COASTAL ZONE MANAGEMENT

A DRAFT POLICY FOR IRELAND

MAIN REPORT

AN ROINN COMHSHAOIL AGUS RIALTAIS ÁITIÚIL
DEPARTMENT OF THE ENVIRONMENT AND LOCAL GOVERNMENT

Department of the Marine and Natural Resources
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DEPARTMENT of ARTS, HERITAGE, GAELTACHT and the ISLANDS

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Natural Environmental Consultants Ltd.

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Prepared for

Department of Arts, Heritage, Gaeltacht and the Islands
Department of the Environment and Local Government
Department of the Marine and Natural Resources

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Glossary of Abbreviations

BIM	Bord Iascaigh Mhara
CAMPNET	Coastal Area Management and Planning Network
CAP	Common Agricultural Policy
CIE	Coras Iompair Eireann
CFP	Common Fisheries Policy
CNCC	Council for Nature Conservation and the Countryside
CSF	Community Support Framework
CSO	Central Statistics Office
CZM	Coastal Zone Management
DED	District Electoral Division
EEA	European Environment Agency
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
ESA	Environmentally Sensitive Area
ETC/MC	European Marine & Coastal Environmental Topic Centre
EU	European Union
FAO	Food and Agricultural Organisation of the United Nations
FRC	Fisheries Research Centre
GESAMP	Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection
GIS	Geographical Information System
ICES	International Council for the Exploration of the Sea
ICZM	Integrated Coastal Zone Management
IMO	International Maritime Organisation
IMES	Irish Marine Emergency Services
IPC	Integrated Pollution Control
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for the Conservation of Nature and Natural Resources
MARPOL	International Convention for the Prevention of Pollution by Ships
MHWM	Mean High Water Mark
MLVC	Marine Licence Vetting Committee
NGO	Non-Government Organisation
NHA	(Proposed) Natural Heritage Area
NI	Northern Ireland
NMHPS	National Monuments and Historic Property Service of Department of Arts, Heritage, Gaeltacht and the Islands
NPWS	National Parks and Wildlife Service of Department of Arts, Heritage, Gaeltacht and the Islands
OECD	Organisation for Economic Co-operation and Development
OPW	Office of Public Works
OSPAR	Convention for the Protection of the Marine Environment of the North-East Atlantic
REPS	Rural Environment Protection Scheme
RTO	Regional Tourism Organisation
SAC	Special Area of Conservation
SMT	Software Management Tool
SPA	Special Protection Area
TAC	Total Allowable Catch
UCC	University College Cork
UCG	University College Galway
UDC	Urban District Council
UK	United Kingdom
UN	United Nations
UNCLOS	United Nations Conference on the Law of the Sea
UNEP	United Nations Environmental Programme
UNESCO	United Nations Educational, Scientific & Cultural Organisation
USA	United States of America
WTO	World Tourism Organisation
WWF	World Wide Fund for Nature

1. INTRODUCTION

This report was jointly commissioned by the Department of the Environment and Local Government, the Department of the Marine and Natural Resources and the Department of Arts, Heritage, Gaeltacht and the Islands to provide a coherent framework for the co-ordinated and sustainable management of coastal areas.

The report, prepared by consultants, is intended to provide a key input to the formulation of national policy on Coastal Zone Management and to stimulate debate and discussion among interested parties and the public.

1.1 Ireland has a long and varied coastline for a country of its size. Almost 60 per cent of the total population reside in coastal areas, which include the greatest concentrations of population, and the major cities. Moreover, much of the country's industry is concentrated on or near the coast. The Irish coastal zone also contains many sensitive ecosystems of considerable nature conservation and amenity value.

1.2 The coastal zone is therefore of great significance to the country, and a valuable national asset. It contains important resources that provide economic, recreational, aesthetic and conservation benefits, and is also the access to a vast marine resource that includes fisheries, aquaculture, minerals and hydrocarbons. The coastal zone is a finite resource that has been considerably developed, and that is under increasing pressure and competition for further development and use.

1.3 This important resource, in common with the rest of the country, is managed by a range of agencies and organisations. However, the management of the coastal zone is distinguished by:

- great complexity and variety arising from the combination and interaction of land and sea;
- the variety and importance of the resources that the zone contains, and its importance as an access route for people and trade;
- the importance of coastal ecosystems in themselves, and in their interaction with other marine and terrestrial ecosystems;
- the variety and extent of social and economic demands on the zone, and the scale of growth in these demands;
- legislative and administrative structures that are largely split along the land/sea divide; and
- anticipated impacts of sea level rise, changing weather patterns, etc.

1.4 A strong case can, therefore, be made to accord the coastal zone a special status, and to devise and implement measures to ensure a more holistic and integrated approach to its management in the future. This is in the interests of coastal communities, the wider community-at-large and the environment.

PURPOSE OF STUDY AND REPORT

1.5 The principal central government departments concerned with the management of the coastal zone are the Department of the Environment and Local Government, the Department of the Marine and Natural Resources and the Department of Arts, Heritage, Gaeltacht and the Islands. These departments, recognising the special needs of the coastal zone, jointly commissioned this report to provide a coherent framework for the co-ordinated and sustainable management of coastal areas. The document is intended to provide a key input to the formulation of national policy on Coastal Zone Management (CZM), and includes draft recommendations in this regard.

1.6 A synopsis of the report has been issued as a Discussion Document, intended for widespread public dissemination.

1.7 The scope of the study is outlined in the Brief to the Consultants. In summary, the Brief covered the following items:

i) to review relevant developments on Coastal Zone Management at international level and in particular developments at EU level;

ii) to review and assess the present situation in Ireland in relation to Coastal Zone Management with particular regard to the main areas of land use planning and control, legislation, coastal protection, nature conservation, marine resource development (aquaculture and in-shore fisheries), environmental protection and the extent to which these issues influence national and local planning, nature conservation, infrastructural development, etc.;

iii) to identify current issues affecting the coastal zone in Ireland and identify how they are dealt with in the policies and procedures of other EU member states; and

iv) against this background, to make recommendations for a National Coastal Zone Management Policy for Ireland.

1.8 The document takes a strategic view, concentrating on matters of policy, cohesion and co-ordination, mainly at a macro level. It provides a draft structure for the development of a comprehensive, harmonised management policy for the entire coastal zone, integrating the seaward and landward sides and providing a framework for conservation and sustainable use.

1.9 The framework embraces land-use planning and control, coastal protection, nature conservation, marine resource development, marine environmental protection and the links between these.

STRUCTURE OF REPORT

1.10 The links between the scope of the study and the structure of the report are outlined in Table 1A. The background and current situation is assessed in Chapters 2 to 9, whilst Chapters 10 to 14 outline the key issues, discuss some options and the scope for action, and make recommendations, including a draft framework for the introduction of Coastal Zone Management to Ireland. The legislative and administrative basis for each sector are discussed in the relevant chapters, but these matters of governance are also summarised separately in Chapter 4. The review of international and European Union practice is principally given in Chapter 3, but

relevant examples of overseas practice are also given throughout the document. The Appendices contain a description of the coastline, details of draft recommendations for the content of Integrated Coastal Zone Management Plans, a bibliography and lists of consultees and submissions.

1A Structure of Report

Study Requirements		Chapter
	1.	Introduction
	2.	The Concept of Coastal Zone Management
International and EU review	3.	The International Context
Review and Assessment of CZM in Ireland		
Legislation	4.	Legislation and Administration
Nature conservation Environmental protection	5.	Conservation and Environmental Protection
Land use planning and control	6.	Land-use Planning and Control
	7.	Coastal Resource Development
Marine resource development (aquaculture and in-shore fisheries)	8.	Marine Resource Development
Coastal protection	9.	Coastal Protection
Current Issues	10.	Key Issues
Recommendations for National CZM policy	11.	The Need for ICZM
	12.	The Scope for Action
	13.	The Recommended Framework
	14.	Other Recommendations

SOURCES AND CONSULTATION

1.11 The consultants have had regard to many sources in preparing the document. These have included extensive consultations with interested parties, a review of submissions received and a review of both national and international legislative and administrative structures. A wide range of source material was used, and a bibliography is given as Appendix 3.

1.12 The Communication from the European Commission to the Council and the European Parliament on the integrated management of coastal zones[1] is regarded as especially relevant, in that it represents current thinking at European Union level.

1.13 An extensive consultation procedure was incorporated into the study programme so as to ensure that the widest possible range of views and opinions were obtained. Submissions were specifically invited, through written invitations, from 139 organisations ranging from local authorities to non-government organisations to specific representative groups, all with an interest in the coastal zone. Of these, only 38 responded.

1.14 The invitation for submissions was extended to the general public through newspaper advertisement. There were 28 respondents to this, the majority from angling clubs, but including a number of individuals. Follow-up calls to a range of bodies revealed that the advertisement was widely seen.

1.15 In addition, some 33 direct consultations were held with various bodies and organisations. These were primarily statutory bodies, but also included a number of representative groups and non-government organisations. A list of consultees and submissions is given in Appendix 4.

1.16 The material derived from the submissions and consultations was very useful in helping to identify the issues, and in formulating a draft approach to Coastal Zone Management in Ireland. Predictably, the submissions tended to concentrate on issues which were of most concern to the organisations involved. For example, anglers and angling groups tended to highlight possible conflicts between aquaculture and angling, and commercial fishing and angling. Many of the issues raised were sectoral rather than directly related to CZM, and there appeared to be many varying perceptions of coastal zone management. Some see it as coastline management, others as coastal protection. There is a tendency to take a narrow view of both the coastal zone and of CZM.

ACKNOWLEDGEMENTS

1.17 The draft policy study was prepared under the direction of a Steering Group comprising officials from the Department of the Environment and Local Government, the Department of the Marine and Natural Resources and the Department of Arts, Heritage, Gaeltacht and the Islands and the Marine Institute. The consultants would like to thank the Steering Group members for their assistance in the preparation of the report.

1.18 In addition, a large number of people and organisations contributed to the preparation of the study through submissions, meetings with the consultants and the provision of data and information. The time and effort devoted by them is much appreciated and indicate a high level of interest in the management of the coastal zone. The consultants wish to convey their thanks to all who made a contribution.

[1] Commission of the European Communities, *Communication from the Commission to the Council and the European Parliament on the integrated management of coastal zones*, (COM (95) 511 final/2) November 1995

2. THE CONCEPT OF COASTAL ZONE MANAGEMENT

For purposes of this report, the Coastal Zone is defined as "a strip of land and sea territory of varying width depending on the nature of the environment and management needs. It seldom corresponds to existing administrative or planning units".

The concept of Coastal Zone Management (CZM) has developed as a response to the fragmentation of existing management effort, and in recognition that more efficient and sustainable use of the coastal resource can be achieved by concerted management of the coastal zone as a whole in relation to local, regional, national and international goals. At the heart of the concept lies the idea of greater integration of planning and management, and consequently the concept has been increasingly referred to as Integrated Coastal Zone Management (ICZM) which is defined as:

> *A continuous process of administration which seeks, through more efficient and holistic management:*
>
> - *to establish and maintain the sustainable use and development of the resources of the coastal zone so as to improve the quality of life and of human communities dependent on these resources; and*
>
> - *to maintain the biological diversity and productivity of coastal ecosystems, and to improve the quality of the coastal environment.*

CHARACTERISTICS OF THE COASTAL ZONE

2.1 The coastal zone is characterised by great diversity in terms of its environmental and economic resources, administrative structure and legislative framework. The physical diversity and dynamism of the coast has created an environment that is both highly productive and biologically diverse and which, in turn, is one of the main attractions of the zone for economic activity.

2.2 Settlement of the coastal zone and exploitation of its natural resources has occurred since the earliest times. The coast has attracted, and continues to attract, human settlement due to its proximity to the ocean's resources, both living and non-living, the potential for marine transportation and the attractiveness and suitability of the coastal zone for tourism and recreation. It is estimated that over 50 per cent of the world's population live within 60 km of the coast, and many of the world's greatest cities have a coastal location[1]. The coastal zone is a vital resource in terms of food supplies, disposal of waste, recreation space, transport, location of industry and mineral supplies. The diversity of resources in the coastal zone also provides the basis for a wide range of uses, as summarised in Box 2A.

2.3 Ireland has a lengthy and varied coastline for a country of its size, with a coastal zone of great significance. In Ireland, it is estimated that 59 per cent of the total population in 1996 reside in coastal areas (defined as Rural Districts, Urban Districts and Boroughs adjacent to the coast). Among European Union countries, Ireland has the second highest proportion of its total population living within 50 km. of the coast. It is not surprising, therefore, that much of the country's economic activity is

concentrated there. The Irish coast is also an area containing many sensitive ecosystems of considerable nature conservation value.

2A Principal Uses of the Coastal Zone

Renewable Resources	Fishing, including shellfish Aquaculture, including shellfish Seaweed, including kelp Agriculture and Forestry Energy (waves, tides, etc.)
Non-Renewable Resources	Oil and Gas Minerals, including sands and gravels
Infrastructure and Built Development	Industry, including on-shore and off-shore facilities, and food processing Urban developments Recreation and Tourism Transport, including ports and harbours Waste Disposal Defence Communications
Heritage	Nature conservation Archaeology

2.4 The greatest concentrations of population tend to be in those settlements associated with ports and harbours. The five largest settlements in Ireland - Dublin, Cork, Limerick, Galway and Waterford - all have port facilities which contributed to their historical growth.

2.5 The coastal zone is therefore of great significance to the country, containing important resources that provide economic, recreational, aesthetic and conservation benefits. It is also a finite resource that requires to be carefully planned and managed to ensure that its value is sustained for future generations.

2B The Irish Coastline

Length*:	7,100 km
Population of coastal areas**:	1,926,914
% of total population living in coastal areas:	59%
% of urban population living in coastal areas***:	69%

* Length of coastline is variously stated in different sources. The figure given here is taken from the Operational Programme for Environmental Services 1994-99.
** Defined as coastal Rural Districts, Urban Districts and Boroughs.
*** Defined as those living in County Boroughs or Urban Districts or in Counties Dun Laoghaire-Rathdown and Fingal.

Source of Population Data: *Census of Population.*

2.6 Within the coastal zone, the land-sea divide is of the greatest importance. It is here that the principal administrative systems, governing land and sea, meet and interact, whilst the foreshore itself is a public resource vested in central government.

DEFINITION OF THE COASTAL ZONE

2.7 There are many perceptions, definitions and understandings of the coastal zone. All embrace the shoreline, where land and sea meet, and this area always lies at the heart of the coastal zone.

2.8 The influence of the land on the sea, and of the sea on the land, extends much further than the shoreline, and varies depending on the particular attribute under consideration. For example, the development of off-shore fishing has considerable implications for the land, through requirements for ports, access and processing facilities.

2.9 In their report on the World Coast Conference, Netherlands, 1993[2], the organising committee described the coastal zone as a:

"*...geographically delineated area, distinctively characterized by the aggregation of interacting coastal environments and corresponding natural and man made structural systems*".

2.10 In Sweden, the zone is defined as coastal lands and waters out to a baseline, and where the baseline follows the shore, a further two nautical miles. In Spain the coastal zone, as defined in the Shores Act, covers the area 500 metres from the highest storm level or tideline, seaward to 12 miles.

2.11 However, placing precise geographical limits on the coastal zone is problematical, if not impossible, due to the diversity of environments, systems, (natural, socio-economic, etc.), uses and activities in the area, and to the interdependencies and cross-impacts amongst uses and users, some of which are generated in areas remote from the zone in question (e.g. international tourism).

2.12 Administrative boundaries in the coastal zone are rarely related to natural topographical or ecological boundaries. Similarly, sectoral activities often transcend administrative boundaries. As a consequence, there is no simple rule which can be used to define the limits of the coastal zone.

2.13 A flexible approach is, therefore, required which recognises that the focus of management effort is the diversity of systems that comprise the coast, especially those systems that affect inshore waters and coastal lands. Thus the extent of the zone will vary with location and with the issues, or combinations of issues, under consideration at a given time (see Figure 2.1).

2.14 In general, the spatial limits of the coastal zone in a particular area are determined by the geographical extent of natural coastal processes and of human activities which involve the use of coastal resources. For example, it has been suggested that identification of the extent of the zone should be based, *inter alia*, on an ecosystem approach, i.e. it should include:

"*associated aquatic ecosystems and those portions of tributaries draining into the estuary up to the historic height of migration of fish to spawn or the historic head of tidal influence, whichever is higher.*" [3]

2.15 There are also issues and problems that have significant effects in the coastal zone but which need to be planned at national or regional level (e.g. prioritisation of major infrastructural investments). For these matters, the 'coastal zone' may be said to cover the whole of the national or regional territory. The physical limits of the coastal zone may therefore extend many kilometres inland and out to sea.

2.16 The coastal zone also has a vertical dimension which, to use the guideline suggested at the World Coast Conference, extends "*from at least the depth of economic mineral recovery to the top of the atmospheric mixing layer.*" [4]

2.17 Because of the concentration of uses and activities in the coastal area, the potential for competition and, in some instances, conflict amongst users and uses is greater than in other areas. Thus an understanding not only of uses and activities, but also of interactions and cross-impacts is essential to the management of the zone.

2.18 The World Commission on Environment and Development 1987 (the Bruntland Commission)[5] identifies five sub-zones or areas of the coastal zone:

1. Inland areas (coastal hinterland);

2. Coastal lands (including lands within the visual influence of the sea and including the tidal zone);

3. Coastal waters (including the foreshore and territorial waters - 12 miles);

4. Offshore waters.(extending possibly to the limit of the Exclusive Economic Zone (EEZ) - 200 miles); and

5. High seas (coastal hinterland).

These areas overlap one another and are wholly interdependent. The principal focus of Integrated Coastal Zone Management, however, may be identified as comprising the 'foreshore' and 'coastal' lands (see Figure 2.2).

2.19 For the purposes of this report use is made of these various descriptions, and the broad definition adopted is that used by the European Commission in '*Communication from the Commission to the Council and the European Parliament on the integrated management of coastal zones*' [6]. This states:

"the coastal zone is defined as a strip of land and sea territory of varying width depending on the nature of the environment and management needs. It seldom corresponds to existing administrative or planning units."

CONCEPTS OF INTEGRATED COASTAL ZONE MANAGEMENT

2.20 The concept of Coastal Zone Management (CZM) presupposes that there is, in fact, a sound basis for isolating the 'coastal zone' as an area that justifies special attention in management and planning terms. This approach can be justified on the basis of the concentration and diversity of human activity in the coastal zone and the complexity and diversity of the coastal environment itself. The diversity of activity concentrated in the area is the principal reason why there are so many agencies and organisations having responsibilities in the coastal zone, why its administration is so complex and why a special effort is needed to 'manage' the zone.

2.21 In Ireland, as in most countries, the resources, uses and activities of the coastal zone are already managed. This management is generally carried out, on an individual basis, by various authorities and agencies and through land-use and development control and other regulations administered by local authorities, the Department of the Marine and other relevant bodies. Individual landholdings are generally managed by their owners, principally through agricultural practices.

2.22 It is widely recognised however that, apart from the complexity which arises because of the multiplicity of agencies involved, there are gaps and duplication of effort built into this management system which adversely affect its efficiency.

2.23 Thus, the concept of Integrated Coastal Zone Management (ICZM) arises in response to the fragmentation of the existing management effort, and recognition that more efficient and sustainable use of the coastal resource can be achieved by concerted management. This approach is recognised in Agenda 21[7].

2.24 Concepts and techniques of Coastal Zone Management and Integrated Coastal Zone Management have been evolving over the past twenty five years. In 1989 the Coastal Area Management and Planning Network (CAMPNET) of the University of Florida[8] defined Coastal Zone Management as:

"*A dynamic process in which a co-ordinated strategy is developed and implemented for the allocation of environmental, socio-cultural and institutional resources to achieve the conservation and sustainable multiple use of the coastal zone.*"

2.25 In their report on Coastal Zone Protection and Planning, the House of Commons Environment Committee (UK)[9], referring to this definition, made the point that whilst definitions of coastal zone management differ between countries a common factor is that environmental principles underlie the whole process.

2.26 That committee also observed that "*the importance of Coastal Zone Management is that it aims to integrate all uses and activities in the coastal zone, not just defence or conservation alone*" and that in order to function effectively, "*CZM requires a national perspective, a long term view, an integrated approach to planning and management, co-ordination and co-operation between planners, managers and users.....*". It also requires a very thorough understanding of the coastal dynamic and at least an adequate, if not comprehensive, data base.

2.27 The goal of integrated coastal management has been defined by GESAMP[10] as:

"*to improve the quality of life of human communities who depend on coastal resources while maintaining the biological diversity and productivity of coastal ecosystems.*"

2.28 The document goes on to say that the process "*must integrate government with the community, science with management, and sectoral with public interests in preparing and implementing actions that combine investment in development with the conservation of environmental qualities and functions*", and that successful programmes will involve:

"*a) public participation whereby the values, concerns and aspirations of the communities affected are discussed and future directions negotiated;*

b) steps by which relevant policies, legislation and institutional arrangements (i.e. governance) can be developed and implemented to meet local needs and circumstances while recognizing national priorities;

c) collaboration between managers and scientists at all stages of the formulation of management policy and programmes, and in the design, conduct, interpretation and application of research and monitoring."

2.29 From the above definitions, it will be seen that ICZM concerns the management of the coastal zone as a whole in relation to local, regional, national and international goals. It requires the integration of environmental protection goals into economic and technical decision-making processes. It requires an international focus and integration over time, i.e. the co-ordination of day-to-day management objectives

with long-term policy goals (e.g. integrating emergency response with long-term policy in the case of coastal protection).

2.30 Integrated Coastal Zone Management, therefore, is essentially a process which seeks, by means of a programme of appropriate measures and actions, to co-ordinate management of the natural and man-made systems which comprise the coast.

2.31 This emphasis on process and management is central to the concept of ICZM. The consultations and submissions reviewed in the preparation of this report revealed many different views of the purpose and nature of Coastal Zone Management, and it should consequently be made clear that it is not:

- an environmental protection measure;
- a plan;
- a technique of planning or administration;
- a once-off application;
- an end in itself; or
- a formula, model or universal application.

