also shape the location, extent and management of any MPA network should relate to:

1. core **values** of the local area (physical, ecological or social);
2. **threats** to those values; and
3. the production of **measures** to reduce such threats.

This simple management structure is applicable across terrestrial, littoral and marine areas and can also account for management on a multi-sectoral, spatial basis. The actual process of establishing steps one to three above is the actual core task in establishing and managing an MPA network and is explored in greater detail in later sections of this report. However, the relationship between legislation and the above process needs further clarification. In the table below, the role of the legislative and policy based context can be seen as supplying the tools for resolving the management issues of an MPA.

Figure 6.2 Context of MPA Management



6.3 The scope of legislative and policy based analysis

The scope of specifying the legislative background relevant to the waters around Northern Ireland has been drawn widely enough to consider all potential spatial and sectoral areas that may be considered relevant to any potential MPA suite. Accordingly, the spatial area of policy application has been considered from the 200nm limit of UK territorial waters, back to catchment management and coastal legislation. Sectoral legislation and policy has also been taken to include all governmental agreements at international, European and National levels. This wide scope has been taken so as to provide the most comprehensive account to the ‘tools’ available for MPA designation. Far from lacking in focus, this approach provides the actual form of any MPA suite to include any of the following approaches:

- Large scale MPA provision including offshore waters (as part of a UK initiative);
- Small scale MPA designations;
- Single use or sectoral based MPA provision;
- Multiple use MPA provision;
- MPA sites allied to Integrated Coastal Zone Management (ICZM) which include either a terrestrial component to the MPA or an adjacent suite of terrestrial management provisions;
- MPA provision based on consistency with adjacent National approaches; etc.

The intent has been to provide the widest range of management tools available to be used in managing the threats to the critical values of the waters around Northern Ireland.

The policy matrix (see **Appendix 1**) provides a hierarchy of all relevant legislation and overarching policy and relates the management application of each mechanism. The management applications can then be used (where appropriate) to address the key management issues described elsewhere in this document.

7 MPA'S IN THE NORTHERN IRELAND CONTEXT

7.1 Mandatory mechanisms

The provision of a range of mandatory mechanisms which provide the impetus and focus for MPA creation and management, is well advanced globally, but particularly well accounted for within the European Community and in the waters of the North Sea/North Atlantic. The range of agreements and conventions specified in **Appendix 1**, provide a comprehensive basis for the broader, spatially based management of the marine environment in Northern Ireland. At present several key mechanisms can be defined which clearly provide the focus for the creation and management of an MPA network. It should, however, be noted that **the instruments listed below have a heavy bias on the establishment of MPA's for nature conservation purposes**. As outlined in the previous sections, the focus for MPA management can equally relate to the conservation of social or economic values or the sustainable management of marine resources. In establishing the scope for the creation of a suite of MPA's in Northern Ireland, it would be a great opportunity missed if this was to remain the constrained focus of MPA provision. Indeed, given the pivotal role of the Environment and Heritage Service and the Department of Agriculture and Rural Development, there would appear to be adequate scope to ensure that the focus for MPA creation could remain concentrated on the wider remit witnessed elsewhere in the world (see Sections 4 and 5 for context).

7.1.1 Existing mechanisms

The existing core Mandatory Mechanisms relating to Northern Ireland are summarised as follows:

The Convention on Biological Diversity 1992

In June 1992, the Convention on Biological Diversity was signed in Rio de Janeiro. The summit provided the requirement on supporting Government's to develop a series of national action plans to halt the worldwide loss of animal and plant species. The Government's response to the Biodiversity Convention, "Biodiversity: The UK Action Plan (BAP)" 1994, establishes the broad strategy for conserving and enhancing wild species and wildlife habitats in the UK for the next 20 years. The thrust of the Governments reponse to the treaty has been based upon the implmentation of action plans for specific habitats and species known as Habitat Action Plan's (HAP's) and Species Action Plans (SAP's). HAP's and SAP's have been currently been produced for a range of marine habitats. The implementation of Marine HAP's and SAP's may be critically dependent on the provision of an MPA network which enables management objectives to be specified with explicit links to plan targets.

The Northern Ireland Biodiversity Group (NIBG) was formed in 1996 to oversee the development of a biodiversity strategy for Northern Ireland. In 2000, the NIBG produced a document entitled "Biodiversity in Northern Ireland: Recommendations to Government for a Biodiversity Strategy". This document identified 15 major issues affecting Northern Irelands biodiversity and, for each issue, produced a range of recommendations. 13 recommendations were made for the coastal and marine environment including one specifically relating to MPA's:

“Set up appropriate new bodies for marine protected areas to ensure more effective management”.

The Government response to the NIBG report was to publish, in 2002, the *Northern Ireland Biodiversity Strategy*. This document builds upon the NIBG recommendations and sets out the strategy by which they are to be met.

The Habitats Directive and The Birds Directive.

The European Commission Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (The Habitats Directive) requires member states to designate Special Areas of Conservation (SACs) to protect some of the most seriously threatened habitats and species across Europe.

Under the European Commission Directive on the Conservation of Wild Birds (The Birds Directive), all European Community member States are required to identify internationally important areas for breeding, over-wintering and migrating birds and designate them as Special Protection Areas (SPAs).

The Habitats Directive is implemented in Northern Ireland through The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995. Under the classification of habitats and species provided by Annex I and II of the Habitats Directive, selected habitats and species occurring within a number of given habitats, including those in the marine environment are allocated for protection by Member States. The obligation is therefore incumbent on Member States to pursue the protection of representative areas of Annex I habitat and of Annex II species, and, as such, the use of MPA's to serve this purpose would appear to be wholly appropriate. The Habitats and Birds Directives are also listed under Section 7.1.1 on Enabling Mechanisms.

The Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Convention) 1998

The requirement of member states to provide for a series of MPA's is clearly stated within OSPAR Recommendation 2003/3. Equally, the actual management of MPA's is addressed in the Guidelines for the Management of Marine Protected Areas in the OSPAR Maritime Area (adopted by the OSPAR Commission on 27 June 2003). Under recommendation 2003/3 member states are required to establish a network of MPA's as part of the OSPAR Network and to ensure this by 2010. The recommendation further requires that the MPA network provided is an ecologically coherent network of well-managed marine protected areas which will:

1. protect, conserve and restore species, habitats and ecological processes which have been adversely affected by human activities;
2. prevent degradation of, and damage to, species, habitats and ecological processes, following the precautionary principle; and
3. protect and conserve areas that best represent the range of species, habitats and ecological processes in the maritime area.

The JNCC are currently supporting Defra in their efforts to provide a focussed framework for the implementation of the Convention.

7.1.2 Recommendations and forthcoming mechanisms

EU recommendation on the Implementation of Integrated Coastal Zone Management in Europe and the ICZM Strategy for Northern Ireland (expected publication date 2006)

The EU recommendation on the Implementation of Integrated Coastal Zone Management in Europe (COM/00/545 of 8 Sept. 2000) sought to ensure an ICZM based approach to coastal management throughout the EU. A core component of this is the provision of a National ICZM Strategy for member States. Northern Ireland are moving towards this objective by means of the forthcoming ICZM Strategy for Northern Ireland (expected publication date 2006). The principle of ICZM is defined within the UK according to Defra who are the lead on this project. Defra's definition of ICZM relates to:

The objective of Integrated Coastal Zone management (ICZM) is to establish sustainable levels of economic and social activity in our coastal areas while protecting the coastal environment. It brings together all those involved in the development, management and use of the coast within a framework that facilitates the integration of their interests and responsibilities.

Successful integrated coastal zone management requires adopting the following principles:

- A long term view
- A broad holistic approach
- Adaptive management
- Working with natural processes
- Support and involvement of all relevant administrative bodies
- Use of a combination of instruments
- Participatory planning
- Reflecting local characteristics.

(See - <http://www.defra.gov.uk/environment/water/marine/uk/iczm/index.htm>)

Underpinning coastal and marine management within an ICZM approach, is the central and critical need to ensure active management of the marine environment in a multi-sectoral cross agency manner. Such management is also dependent on the application of integrated approaches to terrestrial and marine management. Accordingly, the requirement for a suite of MPA's in the coastal waters off Northern Ireland would appear to be critical to the pursuit of ICZM based management. Whilst the details relating to this will be specified in the forthcoming strategy, there is a pressing need to ensure that the development of the strategy is aware of the potential role and possibilities provided by the provision of an MPA network.

The Review of Marine Nature Conservation

The Review of Marine Nature Conservation (RMNC) was established in 1999 in fulfilment of the Government's pledge to accompany the strengthening of protection for terrestrial wildlife sites with an examination of the effectiveness of the system for protecting nature conservation in the marine environment. The Working Group Report for the RMNC was published in July 2004 and makes a number of key

recommendations including one whereby the Working Group recommends that an ecologically-coherent and representative network of marine protected areas should be identified and established, and appropriate and proportionate measures applied to ensure their conservation needs are met. Related to this a further key recommendation is that the Government should introduce the necessary measures, including policy and legislation as appropriate, to underpin the application of the marine nature conservation framework throughout waters under UK jurisdiction.

An interim report recommended the testing, through a pilot scheme, the regional seas approach to marine nature conservation in UK waters. The Irish Sea Pilot Project (ISPP) was initiated to fulfil this aim. The ISPP explicitly identified the need for spatially based marine management and the mandatory mechanisms relating to the territorial and offshore waters around Northern Ireland. As such the ISPP must be seen as a driving mechanism in seeking to establish mechanisms to pursue the spatial management of the waters adjacent to Northern Ireland. Further to this the lessons learned from the ISPP, in terms of marine spatial planning etc are persuasive considerations in clarifying the benefits of MPA provision.