2.32 Noting that management "*is a continuous activity comprising a comprehensive set of related functions*", the Organising Committee of the World Coast Conference 1993 lists five general tasks of management as:

"*1. to plan for management activities including: to formulate, analyze, evaluate and select alternative management plans and programmes, including concrete actions for implementation;*

2. To draft detailed designs of the physical measures and implementation incentive system;

3. To install the components of the selected strategy, including financial arrangements;

4. To operate, maintain and adjust the components of the implemented measures over time;

5. To monitor and evaluate results in order to realise the programme objectives effectively and efficiently."

Definition

2.33 The definition of Integrated Coastal Zone Management used as a basis for this report draws on the various definitions referred to above, and emphasises the key importance of process and management. The definition is:

Integrated Coastal Zone Management is a continuous process of administration which seeks, through more efficient and holistic management:

- ***to establish and maintain the sustainable use and development of the resources of the coastal zone so as to improve the quality of life and of human communities dependent on these resources; and***
- ***to maintain the biological diversity and productivity of coastal ecosystems, and to improve the quality of the coastal environment.***

2.34 Integrated Coastal Zone Management is, therefore, a process, comprising a programme of appropriate measures and actions that include:

- community participation to allow the values, concerns and aspirations of the public to be incorporated into the process;
- the co-ordination and integration of relevant policies, legislation and institutional arrangements; and
- collaboration between managers and scientists in the formulation of policy, programmes, research and monitoring.

The process also requires a framework or structure, relating it to other aspects of government, as well as adequate funding.

PHASES OF INTEGRATED COASTAL ZONE MANAGEMENT

2.35 The nature of the process of introducing Integrated Coastal Zone Management has been described in some considerable detail by Sorensen (Figure 2.3), who identifies a number of distinct phases in the gradual move towards integration of management in the coastal zone[11]. This process is common in most countries. The phases of ICZM installation are outlined below.

2.36 **Phase 1 - Perceived Need:** This phase is characterised by realisation and a growing awareness both by the general public and Government that the coastal zone has special needs and prospects and that the existing management and planning arrangements are in need of review and updating. This usually arises from persistent internal issues and public (NGO) lobbying as well as on-going growth in development pressure and monitored deterioration and change in the coastal environment.

2.37 **Phase 2 - Review of Issues and Framework for ICZM:** A key characteristic of this phase is a government led review of coastal zone issues at all levels of administration (including the international dimension), policies, institutional arrangements and plans. This generally leads to the initial design of draft ICZM policies, a framework strategy and a programme for ICZM.

2.38 **Phase 3 - Draft ICZM Programme:** The finalisation and drafting of an Integrated Coastal Zone Management Programme of actions and measures designed to address key issues follows the adoption of basic policy and of a framework. This is more than an operational programme.

2.39 **Phase 4 - Implementation:** This involves the detail design of programme elements, including preparation of ICZM plans, capacity building measures. awareness raising measures, pilot projects, prioritised investments, etc., as well as monitoring and evaluation.

2.40 Once commenced, the process becomes continuous and involves public debate and participation in each evolving phase. As the process evolves, the debate as to whether the process should be 'top down' or 'bottom up' becomes irrelevant. ICZM, when instituted, operates as a continuous cycle of management actions and procedures designed to achieve integration of strategic objectives and priorities as well as development needs and prospectives at all levels of administration and authority and over short, medium and long time scales.

THE PROCESS OF ICZM IN IRELAND

2.41 The evolution of ICZM in Ireland can be traced to the 1960's when an attempt was made to identify the 'best use' of the coastal zone for development and conservation purposes - '*by zones or stretches*'[12]. The output from that study, has, over the years, assisted many of the coastal local authorities in the drafting of their development plans in so far as these make reference to the coastal zone. Thus there has long been an acute awareness among leading authorities of the importance of the coastal zone and of the need for its management.

2.42 More recently, there has been a succession of conferences and meetings in Ireland concerned with the theme of Coastal Zone Management which have served to further heighten interest in the topic. In addition, the European Union has sought to develop policies in respect of the European coastal zone which, together with a spate of international publications, has further raised awareness of the issue in Ireland.

2.43 These external and internal 'events' have brought together, by mutual agreement, a number of the principal actors responsible for the administration of the coastal zone. Through their interaction the need for a particular management effort in the coastal zone has been identified and a process put in train to create the conditions under which management of the zone can, over time, be co-ordinated and become truly integrated.

2.44 This present report represents the initial element of the second phase of the process as described by Sorensen, and outlined above.

2.45 Recent debate has seen increasing use of the word 'integrated' alongside 'coastal zone management', expressing this important role and characteristic of the process. At this stage of the development of the process in Ireland 'integration' must be seen as an aspiration. Fully developed 'Integrated Coastal Zone Management', including the integration of environmental and economic planning policy and objectives, will only be brought about when the following conditions can be met:

- where there is mutual awareness of the issues involved;
- there is shared and thorough understanding of the coastal dynamic and of the problems and procedures, the difficulties, etc., which must be dealt with;
- where the principal actors can identify common cause or purpose;
- a shared vision of the quality of environment that is to be sustained;
- a real prospect of mutual benefit, or of potential benefit exists; and
- where there is widespread **c**onsensus and commitment.

2.45 Integrated Coastal Zone Management, therefore, requires a fully fledged partnership of actors working together to achieve a common set of goals. Accordingly attention throughout this report is focused on the extent to which the conditions noted above are already satisfied, or can be met by adjustment of the present situation.

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1 European Environment Agency, *Scoping Study on Integrated Environmental Assessment of Coastal Zones*, October 1995

2 World Coast Conference 1993 Organising Committee, *World Coast 1993: Management Arrangements for Development and Implementation of Coastal Zone Management Programmes*, October 1993

3 Hildebrand, L.P., 1989, Canada's Experience With Coastal Zone Management, Ocean Institute of Canada, Halifax, quoted in OECD, 1993, *Coastal Zone Management: Integrated Policies.*

[4] *Op. cit.* World Coast Conference 1993

[5] World Commission on Environment and Development, *The Bruntland Report,* 1987

[6] Commission of the European Communities, *Communication from the Commission to the Council and the European Parliament on the integrated management of coastal zones*, (COM (95) 511 final/2) November 1995

[7] United Nations Conference on Environment and Development (UNCED), *Agenda 21*, Rio Earth Summit, 1992

[8] The Coastal Area Management and Planning Network (CAMPNET) , University of Florida, 1989 as quoted in Department of Environment and the Welsh Office, *(PPG) Managing the Coast*, HMSO, 1993

[9] Select Committee on the Environment (Department of Environment (UK), *2nd Report: Coastal Zone Protection and Planning*, HMSO, 1992

[10] GESAMP Report No. 61, *The Contributions of Science to Integrated Coastal Management*, 1996

[11] Sorensen, J., 1993, *International Proliferation of Integrated Coastal Zone Management Efforts*, Ocean and Coastal Management 21

[12] Brady Shipman Martin and Niall Hyde, 1973, *National Coastline Study*, Bord Failte Eireann and An Foras Forbartha

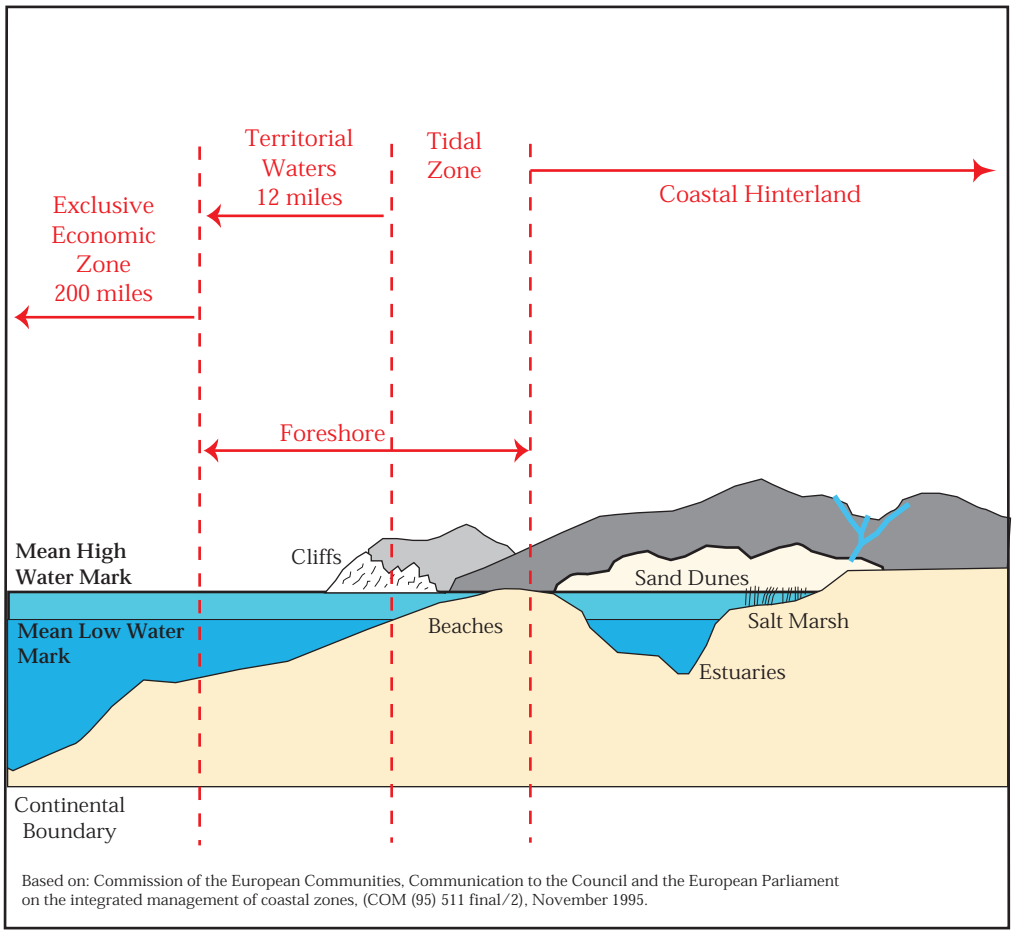

Figure 2.1
Definition of Coastal Zone (A)

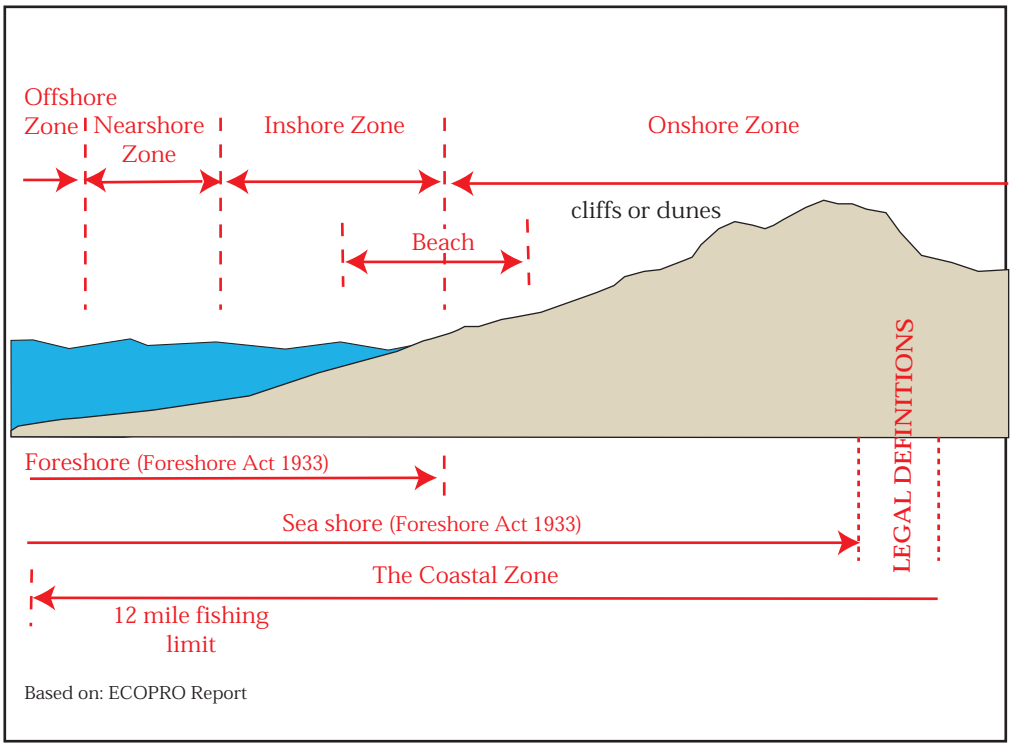

Figure 2.2
Definition of Coastal Zone (B)

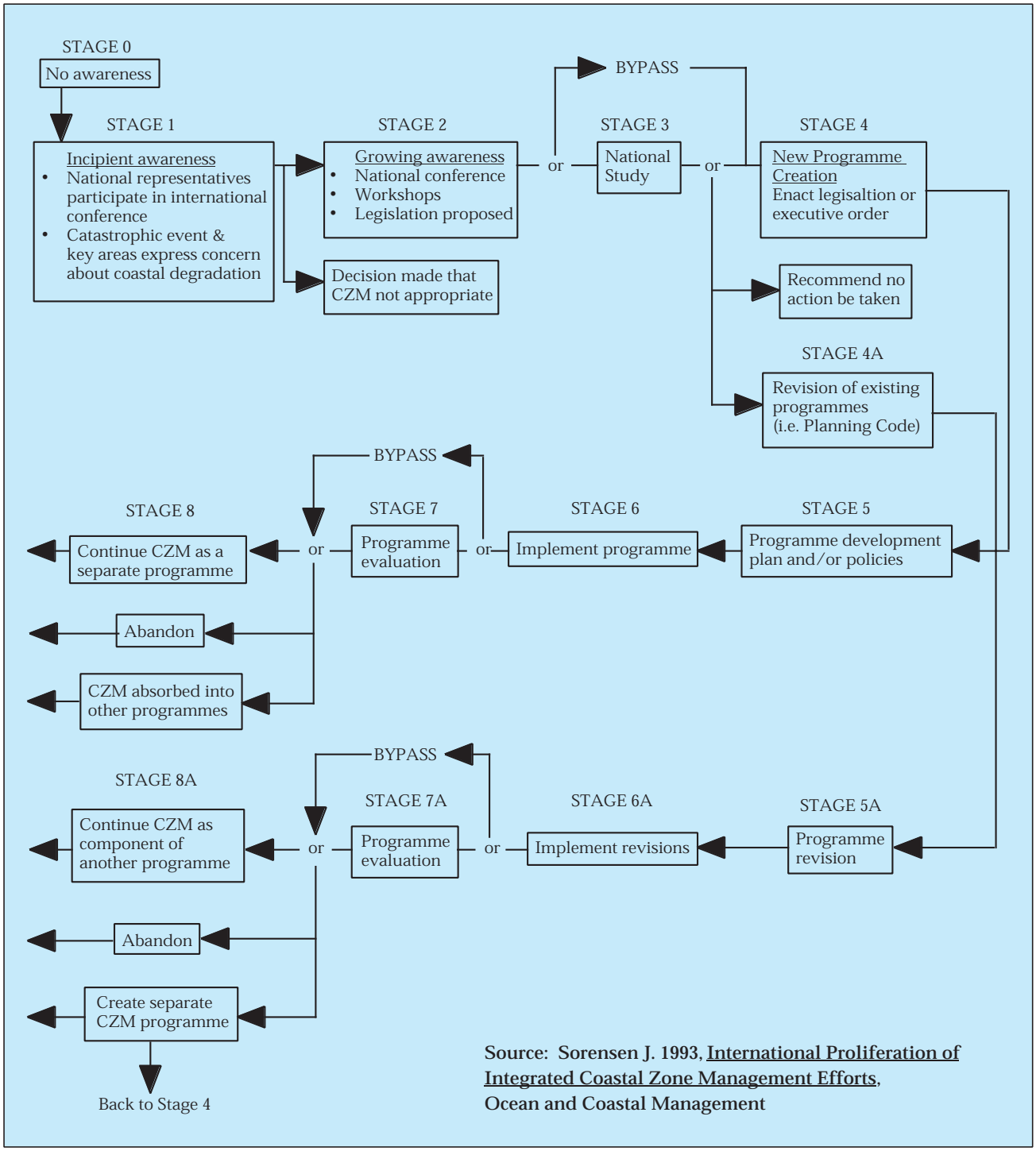

Figure 2.3
Evolution of Coastal Zone Management

3. THE INTERNATIONAL CONTEXT

Increasing development pressure, deterioration of coastal environments, recognition of the economic potential of coastal zones and anticipated climatic changes, with a prospect of sea-level rise, has stimulated growth of interest in ICZM in many parts of the world, especially in the last decade.

The United Nations Conference on Environment and Development initiated a series of developments in ICZM, and actions have also been taken, or are contemplated, by the OECD, the Commission of the European Union and the Council of Europe.

Key elements for the success of ICZM initiatives in individual countries have included the involvement of user groups and local communities, mechanisms for co-operation between administrations, legal provisions to underpin the process including local, regional and national elements to reflect the needs of different areas, and clearly stated objectives. Financial provision for implementation is also critical.

THE COASTAL ZONE

3.1 The diversity and dynamism of the coastal zone have already been noted, as has the importance of the zone, and the resources it contains, for most maritime countries. This is reflected in the heavy concentration of population in the coastal zone. For example, two-thirds of Norway's 4.5 million population live within 15 km of salt water, and the average population density of coastal counties in the United States is five times greater than non-coastal counties.[1] Table 3A illustrates the importance of the coast to the population of coastal European Union Member States.

3A Relative Importance of Coastal Population

A	B	C	C/B%	D	D/B%	E	E/B%
Belgium	10,041	295	3	3,190	32	6,851	68
Denmark	5,171	3,600	70	5,171	100	0	0
Finland	5,042	1,826	36	2,994	59	2,048	41
France57,372	5,245	9	13,981	24	43,391	76	
Germany	80,614	3,910	5	8,878	11	71,736	89
Greece	10,323	3,445	33	8,817	85	1,506	15
Ireland	**3,549**	**1,810**	**51**	**3,061**	**86**	**488**	**14**
Italy	56,859	16,919	30	33,853	60	23,006	40
Netherlands	15,182	3,231	21	11,412	75	3,770	25
Portugal	9,862	4,351	44	7,236	73	2,626	27
Spain 39,085	11,703	30	21,201	54	17,884	46	
Sweden	8,668	4,373	50	6,796	78	1,872	22
United Kingdom	57,998	7,961	14	42,592	73	15,406	27
Total	**359,766**	**68,669**	**19**	**169,182**	**47**	**190,584**	**53**

A: country
B: total population ('000)
C: population of the coastal municipalities ('000)
D: population in a 50 km coastal band ('000)
E: remainder of the territory

Source: *European Commission*[2]

3.2 In many countries the population in the coastal zone is increasing at a more rapid pace than the population in inland areas. In Australia it is estimated that the coastal zone occupies approximately 17 per cent of the land area of the country, but between 1983 and 1991 over 35 per cent of dwelling construction in Australia was concentrated in the non-metropolitan coastal zone.[3]

3.3 **Development Pressure:** The coastal zone is under increasing pressure in many countries due to urban encroachment and urban generated development. Although such development may have local economic benefits, uncontrolled encroachment can result in adverse environmental impacts and is the cause of many coastal zone management problems. The UK Planning Policy Guidance document on Coastal Planning notes that the demand for underdeveloped and undesignated (coastal) land is increasing especially in areas in proximity to urban settlements.[4]

3.4 The coastal zone, with its varied resources, usable land, access to communications, labour supply and markets, has traditionally been a prime location for many types of industrial development, and this is likely to continue. The extractive industry is displaying increasing interest in the coastal zone as inland sites become more difficult to exploit economically, and sea dredging for aggregates, sand and gravel is a growing economic activity.

3.5 Large urban settlements not only require land for expansion, but also need recreational and leisure access to the coast, and generate pressure for land for second and holiday homes.

3.6 **Pressure from Recreation and Tourism:** Traditionally, the coast has been a popular destination for recreational pursuits and tourism trips, and consequently the coastal zone is often under pressure from leisure, sport and recreational demand, development pressure in the form of holiday homes and other tourism related facilities.

3.7 Tourism is the world's largest industry. Estimates indicate that in 1994 there were 531 million tourism arrivals world-wide, a 3.7% increase since 1993, which accounted for receipts of US$ 336 billion (an increase of 9.2%). Tourism arrivals are expected to almost double in the next 20 years. WTO projections suggest that by 2010 world-wide arrivals will total 937 million.[5]

3.8 The tourism industry is in a constant state of evolution with a continual emergence of new products, e.g. cultural tourism, 'green' tourism, urban tourism, etc. There has been a notable shift in focus away from the coast in many European countries. The declining fortunes of many traditional seaside resorts are a reflection of such trends.

3.9 However, emerging products do not always replace traditional products, but extend the range and impact of the industry, and traditional coastal destinations continue to be popular despite the relative decline of coastal areas in terms of overall tourism numbers. Indeed, in Europe, the coastal zone is still the dominant destination for tourism and leisure trips. It is likely that the coastal zone will continue to be a focus for tourism use and development pressure in the foreseeable future. For example, in Australia projections suggest that during the 1990's international tourism will increase annually by 7 per cent and domestic tourism by 2 to 4 per cent. It is expected that the '*bulk of visitors*' will continue to visit destinations in the coastal zone.[6]

3.10 Tourism development is increasingly important in the coastal zone as an alternative to traditional sources of employment such as agriculture and fishing. In the more peripheral, undeveloped coastal areas, tourism is often the only employment alternative. As a result, economic dependency on tourism is common in coastal areas, much more so than in inland areas.

INTEREST IN INTEGRATED COASTAL ZONE MANAGEMENT

3.11 Increasing pressure of use and development in coastal zones, deterioration of coastal environments, and recognition of the potential of coastal zones in economic terms has stimulated growth of interest in Integrated Coastal Zone Management (ICZM) in many parts of the world. This growth of interest has been particularly marked in the last decade. Coastal nations have been looking to ways of improving management of activities taking place in the coastal zone. The prospect of sea-level rise, linked to global warming, has also focused attention on the coastal zone and raised questions about the capacity of current management systems to tackle the resulting problems.

3.12 The result has been considerable interest in improving management of the coastal environment. A review of international initiatives on CZM, carried out in 1993[7], noted that 177 coastal states have some kind of programme or projects on CZM. The number of states taking this action is increasing but, at the same time, developmental work on the improvement of existing programmes is also receiving much attention.

INTERNATIONAL DEVELOPMENTS

3.13 The growth of interest in ICZM at national level has been reflected in greater recognition of the significance of the issue at international level. The 1987 report from the World Commission on Environment and Development (Bruntland Commission)[8] was one of the early international documents to give the matter some attention. Since then there have been a number of important international documents which have emphasised the importance of ICZM and which provide guidance for national programmes.

3B Major International Documents Relating to ICZM

Document	Year	Comment
Agenda 21 (Chapter 17)	1992	An output of United Nations Conference on Environment and Development, Rio de Janeiro, June 1992
Convention on Biological Diversity	1992	An output of United Nations Conference on Environment and Development, Rio de Janeiro, June 1992
United Nations Law of the Sea Convention	1982	Came into force 1994
Noordwijk Guidelines	1993	Output of World Coast Conference, 1993. Follow up to Agenda 21
OECD Report (2 volumes)	1993	

3.14 International policy statements on ICZM have been supplemented with the publication of guidelines, good practice guides and case studies reviews, intended to support the implementation stage. In addition to the major documents listed in the box, and described below, there is a considerable amount of complementary material mainly focusing on how particular sectors might help develop and implement aspects of ICZM, e.g. fisheries management (FAO), nature conservation (WWF), scientific research (UNESCO), and shoreline management (IPCC).

Agenda 21

3.15 Agenda 21 is specific in its support for ICZM[9]. A full chapter of the document is devoted to oceans, seas and coastal areas, and "*integrated management and sustainable development of coastal and marine areas"* receives a high profile as one of the seven major programmes in this section of the report.

3.16 The objectives of this programme are described as follows:

"*Coastal States commit themselves to integrated management and sustainable development of coastal areas and the marine environment under their national jurisdiction. To this end, it is necessary to, inter alia:*

(a) Provide for an integrated policy and decision-making process, including all involved sectors, to promote compatibility and a balance of uses;

(b) Identify existing and projected uses of coastal areas and their interactions;

(c) Concentrate on well-defined issues concerning coastal management;

(d) Apply preventive and precautionary approaches to project planning and implementation, including prior assessment and systematic observation of the impacts of major projects;

(e) Promote the development and application of methods, such as national resource and environmental accounting, that reflect changes in value resulting from uses of coastal and marine areas, including pollution, marine erosion, loss of resources and habitat destruction; and

(f) Provide access, as far as possible, for concerned individuals, groups and organisations to relevant information and opportunities for consultation and participation in planning and decision-making at appropriate levels."

3.17 To achieve this a range of activities are recommended under the headings of management, data and information, and international and regional co-operation and co-ordination.

Convention on Biological Diversity

3.18 Article 6 of the Convention[10] describes the general measures for conservation and sustainable use which should be progressed, and is particularly pertinent as ICZM programmes can make an important contribution to achieving these measures. Article 6 states that:

"*Each Contracting Party shall, in accordance with its particular conditions and capabilities:*

(a) Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, inter alia, the measures set out in this Convention relevant to the Contracting Party concerned; and

(b) Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies."

United Nations Law of the Sea Convention

3.19 This convention[11] confers greater responsibility on states for their 200 mile Exclusive Economic Zones and when operating on the High Seas. Part XII, for example, includes the general obligation on states to protect and preserve the marine environment and to exploit their natural resources pursuant to their environmental policies and in accordance with this general obligation (Articles 192/3).

Noordwijk Guidelines

3.20 The World Coast Conference (1993) was part of the follow up to the Earth Summit, developing the goals of Agenda 21 to specific actions to be taken by international and national governmental and non-governmental organisations. The ICZM needs identified in Agenda 21 were the subject for discussion at this conference and, along with many papers updating the international picture on implementation of ICZM, there was a supporting paper generally called the 'Noordwijk Guidelines'[12].

3.21 The Guidelines provide advice on technical and institutional matters with an emphasis on how to improve integration of planning and management. Other issues include environmental impact assessment, human resources development and data and information requirements.

OECD Report

3.22 This is a two volume report[13] bringing together the experiences, issues and problems faced by OECD member countries in their coastal zones with 18 country information papers and 16 case studies. Particular emphasis is put on structures and processes for integrated management. The sequence for the coastal zone management process is presented in the following way:

- Establishing (by political and/or common interest groups) administrative/ political co-ordination and the creation of the institutional mechanism.
- Generation of information (analysis/planning).
- Reassessment of present policies.
- Reassessment of legislative requirements.
- Reassessment of legal/judicial action.
- Preparation of alternative options and analysis of implications (environmental, social, economic), and risk/uncertainty.
- Selection of the final plan, involving public participation.
- Implementation.
- Monitoring and evaluation to feedback into planning.

3.23 There is also guidance on the creation of the institutional mechanism to implement ICZM. A co-ordinating mechanism is seen as a primary requirement and a number of general features of a successful approach to ICZM are identified:

1. To have the capacity and resources (personnel, financial, political) to undertake analysis, planning, implementation and monitoring of management strategies.

2. To involve the public, industry and interest groups in CZM.

3. To transcend narrow administrative boundaries and include consideration of the coastal hinterland as well as the territorial seas, perhaps as far as the EEZ at times.

4. To be able to manage resource allocation as well as pollution externalities (spillover effects).

5. To have the competence to handle particularly difficult or important areas of integration:
   - coastal development/environmental protection;
   - coastal water/inland water;
   - coastal land/coastal water;
   - coastal management/fisheries management;
   - national/regional/local government integration.

6. To have the power or authority to raise and distribute funds.

EUROPEAN ICZM INITIATIVES

3.24 There has been a long standing interest in coastal management within Europe. Organisations, such as the Council of Europe, the European Commission and the European Environment Agency, have been promoting work on coastal management at a European level as well as supporting the work of coastal nations on this subject.

3.25 The Council of Europe passed a resolution on the protection of coastal areas in 1973 which urged Governments to compile inventories of coastal resources, and to promote integrated coastal planning and ensure wildlife conservation in coastal areas. The Council is currently working to implement the coastal and marine ecosystems element of the Pan-European Biological and Landscape Biodiversity Strategy and, in particular, the formulation of model legislation for sustainable use of coastal areas and resources.

3C Major European Union Initiatives on ICZM

Initiative	Year	Comment
5th Environmental Action Programme	1992	Titled 'Towards Sustainability"
European Union Coastal Strategy	1991 on-wards	Process
Communication from the Commission to the Council and the European Parliament on the integrated management of coastal zones (COM(95) 511 final/2)	1995	Current EU thinking on CZM
European Marine and Coastal Environment Topic Centre	1994	Initiative by European Environment Agency
Dobris Assessment	1995	Produced by European Environment Agency
ENVIREG Guide to Good Practice	1994	Intended to assist Objective 1 countries in the ENVIREG Programme

3.26 A European Coastal Charter was adopted by the Conference of Peripheral Maritime Regions of the European Community in 1981, whilst in 1986 the European Commission prepared a Communication to the Council of Ministers on integrated planning of coastal areas[14]. More recent events in Europe, which also have a particular bearing on the development of a programme of ICZM for Ireland, are the actions being taken under the auspices of the European Union.

3.27 The European Union has passed numerous resolutions, regulations and directives relevant to ICZM. They generally fall into one of three categories:

- actions which cover one aspect of ICZM in some detail (e.g. fisheries);
- actions which concern both terrestrial and marine systems (e.g. water quality and nature conservation); and
- actions which deal with land management issues but have implications for ICZM (e.g. Common Agricultural Policy).

3.28 Influence on coastal matters is also directed through the financial instruments of the Union, such as the European Regional Development Fund, as well as programmes, with linked funds, that specifically direct actions on the coastal zone. What has been missing, however, is an overarching European Union policy on ICZM which tries to integrate policies across sectors as well as assessing their cumulative impact on the coastal zone. The need for such an approach was recognised by the Council of the Environment Ministers in a Resolution to the European Commission in 1992[15]. This invited the Commission to progress CZM by preparing a Community strategy on this matter and to incorporate the initiative into the Fifth Environmental Action Plan. These and a number of other important initiatives from the EU are listed in Box 3C and summarised below.

Fifth Environmental Action Programme

3.29 Section 5.6 of the Programme[16], on coastal zones, restates the importance of the coastal environment and the pressures on these areas. The request of the Council of Ministers for an EU strategy on ICZM was noted and the main elements that would form part of this strategy were presented in the report (Table 3D). It was envisaged that the framework of integrated management plans should be in place by 1998.

European Union Coastal Strategy

3.30 There has been considerable discussion on the possible approach and content of an EU Coastal Strategy since the idea was proposed in 1991. The first European Workshop on Coastal Zone Management, for example, highlighted the need for the EU to have an appropriate framework for Member States to achieve management objectives for their coastal zones. A memorandum to the Council of Ministers, prepared by the European Environment Bureau in 1993[17], went into more detail by requesting a legal instrument, and outlining possible areas which it could cover. In 1994 Bird Life International prepared a report presenting recommendations for a European Union Coastal Strategy[18].

3.31 During this period, three areas have elicited particular interest:

1. how far can the EU go on this issue, bearing in mind the concern of Member States about subsidiarity;
2. should the EU promote a legal instrument on ICZM; and

3. is the lead within the European Commission most appropriate to the Environment Directorate or Rural Affairs Directorate?

3.32 A Communication from the Commission to the Council and European Parliament on integrated management of coastal zones has now been issued by the Environment Directorate and outlines the thinking of the Commission on how the EU should go forward on ICZM[19]. The Communication is a joint one, issued by the Environment Directorate, Fisheries Directorate and Rural Development Directorate.

3D Elements of Coastal Zone Strategy
(as identified in Fifth Environment Action Programme; Table 13)

OBJECTIVE	EC TARGETS UP TO 2000	INSTRUMENTS	TIME-FRAME	SECTORS/ ACTORS
* sustainable development of coastal zones and their resources in accordance with the carrying capacity of coastal environments	* higher priority to the environmental needs of coastal zones, through inter alia, better coordination between relevant EC policies and between policies at the EC, national and regional levels.	* framework of integrated management plans on appropriate levels	before 1998	MS+LAs+EC
	* operational framework for integrated planning and management	* better know-how and exchange of experience	continuous	MS+LAs+EC
		* creation and improvement of data bases and relevant indicators	before 1995	MS+LAs+EC
	• development of criteria for a better balance of land use and conservation and use of natural resources	* pilot projects on integrated management of coastal zones	1993-1994	MS+LAs+EC
	* awareness raising of the public, competent authorities and economic sectors	* - information campaigns - education - professional training - financial support for demonstration projects and innovative approaches (LIFE)	1992-	MS+LAs+EC Tourist Sector Transport Enterprises Agriculture General public
		* improvement of criteria to ensure sustainability of projects and programmes (incl. EIA)	1993-	MS+EC

MS = Action at Member State level; LAs = Action at Local and Regional Authority level; EC = Action at Community level.
Source: *Towards Sustainability, A European Community Programme of Policy and Action in relation to the Environment and Sustainable Development, Volume 2.*

3.33 The Communication reiterates the importance of the coastal zone to the Member States and concludes that there is a clear case for action at EU level as well as by the Member States. The emphasis is on how ICZM can play a pivotal role in sustainable development of the coastal zone and the approach advocated in the Communication is for a demonstration programme.

3.34 The objective of the demonstration programme is "*to show the practical conditions that must be met if sustainable development is to be achieved in the European coastal zones in all their diversity. It will have a dual function:*

(a) To test co-operation models for the integrated management of the coastal zones; and

(b) as it progresses, to provide the technical results necessary to foster dialogue between the European institutions and all the players with a stake in the development of the coastal zones."

3.35 There are no plans for a Directive on ICZM, although the findings of the demonstration programme will inform the preparation of a Directive on strategic environmental impact assessment. This communication should therefore be viewed as a step on the way to preparing a European Union ICZM strategy and, with a time scale of three years for the demonstration programme, it is unlikely that a broad ranging strategy on coastal zones will be prepared by the European Commission in the near future.

European Marine and Coastal Environment Topic Centre

3.36 The European Environment Agency is currently considering the work and resources required to develop the projects identified in its Multi Annual Work Programme. One area which is potentially of great significance to future work on ICZM in Europe is the establishment of a permanent European Marine and Coastal Environment Topic Centre (ETC/MC). The Centre has been asked to carry out two scoping studies to look at the activities it might undertake on Integrated Environmental Assessment of Coastal Zones and Improvement of Information on Coastal and Marine Water Quality. This work has been completed[20] and has identified a role for ETC/MC in six areas:

- A European strategy
- Regional, national and local polices and instruments.
- Co-operation with international organisations
- Information on the coastal zone
- Indicators
- Modelling

3.37 If this is approved it will give the ETC/MC an important role in collating information on ICZM throughout the EU and providing comparable data in order to assess progress in the different coastal nations. The possibility of future work on indicators and modelling is also important as this could assist with the development of national programmes.

Europe's Environment: The Dobris Assessment

3.38 The publication of The Dobris Assessment[21] by the European Environment Agency in 1995 gives further support and general guidance on approaches to ICZM within the EU. The section on coastal management provides information on the threat to the coastal environment of Europe and highlights the following necessary steps:

- A better understanding of the scale of environmental problems on the coast through detailed quality and status assessments, baseline data and the collation of existing baseline data.

- Identification of problems requiring priority action against agreed criteria.

- Public policies to help improve the compatibility of activities in the coastal zone and bring about real improvements in the environmental quality of coastal areas.

- International collaboration and agreement between riparian states and states within the same catchment.

- Assessment of actions and priorities on the basis of short and long-term goals and their cost-effectiveness.

ENVIREG Guide to Good Practice

3.39 This report on economic development and environmental protection[22] in coastal areas was published in 1994 and is primarily intended to assist Objective One countries eligible for support through the ENVIREG Programme. ICZM is recognised as one of the important tools in making progress towards sustainable development of the coast and the handbook is intended to provide "*a signpost to information and ideas*" on these tools. The report brings together examples of good practice in ICZM and highlights a number of important general points. These are:

- ICZM is of paramount importance in creating a more sustainable base for the coastal economy
- Successful ICZM depends on developing solutions at local and regional levels within a wider national and international policy framework.
- Communication, information and co-ordination are the basic ingredients of good practice
- A lead organisation must be appointed for plan preparation and responsibility for implementation should be clearly defined.
- ICZM plans must be designed to be workable and resources devoted to their implementation and periodic revision.
- Strategic environmental assessment of programmes, policies and plans is important

APPROACHES TO ICZM

3.40 The relatively recent interest in ICZM does not mean that there has been a vacuum in coastal planning before now. What it has done, however, is to change the emphasis of such work. Two of the most important developments are, firstly the shift to more integrated planning and management, and secondly for the resulting policies and programmes to focus on a 'coastal zone'. Previous approaches have therefore been recognised but adapted and superseded by new measures. A review of international ICZM efforts conducted by Sorensen at the University of Massachusetts in 1993[23] identified 10 stages in the evolution of ICZM programmes around the world (see Figure 2.3 Chapter 2).

3.41 The outcomes are extremely varied. In some cases there is a great deal of emphasis on legislation, in others, on voluntary collaboration. The principal direction for ICZM comes from the national level in some countries and the local level in others. This variety suggests that, although there are some common themes to ICZM programmes, there is no single model which can be advocated as "the best way". Instead it is necessary to examine the different approaches, then adopt what is appropriate, and adapt other ideas to suit the particular circumstances in Ireland. The following examples highlight this point by describing the different approaches being taken in a number of countries.

ICZM in the United States of America

3.42 The approach to managing activities within the coastal zone of the United States is probably the most widely cited example of ICZM. The 1972 Coastal Zone Management Act set the scene for increased priority on this issue by highlighting the need for action and setting in place the means to do so. The Act has done this by providing a framework at federal level, yet giving individual states the freedom to develop their own programmes. It is administered at the national level by the National Oceanic and Atmospheric Administration's Office of Oceans and Coastal Resource Management and sets out four national policies. These are to:

1. preserve, protect, develop and where possible to restore or enhance the resources of the coastal zone;

2. encourage and assist the states to develop and implement coastal management programmes that meet national standards;

3. encourage the preparation of "*special area management plans*" to protect significant natural resources, to ensure "*reasonable coastal-dependent economic growth*", and to provide "*improved protection of life and property in hazardous areas and improved predictability in government decision making*".

4. encourage the participation and co-operation of public, state and local governments, interstate and other regional agencies, and federal agencies in achieving the purposes of the Act.

3.43 There is also an important provision on 'consistency' to ensure that, as far as possible, federal policy and action is consistent with local management.

3.44 Individual states were offered the opportunity to draw up management programmes for federal approval, following which funds were available to help implement the programme. Before such approval was given, each plan was required to include the following:

- boundaries of the 'coastal zone';

- identification of the legal and institutional capability by which they could control land and water use;

- the organisational structure for implementing a unified programme which must include an open and participatory planning process; and

- assurances that national and regional concerns were included in the planning process.

3.45 Two of the most important factors which have enabled these ideas to be put into practice are the financial assistance which the federal government has given to states through cost sharing arrangements, and the fact that the law created a process and structure which encouraged and helped coastal planning and plan implementation by states and local municipalities without being prescriptive or over-riding their authority. The Act has encouraged individual states to promote national goals and at the same time has given states some control over federal agency action and policy in their coastal zones.

3.46 Twenty-nine out of a possible 35 states now have approved plans and these are complimented by a range of measures such as permits, land acquisition, sanctuary designation and conflict resolution through local fora, to implement the ICZM programme in any one state.

3.47 California was one of the first states to take up the idea of ICZM with the establishment of a California Coastal Zone Conservation Commission to draw up a ICZM plan as well as regulate coastal development. It became a permanent body in 1976 and is responsible for issuing permits for developments in the coastal zone and approving local plans. Main areas of coastal resource planning and management policies dealt with by the Commission are public access, recreation, land resources, the marine environment and development.

3.48 In Oregon, an existing agency, the Land Conservation and Development Commission, oversees ICZM in the State. A major feature of their programme is community participation. This is encouraged through permanent 'citizen committees', public meetings, wide dissemination of information, and election of local officials onto the Commission. Permits are issued by a number of state agencies for approved uses on wetlands, beaches and water areas, but these must be consistent with the ICZM plan for the state. A Nearshore Ocean Planning Task Force, set up in 1984, reported that the state had excellent provisions for multiple-use ocean management and helped to identify an Ocean Resources Goal for the ICZM Plan. This "*gives renewable resources top priority in decision making, and imposes tough requirements for resource inventory, impact analysis, pollution avoidance and interagency co-ordination*".

3.49 In North Carolina a Coastal Area Management Act (1974) sets out the ICZM programme for its 20 coastal counties. A Coastal Resources Commission has been set up by the Governor and the counties must adopt comprehensive plans, consistent with the standards set by the Commission. As a result there is some uniformity between the local plans and methods of implementation. In addition to comprehensive land use planning the approaches included setback, protection of offshore fish nursery areas and coastal protection schemes.

ICZM in the United Kingdom

3.50 The recent interest in ICZM in the UK can be traced back to a number of events in the early 1990's. There was considerable lobbying of Government by local authorities, conservation groups, planners and coastal managers on the need to provide a framework of ICZM for the UK. One outcome was the decision by the House of Commons Environment Select Committee to conduct an inquiry into coastal zone planning and protection. The Committee reported in 1992[24] and, in light of the evidence received, concluded:

"*We recognise the benefits of the approach known as Coastal Zone Management, and we recommend that such an approach be adopted as the framework for all coastal zone planning and management practices in the UK.*"

3.51 These and other recommendations were welcomed widely. The Government responded that it was "*firmly committed to the effective protection and planning of our coast*", but was also of the view that no major actions needed to be taken. Since the Committee reported there has been progress with ICZM in the UK by means which could be considered to be 'evolutionary rather than revolutionary' and based on a 'voluntary approach' rather than statute.

3.52 There is no national programme on ICZM in the UK but separate countrywide initiatives for England, Wales, Scotland and Northern Ireland. Some liaison is achieved between them through an Inter-Departmental Group which brings together the government departments involved in coastal management.

However, its role remains to be clarified.

3.53 For England and Wales there is Planning Policy Guidance (PPG)[25] on coastal matters and a summary of current arrangements in two documents published by the Department of the Environment and the Welsh Office ('Managing the Coast'[26] and 'Development Below Low Water'[27]). There is a recognition that planning the coast is a strategic issue and a recommendation that local authorities should work closely together on coastal planning issues. The Policy Guidance document identified seven themes and priorities for the coast. These are:

- achieving sustainable use of the coastal resource;
- helping to reconcile competing needs;
- promoting integrated management of the coast;
- having full regard to the international importance of the coastal zone and related legal obligations;
- basing decisions on a clear understanding of natural coastal processes - and consistency with these processes;
- making systems of regulation more transparent; and
- ensuring a fair and effective balance between regulation and voluntary initiative.

3.54 In 1994 the Environment Minister announced four new initiatives on coastal policy for England:

- the production of a statement of policy guidelines for the coast (published 1995)[28];
- a standing forum on coastal zone management (The Coastal Forum; established 1994);
- action to highlight good practice on coastal management plans (ongoing); and
- a review of bye-law powers relating to coastal management (ongoing).

3.55 The Coastal Forum operates under the chairmanship of the Department of the Environment and met for the first time in December 1994. It has more than 60 member organisations with wide-ranging interests in the coastal zone. A public meeting twice a year provides an opportunity to hear about the work of the different organisations and debate issues of concern. More detailed work may be carried out through topic groups and the first of these has helped to develop guidelines for the management of marine 'Special Areas of Conservation'. The terms of reference of the Forum are:

- to promote understanding of coastal zone initiatives;
- to build on existing liaison arrangements regionally and locally to assist evaluation of action to implement coastal zone initiatives and monitor the preparation of a guide to good practice;
- to complement, but not overlap, the work of other bodies with interest in coastal issues; and

- to liaise with other relevant initiatives elsewhere in the United Kingdom.

3.56 A report prepared by the Association of Welsh County Councils identified coastal policy as one of several subjects requiring strategic guidance from the Welsh Office. A number of coastal groups are doing much to promote ICZM locally and regionally, and the Secretary of State for Wales has announced the intention to set up a Coastal Forum for Wales.

3.57 Progress towards ICZM in Scotland has been more limited. Although there were Planning Guidelines for Oil and Gas Development on the Coast[29] in 1972 there have been no further policy papers directed at the coastal zone. The Scottish Office issued a discussion paper entitled 'Scotland's Coasts' in 1996 which has proposed the encouragement of more local coastal fora, the possibility of a Coastal Forum, and updating of the 1974 National Planning Guidelines on the coast[30].

3.58 In Northern Ireland CZM was the subject of a policy paper prepared by the Council for Nature Conservation and the Countryside (CNCC) in 1994. This described current management responsibilities and constraints and suggested the establishment of a CZM Management Committee to develop a coastal zone management strategy for Northern Ireland.

3.59 In the following year, 1995, the Environment Service published, on behalf of the Government, a consultation paper entitled 'Delivering Coastal Zone Management in Northern Ireland'.[31] This document sets out the Government's policies on the conservation and management of the coast, as "*a considered response to CNCC*". The report envisages the continuation of the existing sectoral approach to coastal management, but with the introduction of a 'Coastal Zone Forum', to provide for an exchange of views and to build on existing liaison arrangements, and the wider use of local management plans and advisory fora.