Marine Bill

In December 2004 the Department for Environment, Food and Rural Affairs launched its 'Five Year Strategy: Delivering the Essentials of Life'. Measures set out in the Strategy include a Marine Bill, the function of which is to ensure greater protection of marine resources, and simplify regulation, so that all uses of the sea, including for example wind farms, can develop sustainably and harmoniously.

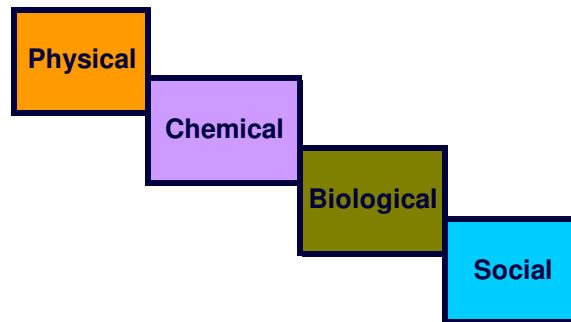
UK Net Benefits Report

Under the UK Net Benefits Report, all Fisheries Departments (including Fisheries Division in DARD NI) will be expected to introduce NTZ's in territorial waters and where applicable integrate them with a wider network of MPA's. This requirement clearly provides a pressing need to pursue the establishment of an MPA network. The reliance on NTZ's established with the sole purpose of fisheries management, will not afford any degree of holistic management to marine resources or values. The requirement to establish fisheries based NTZ's, actually makes the provision of an actual MPA suite in Northern Ireland a more immediate and pressing task, if a balanced approach to marine management is to be pursued.

The Ecosystem Based Approach to Marine Management

The ecosystem based approach to management is based on the provision of management focused on supporting the critical physical, chemical and biological processes which support the ecological or social values of a given area (see **Figure 7.1**).

Figure 7.1 The Basis of the Ecosystem Based Approach



A more comprehensive definition is provided within the Convention on Biological Diversity 2000 which states that ecosystem based management is:

“a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way”. The ecosystem approach is fundamental to the recommendations within the RMNC for the way forward for marine management.

English Nature has provided a comprehensive account of the application of this approach to the marine environment (see Laffoley *et. al.* 2004) which is equally applicable across the UK. Fundamentally the application of the ecosystem based approach in marine areas is underpinned by cross-sectoral management, such management is most effectively enabled via the use of MPA's. If the use of an ecosystem based approach is to be pursued within Northern Ireland, a suite of MPA's represent the ideal tool to pursue this within the marine environment.

Other drivers applicable to the Marine Environment in Northern Ireland would also include:

- NI response to marine stewardship initiative;
- Issues emerging from the Randall Bill debate and its aftermath in the general raising of the need for a rational approach to national marine designation to fill in the gaps left by EU Directives; and
- UK Labour party commitment to look at ‘new ways of managing the marine environment’.

In the future, it is expected that the Water Framework Directive would have a role in the MPA process, although at present such a role is not defined. In addition, it is more likely that the Environmental Liability Directive will play a role. This Directive seeks to provide stringent EU wide control over damage to the environment by prevention and restoration

At present, given the above, there would appear to be a range of mandatory mechanisms providing the impetus for the creation of a suite of MPA's in Northern Ireland.

The matters that an MPA network would be expected to address under the existing mandatory mechanism would relate to the following:

1. The protection of ecological values of Northern Irelands coastal waters;

2. Placing a duty of care on all marine regulators to 'have regard to' or 'to exercise their duties in pursuance of the protection and sustainable management of MPA activities';
3. Requirement to consult on plans and projects; and
4. Duties to consult local stakeholders and communities.

7.2 Enabling mechanisms

The tools available for enabling the actual delineation and designation of a suite of MPA's do not currently provide for a blanket spatial coverage from the landward extent of coastal habitat out to the 200nm limit (the area considered to represent the greatest spatial coverage for MPA designation in Northern Ireland). However, the following mechanisms do potentially enable the physical delineation of a range of natural heritage MPA's to cover areas from the range of coastal habitats (or catchments) out to 3nm under the provisions of the **Nature Conservation and Amenity Lands (Northern Ireland) Order 1985**. Under this order the designation of an MPA could be underpinned by the declaration of a **Marine Nature Reserve** (Article 20) (in regard to the marine component) and a Nature Reserve or National Nature Reserve (Article 16) (in regard to the littoral/terrestrial environment).

As an MNR, Bye-Laws can be developed for purposes pursuant to the conservation of the nature conservation interests of a given area. Whilst this does not allow designation or management to protect cultural values or to enable sustainable resource extraction, nevertheless the designation of an MNR could serve as a mechanism for the designation of a suite of nature conservation based MPA's solely for the purposes of nature conservation. At present only Strangford Lough benefits from such a designation; interestingly, it is an area with a history of extractive uses and cultural heritage values. In this respect, the Strangford Lough MNR may seem a difficult choice for MNR designation, which would seem to be more appropriate for areas with lower levels of extractive use or predominantly ecological rather than ecological and social values. It must therefore be questioned whether the relative effectiveness and/or success of the MNR in Strangford Lough is a failing of the MNR as a management tool or whether the Lough was an inappropriate location for its application. It should therefore be established if an area with less intensive or simpler patterns of human activity may provide a successful location for MNR designation.

In **Appendix 2**, a suite of potential MNR's are identified for further study as potential pilot (or Stage 1) MNR based MPA's. **It must be stressed that using this enabling mechanism is not considered to be the best way forward, but it is considered to be the only available mechanism, given current legislation.** In general, the concept of MNRs has not been the most successful tool for management of the marine environment, partly due to the fact that the management mechanisms are not always fully supported by the stakeholders. This is not considered to be practical in any situation given the requirements placed on marine resources.

The opportunity exists for enabling mechanisms to be created out to the limit of Northern Ireland's territorial waters, as provided for by the **UN Convention on the Law of the Sea (UNCLOS)**, a convention to which Northern Ireland acceded in 1997. However, whilst this does provide for the creation of enabling mechanisms out to 12nm, the

creation of such instruments is dependent on the actual need for protection of resources and the political will to drive such new legislation through the Assembly.

The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 also provides for the designation of Marine SAC's out to 12nm, however this would need to clearly relate to measures relating to the management of habitats and species listed under Annex I and II of the EU Habitats Directive, and as such may not fully accord with the desire of multisectoral spatial management. The designation of SAC's in waters beyond 12nm is currently being pursued by the **UK Offshore Habitats Regulations 2003** which seeks to implement the Habitats Directive beyond the 12nm limit. The use of either regulation to designate or support MPA designation, is however a matter for discussion in the context of the actual requirements of any MPA network.

Whilst there is no explicit mechanism for MPA designation, the use of the **Marine Nature Reserve**, would appear to provide the basis for the designation of a spatial area for multisectoral nature conservation based management. This would, at present, only allow for nearshore (within 3nm) to be included within any MPA plus an appropriate terrestrial component. Nearshore waters may however represent the area where most threats to marine and coastal values occur and in this respect, a nearshore MPA suite may provide for the management/resolution for the majority of the critical management issues.

Given the existing provisions of the Regulations (and in the absence of any current specific Marine Act or equivalent head of power) MNR's could be designated which would meet with the minimum requirements of the IUCN definition of an MPA. It should be made explicitly clear however, that any pilot initiatives to provide a suite of MPA's (based on MNR classification) would only provide for the management of areas for their ecological values with social and economic criteria not being afforded comparable weight or consideration. In this respect the use of MNR's as the key for designating a suite of MPA's should be considered as a first step (Stage 1) in any long term initiatives to provide a suite of representative MPA's around the province.

The use of MNR's would restrict Stage 1 MPA's to designation primarily as IUCN category IV reserves which would have significant implications for the function of the Stage 1 suite. As stated, MNR's would provide for the protection of the ecological values of coastal waters, but would not enable designation for cultural heritage MPA's and, critically, would restrict the extent to which extractive or recreational activities could be accommodated within the Stage 1 suite. In this respect, the need for a Stage 2 suite is essential if Northern Ireland is to seriously address the management of its marine environment. The requirements of the Stage 2 suite, fall outside the scope of this study (which considers what is currently possible), however recommendations are provided in **Section 6** which describes the 'toolkit' needed to take forward Stage 2 designations. In this manner Northern Ireland is extremely well placed to lead the UK (and possibly Europe) in designating and managing a comprehensive MPA suite in its provincial waters. The summary recommendations at this stage are described in **Box 7.1**.

7.3 Functional mechanisms

The range of functional mechanisms available in the marine environment within Northern Ireland is listed in **Appendix 1**. The matrix provided in **Appendix 1** can be used as an active source of functional mechanisms, for any identified issue. Clearly, the

mechanisms required will be dependent on the resource under threat from a given activity. Accordingly, functional mechanisms are provided in the matrix on a thematic basis, so issues to resolve threats from shipping, for example, can be easily identified. From this it can be seen that there are numerous measures that can be used to manage the marine environment, for example within the area of fisheries there are several relevant Acts, Regulations and Orders that can be used to control fishing activity. In this respect, where a particular threat is identified for a specific site it is worth evaluating the mechanisms already available in terms of the Regulations and Bye Laws, etc. that can be put in place to manage activities to some extent.

A suggested structure for development of management measures is recommended below in **Table 7.1**, which is a summation of the approach taken in Australia and Asia. The formulation of tables such as this could be developed for all the key ecological, cultural and economic values, or in the case of MNR based MPA's, the ecological values alone. The management strategies would need to be developed depending on the issues at hand, using the functional mechanisms catalogued in the matrix in **Appendix 1**.