3.60 The limited progress with the development of ICZM policy at national level in the UK is in contrast with interest in ICZM at a local level and indeed this is where most has been done to promote ICZM in the UK. The current emphasis is on the preparation of ICZM plans and a directory published in 1994[32] describes 90 coastal planning and management initiatives in England alone. County and district planning authorities have been particularly active in the preparation of coastal strategies, estuary management plans and coastal management plans. A major feature has also been the interest and involvement of all major coastal user groups as well as those involved in the management of activities at the coast. Project officers have helped facilitate the process at a number of sites and funding has come either through joint commitments or through seed funds from organisations such as English Nature in its 'Estuaries Initiative' and Scottish Nature Heritage through its 'Focus on Firths' programme.

3.61 Commitment and interest in ICZM at the local level is proving to be the driving force in the UK, and it is at this level that most progress has been made.

ICZM in Australia

3.62 In 1991 the Commonwealth Government requested the Resource Assessment Commission to conduct a major inquiry into the use and management of Australia's coastal zone resources. It conducted its work through public hearings, discussion, workshops and received more than 700 submissions. The findings were published in 1993[33] and recommended a "*National Coastal Action Program, involving all governments and community and industry groups with responsibility for and interests in the management of coastal zone resources*".

The report went on to suggest that such a programme should contain:

- national coastal zone objectives;
- arrangements for implementing and managing the Programme;
- mechanisms for community and industry involvement; and
- innovative management mechanisms.

3.63 One of the important themes was that improvements on the way the coast was used could only be achieved if there was co-operation between the community, industry and the different spheres of government. There was a recommendation for a national coastal action programme, overseen by a national coastal management agency. However, this was rejected and instead the Commonwealth proposed that a 'National Coast Action Plan' should be developed in consultation with state and local governments. An Intergovernmental Coastal Working Group was set up to develop this programme and started in June 1994.

3.64 The Commonwealth Coastal Policy[34] was published in May 1995, stating an underlying goal of "*ecologically sustainable use of the coastal zone*" and listing the coastal management objectives of the Commonwealth as:

- sustainable resource use;
- resource conservation;
- public participation; and
- knowledge and understanding

3.65 The guiding principles to help integrate government coastal management activities and to achieve these objectives are:

- sustainable resource use, covering integrated assessment, the precautionary approach, resource allocation and the user-pays principle;
- resource conservation; and
- public participation.

3.66 The policy document concludes by setting out a programme of action.

3.67 Individual states are progressing in different ways. However, there is a common process, through the development of consensus amongst the major government agencies and stakeholders. Common themes are the development of co-ordination and communication within and between state agencies, local governments and the community. These include setting up co-ordinating committees or councils, specific legislation, strategies and policies. There are also local area coastal management plans which are evolving from general coastal land use plans.

ICZM in New Zealand

3.68 In New Zealand, ICZM was introduced as part of an overall restructuring of legislation and administration.

ICZM in Sri Lanka

3.69 In Sri Lanka, a new government department was established for the management of the coastal zone.

CONCLUSIONS

3.70 Key elements for the success of ICZM initiatives appear to be the involvement of user groups and local communities, mechanisms for co-operation between administrations, legal provisions to provide a strong structure, including local, regional and national elements to reflect the needs of different areas, and clearly stated objectives. Financial provision for implementation is also critical, although progress has been made with limited budgets where there is sufficient enthusiasm, motivation and political will to move forward.

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4. LEGISLATION AND ADMINISTRATION

The legislative framework in the coastal zone is very complex and intricate, involving both international and national measures. In simple terms, the legislative measures serve one of two principal purposes - the administration of activities or protection of the environment.

A very strong land/marine divide is evident in the legislative framework, and is the basis of the land/sea divide in the administrative structure. In addition, much legislation and administration is structured on a sectoral basis, and so does not promote integrated policy.

The system allows for strong formal links and consultative procedures vertically from Government Departments to the relevant implementation agencies at national, regional and local level. However, formal horizontal linkages between departments, and between agencies on the ground, are much weaker, and these give rise to many of the problems of inadequate consultation, both real and perceived.

4.1 In Ireland, the coastal zone is currently administered by a range of authorities, agencies and bodies. The principal division of responsibility and jurisdiction is along the shoreline, at the boundary between land and sea.

THE LEGISLATIVE FRAMEWORK

4.2 The legislative framework in the coastal zone is very complex and intricate, involving both international and national measures. In simple terms, the legislative measures serve one of two principal purposes - the administration of activities, or protection of the environment. The principal legislation governing administration in the coastal zone is summarised in Box 4A. Details of the legislative base for each of the principal sectors is dealt with in the appropriate section of the following chapters.

4.3 A very strong land/marine divide is evident in the legislative framework, and is the basis of the land/sea divide in the administrative structure. In general, separate legislation governs land and marine based activities and environmental protection. For example, local government planning jurisdiction ends at mean high water mark, whilst the provisions of the Foreshore Act are applicable below mean high water mark.

4.4 Much legislation is structured on a sectoral basis, dealing with issues such as fisheries, minerals exploration, water quality, coastal protection, etc.

4.5 The land/marine divide and sectoral approach are common to many countries. In Denmark, for example, authorities involved in planning in the coastal zone include national agencies for physical planning, nature conservation, protection of the environment, energy planning, the roads directorate and the Ministry of Agriculture. In the UK planning jurisdiction of local authorities generally ends at low water mark, but there are exceptions. An example is in Shetland, where the local authority have powers to issue 'works licences' out to the territorial limits. In Israel, a national plan for the sea and shores of the country is being developed under the auspices of the National Planning and Building Board which approves the plans and permits for development in territorial waters.

4.6 EU Directive 85/337/EEC on the Assessment of Environmental Effects has been incorporated into a range of separate development consent processes in Ireland, and in appropriate cases has the potential to integrate consideration of impacts across the land/sea divide. In practice, however, this is limited in scope, as the procedure is confined to certain designated development proposals, usually of a larger scale, and fully integrated assessment applies only to projects straddling the land/sea divide.

4A Principal Legislation Controlling the Administration of Activities in the Coastal Zone

CONTROL OF ACTIVITIES	
Regulation of Development on the Seabed	Foreshore Act 1933 and 1992. Petroleum, Gas, Mineral Development and Continental Shelf Acts.
Regulation of Activity at Sea	Fisheries Acts 1959, 1962, 1978, 1980 and 1983 Fisheries Amendment Acts 1994, 1997 Common Fisheries Policy including Regulations 3760/92, 172/83, 3094/86, 2241/87, 4028/86
Control of Development on Land	Local Government (Planning & Development) Acts 1963-1993 Harbours Acts 1946 and 1995
ENVIRONMENTAL PROTECTION	
Coastal Defence	Coastal Protection Act 1963
Nature Conservation	Wildlife Act, 1976 EU Directive 79/406/EEC Conservation of Wild Birds EU Directive 92/43/EEC Conservation of Natural Habitats and of Wild Flora and Fauna
Pollution Control	Water Pollution Acts 1977 and 1990 Environmental Protection Agency Act 1992 Dumping at Sea Act 1996 Sea Pollution Act 1991 Waste Management Act 1996 EU Directive 76/160/EEC Bathing Waters EU Directive 91/271/EEC Urban Waste Water Treatment EU Directive 79/923/EEC Shellfish Waters
In addition, Ireland is signatory to a number of international conventions, including the Bonn, Bern and Ramsar Conventions, MARPOL, IMO, OSPAR, UNCLOS. etc.	

4.7 Whilst there are shortcomings in the legislative framework, as identified later, these refer principally to matters of detail, such as statutory requirements for consultation, rather than to matters of principle. However, the situation has improved greatly in recent years. For example, planning authorities are now required to provide for the conservation and protection of Special Areas of Conservation, though this does not extend to other nature conservation designations.

4.8 There are, however, some instances where more fundamental reform of the legislation may be required to facilitate effective management of coastal areas. The legislation governing aquaculture licensing has recently been revised, but other legislation, such as the Foreshore Acts, remains in need of major review.

4.9 Reform of this type is widely held to be part of the process of establishing Integrated Coastal Zone Management. New Zealand was unusual in having a total

restructuring of legislation. Some countries have introduced a specific Coastal Zone Management Act, whilst others work with a mix of regulation.

4.10 There are shortcomings in the enforcement and policing of some legislation. For example, there are severe difficulties in enforcing the rules on salmon fishing where there is widespread use of illegal gear. In some cases, the shortcomings are due to difficulties with the legislation itself, but in many cases the problems arise from resource limitations on the administration, as in the follow-up procedure to ensure compliance with foreshore licence conditions.

4B Principal Issues Relating to Legislation

- The legislative framework is complex.
- There is a strong land/marine divide.
- Legislation is generally structured sectorally, and so does not tend to integrate issues.
- Parts of the legislative framework are out of date and inadequate to the task in hand, and so require reform, but some of this is relatively minor in extent, such as requirements for wider consultation.
- In some cases, existing legislation is not adequately enforced, but this is often the result of inadequate administrative resources rather than shortcomings in the legislation.

THE ADMINISTRATIVE FRAMEWORK

4.11 The concentration and diversity of human activity in the coastal zone and the complexity and diversity of the coastal environment itself, typically results in a wide and intricate range of government departments, state agencies, regional and local authorities responsible for its administration. In Ireland there is a clear division of responsibility for the administration of the marine and terrestrial sub-zones of the coastal zone. The key administrators of the coastal zone are the Department of the Marine and Natural Resources, the Department of the Environment and Local Government, the Department of Arts, Heritage, Gaeltacht and the Islands, and the local authorities.

4.12 In general, developments or activities which are marine based are the responsibility of the Department of the Marine and Natural Resources, which has both policy and implementation roles, and has very little responsibility for activities that take place above mean high water mark.

4.13 The Department of the Environment and Local Government is responsible for policy-making in relation to the protection and improvement of the physical environment, including the management of use, activity and development. The Department is responsible for guiding the functions of the local authorities, who are in effect the implementation authorities.

4.14 The Department of Arts, Heritage, Gaeltacht and the Islands is responsible for policy in relation to the protection and management of Ireland's natural and man-made heritage including historic properties and wild flora and fauna. The policy is implemented through the National Monuments and Historic Properties Service (NMHPS), the National Parks and Wildlife Service (NPWS) and the Waterways Service.

4.15 In addition, many other government departments, state agencies, regional and local authorities are responsible for some aspect of administration in the coastal zone. For example, the policies of the Department of Defence, the Department of Agriculture

and Food, the Department of Public Enterprise, the National Roads Authority, etc. impact on the coastal zone, but these policies are seldom exclusive to the coast, and may be indirect. Other agencies, such as the harbour authorities, the Central and Regional Fisheries Boards, etc. have responsibilities that focus exclusively or significantly on the coastal zone.

4.16 There are few administrative bodies whose functions extend across the marine/land divide. Examples include the Department of Tourism, Sport and Recreation, Bord Fáilte and the Environmental Protection Agency. Their function in relation to the administration of the coastal zone is, however, indirect. Bord Fáilte, for example, is concerned with the promotion of Ireland as a tourism destination and the attraction of overseas visitors. Although coastal areas may be highlighted as a tourism attraction, Bord Fáilte has no direct involvement in the administration of the coastal zone.

4C Principal Statutory Bodies Directly Concerned with Administration of the Coastal Zone

Department of the Marine and Natural Resources
Department of the Environment and Local Government
Department of Arts, Heritage, Gaeltacht and the Islands (National Monuments and Historic Properties Service; National Parks and Wildlife Service; Waterways Service)
The Local Authorities
The Regional Authorities
The Harbour Authorities
Environmental Protection Agency
Central and Regional Fisheries Boards
Foyle Fisheries Commission
Commissioners of Irish Lights
Udáras na Gaeltachta

4.17 The statutory basis for each Government Department gives rise to a compartmentalised structure, with generally strong formal links and consultative procedures vertically from each department to the relevant implementation agencies at national, regional and local level. For example the administrative structure which operates between the Department of the Environment and Local Government and the local authorities generally functions satisfactorily. Similarly, linkages between the Department of the Marine and Natural Resources and the harbour authorities are also direct.

4.18 Horizontal linkage is not so clearly defined, and co-operation and consultation is often dependent on voluntary or informal contacts. The Department of the Marine and Natural Resources, the Department of the Environment and Local Government, and the Department of Arts, Heritage, Gaeltacht and the Islands are the major national administrative authorities in the coastal zone, but there are few formal mechanisms for linkage (both operational and policy) between these key government departments.

4.19 Horizontal linkages in other countries work in a variety of ways. The mechanisms include a designated lead agency (USA), inter-departmental committee (UK), and inter-agency council, co-ordinating commission or committee (Australia). In the Netherlands, a national physical planning scheme forms the basis for integration and co-ordinates all sectoral policies through the Wadden Sea Memorandum. This is used as a framework by the 7 relevant departments, as well as the 3 Wadden provinces and 28 municipalities.

4.20 Where linkages have both a horizontal and vertical component, as between the Department of the Marine and Natural Resources and the local authorities, they are generally weak, and a number of the perceived difficulties in the current management of the coastal zone relate to such linkages. For example, local authorities are responsible for many small harbours and for coastal protection works, both of which are funded by the Department of the Marine and Natural Resources. Limitations in funding for these works are sometimes attributed, *inter alia*, to the indirect line of responsibility between the government department and the local authorities.

4.21 Poor linkages throughout the system are expressed primarily in terms of inadequate consultation on matters such as the consideration of planning applications, protection of water courses, development of effluent outfalls on the foreshore, etc. For example, the growth in importance of nature conservation designations does not appear to have been reflected in increased levels of consultation and linkage with the National Parks and Wildlife Service, though recent legislation in respect of Special Areas of Conservation has improved the situation.

4.22 Strategic direction for the management of the coastal zone is limited. Apart from the Operational Programmes, strategic decision making and planning on a sectoral basis is limited, and is seldom integrated across the coastal zone, or across a number of sectors. Moreover, there is little spatial strategy at national level. For example, there is little guidance in respect of the identification and protection of strategic industrial sites in the coastal zone.

4D Principal Issues Relating to Administration

- There is a strong land/marine divide.
- There is a strong sectoral basis to the structure of administration.
- The system is characterised by both real and perceived weak linkages, most frequently expressed as inadequate consultation.
- Planning and decision-making are inadequately integrated across the administrative system.
- Strategic direction, especially with a spatial dimension, is limited.
- There is a shortage of specialist coastal knowledge and expertise, especially to decision makers at local level.

4.23 There is also a shortage of specialist coastal knowledge and expertise, especially to decision makers at the local level.

4.24 Denmark is the only EU country with a National Coastal Strategy, and all Member States rely on sectoral planning at present, although some have started to take things to the next level. Italy has Regional Coastal Plans, for example, and the Netherlands a comprehensive set of Regional and Local Coastal Plans.

4.25 At present, each government department is undertaking a major review, known as the Strategic Management Initiative, of its structure. This will address some of the present shortcomings, and incorporate a more strategic approach to management, incorporating, where appropriate, a review of the relations with other departments and agencies.

DEVELOPMENT ON THE FORESHORE

4.26 Development on land, above mean high water mark, is generally controlled by the local authorities, under the Local Government (Planning and Development) Acts (see Chapter 6). Control of development below mean high water mark is the responsibility of the Department of the Marine and Natural Resources, through the provisions of the Foreshore Act 1933 and the Foreshore (Amendment) Act 1992. Control of development on the foreshore emerged during the study as an area of concern to many parties, and, as a key management component of the coastal zone, is considered here.

4.27 The foreshore is defined as the bed and shore of the sea, every tidal river and estuary, below the line of the high water of ordinary or mean tides. The seaward limit of the foreshore extends 12 nautical miles from the coast, but may be increased to 200 miles in line with the UN Law of the Sea.

4.28 State ownership of the foreshore does not imply unrestricted public access. There is no general right to enter on the foreshore, even for bathing, but in general no prohibition is enforced. Similarly, the gathering of shellfish for personal use is not generally restricted, but a foreshore licence is required for any commercial undertaking.

4.29 In other countries, levels of control over the foreshore vary. In Jersey, for example, the Bailiwick controls beach traders through the issue of permits, and has a policy that some beaches will be free of this activity. In the UK there is a 'right to fish' from the foreshore.

4.30 All development on, or use of, the foreshore requires a foreshore lease or licence. The foreshore is state owned property, and its control is vested in the Minister for the Marine and Natural Resources, who will only allow its use in '*the public interest*'. There is no obligation on the Minister for the Marine and Natural Resources to demise land, nor to do it within a set time. A foreshore lease confers property title for a specified period and thus allows exclusive use of the foreshore and the right to undertake certain works, for example the construction and operation of a marina. A foreshore licence allows the non-exclusive use of land for a specified period, for example horse racing, sea-weed collection, etc.

4.31 Both a foreshore licence or lease and planning permission may be required for development that adjoins, abuts or is adjacent to the functional area of a planning authority. However, consideration of such applications is not formally integrated, and, for example, conditions attaching to one consent may not necessarily be reflected in the other. Whilst the Department of the Marine and Natural Resources considers, *inter alia,* the environmental implications of the proposed development or use in considering applications for foreshore licences and leases, the range of issues considered under the planning system is perceived to be wider. In practice, however, a foreshore licence or lease is not usually granted until any necessary planning permission has been obtained.

4.32 The receipt of applications for licences or leases are usually advertised, and details made available to the public for 21 days at the local Garda station, where objections can be made. A public enquiry can also be requested. However, there is no further public participation in the process. The decision will be sent to an objector together with those parts of the agreement that may have been included as a result of the objection. However, the whole agreement is not available to the public since it is a private treaty between the applicant and the Minister. There is no appeal process except by way of judicial review.

4.33 Because there are no time limits there are often long delays involved in the assessment of licence and lease applications, with the shortest assessment period averaging 4-5 months. Some applications can take up to 5 years to process. Much of the time is spent in conflict resolution tasks. There is no requirement for statutory consultation in the process. Also, unlike planning applications, there is no strategic development plan for the foreshore, by which applications are assessed. The lack of public access to the process and the lack of a time limit for determination are the two most common criticisms of the present system.

4.34 Foreshore licences and leases are both an agreement on the leasing of land (a landlord/tenant agreement) and a grant of permission for particular activities and developments (a development consent). These are two quite distinct functions, and can be perceived as giving rise to conflicts.

4E Principal Issues Relating to Foreshore Licences and Leases

- The current system is generally perceived as out-dated and inadequate in terms of public access and involvement, consultation with other interests and in lack of time limits.
- The system is inadequately integrated with the planning system.
- There is no strategic framework within which applications can be considered.
- Licences and leases are both commercial (lease) and regulatory (permission) instruments, and this can give rise to perceived conflicts.

4.35 The difficulties of the current foreshore licence and lease system are widely recognised, and a major review of the Foreshore Acts is planned.

4.36 Also included in the Foreshore Act are Prohibitory Orders and Notices. A Prohibitory Order applies to everyone for a specified area within the seashore area[1]. It can be used to prevent access, or any specified activity. A Prohibitory Notice is addressed to a named individual and applies within the foreshore area only. The most common use of both is to prevent the removal of sand and gravel.

STRUCTURES FOR RESEARCH AND DEVELOPMENT

4.37 Research and development are key elements of ICZM programmes around the world, as improved understanding should result in more informed and more effective policies and programmes, and help decision-making. A CZM centre has been set up in the Netherlands as a government organisation under a steering group of 6 Netherlands Departments. It provides advice, internationally as well as within the Netherlands. In the academic field the Coastal Resource Center at the University of Rhode Island in the USA has run courses in ICZM for many years, together with a Summer Institute to train coastal zone managers from many countries. Data centres are also becoming important. The UK is setting up a Biodiversity Information Service under the auspices of a government agency, the Joint Nature Conservation Committee.

4.38 Research and development, including monitoring and data collection, is essential to good management. Administration of the coastal zone is supported by research and development work undertaken by a number of agencies. The Department of the Marine and Natural Resources, the Department of the Environment and Local Government and the National Parks and Wildlife Service (NPWS) all have research and development functions. For example, NPWS has undertaken extensive survey work as a basis for the designation of Special Areas of Conservation and of Special

Protection Areas. Other principal organisations involved in research and development include:

- the Marine Institute;
- the Environmental Protection Agency; and
- the universities and other third-level institutions, including the Martin Ryan Marine Science Institute at University College Galway and the Coastal Zone Institute at University College Cork.

The Marine Institute

4.39 The Marine Institute is a statutory body established under the Marine Institute Act 1991. Its general functions are "*to undertake, to co-ordinate and to assist in marine research and development... [in order to] promote economic development and create employment and protect the marine environment.*"[2]

4.40 The principal role of the Marine Institute is, therefore, the co-ordination and promotion of research and development activities and, through the improvement, development and application of technical and other processes, support the sustainable exploitation and development of the marine resource.

4.41 The Institute incorporates a number of operational units, including:

- headquarters, Dublin;
- the National Marine Data Centre, Dublin;
- the Fisheries Research Centre, Abbotstown;
- FRC fishery technicians, located at the major Fishery Harbours;
- Quality Status Report (QSR) Office, Shannon; and
- Research Vessel Operations Unit.

4.42 The Fisheries Research Centre provides specialist laboratory and workshop facilities for fisheries, aquaculture and environmental research and monitoring. Its work focuses on the stock assessment of fish and shellfish, aquaculture (including fish health) and aquatic environmental quality.

4.43 At the request of the Department of the Marine and Natural Resources and the Department of the Environment and Local Government, the Marine Institute has established a specialist marine group (QSR Office) to prepare a detailed assessment of the environmental status of Ireland's marine environment. This is to meet Ireland's obligations under the terms of the Convention on the Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention 1992).

4.44 The Quality Status Report (QSR) will cover all relevant fields of natural science, including geography, human activities and impact, hydrography and climate, marine chemistry and marine biology, on coastal zones, near-shore and offshore areas to the 200 metre depth contour. In addition to a compilation of existing knowledge, the QSR will evaluate the information in relation to agreed criteria of environmental quality, and will include a statement of the prevailing condition of the area. In addition, the report will identify priority gaps in the information to be filled.

4.45 The objective of the National Marine Data Centre, established in 1993 with the assistance of the EU STRIDE Programme, is to protect the long-term value of quality assessed marine data and maximise the utilisation of these data by promoting data exchange and servicing the needs of the marine community. The centre is not a primary data collection organisation, but co-ordinates and manages existing information at a national and international level.

4.46 The work of the Marine Institute has improved the co-ordination of research and data collection in relation to the marine side, and complements the work of agencies such as the EPA on the land side. However, there are difficulties in ascertaining the full extent of information that is available on the environment and its location, and this significantly reduces the management value of the data, and could potentially give rise to overlaps.