Table 7.1 Suggested Structure for Development of Management Measures

Criteria	Description	Example
Value	Description of ecological, cultural or economic value	Rocky Reef Communities
Context	Description of the role of the value (e.g. ecological function or social function) and its relative importance	Critical areas of high biodiversity. This value is central to the areas designation as a marine SAC and has European level importance
Condition	Description of the condition/status of the value	The condition of the reef is generally in good condition with selected areas showing signs of physical damage and disturbance
Existing threats	Outline of existing pressures on value	Inappropriate anchor use and over fishing of selected areas
Potential threats	Outline of potential or emerging pressures on value	Increase in intensity of use due to the expansion of the adjacent tourism facilities
Management Objectives	Simple statement of the desired intent	Measures will seek to ensure that levels of biodiversity on the reef are maintained so that the reef continues to function as a viable ecological unit and that fishing activity can continue on a sustainable basis
Management Strategies	Outline of management approach with the use of functional mechanisms	Provision of a regular, structured monitoring programme Provision of a zoning scheme which provides for the protection of key areas of high productivity Development of a comprehensive local public education and information exercise Liaison with DARD to ensure that fishing levels within the reserve are enforced and that such measures can be amended, if necessary to meet key targets (see accompanying section on "Finfish Values")
Performance Indicators	Specific measurable criteria	a Reef Species Diversity b Reef Species Abundance c Extent of active reef community
Desired Trends	Trends in measured criteria which can be scientifically ascertained or specified with a high degree of rigour	a Positive or neutral b Positive or neutral c Positive or neutral
Targets	Statements of the intent of the above measures within given time parameters	a Diversity restored to natural levels within the reserve by 2010 b Species abundance to show a positive trend by 2006 c No further net loss of reef community areas due to physical disturbance

8 CONCLUSIONS AND RECOMMENDATIONS

The provisions of current legislation in Northern Ireland only provide for the designation of any reserve akin to an MPA by virtue of the MNR designation. This mechanism does not provide for the consideration of management issues other than those relating to nature conservation. It is also worth evaluating the range of functional mechanisms available in the marine environment within Northern Ireland as listed in **Appendix 1**. From this it can be seen that there are numerous measures that can be used to manage the marine environment, for example within the area of fisheries there are several relevant Acts, Regulations and Orders that can be used to control fishing activity. In this respect, where a particular threat is identified for a specific site it is worth evaluating the mechanisms already available in terms of the Regulations and Bye Laws, etc. that can be put in place to manage activities to some extent.

For the establishment of a contemporary suite of MPA's that will put Northern Ireland at the forefront of MPA development in Europe, there is a fundamental need for the development of either the amendment of existing, or provision of new legislation that will enable MPA's to be designated out to the extent of territorial waters where there is an identified need to protect environmental or cultural heritage values to ensure the sustainable management of marine resources. A two stage step to the provision of this network is therefore recommended; based on the following process (see **Box 8.0**):

Box 8.0 Summary Recommendations for MPA Designation in Northern Ireland

It is recommended that:

1. the broad process for MPA designation in Northern Ireland should follow a range of functional methodologies including multiple use based MPA's and NTZ MPA's;
2. The designation of a pilot suite of MPA's, underpinned by MNR's should be evaluated as soon as possible; and
3. Existing legislation is amended, or new legislation developed to allow for the designation of MPA's, aimed at preserving or enhancing ecological, social and/or economic marine values, while enabling the sustainable management of marine resources. This should be developed in line with the recommendations set out in the Review of Marine Nature Conservation (see section 7.1).

The structure outlined in **Box 8.1**, has been developed to establish a programme that will enable MPA designation in Northern Ireland to progress at a rate that will accommodate changes or the provision of new legislation and the production of the necessary supporting background studies required for the provision of a suite of multiple use MPA's. These sites have been selected based on the available information for this study, as outlined in **Appendix 2**. In addition to this information collation, it is recommended that collation of data relating to the value and threats at particular sites is collated in order to initiate the process of MPA designation. This would need to consider ecological, social and cultural requirements. It is also necessary to consider how the sites within Northern Ireland may fit into the wider UK framework for designation of a network of MPAs.

Box 8.1 Recommended MPA Designation Programme

Stage 1

The designation and provision of management and zoning plans for the following pilot sites:

- Murlough
- Strangford Lough (extension to include Outer Ards and Copeland Islands ASSI's);
- Rathlin Island

Expected task duration: 18 months

Stage 1a

Based on the success of the pilot sites above, and the expected timelines and/or support for new or amended marine legislation there may be a need for the designation of a second phase of Stage 1 (MPA's underpinned by MNR's). It would be necessary to gather baseline information for these sites in order to determine whether they are appropriate for designation as MPA's. Recommended sites could include:

- North Antrim Coast
- Bann Estuary
- Magiligan
- The Skerries

Expected task duration: 12 months

Stage 2

If the need for new or amended legislation and mechanisms for the designation of true multiple use MPA's is accepted, then there will be a need for a clear structure to utilise new mechanisms in the most efficient and effective manner. Accordingly the following tasks would be required to ensure that the MPA programme progresses in the most effective manner:

- Establishment of mechanisms to support new legislation (dependent on the content of legislation, but could include the establishment of a Northern Ireland Marine Management Group etc);
- Development of a Strategy for MPA designation including:
 1. A review of all existing Stage 1 pilot MPA's in terms of boundary amendment, zoning, management etc;
 2. A review of all candidate areas outside of the pilot areas to consider their core values and the degree of threat to such values;
 3. A prioritised approach (based on risk) to the designation of new MPA's;
 4. A comprehensive approach to consultation mechanisms;
 5. A periodic review of MPA functioning and the resourcing.

Expected task duration: 5 years

9 REFERENCES

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APPENDIX 1

Matrix of Instruments Relevant to the Creation and Management of MPA's in Northern Ireland

APPENDIX 1 - COASTAL AND MARINE LEGISLATION MATRIX - NORTHERN IRELAND

Instrument Source:									
Instrument	Source	Sector's)	Requirement or Intent	Spatial Extent	Management tools	Application	Lead Agency	Function	
CONVENTIONS									
UN Convention on the Law of the Sea (UNCLOS) 1994 (N.Ireland acceded in 1997)	United Nations	All	Seeks to ensure consistency in marine management amongst members	Provides for establishment of territorial sea out to 12nm from lwm.	Provides UK with sovereignty over all territorial waters (TW's) and the organisms living in it	Enables management of water out to 12nm to be determined by Northern Ireland Assembly	EHS (species and habitats)	M/E	
					Provides the power to make regulations for TW's with respect to UK's international conservation obligations	Enables the provision of regulatory measures for the conservation of species and/or habitat afforded protection under UK endorsed international agreements	EHS (species and habitats)	M/E	
						Defines an international 'right of innocent passage' for vessels thru international waters. Innocent passages are NOT defined as fishing or the wilful and serious pollution	Enables control of fishing within TW's and also the control/enforcement of marine pollution (dumping at sea, ballast water exchange etc)	NI Dept of Agriculture and Rural Development (DARD)	F
The Convention on Biological Diversity 1992	United Nations Rio Earth Summit	All	Seeks to ensure the protection of biodiversity	Limits of national jurisdiction					
			Requires that members take conservation measures for the protection of biodiversity within national boundaries	The extent of TW's	Provides the requirement to maintain biodiversity within TW's	Enables the provision of National Strategies and Plans for national biodiversity at a species or habitat level (within the UK this relates to the UK BAP and related plans).	EHS out to 12NM and JNCC out to 200nm	M	
					Article 8 provides for the provision of in situ measures to protect biodiversity	Enables the provision of spatially defined management areas for the conservation of biodiversity	EHS out to 12NM and JNCC out to 200nm	F	
Ramsar Convention 1975	International Agreement	All		All designated Ramsar sites within Northern Ireland (see map A). Ramsar sites can cover all fresh and brackish waters and marine waters (where the depth at low tide does not exceed 6m)	Provides for the management and designation of internationally important wetland sites	Enables management provisions to be made for Ramsar sites. In NI this is achieved thru the land use planning system and the management of ASSI's	EHS	M/F	
MARPOL Convention 1973 Int Convention on Prevention of Pollution from Ships	International Agreement	Shipping	Seeks to prevent acute or chronic marine pollution. Actively prohibits the dumping of hazardous materials at sea and provides a permit framework for listed substances	Includes all inshore and offshore areas adjacent to Northern Ireland	Provides impetus of management of marine pollution	Enables the provision of pollution control measures, consistent with international policy	Determined through various instruments - UK Merchant Shipping Act 1995/UK Merchant Shipping and Maritime Security Act 1997/UK Pilotage Act 1987/Harbour Works (Assessment of Env Effects) Regs/Coastal Protection Act 1949/Food and Environmental Protection Act 1985. LEAD ROLE in NI TW's to be DARD	MF	
Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) 1975	International Agreement	All	Seeks to prevent trade of endangered species	UK	Provides impetus for measures aimed at reducing th eopportunities for illegal trade of endangered species	Enables control mechanisms for prevention of illegal trade to operate with regard to Internationally consistent objectives	UK Government	M	
EUROPEAN LEGISLATION/DIRECTIVES									
The Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Convention) 1998	European Agreement	All	Conservation and sustainable management of the ecosystems of the North East Atlantic	Includes all inshore and offshore areas adjacent to Northern Ireland	Provides for signaturees to develop measures to conserve the ecosystems and biological diversity of maritime areas	Enables the designation of management areas or measures to protect key species or habitat	EHS out to 12NM and JNCC out to 200nm	M/E	
					A series of guidelines for the selection of habitats and species requiring protection has been developed (Texel-Faial Criteria)	Enables a structured internationally consistent approach to MPA designation	EHS out to 12NM and JNCC out to 200nm	M	
					Provides guidance on the selection and management of MPA's	Enables a structured internationally consistent approach to MPA designation	EHS out to 12NM and JNCC out to 200nm	E	
					Provides a suite of Ecological Quality Objectives relating to sea mammals, seabirds etc and biophysical factors such as nutrient budgets etc	Enables best practice, scientifically sound management objectives to be developed within MPA's	EHS out to 12NM and JNCC out to 200nm	M/F	
EC Directive on the Conservation of Wild Birds 79/409/EEC. The Birds Directive	European Directive	All	Conservation of rare or vulnerable birds listed in Annex 1 of the Directive and all migratory birds within the EU	All designated Special Protection Areas (SPA's) In NI see Map B	Provides for member States do designate a series of SPA's	Enables member States to designate a series of SPA's	EHS out to 12NM and JNCC out to 200nm	M	
					Provides for member States to take conservation measures allied to the protection of birds listed on Annexe 1 of the directive and/or regularly occurring migratory species	Enables member States to take special measures to protect the SPA network	EHS out to 12NM and JNCC out to 200nm	M	