4.47 One advantage of the currently available databases is that they serve to highlight gaps in the available data, both in a geographical and a sectoral sense. Fisheries and aquaculture are two notable omissions from the existing databases. The gaps are generally acknowledged, especially in relation to the coastal zone. Gaps in baseline information make comparison with newly compiled information difficult or impossible.

Environmental Protection Agency (EPA)

4.48 The Environmental Protection Agency is a statutory body established under the Environmental Protection Agency Act 1992, responsible for the promotion of improved environmental protection in Ireland. One of the EPA's main responsibilities is environmental monitoring including research and development, environmental information collation and assessment.

4.49 The EPA is responsible for the co-ordination of water monitoring services in conjunction with the Marine Institute and the local authorities. It is currently involved in the preparation of a national environmental monitoring programme, in association with the Department of the Environment and Local Government, the Fisheries Research Centre and the local authorities, in relation to estuarine and coastal waters.

4.50 The EPA is also the national focal point for the European Environment Agency (EEA), which deals entirely with environmental information. The EPA is responsible for supplying environmental information on Ireland to the EEA, and the links with the organisation facilitate horizontal contacts between Ireland and other European countries.

The Universities and Other Third-Level Institutions

4.51 Considerable research and development work is undertaken in many of the universities and other third-level educational institutions on topics relating to the coastal zone. The work of these bodies is also important in the collection, analysis and dissemination of monitoring and other data. The fields of interest extend from the human and social sciences to the natural sciences, and to areas of application such as coastal engineering.

4.52 The Martin Ryan Marine Science Institute was established in 1992 to co-ordinate the marine science activities of University College Galway. It embraces the marine science activities of the departments of Botany, Microbiology, Oceanography, Physics, Zoology, and to a lesser extent the departments of Applied Geophysics, Biochemistry, Chemistry, Geology and Engineering. It is the largest and most diverse centre of Irish expertise in marine science and technology.

4.53 The Institute is committed to promoting the best combination of uses for the sea, while preserving and enhancing it for continued benefit. The research concentrates on the promotion of marine based industry and the effective use of marine resources. Research is focused on space oceanography; estuarine/ecosystem modelling and management; aquaculture of environmentally compatible and commercially important marine flora and fauna; marine botanical and zoological taxonomy; the use of innovation technologies in marine survey and monitoring.

4.54 The Coastal Zone Institute of University College Cork is a combination of the research, training and consultancy areas of the college in the specific field of coastal studies, which traditionally took place in a wide range of faculties and departments. The Institute comprises the Aquaculture Development Centre, the Coastal Resources Centre and the Hydraulics and Maritime Research Centre, along with other relevant research in university departments.

4.55 The Institute has the following research and development objectives:

- to ensure an integrated multi-disciplinary approach to data collection and research as a support for the management of the Irish coast;
- to facilitate the rational development of coastal resources ensuring the avoidance of conflict between competing uses;
- to provide a technical support base for industries developing and using coastal resources; and
- to support the work of government agencies by specific projects and also by developing baseline information and monitoring of the coast.

4F Principal Issues Relating to Research and Development

- There are inevitable gaps in the available data, many of which are now recognised.
- The co-ordination of marine data collection and research has improved, but co-ordination with land-based data collection and research requires further improvement.

[1] The 'seashore' is defined, in the Foreshore Act 1933, as the foreshore and every bank, beach, cliff, sand and rocks contiguous thereto.

[2] Marine Institute Act 1991

5. CONSERVATION AND ENVIRONMENTAL PROTECTION

The Irish coast has international importance for nature conservation. Some areas, which are in a semi-natural state, require strict protection, whilst others require appropriate management to ensure their conservation. Existing and proposed nature conservation designations apply, or will apply, to significant sections of the Irish coast. These designations help to protect an important part of the heritage, but can have implications for the use and development of land, and may increase pressure for development elsewhere. However, the multiplicity of the designations, and the fragmentary way in which they are applied, can lead to confusion, especially among the public.

The coastal zone also contains a significant cultural heritage, especially of archaeological monuments, whilst marine archaeology is growing in importance.

The importance of a clean, unpolluted environment as a resource for economic development is increasingly recognised, and underpins the production of quality food products. The quality of coastal waters is controlled through a range of legislation, much of which implements EU Directives or international conventions.

The effective administration of conservation and environmental protection requires changes in the legislation, currently in hand, enhanced and strengthened consultation procedures, the provision of appropriate expertise to local authorities and other decision makers, and adequate resourcing. There is also a requirement for a comprehensive programme of survey and monitoring of coastal resources of nature conservation value.

5.1 The coastal zone contains many features and areas of conservation value. In addition to nature conservation, the coastal zone can be important for geology and geomorphology and for cultural heritage, including marine and terrestrial archaeology. The protection of environmental quality is essential to the sustainable use of the coastal zone.

NATURE CONSERVATION

5.2 Nature conservation involves a system of national and international priorities for regulating uses of the coast to ensure long-term protection of the natural resources, both physical and biological. It thus has implications for all other uses and activities on the coast, especially where these may have an impact on habitats, flora and fauna.

5.3 Nature conservation has increasingly become an international obligation of all Member States of the European Union which are subject to a number of Council Directives, and through ratification of other international conventions. While some of the measures already in place are aimed at protection of species, there is a growing emphasis on habitat conservation, mainly through the designation of sites.

5.4 Nature conservation sites are designated on a high proportion of the coastline of Ireland. Most of the land areas (e.g. off-shore islands, cliffs, sand dunes, saltmarsh) are relatively undeveloped, and range from small to large stretches of coastline. Very significant areas of intertidal land (e.g. estuarine mudflats) have been designated including some areas of major economic importance. The number of marine areas designated so far is small by comparison, partly due to incomplete knowledge of the resource. This has also been the case in other European countries. Denmark and the Netherlands are the only two EU Member States to have designated fully marine Special Protection Areas under the Birds Directive, whilst a global review of marine protected areas, published by the World Conservation Union (IUCN)[1], reports 43 subtidal marine protected areas in the North East Atlantic, only 3.1% of the global total.

Importance of the Irish Coast for Nature Conservation

5.5 The coastal zone is of major importance to nature conservation because of the high ratio of coast to land area in Ireland. Most coastal ecosystems represent ecological gradients, showing a succession from marine to terrestrial or freshwater conditions. As a result, the plant and animal communities are generally linked to narrow zones and they vary according to distance from the sea. Many coastal communities comprise highly specialised plants and animals, which are adapted to survive at the environmental interface and may have comparatively restricted geographical distributions. Due to the environmental stresses and dynamic nature of the coast, many coastal communities are species-poor but the close juxtaposition of a wide range of habitats leads to a rich variety of plants and animals.[2]

5.6 Geological formations, and the degree of exposure to wave and wind energy are among the major factors in determining the habitat types which occur on any given stretch of coast. The Irish coastline exhibits a wide range of ecotype from the sheltered sandy and muddy shorelines of the Irish Sea to the more rugged systems of the west coast which are exposed to the high energy of the Atlantic Ocean. Even within a particular ecotype (e.g. sand dunes) there may be considerable variation according to the degree of exposure often leading to a different suite of species on east and west coast systems.

5.7 Some coastal habitat types (e.g. sand dunes, saltmarsh) have been well studied in Ireland and inventories of representative sites have been prepared. Other habitats (e.g. rocky shore, estuaries, sandy beach) have been studied in particular localities but the full range of variation has not been documented. This is one of the main objectives of the EU BIOMAR-LIFE project which is currently surveying intertidal and subtidal biotopes (plant and animal communities) around the Irish coast[3]. The status and distribution of some coastal species and species groups (e.g. terrestrial plants, birds) are well known, but others (especially marine and intertidal invertebrates) are poorly documented to date.

5.8 Coastal lagoons are a priority habitat in the EU Habitats Directive (92/43/EEC). They are currently being surveyed under the maritime part of the EU BIOMAR-LIFE project (See paragraph 5.18)

5.9 Sand dunes have been well documented with a total of 168 sand systems identified in the Republic of Ireland[4]. There is a concentration of sand dune systems in the north-west, especially in Co. Donegal, with a very small number in the south-west, in Co. Cork, largely due to geological factors. Some 75 sand dune systems on the north-west coast, between Galway Bay and Malin Head, are classified as machair, or sand plains[5], which have distinctive plant and animal communities[6]. Together with similar landscapes in western Scotland, these machair systems are unique in Europe and have been given priority in the EU Habitats Directive (92/43/EEC). Saltmarsh

communities have also been recently surveyed and an inventory of sites throughout the country has been prepared[7]. Saltmarshes vary widely according to substrate type, degree of exposure and past and present land uses. The main differences recorded in saltmarsh vegetation are between east and west coasts[8].

5.10 In the marine environment, Ireland straddles the boundary between northern cold water and southern warm water communities. The overlap in distribution of some species from both areas produces a unique assemblage which is of high nature conservation value. The Irish coast has extensive outcrops of limestone which support biotopes that may be more species rich than those on igneous or metamorphic rocks. The relatively unpolluted waters of the Irish coast also contribute to the high species diversity which is of conservation value[9]. Comprehensive surveys of the littoral and sublittoral zones of the Northern Irish coast have been published[10], while in the Republic most of existing knowledge is based on a few well studied localities such as Dublin Bay, Lough Hyne and Galway Bay[11]. The state of knowledge will be greatly improved with publication of the results of the EU BIOMAR-LIFE project[12].

5.11 Birds are among the best studied coastal organisms with comprehensive surveys of numbers and distribution. The true seabirds of Ireland are part of a biogeographical population in the north-east Atlantic which is of international importance[13]. Most of the large breeding colonies are on remote off-shore islands, cliffs and headlands on the south-west, west and north-west coasts. Smaller concentrations are found on the south and east coasts. Outside the breeding season, Irish inshore waters hold very important concentrations of feeding and moulting seabirds[14]. Ireland's coasts are of major international importance for certain seabird species. These include storm petrel (50% of world population), Manx shearwater (10% of world population), gannet (9% of North Atlantic population), razorbill (3% of world population) and roseate tern (75% of NW Europe population). In addition, a land bird, the chough, has up to 27% of its West European population on the Irish coast[15].

5.12 Ireland's coast is also of major importance for wintering and passage waterfowl (wildfowl and waders) due to its strategic position on the East Atlantic Flyway. Some 66% of the internationally important sites for waterfowl in the island of Ireland are coastal, mainly estuaries and coastal lakes[16]. Of the wetland sites in Ireland holding 10,000 or more waterfowl in winter, 78% are located on the coast. Some species (e.g. shelduck, dunlin) are virtually confined to coastal habitats. The Irish coast is a major stronghold for several species such as light-bellied brent goose (97% of the European wintering population) and barnacle goose (<25% of the Greenland breeding population). Ireland has 4.6% of the total estuarine area on the Atlantic and North Sea coasts of Western Europe[17].

5.13 Marine mammals are relatively poorly surveyed on Irish coasts but knowledge is improving. Breeding seal populations are small by comparison with those in Britain and Northern Europe[18] but larger numbers of these animals probably feed in Irish waters outside the breeding season. Cetaceans (whales, dolphins and porpoises) are mainly known from recorded strandings which indicate that a wide range of species pass through Irish waters (especially the west coast) in summer. Limited observations of live cetaceans at sea suggest a high density of porpoise and certain dolphin species on the continental shelf off south-west Ireland.

Administration and Organisation

5.14 The administration of nature conservation is the responsibility of the Department of Arts, Heritage, Gaeltacht and the Islands. The functions are carried out by the

National Parks and Wildlife Service (NPWS) which was formerly part of the Office of Public Works.

5.15 The NPWS is responsible for administering and enforcing the Wildlife Act, 1976, the Whale Fisheries Act, 1937 and regulations under the European Communities Acts where they relate to nature conservation measures, as well as the Bern and Bonn Conventions. This is done by:

a) regulating the taking, hunting and trade of protected species;

b) protection and management of sites of importance to wild plants and animals;

c) promoting knowledge and understanding of the natural world; and

d) co-operation and liaison with national and international organisations whose objectives are relevant to nature conservation.

5.16 The NPWS has a headquarters staff (subdivided into administrative and technical divisions) and a regional network of offices and staff. It has no formal responsibilities for any other government agencies.

5.17 **EU BIOMAR-LIFE Project:** The EU BIOMAR-LIFE Project is developing a system for the collection, storage, analysis, classification and dissemination of marine ecological and environmental data for coastal management. Whilst the short-term objective of the project is to assist in the identification of marine areas of conservation value, it is envisaged that the results will also have relevance for the management of other coastal resources.

5.18 The project has been undertaken as a partnership between the National Parks and Wildlife Service and Trinity College Dublin, with UK partners in the Joint Nature Conservation Committee and the University of Newcastle-on-Tyne. Its main tasks are to develop a marine biotopes classification, to survey and document marine and coastal biotopes in Ireland, to assess remote survey methods, and to develop computerised data storage, analysis and dissemination systems. The project is also undertaking a review of marine protected areas in Europe. The results of the project are currently being analysed for publication.

5.19 **The Heritage Council:** The Heritage Council is a statutory body, established under the Heritage Act, 1995. Its functions are to propose new policies and priorities for protection of the National Heritage and to promote interest, education, knowledge, appreciation and enjoyment of the heritage (both natural and man-made). It has absorbed the functions of the Wildlife Advisory Council previously provided for under the Wildlife Act, 1976.

5.20 In France, a somewhat similar role has been taken on by the Conservatoire du Littoral. As a public organisation, funded by the State, with support from Regions and Departments and contributions from individuals, the Conservatoire also purchases and manages coastal land for public enjoyment and nature conservation.

Principal Legislation

5.21 The principal legislation governing nature conservation in Ireland and the appropriate designations which they enforce are given in Table 5A.

5.22 The principal EU Directives affecting nature conservation are:

- Council Directive (79/409/EEC) on the conservation of wild birds; and

- Council Directive (92/43/EEC) on the conservation of natural habitats and of wild flora and fauna.

5A Principal Nature Conservation Legislation

Legislation	Designations
Wildlife Act, 1976	Nature Reserves; Wildfowl Sanctuaries; Refuges for Fauna.
Whale Fisheries Act, 1937	Whale and Dolphin Sanctuary
Regulations under the European Communities Acts	Special Protection Areas Special Areas of Conservation

5.23 The 'Birds' Directive is mainly implemented through the existing provisions of the Wildlife Act and by designation of Special Protection Areas. The Habitats Directive has been transposed into Irish law through the European Communities (Natural Habitats) Regulations 1997. These give extensive powers to the Minister for Arts, Heritage, Gaeltacht and the Islands for the conservation of Natural Habitats and Habitats of Species.

5.24 **Bern Convention:** The Bern Convention on the Conservation of European Wildlife and Natural Habitats was set up by the Council of Europe but this has no legislative basis in Ireland. Contracting parties are encouraged (but not obliged) to declare Biogenetic Reserves as a contribution to the Convention's aims. To date 14 such reserves have been designated in the Republic of Ireland but these are all covered by other national designations, principally statutory nature reserve orders under the Wildlife Act 1976. Only two of the sites are coastal. In practice this designation does not add any additional protection to the sites than would already exist under national legislation. Threats to the coastal habitat of the natterjack toad (a protected species under the Bern Convention) in Co. Kerry, were the subject of a report by a delegation of the Council of Europe in 1991. This report made a number of recommendations but did not have any statutory powers of enforcement.

Existing Designations

5.25 **Statutory Nature Reserves:** These are established under the Wildlife Act, 1976, either on state-owned land or sea, or by Recognition Order covering privately owned sites. A total of 23 nature reserves had been established on the coast up to 1995, although in several cases contiguous land and marine areas are considered as separate nature reserves. There is, at present, only a single wholly marine nature reserve at Lough Hyne, Co. Cork. Regulations may be enacted for such reserves but in practice few such regulations exist. Since the late 1980s, the number of new reserves designated has declined significantly.

5.26 **Wildfowl Sanctuaries:** These are designated under the Wildlife Act 1976 in order to control the hunting of wild birds. They provide no protection for the habitats within them. Approximately half of the 68 wildfowl sanctuaries in Ireland are on the coast. These are mostly coastal estuaries, lagoons and islands.

5.27 **Refuges for Fauna:** These are designated under the Wildlife Act 1976 to protect certain species of animals and their habitats from disturbance. To date, some seven coastal sites containing important seabird colonies have been designated.

5.28 **Whale and Dolphin Sanctuary:** In 1991 the Irish Government declared Irish waters as a whale and dolphin sanctuary. The sanctuary was empowered by the legal framework already in place, under the Whale Fisheries Act 1937, which bans the hunting of all whale species, including dolphins and porpoises, within the exclusive fishery limits of the State, i.e. to within 200 miles of the coast.

5.29 **Special Protection Areas:** These are established to give effect to the EU Birds Directive. Over 140 SPAs have been designated to date, and over 90 of these have coastal locations. The provisions of the European Communities (Natural Habitats) Regulations 1997 also apply, where appropriate, to such designated SPAs.

5.30 The coastal SPA sites cover mainly estuarine mud and sandflats, seacliffs and offshore islands (Figure 5.1). The regulations specifically prohibit pollution or deterioration of habitats or disturbance to bird species. The principal mechanism for protection of SPAs is government or EU Commission intervention in respect of development proposals which are considered to have detrimental effects on bird populations or their habitats. This can have significant implications for state aid or EU funding for developments in the coastal zone.

5.31 The procedure for designation of SPAs requires consultation with the Department of the Marine and Natural Resources on boundaries. Proposed areas are advertised in national and local newspapers, and maps of proposed areas are sent to local authorities and non-government organisations (NGOs). A period of approximately one month is allowed for comments.

5.32 Denmark and the Netherlands are the only two EU Member States to have designated fully marine Special Protection Areas under the Birds Directive.

5.33 **Biosphere Reserves:** These sites have been recognised by the global organisation UNESCO, although it is assumed that such sites are already recognised and protected under national legislation. There are two UNESCO Biosphere Reserves in Ireland. One of these, the North Bull Island in Dublin Bay, is a coastal site. The objective of this designation is to facilitate sustainable development. However, the application of this designation in Ireland has been used for strict nature conservation.

5.34 **Biogenetic Reserves:** These sites are designated by the Council of Europe, but do not have additional legal protection. All of the Biogenetic Reserves in Ireland are also Statutory Nature Reserves. Only one of these, Lough Hyne, Co. Cork, is a coastal site.

Proposed Designations

5.35 **Natural Heritage Areas:** These designations are proposed to take the place of the previously listed Areas of Scientific Interest. At present, Natural Heritage Areas (NHA) have no legislative basis but the Department of Arts, Heritage, Gaeltacht and the Islands is proposing to publish an amendment to the Wildlife Act 1976 which will provide for their designation. Many hundreds of coastal sites are proposed for designation. Marine biotopes will be considered for designation as NHAs on the basis of the EU BIOMAR-LIFE project which involves a systematic survey of Irish coastal waters and intertidal areas.

5.36 At present the protection of proposed NHAs is achieved by three principal mechanisms that apply almost exclusively to developments on land. These are:

- guidance to planning authorities when deciding on planning applications;

- screening of applications for state or EU grants for developments which may affect NHAs; and

- grants for environmentally sensitive farming practices under the Rural Environment Protection Scheme (REPS) administered by the Department of Agriculture and Food.

5.37 **Special Areas of Conservation:** A list of 207 of the most important NHAs have been proposed for designation as Special Areas of Conservation (SAC) to give effect to the EU Habitats Directive. This list will be extended later in 1997 and early 1998. The areas are designated under the European Communities (Natural Habitats) Regulations 1997. The regulations deal with issues of notification of owners, management agreements, compensation for development restrictions and an appeals procedure. The list of SACs has been published in local newspapers and sent to the EU Commission. After publication of the lists, there is a three month public consultation period, during which appeals will be considered, and modification to site boundaries may be made, based on scientific grounds only.

5.38 The regulations empower the Minister for Arts, Heritage, Gaeltacht and the Islands to indicate types of operations or activities which would be likely to damage or interfere with the integrity of a site. There are extensive powers for prohibition of such operations or activities and for compensation to land owners. The regulations also place an obligation on other Ministers of Government in carrying out functions under various enactments, including the Foreshore Acts, Fisheries Acts, Dumping at Sea Act 1996, Gas Act 1976, Harbour Act 1946, etc. Any operations or activities carried out under these acts which are likely to have a significant effect on a designated SAC may require Environmental Impact Assessment to be carried out.

5.39 Similar procedures have been, or are being, followed in other EU Member States, and similar proposals for refuges for flora may be made in the future.

Management and Effectiveness of Designations

5.40 The NPWS has a 3 year contract with the EU Commission to prepare management plans for approximately 200 proposed SACs. This includes a number of coastal sites. The NPWS is also contracted by the EU Commission to prepare management plans for 33 SPAs, to implement these plans, including protective works, and to prepare aquaculture zonation plans for 26 coastal SPAs. It is expected that such plans will include zoning of designated areas for certain activities and development categories. Existing uses will generally not be restricted, but difficulties may arise with new developments, changes of use or extensions of existing developments. In some cases there may be pressure to change existing practices. The designations, but not the management plans, have a statutory status.

5.41 As yet, no EU Member State has completed SAC Management Plans. Practice in existing marine protected areas provides an indication of the measures that may be used in SACs. Zoning is often a key element of such areas, with provision for multiple-use through to refuges. In Spain, for example, the management of the Columbrettes Islands Marine Reserve has involved the declaration of a core zone within which all fishing is prohibited. Similar controls have been applied to a zone in the Banyulus-Cerbere Marine Reserve off the Mediterranean coast of France.

5.42 Nature conservation interacts with the planning process through the statutory requirement in the Planning Acts for consultation with the Minister for Arts, Heritage, Gaeltacht and the Islands concerning planning applications in any designated area. This is further strengthened by the European Communities (Natural Habitat) Regulations 1997, which place obligations on local authorities and An Bord Pleanála in relation to applications for licences to carry out operations or activities

which may have implications for a designated SAC. Such licences will only be granted after an Environmental Impact Assessment has shown that the operation or activity will not adversely affect the integrity of the designated site.

5.43 The European Communities (Natural Habitat) Regulations 1997 also require any other Government Minister who is giving consent for an operation or activity which may affect a designated SAC to consult in advance with the Minister for Arts, Heritage, Gaeltacht and the Islands. The strengthening of these consultation procedures between the relevant agencies, including the Department of the Marine and Natural Resources and the local authorities, should help to prevent unnecessary damage to designated areas. Additional formal consultation structures may be necessary, as may a requirement for local authorities to take such designations into account in considering planning applications.

5.44 The formulation and approval of management plans for statutory designated sites can greatly assist all relevant decision makers, and is an approach that is being advocated in the UK, where government is recommending the preparation of management schemes for marine SACs.

5.45 Nature conservation has major interactions with agriculture and forestry through the screening of grant applications in designated areas by the NPWS as referred by the Department of Agriculture and Food. Rural Environment Protection Scheme (REPS) grantees in proposed NHAs are eligible for premium payments if they adhere to certain guidelines laid down by the NPWS. The REPS may be particularly appropriate in many coastal lands which are already farmed by extensive grazing.

5.46 Nature conservation has both positive and negative interactions with the tourism and leisure industry. The protection of important habitats and species provides a resource for specialist tourism interests. Control of damaging tourism developments in ecologically sensitive areas and the regulations governing hunting of protected species in coastal locations also have impacts on the tourism industry.

5.47 The Greek islands support many endemic species as well as being the last strongholds for some of Europe's most endangered wildlife. The most important breeding site for the Loggerhead Turtle is on Zakynthos Island where there has been conflict with tourism. Visitors disturb the turtles when they come ashore to lay eggs, and development adjacent to the beaches has disorientated hatchlings trying to reach the sea. Tourist development along the Valencia coast of Spain has had a major impact on the sand dune systems. More than 20% of the fossil dunes have been destroyed and, on sandy beaches, 80% of the foredunes have been lost.

5.48 On the positive side, natural heritage can attract visitors and the growing interest in 'green' tourism will be beneficial in this respect. In Jersey the authorities recognise that visitors value undeveloped areas, as well as those with facilities. To cater for this, they have a policy of keeping some beaches undeveloped. There is also a ban on bringing camper vans and caravans to the island. The S'Albufeira National Park in the Balearics is an example where conservation of the Park supports tourism in the area. The Park Authorities are working on management agreements with farmers using the surrounding land to encourage agricultural practices which are viable but at the same time benefit the Park by creating a buffer zone.

5.49 There are significant interactions between nature conservation and coastal protection. In the past, many engineering works designed for coastal protection have had detrimental effects on sites of nature conservation value, for example, by disrupting the natural sediment exchange between beaches and dunes.

Given the implications of possible future sea-level rise and the need to prioritise resources, a policy of accepting natural shoreline changes and accommodating the problems they cause, may be more appropriate for areas that are not of high social or economic value (see Chapter 9). Such areas may be of high nature conservation value.

5.50 Landfill on foreshore or in tidal waters may be potentially damaging to nature conservation. Under the Waste Management Act, 1996, all disposal of waste at a waste management facility may be undertaken only in accordance with a 'waste licence' granted by the Environmental Protection Agency. The granting of such a waste licence may be subject to the submission of an Environmental Impact Statement. Any conditions attached to a waste licence which are for the purpose of preventing environmental pollution take precedence over conditions attached to a foreshore licence granted for the same activity under the Foreshore Act 1933. The granting of a foreshore licence does not prejudice, affect or restrict the application of the Waste Management Act to such an activity. Under this Act, environmental pollution may include any activity which adversely affects the countryside or places of interest.

5.51 The development of golf courses on coastal and dune systems has damaged many important coastal features for nature conservation. This is principally because dynamic mobile systems have become stabilised and the natural exchange of sediment between beach and dune has been interfered with. The conservation of remaining semi-natural dune systems will be enhanced in the future by the requirement for planning permission for golf courses. The protection of many of the best sites as Special Areas of Conservation may in future require Environmental Impact Statements to be prepared for future development proposals.

5.52 **Aquaculture:** The sustainable development of aquaculture can generate valuable employment in peripheral coastal regions and can provide raw materials for fish processing. Such development, however, must be carefully balanced with the requirements of conservation. One way in which this has been sought has been the establishment of 'Marine Conservation Areas' in Scotland. These are areas which the nature conservation agency recognise as being of particular distinction in respect of the quality and sensitivity of the marine environment, and wish to be consulted over proposals. Unfortunately, the voluntary nature of the initiative has meant that it has been unsuccessful in that more contested facilities have been approved within these areas than outside.

5.53 Concern has been expressed about the risk of importation of exotic species and disease through aquaculture, especially where non-native species are being cultured in an economic climate of free trade. Some species have already been imported in this way, and there is further concern that more species will be imported. Suitable controls are required to reduce the risk.

5.54 At present an EIS is not required for shellfish farming proposals, but is required for salmon farming proposals, where the output will exceed 100 tonnes per year.

5.55 Nature conservation designations have significant implications for licensing and grant-aid for new shellfish farms in coastal areas which have been designated either as SPAs or as proposed SACs. The present system of licensing aquaculture has proved unworkable (see Chapter 8), and it is impossible to adequately monitor the impacts of this growing sector on nature conservation.

5.56 There is, therefore, a clear need for close consultation, at both strategic planning and operational levels, between the Department of the Marine and Natural Resources, the NPWS, the Department of the Environment and Local Government and the local authorities in order to ensure compatible development. There is also a need for applied research on the capacity of coastal ecosystems to accommodate aquaculture

development, and for enhanced monitoring of conditions attached to foreshore and aquaculture licences.

5.57 **Effectiveness of Designations:** The multiplicity of designations and the fragmentary way in which they are applied can lead to confusion in other sectors and among the public in general. A more systematic approach to designation of coastal sites for conservation (including better coverage of marine areas based on the EU BIOMAR-LIFE Project) would make their administration more effective.

5.58 Existing and proposed statutory designations, such as SPA, SAC and NHA, effectively restrict the use and development of the designated areas. In all of them, there is a presumption against incompatible development, and this may be implied in some cases to be a presumption against all development. A result of this may be to increase pressure for development in non-designated areas where it may become difficult to have nature conservation values taken into account in the planning process.

5.59 The State conservation authority (NPWS) is inadequately resourced to carry out even its present commitments for surveying, monitoring, designation, land acquisition and management. Additional requirements to implement the expected regulations on SACs and NHAs will need to be adequately resourced.

5.60 A comprehensive programme of survey and monitoring of coastal resources of nature conservation value is required to provide a basis for coastal zone management planning. Resource sensitivity mapping may be used as a basis for zoning of activities such as commercial and amenity uses.

5B Principal Issues Relating to Nature Conservation

- The Irish coast has international importance for nature conservation.
- There is a range of current and proposed nature conservation designations that affect, or will affect, significant sections of the Irish coast.
- The multiplicity of designations and the fragmentary way in which they are applied can lead to confusion.
- Nature conservation designations effectively restrict the use and development of the designated areas, and may affect eligibility for grant aid.
- Effective presumptions against development in designated areas may increase pressure for development elsewhere in the coastal zone.
- Changes are required in the legislation to formally adopt the proposed designations, and this is currently in hand.
- Consultation procedures regarding proposed developments in designated areas require to be enhanced and strengthened.
- Resources for the administration and management of nature conservation are inadequate.
- There is a requirement for a comprehensive programme of survey and monitoring of coastal resources of nature conservation value.
- Appropriate information and nature conservation expertise must be available to local authorities and other decision makers.

5.61 The effectiveness of local authorities in ensuring that nature conservation is taken into account in development planning and control in the coastal zone (including coastal protection works) is highly dependent on a requirement for them to do so and on the availability of specialist expertise, whether directly employed or available from another source.

GEOLOGY AND GEOMORPHOLOGY

5.62 The Irish coastal zone contains a number of sites of scientific interest and importance because of their geology and/or geomorphology. Continuous sections of geological features which would otherwise be obscured by glacial drift inland, are often fully exposed on the coast. The dynamic nature of many soft coastal systems provides an important resource for the understanding of coastal geomorphology, which is essential for coastal zone management.

5.63 The only national listing of geological and geomorphological sites for conservation was carried out in the 1970s by An Foras Forbartha, and the results published in 1981 in 'Areas of Scientific Interest in Ireland'[19]. However, since ASIs have now been superseded by Natural Heritage Areas (NHA), no sites have been included in this new network on grounds of earth science interest only. There are no earth scientists on the staff of the National Parks and Wildlife Service, and the Geological Survey of Ireland does not have the resources at present to carry out the necessary re-assessment of the sites to ensure inclusion in a future network.

CONSERVATION OF CULTURAL HERITAGE

5.64 The coastal zone contains a significant proportion of the material artefacts of the country's cultural heritage, reflecting its importance as a location for settlement over many centuries. The principal elements of this heritage of relevance to ICZM are archaeological monuments and historic buildings and properties.

5.65 A popular concept is that archaeology can be exploited for tourism. This however is not always the case. Not all monuments are robust, and therefore cannot support large numbers of visitors. This may be particularly true of monuments in coastal areas, where due to coastal erosion processes, or the fact that a monument is located on a dune system for example, large numbers of tourists are inappropriate. Tourism can also have knock-on effects for heritage services - large numbers can increase the cost of maintaining the property or monument.

5.66 Current policy is not to advertise the already popular attractions which are under threat due to visitor pressures. It is hoped to divert people away from such monuments, to the less visited attractions.

5.67 National responsibility for the conservation of the material cultural heritage of the country rests with the Department of Arts, Heritage, Gaeltacht and the Islands, whose policies are implemented through the National Monuments and Historic Properties Service. The principal legislation is enshrined in the Monuments Act.

5.68 **Marine Archaeology:** Marine archaeology can be classified by its location:

- inter-tidal (e.g. the Shannon Estuary);
- sand dune systems;
- coastal lands;
- off-shore (mostly wrecks).

5.69 There is no inventory of underwater archaeology. All known archaeology is protected by the Monuments Acts, which provides a strong legislative base. Northern Ireland has recently completed an inventory of their underwater archaeology based on literature studies, but which it is intended to extend later to field studies. A North-South working party on marine archaeology has been set up with representatives from the Department of the Environment (NI) and the Department of Arts, Heritage, Gaeltacht and the Islands.

5C Principal Issues Relating to Cultural Heritage

- The coastal zone contains significant archaeological monuments, not all of which are suitable for exploitation for tourism.
- Marine archaeology is growing in importance, but there is no inventory of underwater archaeology.

5.70 It is more difficult to protect marine archaeology than land archaeology because of exposure to erosion, storms, etc. Marine archaeology requires a different form of management than land archaeology. For example, coastal protection works are never really feasible and therefore it may be more expedient to provide resources to record the archaeological feature, and rescue whatever can be moved to another site or a museum, than to preserve it *in situ*.

WATER QUALITY

5.71 The quality of inshore waters and estuaries has a direct bearing on the potential economic and amenity uses of the coastline as well as important implications for nature conservation. The potential threats to water quality in the coastal zone include discharges from industry, agriculture and sewage treatment works as well as dumping at sea. The protection of water quality is an essential element in Coastal Zone Management.

5.72 In Denmark, deterioration in water quality throughout the 1970s and early 1980s, primarily from heavy loads of nitrogen and phosphorus from agriculture, households and industry led to the introduction of the Aquatic Environment Act. This set targets for the reduction of nitrogen and phosphorus discharges and improved monitoring of the aquatic environment. The regional authorities are responsible for planning, management and monitoring of the quality of receiving waters.

5.73 The deoxygenating effects of sewage and other biodegradable wastes can have a significant effect on water quality and marine life in coastal water, and are of concern in regard to the passage of migratory fish, especially salmonoid species, through the estuaries. Other effects include microbiological contamination of bathing waters and shellfish rearing areas with implications for public health. However, with the implementation of EU measures, especially the Urban Waste Water Directive (91/271/EEC), and the OSPAR Convention, this should change in the near future.

Waste Water

5.74 Coastal waters have functioned as a sink for the discharge of wastes from domestic and industrial activities as well as run-off from urban and agricultural areas. It is estimated that approximately 84 per cent of collected sewage in Ireland is discharged into estuarine or coastal waters.

About one-third currently receives primary treatment, 5 per cent receives secondary treatment, while the remainder receives preliminary or no land-based treatment.[20] However it is generally recognised that such practises are not environmentally sustainable, and major investments are under way to improve the situation.

5.75 The Environmental Protection Agency Act 1992 (Urban Waste Water Treatment) Regulations 1994 implement in Ireland the requirements of Council Directive 91/271/EEC. The objective of the Directive and Regulations is to protect the environment from the adverse effects of urban waste water discharges. Secondary treatment facilities must be provided for all towns of 2,000 population equivalent or greater discharging to freshwaters and estuaries, and all cities and towns of 10,000 population equivalent or greater discharging to coastal areas. In addition, the dumping of sewage sludge at sea must cease by the end of 1998.

5.76 The Department of the Environment and Local Government has set standards for sewage discharges in line with the Directive's requirements, whilst local authorities are responsible for implementing those standards under the supervision of the Environmental Protection Agency (EPA).

5.77 Significant investment has been targeted for the improvement of existing collection and treatment facilities and the construction of new facilities where necessary. The cost of implementing the Directive's requirements in estuarine and coastal areas is currently estimated at over £1 billion, with cities and towns in excess of 15,000 population equivalent to be compliant by end year 2000, and the remainder by the end of 2005.

5.78 During the period 1990-95, nearly £142 million was spent on sewerage schemes in coastal areas. The ENVIREG initiative 1990-94 was specifically directed at eliminating the discharge of untreated sewage to coastal waters from towns with less than 100,000 population. Schemes were completed under the initiative at a number of locations including Ballybunion, Dingle, Drogheda, Kenmare, Strandhill and Swords. Total investment was over £32 million, of which over £24 million came from the EU. Under the Operational Programme for Water, Sanitary and Other Local Services 1989-93, schemes were funded at, *inter alia*, Achill, Buncrana, Doonbeg, Dun Laoghaire and Wicklow. For the rest of the decade, the Cohesion Fund will provide the main source of EU funding for sewerage schemes in coastal areas. At present, the design of major Cohesion Fund schemes at, *inter alia*, Dublin, Drogheda, Dundalk, Sligo and Tralee is being advanced with a view to early construction. Some funding will also be provided under the Operational Programme for Environmental Services 1994-99.

5.79 The provision of sewage treatment plants facilitates development, but may also may conflict with existing leisure and tourism uses, as well as impacting on nature conservation value. For example, the construction of a sewage treatment plant in Tramore has been delayed because of fears of the negative impact of the outfall on the marine environment, though this was not borne out by the Environmental Impact Assessment (see paragraph 5.107).

Administration and Organisation

5.80 The Department of the Environment and Local Government is responsible for the formulation of policy, legislation, standards and national objectives in relation to water quality. The Department of the Environment and Local Government also co-ordinates the Irish application of EU directives in this area, and reports on their implementation.

5.81 The Department of the Marine and Natural Resources has responsibility under the Fisheries Act, 1959 for protection of fishery waters (with the Fisheries Boards), and under the Foreshore Acts for controlling the location of discharges from pipelines into the sea. The Department of the Marine and Natural Resources is also responsible for controlling dumping by ships and aircraft.

5.82 Local authorities are primarily responsible for implementing government policy on water quality, controlling the nature of effluents and for monitoring. The EPA also has responsibilities in these areas. The local authorities also provide and manage many wastewater treatment plants.

5D Functions of Various Agencies in Relation to Monitoring of Water Quality

Agency	Monitoring Function
Environmental Protection Agency	Co-ordination of water quality monitoring. Advising local authorities on management of coastal areas for environmental protection purposes. Implementation and enforcement of IPC licences. Publication of water quality reports based on own monitoring.
Department of the Marine and Natural Resources	Monitoring fishery and marine waters
Fisheries Boards	Monitoring fishery waters and suspected pollution sources including licensed discharges.
Local Authorities	Monitoring for observance of planning conditions, water pollution controls, urban wastewater discharges and quality of bathing waters as required by EU directives
Radiological Protection Institute	Monitoring radioactivity in the environment.

Source: *Environmental and Planning Law in Ireland (Scannell 1995)*

5.83 The Environmental Protection Agency (EPA) has responsibility for co-ordination of water monitoring services in conjunction with the Marine Institute and the local authorities. The EPA is also responsible for licensing and control of emissions and discharges under the Integrated Pollution Control (IPC) licensing system. The EPA has advisory functions in relation to management of coastal areas.

5.84 A number of agencies have different responsibilities in relation to monitoring of coastal water quality as shown in Table 5D. The EPA has a statutory role in the co-ordination of monitoring functions of other agencies.

5.85 **Water Quality Management Plans:** There have been 15 plans adopted to date, including 5 for coastal waters. Whilst plans for all coastal areas significantly affected by major conurbations and industries are desirable, local authorities do not currently have adequate resources to produce additional plans.

Principal Legislation

5.86 **Local Government (Water Pollution) Acts 1977 and 1990:** These Acts give primary responsibility for preservation, protection and improvement of water quality to the local authorities. They require the licensing of any discharge of trade and sewage effluent to waters (including any tidal waters). Certain discharges require a licence under the Environmental Protection Agency Act, 1992. The Acts also empower local

authorities to make a water quality management plan (this is mandatory if the Minister for the Environment and Local Government directs). Local authorities are bound to have regard to water quality management plans when considering licence applications and when carrying out functions which could be relevant to water pollution control.

5.87 **Environmental Protection Agency Act 1992:** This act established the Environmental Protection Agency (EPA) as an independent public body with a wide range of statutory duties and powers. The agency's duties, as they relate to water quality, include the licensing and regulation of large/complex industrial and other processes through Integrated Pollution Control (IPC) and the application of best available technologies; the monitoring of environmental quality; and advice and assistance to, and the general overseeing of, local authorities in the performance of their statutory environmental protection duties.

5.88 **MARPOL and the Sea Pollution Act, 1991:** This Act was specifically enacted to give effect to the International Convention for the Prevention of Pollution by Ships 1973 (MARPOL), and extends the controls in the Oil Pollution of the Sea Acts 1956-77. It regulates discharges into the sea from ships, and applies to all registered Irish vessels and to all other vessels in Irish waters (12 mile limit).

5.89 Certain discharges are permitted under stringent conditions (e.g. concentrations of substances at specified speeds). No dumping of plastics is allowed.

5.90 MARPOL contains 5 annexes: oil and oily substances; noxious liquid substances; harmful substances in package form; sewage; and garbage. Three sets of Regulations were introduced in 1994 to control oil pollution, pollution by garbage from ships, and pollution by noxious liquid substances. The Minister for the Marine and Natural Resources has extensive powers under this Act to take measures to protect the coastline or related interests from pollution or the threat of pollution, following upon an actual or potential maritime casualty. Particular attention is given to reception facilities in ports and the capabilities of ships to handle certain substances. For example all oil tankers must undergo stringent surveys.

5.91 **Dumping at Sea Act 1996:** This new Act gives effect to the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR, an amalgamation and consolidation of the Oslo and Paris Conventions). The Minister for the Marine and Natural Resources has powers under this Act to grant or refuse a permit to dump material at sea. Offenders under this Act may be liable to a fine of any amount that a court considers appropriate or a maximum of five years imprisonment or both. A district court may impose a fine not exceeding £1,500 or a maximum of 12 months imprisonment or both.

5.92 Under the Dumping at Sea Act 1996, dumping includes deliberate disposal in the maritime area of a substance or material from, or in conjunction with, a vessel or aircraft or offshore installation but does not cover the disposal of a substance or a material incidental to or derived from the normal operations of any such vessel, aircraft or installation if such disposal is in accordance with any other applicable international law to which Ireland is a party.

5.93 Discharge of ballast water is not specifically covered in the Dumping at Sea Act 1996. There is potential for damage to Irish fisheries or aquaculture through the unintentional introduction of exotic species in ship ballast water. IMO guidelines recommend de-ballasting of ships in deep water where such organisms would not survive. Some harbour authorities (e.g. Bantry Bay) have powers to require ships to de-ballast before entering Irish waters.

5.94 Applications for dumping at sea are considered by the Marine Licence Vetting Committee (MLVC) which is comprised of administration and technical staff of the

Department of the Marine and Natural Resources. The criteria for assessment are based on characteristics and composition of the material; characteristics of dumping site and method of deposit; other general considerations and conditions. The criteria are based on internationally recognised guidelines. The permit can be subject to conditions, e.g. amount of spoil allowed to be dumped, time of year, etc. There is no appeal system.

5.95 There is no obligation to advertise an application for a permit, but a public register is kept of all permits that have been granted. Informal consultations are carried out by the MLVC as deemed appropriate.

5.96 Each vessel involved in dumping must keep a log including information on time of dumping, location (co-ordinates), amount, etc. This log is submitted to the Department of the Marine and Natural Resources on a quarterly basis. At present, the Department does not have the resources to adequately monitor and enforce the permit conditions and little information is, therefore, available on compliance.

5.97 EU legislation prohibits the dumping of sewage sludge at sea after 31 December 1998. Dumping of industrial waste at sea has been banned in the EU since December 1995, but had already been banned in Ireland since 1 January 1995.

5.98 Ports are now required to have reception facilities to handle substances formerly dumped at sea. Bins are provided for garbage and tanks for oil (which can be recycled). Only 5 ports in Ireland have noxious liquid handling facilities. However only small amounts of such substances are imported into Ireland and therefore the need has not arisen for reception facilities at all ports.

5.99 All tankers must be surveyed by appointed Department of the Marine and Natural Resources surveyors. The tankers are surveyed before launch, have a minor survey each year, a major one every 5 years and an intermediate every 2.5 years. Each survey allows the issue of a ship certificate. Policing and enforcement of the act is difficult.

5.100 In the UK, the Department of Transport is seeking powers to introduce a statutory requirement for the development and implementation of waste management plans for the reception and disposal of waste from ships and all other sea-going vessels. This follows a consultation period where the idea was supported as an effective way of improving the provision and use of facilities, encouraging the regular disposal of wastes in an environmentally correct manner, and improving communication between providers and users of port waste reception facilities through dialogue and regular consultation. The preparation of such plans is voluntary at present and the guidelines on their development have been issued by the Marine Safety Agency[21].

5.101 The mechanisms in place to prevent and control dumping at sea are generally regarded as adequate. However the difficulties of monitoring and policing limits the usefulness of these mechanisms against those who want to dump at sea. A possible solution is the use of better technology for policing. For example the installation of a marine position recorder onto vessels will ensure that vessels dump only at locations in compliance with the conditions of their dumping permit. However, increased manpower resources are required to improve the situation

5.102 **EU Directives:** The principal EU Directives and implementing measures relating to coastal water quality are given in Table 5E.

5.103 The European Communities (Quality of Bathing Waters) Regulations set national quality standards for 124 (115 coastal, 9 inland) identified bathing areas and require local authorities to conduct sampling and monitoring programmes for specified parameters and substances. Local authorities are obliged to ensure compliance with specified standards and to notify the public of non-compliance with them.