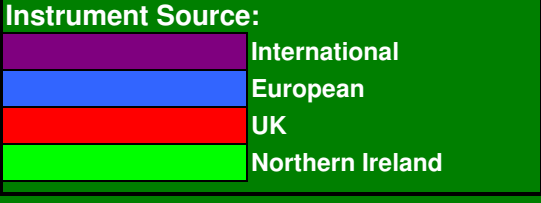
APPENDIX 1 - COASTAL AND MARINE LEGISLATION MATRIX - NORTHERN IRELAND

Instrument Source:								
Instrument	Source	Sector's)	Requirement or Intent	Spatial Extent	Management tools	Application	Lead Agency	Function
						In Northern Ireland, the Birds Directive is implemented by means of Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 which is listed below under domestic instruments		
EC Directive on the Conservation of Natural Habitats AND OF Wild Fauna and Flora 92/43/EEC The Habitats Directive	European Directive	All	Conservation of habitats and species of importance listed on Annex 1 & 2 of the Directive	All designated Marine Special Areas of Conservation (mSAC's) and Special Areas of Conservation (SAC's_	Provides member states to designate a series of mSAC's and SAC's	Enables member States to designate a series of mSAC's and SAC's	EHS out to 12NM and JNCC out to 200nm	M
					Provides for member States to take conservation measures allied to the protection species listed on Annex 1, and Habitats listed on Annex 2	Enables member states to take measures to restore or maintain the favourable status of all listed Habitats and Species	EHS out to 12NM and JNCC out to 200nm	M
						In Northern Ireland, the Habitats Directive is implemented by means of Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 which is listed below under domestic instruments		
Council Directive 79/923/EEC The Shellfish Waters Directive	European Directive	Fishing	TO BE REPEALED UNDER AUSPICES OF THE WATER FRAMEWORK DIRECTIVE	EU Wide				
Convention on the Conservation of European Wildlife and Natural Habitats - The Bern Convention	European Agreement	All	Conservation of key european flora nad fauna	EU wide	Provdies impetus for measures to restrict take disturbance or damage to native species	Has provided focus and legislative context for UK instruments	UK Government	M
Agreement on Conservation of Small Cetaceans of the Baltic and North Seas - ASCOBANS	European Agreement	All	Protection of small cetaceans in the Baltic and North Seas, in terms of practical conservation measures	North Sea	Provides the impetus and focus for UK legislation to address all impacts on small cetaceans in the North Sea (UK territorial waters)	Has potential for a more proactive approach to small cetacean (especially inshore) conservation within the UK	UK Government	M
Water Framework Directive 2000/60/EC	European Directive	All	To ensure that water quality across Europe ensures good ecological status of waterways	EU Wide	Provides obligation for member states to manage water in an integrated manner, with a view to ensuring the good ecological status of waterways	Enables member States to define integrated water management initiatives and area based "River Basin Districts" and cross border "International River Basin Districts".	EHS	M/E
						In Northern Ireland, the Water Framework Directive is implemented by means of Water Environment (Water Framework Directive) Regs (Northern Ireland) 2003 which is listed below under domestic		
Env Liability Directive	Draft EC Directive	All	Seeks to provide stringent EU wide control over damage to the environment by prevention and restoration	UK Territorial Waters	May provide for more stringent measures to prevent shipping pollution spill incidents	May enable environmentally sensitive areas to be established in order to reduce impacts of marine pollution of risks from shipwreck related spills	Unclear at present	F
EC ICZM Recommendation	European Recommendation	All	Requires the provision of a National stock take on coastal/marine management and the production of a National Strategy for ICZM (CURRENTLY IN PRODUCTION BY DEFRA). NI ICZM Strategy expected 2006	Potentially all territorial waters and coastal areas	May provide for the integration of terrestrial and marine management in an integrated fashion.	May enable the provision of adjacent terrestrial component of MPA's and the control of terrestrial activities impacting the marine environment	DEFRA as UK lead	M
CONSERVATION								
UK Offshore Habitats Regulations 2003	UK Regulations	All	Extends the scope of the application of the Birds and Habitats Directives out to the limit of UK Territorial Waters	All UK Territorial Waters	Provides for the designation of a series of Natura 2000 in offshore marine areas	Enables use of potential Natura 2000 sites as active components in MPA management.	JNCC	E/F
Control of Trade in Endangered Species Regulations (COTES) 1997	UK Regulations	All	Seeks to extend the provisions of International and European treaties and agreements to restrict the trade of endangered species	UK	Provides for the enforcement and criminal prosecution of trafficking endangered species (such as cetaceans etc)	Enables the contol of activities based on the trafficking or illegal slaughter of protected species	NI Constabulary	F
Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995	Northern Ireland source regulation	All	Implementation of the EC Habitats and Birds Directives (see above)	The existing and potential range of sites designated in accordance with the requirements of the Habitats & Birds Directives (out to 12nm over marine areas)	Provides for the management of the existing and potential SAC and SPA network	Enables use of potential Natura 2000 sites as active components in MPA management.	EHS out to 12NM and JNCC out to 200nm	E/F
			Designation of a series of SAC and SPA sites representing the NI contribution towards the natura 2000 network	ditto	Provides for the designation of a series of Natura 2000 sites in coastal and marine areas	Enables use of the existing and emerging Natura 2000 network as a focus for MPA designation	EHS out to 12NM and JNCC out to 200nm	E/F
						In Northern Ireland, Natura 2000 sites are underpinned by Areas of Special Scientific Interest (ASSI's) as designated under the Environment (Northern Ireland) Order 2002. See below.		

APPENDIX 1 - COASTAL AND MARINE LEGISLATION MATRIX - NORTHERN IRELAND

Instrument Source:									
Instrument	Source	Sector's)	Requirement or Intent	Spatial Extent	Management tools	Application	Lead Agency	Function	
Nature Conservation and Amenity Lands (Northern Ireland) Order 1985	NI source legislation	All	Designation of wide areas of Countryside for protection or management as National Parks for the purposes of:(a)conserving or enhancing the natural beauty or amenities of that area;	Terrestrial areas down to LWM	Designation under Article 12 and creation of management provisions under Article 13	Provides of the multiple use management of large areas of multi-tenure land. Marine use is not explicitly referred to in the order as a potential National Park Area.	Department of the Environment (EHS?) Article 31 - Enforcement of Byelaws: Any person who—	E/F	
			(b) conserving wildlife, historic objects or natural phenomena therein;					(a) commits an offence against any byelaw made under Article 19, 21 or 30; or	
			(c) promoting the enjoyment by the public of the area; and					(b) obstructs any person authorised under paragraph (1); shall be guilty of an offence under this Order, and shall be liable on summary conviction to a fine not exceeding level 2 on the standard scale.	
			(d) providing or maintaining public access to the area						
Designation of areas of countryside for management for nature conservation purposes as Nature Reserves	Terrestrial areas down to LWM	Designation under Article16 and the provision to make byelaws under Article 19 to:	Provides for the creation of management based byelaws	Department of the Environment (EHS?) Article 31 - Enforcement of Byelaws: Any person who—	E/F				
		a)provide for prohibiting or restricting the entry into, or movement within, the nature reserve of persons, vehicles, boats and animals;		(a) commits an offence against any byelaw made under Article 19, 21 or 30; or					
		(b) prohibit or restrict the killing, taking, molesting or disturbance of living creatures of any description in the nature reserve, the taking, destruction or disturbance of eggs, larvae or other immature stage, of any such creature, the taking of, or interference with, vegetation of any description in the nature reserve, or the doing of anything therein which will interfere with the soil or damage any object in the reserve;		(b) obstructs any person authorised under paragraph (1); shall be guilty of an offence under this Order, and shall be liable on summary conviction to a fine not exceeding level 2 on the standard scale.					
		(c) prohibit or restrict the shooting of birds or of birds of any description within such area surrounding or adjoining the nature reserve (whether the area be of land or of sea) as is requisite for the protection of the nature reserve;							
		(d) regulate or prohibit the taking away of soil, turf, sand or minerals of any description;							
Designation of Nature Reserves deemed to be of National importance as National Nature Reserves	Terrestrial areas down to LWM	As above	Provides for the creation of management based byelaws	Department of the Environment (EHS?) Article 31 - Enforcement of Byelaws: Any person who—	E/F				
				(a) commits an offence against any byelaw made under Article 19, 21 or 30; or					
				(b) obstructs any person authorised under paragraph (1); shall be guilty of an offence under this Order, and shall be liable on summary conviction to a fine not exceeding level 2 on the standard scale.					
Designation and management of Marine Nature Reserves	Marine Areas between LWM out to 3nm	Designation under Article 20 for areas of tidal waters or sea landward of the point from which territorial sea is measured (LWM) and out to 3nmiles for the purposes of:	Provides for the creation of marine Nature Reserves effectively out to the 3nm limit	EHS	E				
		(a) conserving marine flora fauna or features of geological, physiographical or other scientific or special interest in the area; or							
		(b) providing, under suitable conditions and control, special opportunities for the study of, and research into, matters relating to marine flora and fauna and the physical conditions in which they live, or for the study of features of geological, physiographical or other scientific or special interest in the area.							

APPENDIX 1 - COASTAL AND MARINE LEGISLATION MATRIX - NORTHERN IRELAND

Instrument Source:								
								
Instrument	Source	Sector's)	Requirement or Intent	Spatial Extent	Management tools	Application	Lead Agency	Function
				Marine Areas between LWM out to 3nm	<p>Management under Article 21 via the ability to provide byelaws to:</p> <p>(a) may provide for prohibiting or restricting, either absolutely or subject to any exceptions—</p> <p>(i) the entry into, or movement within, the reserve of persons and vessels;</p> <p>(ii) the killing, taking, destruction, molestation or disturbance of animals or plants of any description in the reserve, or the doing of anything therein which will interfere with the sea bed or damage or disturb any object in the reserve; or</p> <p>(iii) the depositing of rubbish in the reserve;</p> <p>(b) may provide for the issue, on such terms and subject to such conditions as may be specified in the byelaws, of permits authorising entry into the reserve or the doing of anything which would otherwise be unlawful under the byelaws; and</p> <p>(c) may be so made as to apply either generally or with respect to particular parts of the reserve or particular times of the year.</p> <p>Nothing in the byelaws shall:</p> <p>4(a) prohibit or restrict the exercise of any right of passage by</p>	Provides for the provision of marine based byelaws out to 3nmiles	Department of the Environment (EHS?) Article 31 - Enforcement of Byelaws: Any person who—	E/F
Water Environment (Water Framework Directive) Regs (Northern Ireland) 2003	NI source legislation	All	Implementation of the EC Water Framework Directive (see above)	Inland waterways and bodys and estuarine areas.	Provides for the management of the water resources and holistic catchment management	Enables use of River Basin Districts and International Rvier Basin Districts as active management tools in determining coastal and inshore water quality (adjacent to or inclusive of MPA's)	EHS	E/F
The Wildlife (Northern Ireland) Order 1985	NI source legislation	All	Protection of wild animals and plants within Northern Ireland. Schedules of listed species contain reference to coastal and marine birds and also to seals and cetaceans	All NI land and territorial waters	Provide restrictions on the take and disturbance of wild plants and animals with enforcement based prescriptions. Several coastal/marine species are provided, and the provision exists to add species to Schedules. Article 16 also provides for the provision of Wildlife Refuges where more stringent measures relating to disturbance and access etc can be addressed.	Provides for direct control over certain listed species	EHS	F
The Environment (Northern Ireland) Order 2002	NI source legislation	All	Provides legislative base or IPPC, Air Quality and the designation and management of ASSI's	Terrestrial Areas down to LWM	Provision of tools to address pollution control in terrestrial areas and the designation and management of ASSI's	Potential for pollution control mechanisms to be critical to success of integrated management of catchments and inshore waters. Designation and management of coastal ASSI's (extend down to the low water mark)	EHS	F
MARINE HERITAGE								
UK Protection of Wrecks Act 1973 (c.33)	UK Legislation	All	Seeks to ensure the protection of historic wrecks and isolation of dangerous wrecks in UK territorial waters	UK Territorial Waters	Provides for orders to ensure that heritage wrecks are left intact and any activities which may threaten such wrecks excluded from a defined spatial area around the site	Enables marine heritage sites to be actively protected via spatial and permit controls	Dept of Culture media and Sport and NI EHS	E/F
UK Ancient Monument and Archaeological Areas Act 1979	UK Legislation	All	As above for protection of heritage or archaeological areas on the seabed	UK Territorial Waters	Provides for regulation of activities which may impact marine heritage seabed areas	Enables marine heritage sites to be actively protected via spatial and permit controls	ditto	EF
Historic Monuments and Archaeological Objects (Northern Ireland) Order 1995 N19	NI Legislation	All	Provides application of the above Act in Northern Ireland	NI Territorial Waters	ditto	ditto	ditto	F
(NI) Protection of Wrecks Act 1973	NI Legislation	All	Provides for the provision of Orders protecting wrecks considered to be of heritage value	NI Territorial Waters	Provides for protection of specific wrecks	Enables direct protection of key wrecks	ditto	F
COASTAL/MARINE PLANNING								
UK Coastal Protection Act 1949	UK Legislation	All	Provides for the siting of oil and gas exploration and wind and wave turbines infrastructure in Auk waters. Controls removal of material such as sand and gravel from tidal waters.	All UK Territorial Waters	Provides mechanisms for the control of development and activities within the marine environment	Enables active control of development and activities requiring development within inshore and offshore waters	DoT and DARD	F
UK Food and Environmental Protection Act 1985 (Part II)	UK Legislation	All	Devolves FEPA responsibilities to DoE Northern Ireland. Part II relates to the placement of materials or articles in tidal waters e.g. Wind Turbines, aggregate extraction	All UK Territorial Waters	Provides mechanisms for licensing of all marine development	Enables active control of development and activities requiring development within inshore and offshore waters	Defra and DoE	F
LAND/SEA INTERFACE ISSUES								


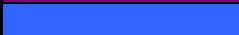


APPENDIX 1 - COASTAL AND MARINE LEGISLATION MATRIX - NORTHERN IRELAND

Instrument Source:

- International
- European
- UK
- Northern Ireland

Instrument	Source	Sector's	Requirement or Intent	Spatial Extent	Management tools	Application	Lead Agency	Function
Drainage (Northern Ireland) Order 1973	NI source legislation	All	Places duties on IDB's and DARD (in relation to fish protection) to ensure the conservation and enhancement of env values	NI Wide	Enables action to be taken by DARD to prevent any impacts on fisheries from waterways in regard to drainage issues on IDB designated waterways	Enables management of water quality and fisheries management in regard to nearshore or estuarine drainage issues.	Rivers Agency of the Department of Agriculture and Rural Development	F
Planning (Northern Ireland) Order 1991	NI source legislation	All	Places responsibility for development control with DoE	All terrestrial areas down to LWM (Local exceptions may exist)	Primary instrument in land use management	Enables active control provision in management of the coastal zone	DoE	F
Harbour Act (NI) 1970	NI source legislation	Ports	Relates to control of new port development and development within existing ports	NI Wide	Primary head of power of establishment and management of port development in Northern Ireland	Enables the provision of Port Authority involvement in integrated MPA management	DoT	F
Harbours (NI) Order 2002	NI source legislation	Ports	ditto	ditto	ditto	ditto	ditto	F
Water (NI) Order 1999	NI source legislation	All	Regulates control of toxic or hazardous to watercourses	NI Wide	Provides for the control (via consent) for discharge to waterways or groundwater	Enables for the management of waterways in or adjacent to MPA's	EHS	F
FISHERIES								
Forthcoming UK Net Benefits Report	UK Report	Fisheries	This report is expected to introduce the requirement to designate fisheries based NTZ's across the UK	UK wide	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD (likely lead agency in Northern Ireland)	M/E
Fisheries Act (Northern Ireland) 1996 (as amended)	NI source legislation	Fisheries	Primary Fisheries Legislation	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Fisheries (Amendment) (Northern Ireland) Order 1991	NI source legislation	ditto	ditto	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Foyle Fisheries Act (Northern Ireland) 1952	NI source legislation	ditto	Supporting Fisheries Legislation	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
SR 1999/415 EIA (Fish Farming to Marine Waters) Regulations (Northern Ireland) 1999	NI source legislation	ditto	ditto	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Mussels (Prohibition of Fishing) Regulations (Northern Ireland) 1999	NI source legislation	ditto	ditto	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Razor Shells (Prohibition of Fishing) regulations (NI) 1998 No 414	UK Legislation	ditto	ditto	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Conservation of Scallops Regulations (NI) 1997 No89	NI source legislation	ditto	ditto	NI Territorial Waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Inshore Fishing (Daily Close Time for Scallops) regulations (NI) 2000 No39	NI source legislation	"	"	"	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Scallops (Irish Sea)(Prohibition of Fishing)Order 1984 SI No 1523	UK Legislation		Seasonal closure of Irish Sea(within UK waters) to Scallop fishing	UK waters of Irish Sea	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Inshore Fishing (Prohibition of Fishing and Fishing Methods) Regulations (NI) 1993 No155	NI legislation		fishing and gear restrictions within Belfast Lough, North Coast, Dundrum Bay, Carlingford Lough and Strangford Lough	NI waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Strangford Lough (Prohibition of Fishing for Shellfish) regulations (NI) 2001 No 379	"		Prohibits fishing by mechanically propelled vehicles	Strangford Lough	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Lobsters and Crawfish (Prohibition of Fishing and Landing) Order 2000 SI No 874	UK legislation		V notching Lobsters/Crawfish	various	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Undersized Lobsters Order 2000 SI No 1503	"		Minimum size	various	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Crabs and Lobsters (Minimum Size)Order (NI) 2000 No200	NI legislation		minimum sizes	NI waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Undersized Edible Crabs Order 2000 SI No 2029	UK legislation		minimum size	various	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F