5.104 Standards for shellfish waters are prescribed in the Quality of Shellfish Waters Regulations 1994. The progress in implementing Directive 79/923/EEC, and particularly the pace of designating specific shellfish waters, has been poor. Only two rounds of designation have been determined since 1979.

5.105 The effluent from municipal sewage can have significant impacts on water quality, especially in enclosed waters such as estuaries. The Urban Waste Water Treatment Directive prescribes minimum standards for the treatment of municipal waste water.

5E Principal EU Directives Relating to Coastal Water Quality

Directive	Implementing Measure
Directive 76/160/EEC concerning the quality of bathing water	European Communities (Quality of Bathing Waters) Regulations, 1992-1996
Directive 76/464 on pollution caused by certain dangerous substances discharged into the aquatic environment	Local Government (Water Pollution) Acts 1977 and 1990 and regulations thereunder.
Directive 86/280/EEC on limit values and quality objectives for discharge of certain dangerous substances included in list 1 of Annex of Directive 76/464/EEC	Local Government (Water Pollution) Acts 1977 and 1990 and regulations thereunder.
Directive 79/923/EEC on the quality required of shellfish waters	Local Government (Water Pollution) Acts 1977-90. Fisheries Acts 1979-90. Quality of Shellfish Waters Regulations 1994
Directive 91/271/EEC on urban waste water treatment	EPA Act 1992 (Urban Waste Water Treatment Regulations) 1994

Source: *Environmental and Planning Law in Ireland (Scannell 1995)*

5.106 Two framework EU directives (76/464 and 86/280) set down the limits for discharge of a number of potentially dangerous substances to coastal waters. The Commission originally produced a list of 129 of the most harmful (List 1) substances (mercury, cadmium, etc.) with the intention to produce a separate directive for each of these. Progress has been slow, and to date 'daughter directives' have been produced for only 17 List 1 substances. These are given effect in Ireland through a series of regulations under the Local Government (Water Pollution) Acts 1977 and 1990. Both of the framework directives give the option to all Member States to implement controls by means of setting uniform standards for emissions, or by setting environmental quality objectives for receiving waters. Ireland has adopted uniform emission standards as set out in the directive.

5.107 **Consultation:** The local authorities consult with the Department of the Marine and Natural Resources on effluent discharge licence applications made to them. Similarly, the Environmental Protection Agency consults with the Department of the Marine and Natural Resources on IPC licence applications affecting the marine area. The observations and comments of the Department of the Marine and Natural Resources are thus taken into account in deciding on such applications, but are not binding on the relevant licensing authorities. However, where a foreshore licence is required for an effluent outfall, the Department of the Marine and Natural Resources has more direct control.

5.108 Despite the extent of the current system, which has improved over the years, perceptions remain that the level of consultation is inadequate. This is illustrated by the example of Tramore, which is not unique. Currently, raw effluent from the town and resort is discharged to sea. To remedy the situation, the local authority sought funding from the Department of the Environment and Local Government for a treatment plant, which was duly designed and funding approved. The outfall from the proposed plant requires a foreshore lease, and consideration of the application for this identified a potential risk to the marine environment in the locality. As a result, there has been a considerable delay in progressing the proposed treatment plant, whilst raw sewage continues to be discharged to sea. Earlier, and more integrated, consultation between the local authority, the Department of the Environment and Local Government and the Department of the Marine and Natural Resources might have resolved the issue and prevented the delay.

5F Principal Issues Relating to Water Quality

- Significant investment has been made in recent years in new and improved wastewater treatment so as to protect marine water quality. Considerable additional investment will be required in the future, and is planned.
- There is a need for closer consultation among all parties whose remit affects coastal water quality.
- Current levels of resources for monitoring and policing water quality regulations are inadequate.

5.109 Water quality in coastal areas has become a matter of increasing significance in recent years, and is also an area of increasing complexity in terms of legislation and regulation. The need for adequate consultation procedures is evident, but at present, there are no formal consultations concerning licences for dredging, extractive industries offshore or oil exploration. The consultation procedures between the Department of Marine and Natural Resources and local authorities in regard to foreshore licensing also require to be more formalised and comprehensive.

5.110 The EPA has well established consultation procedures with government departments and local authorities which have been developed for specific purposes, such as the drafting of the national water quality monitoring programme.

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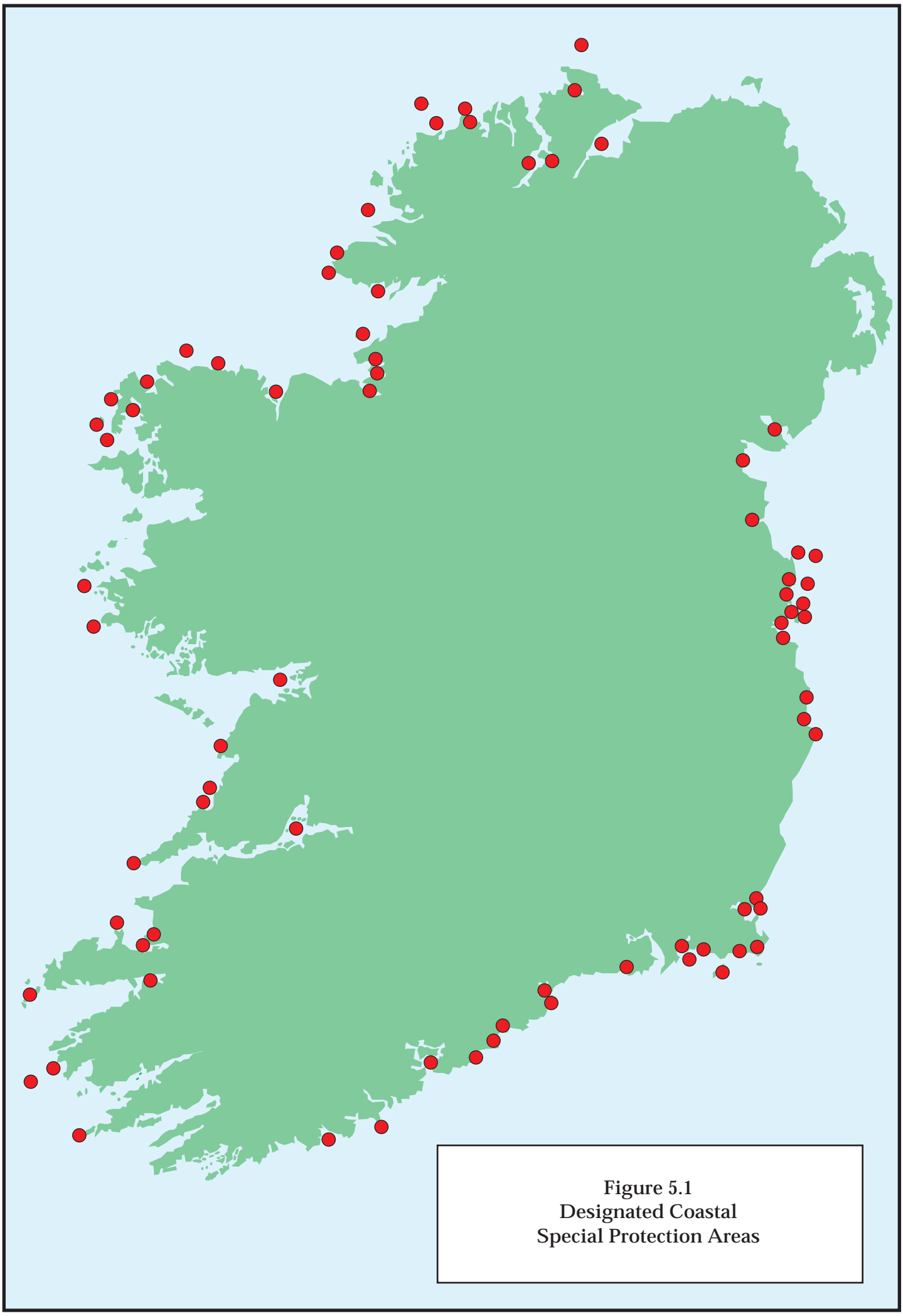

Figure 5.1
Designated Coastal
Special Protection Areas

6. LAND USE PLANNING AND CONTROL

Most land-use activities and developments are controlled through the Local Government (Planning and Development) Acts. This system, administered at local authority level, is widely accepted and understood, and allows for significant public involvement.

Many development plans recognise the importance and potential of the coastal zone, but it is seldom designated as a distinct policy area. There are inconsistencies in the designation of coastal areas from county to county, and also in the objectives and policies for such areas. Generally, the functional area of planning authorities does not extend below mean high water mark, and this gives rise to difficulties with certain types of development.

Only a limited number of sites of strategic importance for major industries, major port development, etc. remain on the coast, and it is important that such sites be identified and reserved for nationally significant use.

Much of the finite land resource of the coastal zone is already committed in terms of existing or planned development, or is designated for nature conservation. The development value of the remaining land must be assessed in the context of an evaluation of the full resource value of the coastal zone, taking account of its value as undeveloped land for conservation and/or amenity purposes, and distinguishing between developments that require a coastal location and those that do not.

6.1 The principal system for the planning and control of development on land is that based on the Local Government (Planning and Development) Acts. However, other statutory instruments such as the Foreshore Acts and Harbour Works Orders are forms of development control, and are used as such by the Department of the Marine and Natural Resources.

6.2 The current system of land use planning and control was introduced in the early 1960s in order to rationalise the exploitation of the country's natural resources and its economic development. A system of physical planning was introduced to cope with economic growth, urbanisation and urban decay. The introduction of the land use planning system addressed five main objectives:

- the establishment of a nationwide planning system that has public acceptance;
- the creation of a climate that facilitates industrial and commercial development;
- the preservation and improvement of amenities;
- the establishment of an equitable and efficient compensation system; and
- the protection of the natural and built environment.

6.3 The land use planning system is based on two inter-related elements:

1. the development plan; and

2. the development control system.

6.4 The land use planning system has important interactions with the pollution control system, which is the joint responsibility of the local authorities and the Environmental Protection Agency (EPA). The local authorities are responsible for the implementation of the Air Pollution Act 1987 and Water Pollution Acts 1977 and 1990. These Acts require the licensing of any air emission or any discharge of trade and sewage effluent to waters. Industrial plants carrying out specified types of industrial activity require an Integrated Pollution Control (IPC) licence from the EPA before commencement of operations. The applicant must provide details of the proposed activities and emission levels and any system proposed to minimise emission levels, including details on the nature of the emissions, means to control them and the periods when they will be made.

The Development Plan

6.5 The development plan provides a framework for future development. It is a plan indicating the manner in which the planning authority proposes that land in their area should be used. It has three major purposes. The first is to require the planning authority to co-ordinate its policies and to plan for them. The second is to ensure that the public is made aware of the authorities' plans, and is given an opportunity to influence them. The third purpose is to create a background against which the propriety of proposals for development can be assessed.

6.6 Each planning authority in Ireland is obliged, under Section 19 of the Local Government (Planning and Development) Act, 1963, to prepare a development plan showing the development objectives for their functional area. The development plan consists of a written statement and a plan indicating the development objectives. It must be reviewed at least once every five years. Once the draft development plan and its amended version have been put on public display to allow objections and representations, it is the function of the elected representatives of the Council to adopt the plan by resolution. Once adopted the development plan becomes a legal document and binds the planning authority to the implementation of its objectives.

6.7 An action area plan is effectively an elaboration of a Development Plan indicating in greater detail how the area in question may be developed in a more comprehensive manner. Usually an action area plan is prepared when it is anticipated that a particular area will be subject to significant development pressures, or because the planning authority wishes to be more specific than the policies contained in the development plan. It will usually indicate detailed proposals for land uses, road patterns, the location of public open space and possibly building scale and volume.

Development Control

6.8 The development plan is the controlling instrument for development in its area. Planning permission is required for all development of land or structures, other than exempted development. Development is exempted primarily for the practical purposes of permitting everyday work to be carried out without the interference of the planning authorities. Examples include most structural work to the inside of existing buildings and most agricultural development, even where this may have consequences for nature conservation.

6.9 To obtain planning permission, an application for permission must be submitted to the planning authority in whose functional area the land or structure is located. In addition to details of the proposal in the form of drawings and reports, the applicant must also submit copies of a newspaper notice in a locally circulated newspaper signalling the applicants intention to seek planning permission for a particular development, and details of the site notice, a prominent on-site sign serving the same purpose as the newspaper advertisement. The purpose of these is to inform the public of the proposed development and thus allow objections and possible appeals. The application must be made available for public inspection at the planning offices.

6.10 Certain types of development may require the submission of additional documents. The most significant of these is an Environmental Impact Statement. This is a document which describes the likely and significant impacts of the proposed development and any mitigation measures proposed. Other studies may be necessary if the planning authority considers them relevant to the application, for example retail impact studies, traffic surveys, etc.

6.11 The planning authority, in deciding on the application, is bound by its development plan, unless amended by the material variation procedure. The decision must be made within a period of two months, unless additional information is requested of the applicant. The decision of the planning authority is an executive one, made by the Manager, and can be:

1. to grant permission;

2. to grant permission subject to specified conditions; or

3. to refuse permission for reasons that are stated.

6.12 In processing the application the planning authority is required to consider the proper planning and development of the area, the preservation and improvement of amenities, and the provisions of the development plan, or of any special amenity area order relating to the area.

6.13 Where developments are proposed in Special Protection Areas or in Special Areas of Conservation, the planning authorities must have regard to the designations, and must refer the applications to the NPWS. These requirements apply to all sites that meet the relevant criteria for designation, even if they have not yet been formally designated by the European Commission.

6.14 Every development control decision of a planning authority may be the subject of an appeal to the Planning Appeals Board (An Board Pleanála). The right to appeal is universal - the applicant or any third party objector can appeal a planning decision.

Review of Current Development Plans

6.15 A review of all coastal county development plans identified a number of common policies and objectives. These are summarised below.

6.16 **Amenity:** The coast is generally regarded as an important amenity resource, with significant recreational and leisure benefits for both local and visiting populations. The high scenic quality of the coastline is recognised in all the development plans.

6.17 **Development Pressures:** There are significant pressures along the coastline of most counties, particularly for residential and tourism developments. The scenic quality of these areas makes them attractive for development, and consequently gives rise to the pressure. More stringent development controls are therefore common in coastal

areas, with an emphasis on the assimilative capacity and character of the locality, and the location, siting and design of the proposed development.

6.18 **Water Quality:** There is a general commitment to protect water quality from pollution, for recreational, tourism, fishing and mariculture purposes. Improved sewage treatment facilities and water quality management plans are methods identified for improving current standards.

6.19 **Ecology:** The importance of the coastal zone in terms of its ecological diversity is generally recognised and protected accordingly.

6.20 **Access:** Many development plans contain specific objectives to preserve public access to the coast by maintaining existing rights of way.

6.21 **Coastal Protection:** Objectives to protect specific areas from coastal erosion are common in many of the plans. Developments or works that may cause erosion are prohibited, i.e. removal of beach material.

6.22 **Ports and Harbours:** There is a general commitment to maintain and develop the small ports and harbours under the control of the local authorities.

6.23 **Area Designations:** Large areas of the coast are designated for special consideration and protection because of their scenic, amenity, visual, recreational or ecological attributes. These designations are quite distinct from nature conservation designations such as Special Protection Areas, but seldom apply specifically to the coast, and may extend inland for considerable distances. Few counties identify and designate a specific coastal zone. Generally, the development plans contain policies to restrict or prohibit development in the designated areas.

6.24 Each planning authority tends to have differing priorities. For example one planning authority may place a high value on the scenic quality of coastal areas, prohibiting all development, whilst a neighbouring authority may regard the economic development of the coast as a higher priority than its scenic quality. The result is an inconsistent approach to planning and development control. The grading of designations in a nationally consistent way is desirable, and the planned Department of the Environment and Local Government Guideline on scenic landscapes may assist in this regard.

6.25 **Strategic Sites:** Many sites of national strategic economic importance (major port sites; major strategic industrial sites, etc.) have already been developed, and there are consequently a limited number of such sites remaining undeveloped. It is important that such sites be reserved for nationally significant uses.

Administration and Organisation

6.26 The operation of the planning system runs contrary to the general centralised system of government, and is highly decentralised, with power and responsibilities resting at a local level. The planning system is a responsibility of the local authorities with limited policy guidance from central government, through the Department of the Environment and Local Government.

6.27 The operation of the planning system is the responsibility of the 88 Planning Authorities in Ireland, comprising 29 County Councils, 5 County Borough Corporations, 5 Borough Corporations and 49 Urban District Councils. Some 43 of the authorities are coastal, including 16 County Councils (Figure 6.1). Their duties and obligations are established under the Local Government (Planning and Development) Acts 1963-1993. Each planning authority has the duty of:

- preparing and implementing development plans for their functional areas;
- controlling development; and
- preserving and improving amenities.

6.28 The Department of the Environment and Local Government has an input into the land use planning system, but their role is largely confined to offering guidance to local authorities in the implementation of the planning code. A series of guidelines on land use policy issues for the guidance of local planning authorities are currently being produced. Together with the National Sustainable Development Strategy[1] it is envisaged that the completed series of guidelines will provide a comprehensive national and local framework for land use planning. The Department may also issue Directives which the local authorities must adhere to when assessing planning applications. Two such Directives have been issued.

6.29 **Coastal Expertise:** Because the land use planning system has been focused on the land-ward side of the coastal zone, planning authorities have not developed any particular expertise or capabilities to deal with marine issues. This needs to be addressed.

6.30 **Regional Authorities:** Seven of the eight Regional Authorities have coastal interests. The function of these authorities is to promote co-ordination in the provision of public services at regional level through co-operation, joint action and cohesion. The authorities also review regional development needs and the provision of public services in the regions.

6A Principal Land Use Planning and Control Legislation

Legislation	Principal Characteristics
Local Government (Planning and Development) Act, 1963	Principal Act. Established planning system within the local government structure. *'An Act to make provision, in the interests of the common good, for the proper planning and development of cities, towns and other areas....'*
Local Government (Planning and Development) Act, 1976	Established An Bord Pleanála, the Planning Appeals Board. Provision for penalties for carrying out development without permission.
Local Government (Planning Development) Act, 1982	Introduced Planning Fees. Changed nature of offences under the planning code and increased penalties.
Local Government (Planning and Development) Act, 1983	Changed method of appointments to An Bord Pleanála. Provided for appeal of conditions attached to a planning permission without appealing entire decision.
Local Government (Planning and Development) Act, 1990	Redressed issue of compensation
Local Government Act 1991	Altered process for direction by elected councillors of Manager of local authority on planning decisions and the process of allowing a material contravention of a Development Plan.
Local Government (Planning and Development) Act, 1992	Introduced significant changes in enforcement of planning control, increased penalties. Measures to speed up planning appeals process.
Local Government (Planning and Development) Act, 1993	Require State bodies to seek planning permission for future developments, with limited exceptions.

Principal Legislation

6.31 **National Legislation:** The principal legislation governing the land use planning system is set out in Table 6A, together with the principal characteristics of that legislation in each case. In addition, the Local Government (Planning and Development) Regulations 1994, as amended, and the Environmental Impact Assessment Regulations 1989, are particularly relevant to land use planning.

6.32 These Acts form the core of the Planning Code in the State. Associated with these are Statutory Instruments which supplement the Acts, Guidance Notes issued by the Department of the Environment and Local Government and EU Directives and Regulations. There is also a body of complementary legislation on environmental protection, pollution, roads, industrial development and tourism which have an impact on, and interface with, the planning system.

6.33 **Planning Boundaries:** The land use planning system is confined to the functional areas of the local authorities, and generally this does not extend beyond Mean High Water Mark (MHWM), i.e. the beginning of the foreshore. There are some exceptions, as at Bantry Bay and in the Shannon Estuary.

6.34 The planning authority effectively has little control over development located on the foreshore unless there is a physical link with the functional area of the planning authority. However the externalities caused by such development, for example visual intrusion, pollution, etc., may have a direct impact on the planning authority's functional area. It is therefore argued by the local authorities that their functional area should be extended to incorporate at least some of the foreshore.

6B Principal Issues Relating to Land Use Planning and Control

- Many development plans recognise the importance and potential of the coastal zone, and may contain specific coastal objectives and policies, but the coastal zone is seldom designated as a distinct policy area.
- There are inconsistencies in the designation of coastal areas, and in the objectives and policies for such areas, from county to county.
- Only a limited number of sites of national strategic importance remain on the coast.
- The planning system is administered at local level, and is widely accepted and understood.
- The regional level of involvement in planning is weak and is principally confined to co-ordination.
- Generally, the functional area of planning authorities does not extend below MHWM, and this gives rise to difficulties with certain types of development.
- Planning authorities have limited expertise to deal with marine-related matters.

6.35 If, at any time in the future, the functional area of planning authorities were to be extended below MHWM, the planning authorities would require access to specialist expertise in both physical and biological aspects of the coast in order to deal with proposed developments on the foreshore.

International Legislation

6.36 **Environmental Impact Assessment (EIA):** The principal international legislation related to the Planning Acts is the EU Council Directive 85/337/85 Assessment of Environmental Effects. The European Communities (Environmental Impact Assessment) Regulations 1989 were enacted in Ireland in order to give effect to this Directive. Certain specified developments, whose size exceed a specified threshold (for example industrial estates with an area greater than 15 hectares) must undergo an assessment procedure which appraises the development's likely and significant impacts on the environment. The developer prepares an Environmental Impact Statement which is then assessed by the competent authority (the local authorities in the case of planning applications) as part of the decision making process. In addition to the mandatory classes of development, competent authorities can require EIA for proposals below the threshold, where these may have a significant impact on the environment.

6.37 EIA also applies to certain developments for which consent is sought under codes other than planning, including the Foreshore Acts, for which the Minister for the Marine and Natural Resources is the competent authority.

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[1] Included in the National Development Plan, and expanded in '*A Strategy for Sustainable Development - A Strategy for Ireland*', Stationary Office, Dublin, 1997

Figure 6.1
Coastal Local Authorities

- County Boroughs
- Coastal Boroughs and Urban Districts

7. COASTAL RESOURCE DEVELOPMENT

The coastal zone contains a wealth of resources, of economic, social, cultural, environmental and nature conservation value. It has traditionally been important for tourism and leisure, and these activities will continue to be a major economic activity in the area. However, as a tourism resource, the coastal zone is finite, whilst the tourism industry gives rise to significant development pressures that tend to be incremental, continuous and widespread. On the other hand, the value of undeveloped land as a tourism and amenity resource is increasingly recognised. Policies of limitation and curtailment on tourism and leisure development and use are likely to be necessary to deal with the increasing pressures, possibly coupled with a greater emphasis on quality rather than quantity.