APPENDIX 1 - COASTAL AND MARINE LEGISLATION MATRIX - NORTHERN IRELAND

Instrument Source:
 International
 European
 UK
 Northern Ireland

Instrument	Source	Sector's	Requirement or Intent	Spatial Extent	Management tools	Application	Lead Agency	Function
The Sea Fish (Conservation) Act 1967 (& associated orders)	UK		Primary Legislation		TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Commission Regulation (EC) No2244/2003 (& orders)	EU		Regulates fisheries including restrictive licensing		TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EEC) No 850/98 (& orders)	EU		satellite based vessel monitoring systems	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Sea Fish (Specified Sea Areas)(Regulation of Nets and Other Fishing Gear)Order	UK		technical conservation regulations	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
The Prohibition of Fishing with Multiple Trawls Order 2001 SI No 650	UK		technical gear measures	various	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EC) No 27/2005 (& orders)	EU		Restrictions on multiple trawls	various	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EC) No 2371/2002 (&orders)	EU		total allowable catches and quotas. Days at sea restrictions	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EC) No2371/2002 (&orders)	EU		conservation and sustainable exploitation of fisheries resources. Includes foreign access.	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Fisheries Byelaws(NI) 1997 No425	NI		restrictions on the use of fishing gear including drift netting for salmon	NI waters	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EC) No254/2002	EU		Irish Sea Cod recovery	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council regulation Regulation (EC) No2549/2000	EU		Additional technical measures for Cod recovery	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EC) No423/2004	EU		measures for Cod recovery	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
Council Regulation (EC) 811/2004	EU		Hake recovery measures	EU	TO BE ESTABLISHED	TO BE ESTABLISHED	DARD	E/F
SHIPPING								
UK Prevention of Oil Pollution Act 1971	UK Legislation	Shipping	Provides the Primary source legislation for control of marine pollution from shipping, implemented via the following instruments:	UK Territorial Waters	Provision of a range of mechanisms for the prevention and response to marine pollution instruments	Application determined by Regulations below	Various	E
UK Merchant Shipping and Prevention of Pollution Order 1983	UK Legislation	Shipping	See above	UK Territorial Waters	Enables the management and enforcement of shipping standards (survey of vessels etc) insofar that this relates to risk reduction in terms of marine pollution and safety	Provides for the management of hazardous shipping activity, adjacent to or within MPA's	ditto	E/F
UK Merchant Shipping Act 1995	UK Legislation	Shipping	Provides for the management of shipping activities in UK waters	UK Territorial Waters	Enables the management of shipping activities such as navigation, movement of vessels containing hazardous substances etc	Provides for the management of hazardous shipping activity, adjacent to or within MPA's	DTI	F
UK Pilotage Act 1987	UK Legislation	Shipping	Provides for the training and authorisation of pilots in UK waters	UK Territorial Waters	Ensures that Pilots in UK Waters are trained to a high standard	Potential for education of pilots operating in or adjacent to MPA's in regard to operation practice which accords with MPA management. Eg application of a code of conduct in regard to vessel movement and cetaceans	Pilot Authorities	F
ENERGY								
UK Energy Act 2004	UK Legislation	Energy	Provides scope and mechanisms for all UK Energy sources, including UK marine based sources	UK Territorial Waters	Provides mechanism for the strategic development of offshore windfarm locations	May provide opportunity to ensure that offshore windfarm development is not located on potential MPA areas	UK Government	F
PETROLEUM INDUSTRY								
UK Continental Shelf Act 1964	UK Legislation	All	Vests all ownership of oil and gas within the UK and its territorial sea with the Crown and gives Government rights to issue licenses to explore and extract	UK Territorial Waters	Provides for the base management of UK offshore petrochemical resource	Enables holistic management of UK offshore petrochemical resources	DTI	E/F
UK Petroleum Act 1998	UK Legislation	Petroleum	ditto. Seeks to ensure safety by potential to declare exclusion zones around well heads, rigs etc	UK Territorial Waters	Provides for mechanisms to increase safety and environmental risk within production areas. E.g. exclusions zones	Enables measures to be taken in productive areas to minimise risk of shipping collision etc	DTI	E/F

APPENDIX 2

Potential MPA pilots for Northern Ireland

APPENDIX 2 MPA Pilots in Northern Ireland (Stage 1)

INTRODUCTION

As discussed, the scope for the provision of a comprehensive network of MPAs around Northern Ireland is not provided for by existing legislation and new or amended legislation may take some time to enact. There is, therefore, a need to establish a rationalised, phased approach to the development of an MPA suite, based upon the principle of the Stage 1 and Stage 2 MPAs.

The structure provided in this section has been developed to establish a programme that will enable MPA designation in Northern Ireland to progress at a rate that will accommodate changes, or the provision of new legislation. It will also allow the time to undertake the range of studies and consultations required for the provision of the MPA suite.

Stage 1” will act as the ‘first sift’ of pilot sites. Effectively, it involves the creation of MNR based nature conservation MPAs in, and adjacent to, areas covered by existing SAC/SPA/Ramsar/MNR/ASSI designations. This is achieved by identifying those designated sites that cover or lie adjacent to areas that support sea bed habitats and species that are important in an international, as well as a Northern Ireland context, due to their conservation value.

In order to identify those sites that qualify as Stage 1 MPAs, this report uses four main sources of information:

- Designated area citations;
- The results of the Irish Sea Pilot Project (ISPP); and
- The recommendations made for the selection of MNRs in Northern Ireland in Erwin *et al.* (1990).

Using citations in Stage 1

While the existing site designations and their associated citations have been used in the identification of potential Stage 1 sites, they cannot simply be considered in isolation. As discussed in **Section 4.1.1**, the ASSI designation does not cover the subtidal environment and so can only effectively be used to identify areas that are protected for particular diversity or have a prevalence of intertidal habitats and species that may signify adjacency to an important subtidal area.

The SPA/SAC citation provides more information, especially on the potential threats to the site and the ways in which they should be managed. However, European sites, while protecting a range of habitats and species within them, can have a focus that is too narrow to be directly applicable to MPAs. SPAs, for example, are concerned with the protection of birds and their associated habitats. SACs are selected on the basis of the presence of Annex I and II listed habitats and species. While every effort is made to manage activities that may impact upon the integrity of these sites, it may not be enough to fit in with the objectives and principles of any one MPA.

Criteria for selection of sites

Erwin *et al* published *Inshore Marine Life of Northern Ireland* in 1990. Chapter 8 of this publication *Conservation of Shallow Sublittoral Marine Sites around Northern Ireland*, discusses the various criteria for conservation of sites in the seas around the British Isles, as originally set out in Gubbay (1985). **Table 1** presents these criteria along with a discussion of their applicability to the identification of Stage 1 nature conservation MPAs. The criteria are discussed from a nature conservation perspective but they are equally applicable to cultural heritage resources.

Table 1 Discussion of the applicability of the criteria used in protected site designations

Criteria	Applicability
Extent	As discussed previously in this report (see Section X.X), size is an important factor in the designation of MPAs. Erwin <i>et al</i> (1990) state that a reserve to protect a particular habitat should be several miles in extent and should contain a number of examples of the protected habitat along with a range of other habitats. This approach is highly significant in the MPA context, as an impact upon a particular habitat or area of seabed is very likely to have knock on effects upon neighbouring habitats. However, large scale MPAs may not always be the most appropriate answer. Lessons learnt in New Zealand and the UK (i.e. Lundy), show that MNRs (and by definition, MPAs) need not be hugely extensive in order to protect a vital marine resource.
Diversity	While marine sites such as SACs focus the majority of their protection upon those specific habitats and species for which they are designated, MPAs offer the opportunity to actively protect and sustainably manage a much greater diversity. The diversity of habitats and communities at a particular site plays a highly significant role in selection of Stage 1 MPAs within this report.
Naturalness	On land, the dearth of areas that maintain a degree of "naturalness" means that any identified sites are of considerable conservation value. The significance of this criteria is lessened in the sublittoral environment of Northern Ireland, as a far greater number of sites will maintain a degree of naturalness.
Rarity	Rarity is traditionally one of the most important features of designated site selection. However, in the MPA context, rarity is not enough when considered in isolation. The selection of MPAs should include rarity and the presence of rare habitats and species should enhance the status of the proposed site. However, it will be used in conjunction with other criteria parameters.
Fragility	The "fragility" of a habitat and/or species, often also referred to as the sensitivity or the irreplaceability. Marine resources, sensitive to disturbance, require protection within MPAs, especially where they are also of particular conservation value due to their rarity or irreplaceability. As one of the overall objectives of an MPA is to manage activities (and, therefore, impacts) in a sustainable manner; the fragility of the resource should be an important consideration.
Representativeness	This criterion has played an important part in the selection of Natura 2000 sites around Europe. Sites have been selected as they represent 10% of the European resource of habitat X or 5% of the UK breeding population of species Y. In the MPA context, the most practical way of incorporating representativeness would be to identify a relatively low number of sites that have a considerable extent, covering a range of diversity, while still being manageable.
Recorded history	One of the main failings of efforts to protect the marine environment is lack of understanding. The UK Biodiversity Action Plan process, for example, has encountered a number of significant problems in the marine environment for this reason. MPAs will benefit in terms of management and long term sustainability if there has been study of

Criteria	Applicability
	the site in the past, providing a baseline upon which monitoring and management decisions can be made.
Position in an ecological/geographical unit	The most important sites in Northern Ireland, in terms of nature conservation, will already carry one or more conservation designations. Establishment of MPAs within or adjacent to these sites will initially be the best practical option in terms of wardening and management of the site as management requirements of the MPA can be incorporated into the existing management plan for the protected site, adding an extra layer of protection and a wider jurisdictional boundary.
Intrinsic appeal	Certain habitats, species and environments in general attract more interest than others. As the marine environment is fairly inaccessible unless you are a diver. However, the marine environment does have intrinsic appeal, and it is these areas that require the protective management offered by an MPA.
Research and educational value	As already mentioned, there is room for considerable improvement in our understanding of the marine environment. Sites that provide the opportunity for research and education will be of vital importance to the MPA network.

Site Selection

Erwin *et al* (1990) recommended four sites that should qualify as MNRs (bold) and four sites that are of significant nature conservation value to be considered for protection:

- **Strangford Lough;**
- **Rathlin Island;**
- **The Skerries, Portrush;**
- **Carlingford Lough;**
- Area of cobble/boulder on the North East coast;
- Red Bay;
- Dundrum Bay; and
- The sea area just outside the mouth of Strangford Lough.

Other important areas for consideration include:

- Belfast Lough;
- Larne Lough;
- Lough Foyle;
- The Maidens;
- Bann Estuary;
- Outer Ards Peninsula;
- North Antrim Coast; and
- Magilligan.

Erwin *et al*. (1990) justify the selection of the first four sites as, if designated as MNRs, the sites would incorporate 98% of the species and all the habitats of the Northern Ireland nearshore sublittoral within protected areas. However, for a number of reasons, MNRs have not been as successful in Northern Ireland (and the UK in general) as they perhaps should have been and only Strangford Lough, so far, carries the designation.

As part of this “first sift” for stage 1 sites, and based on the information available for this study, this report proposes that the initial sites for consideration should be:

- Carlingford Lough
- Murlough;

- Strangford Lough (including the outer Ards Peninsula and Copeland Islands);
- Rathlin Island; and
- The Skerries.

For each site in turn, the following information is considered in the rest of this section:

- Brief description of the site;
- Existing designated status (including area of site and designated features);
- Information known about the site (drawing, where possible, on the outputs of the ISPP);
- Management measures already in place;
- Recommendation for Stage 1 status; and
- Recommendation for Stage 2.

In addition to those considered above for inclusion in the stage 1 list, consideration should be given to the following sites for stage 2 (these sites have not been included in detail in this study due to a lack of factual, reported information regarding):

- North Antrim Coast;
- Bann Estuary; and
- Magilligan.

CARLINGFORD LOUGH

Carlingford Lough is located in the South East of Northern Ireland, and overlaps the border with the Irish Republic. The Northern shore of this narrow, mountain encircled inlet is in Northern Ireland and supports some of the countries most extensive intertidal mudflats.

Erwin *et al* (1990) state that three features of the Lough merit special consideration and give it potential value as an MNR, and hence, potentially, a Stage 1 MPA. These are:

- Sea pen beds at the head of the Lough;
- Sand and rocky reef communities in the Lough's centre; and
- Tidal rapid communities at the Lough's entrance.

The value of this site lies in its unique characteristics when compared with similar environments in Strangford Lough and around Rathlin Island. Sea pen communities are found in both Strangford Lough and Carlingford Lough. However, the Carlingford community is much more extensively developed and provides habitat for a range of species not encountered in the less developed beds at Strangford Lough. The sand and reef communities are similar to those found elsewhere in Northern Ireland, but the tidal rapid community is relatively unique. The Narrows at Carlingford support a different community of sponges and hydroids to those found in Strangford.

Existing designations

The subtidal area of Carlingford Lough is not specifically covered by conservation designations. However, the following designations do relate to the rest of the Lough and its foreshore:

- ASSI;
- SPA

ISPP information

Carlingford is a shallow and relatively cold water sea lough, when compared to other areas in the ISPP. It contains around 4-5 biotope complexes, becoming more diverse towards the mouth. The Lough has a number of records of important benthic and algal species and habitats (again, increasing towards the mouth) and is a relatively important spawning and nursery ground for at least 4 species of commercially important fish. The Lough represents an important and irreplaceable area of biodiversity in Northern Ireland.

Current management

The Lough has a high aesthetic value and, as such is popular recreation. It also supports commercial fisheries production and small scale mariculture. Dredging and shipping can also apply pressures to the ecosystem within the Lough.

At the time of writing, a conservation management plan for the Lough is under review by DoENI and no specific management measures for the site are listed.

Recommendation for Stage 1

Carlingford Lough is of value for its coastal, foreshore and subtidal biodiversity as well as a social and cultural resource. However, significant political co-operation will be required with the Irish Republic if the site is to be effectively managed. As such it **is not** recommended that Carlingford Lough form one of the pilot MPAs.

Recommendation for Stage 2

Given sufficient co-operation, study, political will and legislative power, Carlingford Lough could be developed into a Stage 2 MPA, following the pilot. This report recommends that the site should be initially investigated as a **Natural Heritage: Multiple Use MPA** with a clearly defined, zoning based management scheme that compliments the existing management effort and statutory responsibilities already present in the area. It is also advisable that any management plan developed for the ASSI and SPA designations be expanded below Mean Low Water to ensure that adequate provision is made to enable a smooth transition to MPA status in the near future.

MURLOUGH

Murlough incorporates Dundrum Bay and forms a large marine inlet between Carlingford Lough to the south and Strangford Lough to the north. It is an area of considerable importance, holding the largest area of sublittoral sand banks in Northern Ireland. The area is of considerable importance for its coastal geomorphology.

Existing designations

Murlough, unlike Rathlin Island and Strangford Lough does not qualify as an SPA or a Ramsar site. It does, however, have the following designations:

- ASSI
- National Nature Reserve (NNR); and
- SAC

ISPP information

The ISPP information shows that Murlough contains a relatively high number of biotope complexes and has numerous records of provisionally important benthic and algal species and habitats. It is used as a nursery ground for at least 5 commercially important fish species.

Current management

Much of the area covered by the SAC designation is in the ownership of the National Trust and is managed as an NNR, to the benefit of the natural communities. The MoD owns a substantial area around Ballykinler and take a favourable approach to conservation, as do the Royal County Down Golf Club, who own much of the dune complex along the western foreshore.

The existing management, while beneficial, is not aimed specifically at the protection of the sublittoral environment and its associated habitats and communities. The designation of a Stage 1 MPA in this area would be highly advantageous in terms of extending the coastal and transitional habitat management practices below the low water mark and enhancing the level of protection to the SAC and the truly marine environment.

Recommendation for Stage 1

Murlough already provides protection to coastal habitats and is under the ownership of organisations that take a favourable approach to conservation. While the site does not hold a large percentage of marine habitats and communities that are not found commonly around Northern Ireland, it is considered to be of high significance in terms of maintaining a diverse and natural community. Therefore it is recommended that Murlough **is** taken forward as a Stage 1 MPA. The MPA should extend to the seaward boundary of the SAC and, pending further study should be extended beyond this point to provide protection of the communities on the outside of Dundrum Bay and to ensure that activities that could have a knock-on effect on the physical process acting in the Bay can be managed.

Recommendation for Stage 2

Given the vast range of uses of the sea in this area, this report suggests that Murlough be investigated as a potential **Natural Heritage: Multiple Use MPA** with a clearly defined, zoning based management scheme that compliments the existing management effort and statutory responsibilities already present in the area.

STRANGFORD LOUGH (INCLUDING THE OUTER ARDS AND COPELAND ISLANDS)

For the purposes of this study, and for initial MPA selection, these sites have been merged into one site, due mainly to their proximity. It is however recognised that these areas are distinct in their natural characteristics and that, whilst going through the MPA process, this site may warrant consideration as two separate MPAs.

Strangford Lough is a shallow sea lough covering some 150km² on the east coast of County Down. The Lough is roughly 30km long and 8km wide, making it one of the largest sea loughs in Ireland (Brown, 1990). Almost land-locked, the Lough is separated from the Irish Sea by the Ards Peninsula to the east and the Lecale coast to the south. The Strangford Narrows, an 8km long channel with a minimum width of 0.5km, connects it to the open sea. The Narrows are subject to extremely strong currents of up to 8 knots (4m/s).

Strangford Lough is probably one of the best known and most important marine sites in Northern Ireland. Along with its outstanding array of marine habitats and species it is also a major cultural resource containing numerous sites and artefacts of archaeological importance as well as supporting a range of recreational and commercial activities such as fishing, diving and sailing.

The Outer Ards site provides a particularly rich lower shore site for red algae which form a dense understorey beneath the wracks and kelps. It is also reported to have a rich invertebrate shore fauna for such an open coast area. Further information is required on the sublittoral characteristics of this site in order to determine its inclusion within the MPA.

The Copeland Islands are important sites for seabirds and provide haul-out, pupping and mating sites for significant numbers of grey and common seals. Further information is required on the sublittoral characteristics of this site in order to determine its inclusion within the MPA.

Existing designations

The importance of Strangford Lough is reflected in the following designations within, encompassing the site:

- 7 ASSIs within the Lough, plus the Outer Ards and Copeland Islands;
- SAC;
- SPA;
- Ramsar; and
- MNR.

ISPP information

The area covered by the existing Strangford Lough MNR is clearly a highly important site in terms of the nearshore marine environment in Northern Ireland. The information contained in the ISPP shows that the Lough contains one of, if not the most, diverse mosaics of habitats and associated species assemblages in the country. It is the site of the greatest number of recorded basking shark sightings and, even with the high amenity value of the Lough, there is a high level of naturalness amongst the range of marine landscapes present.

Current management

Although largely superseded by the SAC designation, it is useful to list the Management objectives for the MNR which are summarised as follows:

- Maintain the physical system in as natural a state as possible;
- Maintain the natural biodiversity;
- Maintain or increase the populations of any notable species present;
- Conserve the landscape and man-made heritage;
- Provide for a healthy, safe and clean environment;
- Allow continued sustainable commercial use;
- Integrate new developments and uses;
- Provide for public enjoyment and appreciation;
- Promote and provide for study and research;
- Monitor the physical system, the wildlife and human use and counter adverse changes where practicable; and
- Co-ordinate the conservation and uses of the reserve within an integrated coastal zone management strategy for the wider area.

The Lough has its own management scheme that incorporates the objectives of the MNR and the need to maintain the favourable condition of the nationally and internationally designated sites. Specifically, the management scheme has been developed to:

- Identify the conservation features that need to be protected;
- Set the standards to which the features should be maintained;
- Clarify where statutory responsibilities lie for different aspects of the Lough;
- Establish a programme to monitor wildlife;
- List the types of activities and developments likely to affect the conservation features;
- Identify where further information is needed and/or action is required to manage activities in consultation with local interests;
- Develop co-ordination between bodies; and
- Promote better communication to the public.

The Strangford Lough Management Scheme sets out, in full, the way in which the Lough will be managed. The reader is referred to the scheme for further information¹.

Recommendation for Stage 1

This report recommends that Strangford Lough **is** taken forward as a Stage 1 MPA. It is of irreplaceable importance to Northern Ireland for its natural environment, amenity value and cultural heritage. The designation of this site could also provide a valuable opportunity to encourage *Modiolus* beds to recover, given adequate management measures. The MPA boundary should follow that of the MNR, but should also be extended to cover the area outside The Narrows and northwards along the Ards Peninsula to incorporate the Outer Ards and Copeland Islands ASSIs.

Recommendation for Stage 2

Given the vast range of uses of the sea in this area, this report suggests that Strangford Lough be investigated as a potential **Natural Heritage:Multiple Use MPA** with a clearly

¹ www.ehsni.gov.uk/pubs/publications/StrangfordLoughPubInfoBooklet_web.pdf

defined, zoning based management scheme that compliments the existing management effort and statutory responsibilities already present in the area.

RATHLIN ISLAND

Rathlin Island is the largest island off the Northern Ireland coast and is situated 5Km offshore of the County Antrim coast. The island lies in the North Channel of the Irish Sea and is subject to strong currents and a range of tidal conditions. As such, the diversity of habitats and species present are of considerable importance nationally and internationally.

Erwin *et al* (1990) and the Rathlin Island SAC citation provide an excellent description of the nature conservation interest of the site. The following is a brief summary of this value.

The marine habitats and species of Rathlin Island cannot be classified in the same way as those found within Strangford Lough. The interaction of the range of physical pressures on the site has led to the development of a highly complex assemblage of habitats and species. The relatively small area of the site can vary rapidly in terms of exposure and prevailing environmental conditions mean that communities are not easily separated or defined.

The physical environmental factors are compounded by the range of geology and landscape types around the island. A deep channel runs just north of the island that drops to around 200m below chart datum, creating sublittoral cliffs of unique value and importance in the UK. There is also a wide range of substrates present from medium sands up to boulders and small sea caves.

Rathlin Island, like Strangford Lough, supports a unique and irreplaceable marine area in Northern Ireland's coastal waters.

Existing designations

The unique and irreplaceable value of Rathlin Island is reflected by the following designations:

- ASSI;
- SPA;
- SAC

ISPP information

Rathlin Island falls outside the boundary of the ISPP.

Current management

The SAC citation states that it is not considered that there are any major management issues relating to the SAC in particular and, rather, suggest some fairly generic impacts that could have an effect on the integrity of the SAC. These include:

- Diving – over-collection of specimens;
- Commercial fishing – although this does not occur around the island to any great extent due to the turbulent nature of the environment;
- Large-scale/mechanical harvesting of shellfish;
- Harvesting of seaweeds;
- Removal of sand and gravel from the islands beaches;
- Grazing regime; and

- Recreational activities on the cliffs.

As these notifiable activities are not considered to be a threat to the integrity of the SAC, the management recommended is the monitoring of the site to be able to identify if any impacts occur in the future.

Recommendation for Stage 1

The waters surrounding Rathlin Island are of highly significant conservation value in the context of protecting the marine environment of Northern Ireland. This report recommends that Rathlin Island **is** taken forward as a Stage 1 MPA

Recommendation for Stage 2

The fact that threats to the site, aside from diving and occasional fishing, are considered negligible, Rathlin offers an excellent opportunity for the creation of a **Natural Heritage: No Take MPA**. By using the MPA designation's powers to prevent potentially damaging activities from occurring, the marine life around the island can be preserved in its current, unique state. The designation need not completely exclude practices that are currently occurring (e.g. diving, sand extraction etc) need not be completely banned within the site. However, management measures to ensure that these activities have no long-term and/or significant adverse impact on the site will be essential to its long-term maintenance.

THE SKERRIES, PORTRUSH

In keeping with the overall aim of developing an ecologically coherent network of well managed MPAs in Northern Ireland, the Skerries, off Portrush are characterised by sand-scoured rock and sheltered sand communities that are distinctly different to those found around either Rathlin Island or Strangford Lough. The Skerries experience summer water temperatures that are unusually warm for Northern Irish waters, and so, are able to support communities usually associated with southern and western coasts of Ireland. The potential disadvantages of The Skerries (as discussed in Erwin *et al*, 1990) is the fact that habitat diversity is low in comparison to Strangford Lough and Rathlin Island. The Skerries also do not form a discrete or easily managed site.

MORE INFORMATION IS NEEDED ON THE BENTHIC RESOURCE OF THIS AREA IN RELATION TO THE CRITERIA USED AT OTHER SITES

Existing designations

The following designations are applied to The Skerries:

- ASSI;

ISPP information

The Skerries fall outside the area of the ISPP.

Current management

There are no current management activities or recommendations for the sublittoral area of The Skerries.

Recommendation for Stage 1

The Skerries provide an undoubtedly valuable marine resource; especially as a complementary area to Strangford Lough and Rathlin Island. However, the small area of the site and its adjacency to other areas, designated as SAC/SPA/Ramsar sites it **is not** recommended that The Skerries form a Stage 1 MPA in their own right. This does not mean that the islands and their surrounding waters do not need protection, rather that it would be more practical and achievable if The Skerries were to be included in a MPA of greater extent, perhaps incorporating the sea area fronting the Causeway Coast Area of Outstanding Natural Beauty. The site could then be zoned to establish a management regime reflecting the different interests along this stretch of coast.

Recommendation for Stage 2

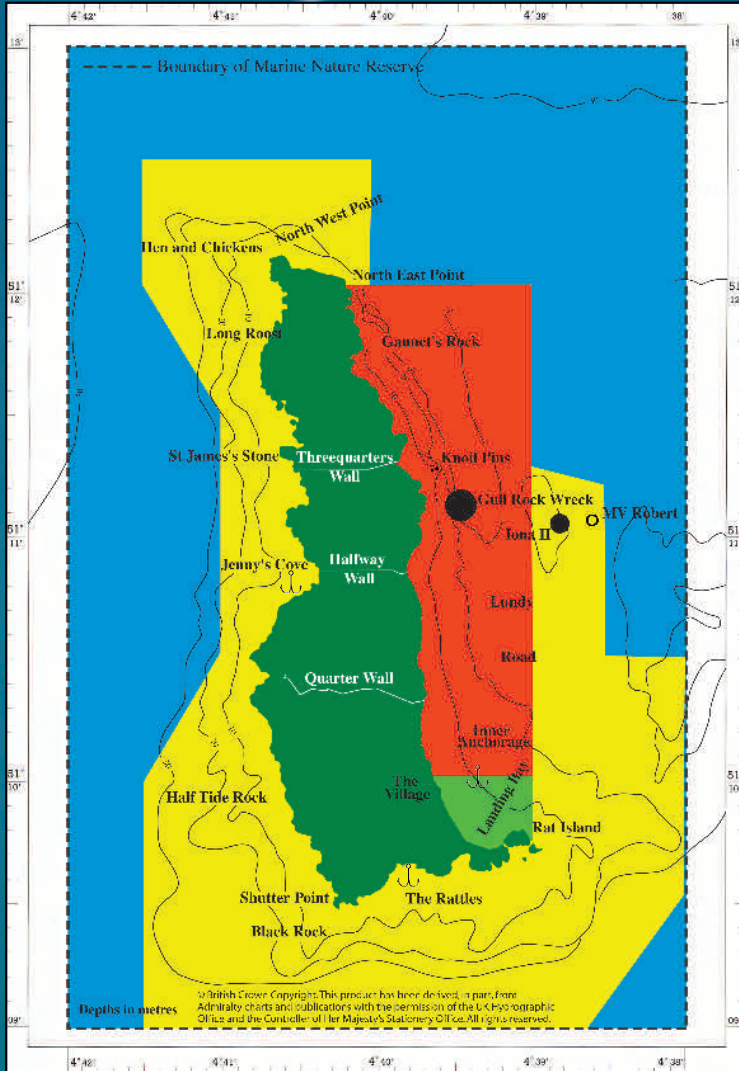
The Skerries should, in the future become part of an MPA. However, due to the issue of potentially requiring an MPA of greater extent it is recommended that the site is reconsidered in Stage 2 in light of the lessons learned from the establishment of the pilot sites. In this way, potential impacts on the site can be identified along with the management measures necessary to protect it.

APPENDIX 3







Zoning maps for Lundy in the UK and the Great Barrier Reef Marine Park in Australia

Lundy Marine Nature Reserve Zoning Scheme

Lundy MNR is used by a wide variety of people. A zoning scheme has been developed, much of which is backed up by law; to enable everyone to enjoy the reserve whilst protecting this special place.



KEY

-  Anchor symbol = **Recommended anchorages.**
In the Landing Bay please allow clear access for the ferry
-  Red = **No Take Zone** –
No fishing or collection of sea life of any kind*. No anchors or diver shotlines within 100m of the Knoll Pins
-  Yellow = **Refuge Zone** –
No fishing except potting or angling
-  Green = **Recreational Zone** –
Restrictions as for Refuge zone but be aware of other water users
-  Black = **Archaeological Protection Zone** –
No diving or fishing allowed (without a licence[^])
-  Blue = **General Use Zone** –
No spearfishing. All other activities allowed

* Devon Sea Fisheries Committee byelaw.

The No Take Zone stretches north to Lat 51 12.04N, south to Lat 51 10.07N and east from Lundy's shores to Long 004 39.00W. [^]Licence from English Heritage

What can you do to help conservation?

Enjoy your visit to Lundy, but remember that the conservation of the island and surrounding sea depends on the cooperation of all those who visit and use the area.

- Learn more about the wildlife – go on the guided walks and snorkel safaris
- Record your wildlife sightings to the warden
- Abide by the zonation scheme
- Keep at least 100m away from seals, seabirds, dolphins and basking sharks
- Do not collect any wildlife without a licence*
- Do not spear fish
- Divers take care with your buoyancy and fins
- Do not remove items from wrecks
- Do not collect bait from the shore

* Contact the Lundy warden for information on licencing

Remember...

Lundy is now a rat free island to help benefit the seabird colonies. We want to keep it that way!

So please:

- Take all rubbish home with you – especially perishables.
- Please check your boats and bags before arriving on Lundy – they can harbour rats!



Supported by:





Our aim is to protect and conserve the natural and built environment and to promote its appreciation for the benefit of present and future generations.

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