Pressure on the coastal zone from urban development is concentrated in areas close to the major cites, but is increasing and spreading. Agriculture and forestry practices in the coastal zone differ little from those inland. However, overgrazing and reclamation are significant problems for certain sensitive coastal ecosystems. Agriculture and forestry can also have impacts on coastal water quality. Coastal erosion and flooding can reduce the stock of agricultural land, but protection measures are seldom economic.

The Irish coastal zone contains a significant endowment of infrastructure, which includes major commercial harbours and fisheries centres, many secondary harbours, navigation, safety and communications facilities, defence installations, roads, railways, airports, wastewater treatment plants, power stations, etc. Ireland is more dependent on its ports and harbours than any other EU country, and these, together with essential infrastructural developments in the coastal zone, such as navigation aids and military installations, must take precedence over other developments and uses. The provision and development of infrastructure, including essential infrastructure, can give rise to conflicts with existing uses and with conservation requirements, whilst proposals for infrastructural development must increasingly take account of environmental factors. There is a clear need for the integration of policy and action.

7.1 This chapter reviews the major users of the coastal zone that are not dealt with elsewhere. Those uses that are primarily marine based, such as aquaculture and fisheries, are dealt with in Chapter 8.

TOURISM AND LEISURE

7.2 The coastal zone has traditionally been a favoured destination for tourism. In 1970, it was estimated that the coastal zone accounted for about 72% of all tourism activity (out of state and domestic) and that about 1.91 million tourism visits took place in the coastal zone, as defined at that time.[1] It is estimated that tourism activity has increased by a factor of at least 4.2 since 1970. A study undertaken by the Marine Institute indicated that water-based activities attracted some 29 million day trips and over 1.3 million overnight trips in 1995, a very large proportion of which would have been to the coast.

7.3 **Resort Tourism:** The traditional seaside resorts, which are scattered all around the coast, along with caravan parks and second home developments, especially those that take advantage of the sandy beaches of the east coast, have been, and continue to be, popular destinations with the domestic holiday market.

The predominant pattern continues to be based on the two week family holiday taken during the summer months and, of necessity, coinciding with the school holiday.

7.4 The more recent growth in second home ownership, and a fashion for renting homes in the coastal area for extended periods, has meant that in some areas these properties are occupied for the whole of the summer. Despite this however, and despite marked improvements in the length of the official holiday period, the availability of superior accommodation, etc., the domestic tourism pattern is still highly peaked in July and August, especially in coastal areas.

7A Traditional Resorts as Listed by Bord Fáilte

Resort	County
Arklow	Wicklow
Ballybunion	Kerry
Bray	Wicklow
Dun Laoghaire	Dublin
Greystones	Wicklow
Kilkee	Clare
Kinsale	Cork
Lahinch	Clare
Lisdoonvarna	Clare
Salthill	Galway
Skerries	Dublin
Tramore	Waterford
Westport	Mayo
Youghal	Cork

Source: *Bord Fáilte*. NOTE: The list includes inland, as well as coastal, resorts.

7.5 The traditional resorts have experienced a protracted period of decline in their fortunes, partially due to the transfer of the family market, from the 1960's and 1970's, to relatively inexpensive and somewhat 'weatherproofed' destinations in Spain and elsewhere in Europe. The flow has not all been out of the country, however, much of it was drawn to the newer and more fashionable holiday home and caravan park developments that have been built on the periphery of the old resorts and on greenfield sites in coastal areas between the traditional resorts. The failure of the traditional resorts to maintain a sufficient level of re-investment has added to their problems since it has meant that they have become progressively more out of date, and, in some instances, degraded.

7.6 Part of the problem with the traditional resorts has been the generally low standards of accommodation available. Rising standards and increasing competition from new accommodation in other non-resort centres, as well as the growth of activity based tourism, meant that the traditional resorts could not attract the up-market (domestic and foreign) tourist, nor could they compete for off- or shoulder season business. Thus they were, for a time at least, locked into a circle of decline.

7.7 More recently, the traditional resorts have been boosted with considerable new investment in facilities and infrastructure, promoted and supported by Bord Fáilte and the local authorities through the Community Support Framework (CSF). The recent designation of resorts for significant tax incentives for investment is also having an effect on the environment of these centres which appear to be entering a period of renewal. It is worth noting that most of these centres enjoy extremely beautiful settings and, whilst recent developments on the periphery of some centres have devalued the environment, they are, by and large, still very attractive places to visit and centres of service for visitors.

7.8 The declining fortunes of traditional seaside resorts prompted the launch of the Resort Renewal Scheme in 1995. The aim of the scheme is to refurbish and update the tourism amenities and facilities in traditional seaside resorts. Incentives available in certain designated areas include:

- capital tax allowances on the development cost of property used as tourism facilities;
- double tax reduction for tenants paying rent in property developed and let during the qualifying period; and
- expenditure on the provision of residential accommodation which is let primarily to tourists, which may qualify for allowance against tax on other rental income. Allowance is available for new buildings, refurbishment and conversions of existing properties.

7B Resort Areas Designated under the Resort Renewal Scheme

Resort	County
Achill	Mayo
Arklow	Wicklow
Ballybunion	Kerry
Bettystown, Laytown, Mosney	Meath
Bundoran	Donegal
Clogherhead	Louth
Clonakilty	Cork
Courtown	Wexford
Enniscrone	Sligo
Kilkee	Clare
Lahinch	Clare
Salthill	Galway
Tramore	Waterford
Westport	Mayo
Youghal	Cork

Source: *Department of Tourism and Trade, Pilot Tax Relief Scheme for Certain Resort Area, October '95*

7.9 The incentives are available from 1 July 1995, for three years, on a pilot basis. There are 15 seaside resorts in Ireland which have been designated (Table 7B). Eligible works include visitor accommodation, for example hotels, guest houses, camping sites, and a range of visitor facilities - leisure centres, information offices, restaurants, car parks, etc.

7.10 **Island Tourism:** A number of off-shore islands have developed a significant and growing tourism base, and it is estimated that, in 1995, 177,000 overseas holiday makers visited offshore islands. In some instances, as with the Aran Islands, the levels of tourism are now giving rise to considerable pressure on resources and facilities, whilst the full potential of other islands remains to be developed.

Current Trends

7.11 Longer holidays and greater affluence generally has created new holiday patterns, including the current fashion for short break holidays (less than 4 days) and specialist (usually relatively short) holidays which can take place at any time of the year. This has created new opportunities for both domestic and foreign tourism in the coastal area, as elsewhere, and has given new hope to the resorts and to individual accommodations.

7.12 Overseas visitors have traditionally favoured destinations on the south and west coasts of Ireland, with particular interest in the Dingle and Ivernian peninsulas and in

Connemara. Over the last two decades, however, the spread of overseas and Northern Ireland tourism has encompassed practically the whole of the western coastal area. Of late there has been some improvement in the form of developments which now tend to include facilities for active recreation such as golf courses, marinas, etc. as well as new services such as restaurants, interpretative and information services, etc. This 'development in depth' has come about out of necessity to deepen and enhance the product which must cope with the unpredictable Irish weather.

7.13 The regional development of tourism in Ireland between 1993 and 1995 was examined in a report published by the Irish Tourist Industry Confederation[2]. This shows that tourism continued to develop, but with trips becoming shorter and urban tourism growing in significance, especially in the Dublin region. The South-West, Mid-West and West regions experienced a decrease in visitors whilst all other regions showed an increased market share. However, the South-West remains the most popular region. The regional disparities in growth are attributed to a growing emphasis on air transport, which favours the Dublin area, growth in urban tourism, increased mobility, shorter lengths-of-stay, seasonality and the effects of marketing and promotion.

7.14 The report recommends a range of measures to encourage a wider distribution of tourism growth, including an increase in ferry capacity, greater promotion of regional airports, and improvements to public transport and car hire services.

7.15 Another aspect of recent tourism development is a marked increase in interest in marine activity and leisure, including sailing, boating, sea angling, water-skiing, etc. These trends were examined in a recent study undertaken for the Marine Institute on marine and freshwater tourism in Ireland[3]. The report identified domestic demand for a range of water-based activities, and estimates that participation in marine tourism activities was worth £303 million to the economy (or 0.7% of GNP) in 1995 (Table 7C).

7C Domestic Participation in Water-Based Activities

Activity	No. Partici-pants	Day Trips	Overnight Trips
Freshwater Angling for Coarse Fish	66200	807600	33100
Freshwater Angling for Game Fish	76400	970300	22900
Sea Angling from the Shore	53600	627100	32200
Sea Angling from Boat	34300	349900	13700
Sailing	49900	638700	54900
Boating in Row/Motor Boats in Sea	81500	741700	65200
Cruising/Boating on Inland Waterways	30100	192600	42100
Swimming in the Sea	538800	7381600	269400
Other Trips to Beach or Seaside	1047800	15717000	628700
Water-skiing, jet-skiing or other sea sports	30900	463500	74200
Whale, Dolphin Watching; Bird Watching; Visiting Nature Reserves in Coastal Areas	131700	922100	42700

Source: *Marine Institute.*
NOTE: Figures are not discrete as respondents may have engaged in more than one activity.

7.16 The study estimates that a total of 1.5 million adults (16+) from the domestic resident population participated in the activities outlined in Table 7C, giving rise to a total of 29 million day trips and over 1.3 million overnight trips.

7.17 Information on water-based activities by overseas visitors does not generally distinguish between marine and inland waterways. In 1995, expenditure by overseas

visitors on water-based activities in Ireland is estimated at £96 million (0.3% of GNP). Bord Fáilte estimate that approximately 269,000 overseas visitors participated in water-related activities in Ireland in 1995. The principal breakdown of activities is shown in Table 7D.

7D Estimated Participation in Water-Based Activities by Overseas Visitors, 1995

Activity	No. of Participants
Angling	152000
Any Watersports	36000
Other Watersports	62000
Cabin Cruising	19000

Source: *Bord Fáilte*
NOTE: The figures relate only to the specific activities; a very high percentage of overseas visitors visit the coastal zone for other activities.

7.18 The development of tourism related facilities (swimming pools, golf courses, marinas, etc.) has improved domestic access to leisure pursuits. However, research by the Marine Institute has indicated that lack of physical access to the water remains a major constraint to the development of tourism and leisure

Pressures and Impacts

7.19 It is clear that tourism will continue to be an important land and sea use in the coastal zone and that there will be significant changes in the industry in the near future in line with rising standards and the introduction of new activities and operations.

7.20 These developments will give rise to significant pressure on coastal land and marine resources and on infrastructure and services of all kinds. If the rate of increase in tourist numbers (currently running at an average of 6.5% per annum since 1988) is maintained, even allowing for increased efficiency in the use of available capacity and restrictions associated with the designation of protected areas for nature conservation and scenic reasons, the coastal lands will be required to cope with seasonal populations far in excess of the resident population. This has clear implications for planning. For example, facilities for waste water treatment and disposal of effluent to sea must take account of the maximum seasonal load, which may be far in excess of the resident population.

7.21 It is difficult to distinguish between pressures arising from domestic or out-of-state tourism and from domestic leisure and day recreation. Whatever the analysis, it is now the case that the pressure on coastal lands from tourism and leisure is spread over the whole of the country and that there are now few areas that do not have some role (however passive) in tourism terms. Of course tourism has been, and continues to be, of major economic importance to some of the more isolated parts of the country and is now an industry of considerable significance in the national as well as the local economies.

7.22 As a result of the growth in marine leisure and tourism activities, there are changes in the demand for access, in the mix of uses in a given area and in the extent to which tourism and leisure developments require control and management over both the land and water areas of the shoreline. The increased interest in marine leisure is also creating conditions in which conflict can occur, particularly in those areas where there are already demands generated by commercial use of the shoreline, harbours and landing facilities and inshore waters. There is, therefore, a need for a mechanism to support and accommodate the development of competing and conflicting uses of the marine and coastal resource.

7.23 The build up of tourism related development, albeit of an evolving kind, in the coastal area is continuous and widespread. The rate of land take varies from one area to another depending upon the type of tourism prevalent but with the fall out of employment in agriculture and corresponding efforts made to replace or supplement employment in the areas affected, the change brought about by tourism in the coastal environment is highly significant.

7.24 Prior to 1995, standards in caravan parks layout and management were regulated by Bord Fáilte and also through the development control procedures operated by the local authorities. Notwithstanding this level of control and management, the spread of such parks was not strategically planned and as a consequence has resulted in some instances in disruption of the coastal environment. Not the least result of this is the proliferation of services, accesses and traffic in the coastal zone creating, at its worst, a semi-urban environment. In some areas this 'rurban' development is almost continuous between formal settlements, the line being held only where the local authority has designated the area as being of high amenity or where the site was already listed under the former 'Areas of Scientific Interest' designation. The point is that, even where there already exists a significant level of control, this control has not always been exercised effectively.

7.25 It would be impracticable, and contrary to the need to improve the economy of the country, to suggest that tourism development be halted. The trend, however, is towards greater control. For example, policies in some areas, such as those contained in the County Wexford Coastal Management Plan[4], are seeking to limit growth in the industry by restricting physical developments within parts of the coastal zone, as between the coastal road and the sea. There is also a growing awareness of the need to plan for sustainable tourism The tourism sector is addressed in both 'A Strategy for Sustainable Development - A Strategy for Ireland'[5], launched in April 1997, and in a major study by the Marine Institute on water-based leisure and tourism[6].

7.26 The coast is a finite resource and additional restrictions will be necessary in the future. This can best be accommodated by a focus on quality and by considering the fact that tourism itself is dependent upon the quality and variety of the coastal environment and therefore upon the prudent protection of the zone against gratuitous or inappropriate development.

7.27 This is the approach that has been taken in the Balearic Islands of Spain which have more than 6 million visitors each year. Tourism is the mainstay of the economy, contributing around 60% of the islands' GDP. In response to concerns about the image of the islands and falling revenues, the regional government introduced increasing tight measures to regulate the standard of new and existing developments as well as investing in improving the environment of the resorts and urban areas. These included bans on construction within 100 metres of the coast, upgrading the standard of hotels, and using powers to close accommodation if prescribed improvements were not made within 24 months of a first inspection. The result has been an improvement in overall quality of accommodation for tourists.

7.28 In France, domestic tourism development is planned and marketed on the basis of coastal tourism, mountain tourism and rural tourism, and the coast is the primary destination for both domestic and overseas tourists. Many parts of the French coast have similar problems to parts of the Irish coast, including under-utilisation of capacity at off-peak times, the spread of holiday homes, the quality of accommodation, etc. In response, the French Tourism Agency has developed an action programme for coastal resorts concentrating on the pursuit of quality initiatives (in activities, the environment, traffic and parking, accommodation), and the diversification of product supply.

7.29 As was stated in the County Wexford Coastal Management Plan[7], many of the 'easy' development options have been used up in the coastal area and we are now faced with difficult choices as between the protection of certain areas or their development for non-strategic purposes. Whilst the coastal zone undoubtedly has further potential for the development of tourism and leisure uses, this requires to be undertaken in a more considered way, based on results of research.

7.30 Tourism, therefore, must be considered a major element in ICZM planning and detailed studies should be undertaken to assess accurately the extent and impact of the sectors activities in the coastal zone. Overall policy for the development of tourism needs to be reviewed bearing in mind the limitations of the natural resource (throughout the country, not just the coastal zone) and of the resident populations to absorb continuing increases in numbers. In some areas at least, a quality shift rather than increases in numbers would seem timely. The economic and social significance of tourism related development must be measured in coastal areas and priorities for development and/or redevelopment or retreat within the industry must be identified.

Administration and Organisation

7.31 The administration of the Irish tourism industry is the responsibility of the Department of Tourism, Sport and Recreation, Bord Fáilte, the Regional Tourism Organisations and the local authorities. The Marine Institute also has a role in the future development of tourism through the implementation of targeted research and development programmes.

7.32 The Department of Tourism, Sport and Recreation is the policy making body for the Irish tourism industry. The Department was responsible for the preparation of the Operational Programme for Tourism 1994-1999, which is the key statement of tourism policy in Ireland. The Department is also involved in the assessment of projects applying for funding under the Operational Programme.

7.33 Bord Fáilte is a state tourism body under the aegis of the Department of Tourism, Sport and Recreation. Its responsibilities include the implementation of national tourism policies. Its core function is to maximise foreign tourism revenue in Ireland, through international marketing and promotion. Bord Fáilte also encourages and assists product development in order to meet tourism demand.

7C Principal Issues Relating to Tourism

- Tourism is, and will continue to be, a major economic activity in most of the coastal zone.
- Demands from tourism, recreation and leisure are difficult to separate.
- Tourism gives rise to significant pressures for development in the coastal zone.
- The coastal zone, as a tourism resource, is finite.
- Policies of limitation and curtailment on tourism and leisure development and use are likely to be necessary to deal with increasing pressures, possibly coupled with a greater emphasis on quality rather than quantity.

7.34 The Marine Institute is currently finalising the preparation of a sectoral development plan for the marine tourism and leisure sector which will be underpinned by a comprehensive programme of fundamental, strategic and applied research.

7.35 The regional tourism organisations support Bord Fáilte in the development and marketing role. There are seven tourism regions. The regional tourism organisations

are responsible for the provision of visitor services within their respective regions including information offices and brochures, promotion of visitor entertainment, surveying tourism resources, etc.

7.36 The local authorities also have a role in the administration of the tourism industry. Firstly, they are responsible for controlling all land based development, which includes tourism developments. Secondly they provide certain recreation and amenity facilities, for example swimming pools, public parks, which can be used as tourism attractions. Many local authorities have been involved in the preparation of County Tourism Plans, either directly or in conjunction with the Regional Tourism Organisations.

URBAN DEVELOPMENT

7.37 Internationally the coastal zone is under *"significant and increasing pressure"* from urban encroachment.[8] Most developed countries have experienced problems as a result of urban expansion and growth in the form of residential, commercial and industrial development. The environmental problems caused by urbanisation are usually more apparent in coastal areas than inland locations. Although the beneficial economic effects of these concentrations of population and economic activity are recognised, there is a growing awareness of the adverse environmental impacts.

7.38 The increasing pressure is a result of:

- the attractiveness of the coastal zone, particularly the opportunities for leisure, tourism and recreation development, and also as a location for industry;
- improving technology that allows development to occur at a more rapid pace;
- improved access to remote areas; and
- greater numbers of people.

7.39 Some 90% of the French Riviera and the land around Athens, Barcelona, Marseilles and Naples is now developed. Within the last 25 years most of the coastline of Languedoc and Provence in France, the Costa Brava and Balearic Islands in Spain, and Sicily has become urbanised.

7.40 Ireland has experienced some of the problems associated with urban development in the coastal zone, but not to the extent that they affect other countries. Although most of the urban settlements located on the coast, particularly the five cities of Dublin, Cork, Limerick, Galway and Waterford, have experienced growth, both in terms of population and physical size, the problems tend to be localised. Similarly the impacts of urban generated development in rural coastal areas, for example holiday homes, tend to be concentrated in specific areas, i.e. Wexford, West Cork.

7.41 The long coastline, low population densities and the traditional dispersed settlement pattern in Ireland may account for the fact that there is less urban pressure on the coastal zone, compared to other countries. Nevertheless, there is significant and growing pressure arising from the expansion of the major cities, both directly for urban development land, and through demands for recreation and leisure access to the coast, and land for second and holiday homes.

7.42 Although urban encroachment into the coastal zone is not as significant in Ireland as it is in other developed countries, international experience suggests that if uncontrolled, urban development in the coastal zone is likely to become a major problem. Difficulties experienced in other countries include pollution of coastal waters by storm water run-off and effluent disposal, loss of important wildlife habitats resulting in irreversible ecological damage, loss of valuable recreation and amenity areas, increasing conflicts between users of the coast, etc. The result is a coastal environment which is increasingly difficult to manage.

7.43 Urban development has both positive and negative interactions with nature conservation. On the positive side, rapid urban expansion has often highlighted the need for conservation. Certain ecologically significant areas, because they are under threat from development, may receive a level of protection that would otherwise not be accorded them. On the other hand many important habitats have undoubtedly been lost due to urban expansion.

7.44 In order to successfully control development a distinction must be made between developments that require a coastal location and those that do not. For example, most industry nowadays is sited in serviced industrial estates that generally do not require a coastal location, and therefore should be encouraged to locate inland. Some industrial plants, however, require a coastal location due to a need for access to deep water, proximity to a port, large quantities of cooling water, etc. Such industries have to be accommodated in the coastal zone.

7.45 The full resource value of the coastal zone must be appreciated and incorporated into coastal zone planning. Coastal land may be more valuable as an undeveloped resource, particularly land in proximity to large urban settlements that may have important recreational functions.

7.46 In other countries, the under-valuation of resources has resulted in development which has caused a net loss of social benefit. For example, the nature conservation value of the Fraser River Estuary in Canada and the recreation and amenity value of Kastela Bay in the former state of Yugoslavia were underestimated - the undeveloped value of these areas was greater than the developed value.[9]

7D Principal Issues Relating to Urban Development

- Pressure on the coastal zone from urban development is concentrated in areas close to the major cites, and is increasing.
- A distinction must be made between developments that require a coastal location and those that do not.
- Urban development pressure must be assessed in the context of an evaluation of the full resource value of the coastal zone.
- Additional control mechanisms may be required in the coastal zone.

7.47 In other countries it is recognised that traditional control mechanisms have not been strong enough to prevent urban encroachment into the coastal zone. Nations have, therefore, started to introduce 'set-back lines', distances from the shore in which either some or all development is prohibited. Denmark has such a zone within 3 kilometres of the shore where there is a ban on construction of summer houses. In Spain, the Shores Act identifies four zones:

1. the foreshore - free public access; siting of facilities and activities which must have a coastal location;

2. a 6 metre wide zone behind the foreshore to allow pedestrian access;

3. a zone between 100 and 200 metres wide for facilities for public use and enjoyment of the coast; and

4. a zone of influence, at least 500 metres wide, where buildings are permitted but with landscaping and density restrictions.

7.48 If excessive urban encroachment is to be prevented in Ireland, appropriate policies must be implemented. There is a need for long-term planning, flexible planning systems that can deal with changes in demand, consistent goals, effective co-ordination and consideration of the cumulative effects of development.

Administration and Organisation

7.49 Urban development is controlled by the local authorities, primarily through the planning system, as described in Chapter 6.

Principal Legislation

7.50 The principal legislation governing urban development is the planning code, together with the associated pollution control and building control legislation.

AGRICULTURE AND FORESTRY

Agriculture

7.51 Agriculture is the most widespread land use type in the coastal zone in Ireland when considered on an area basis. It accounts for 82% of the total land area in the Republic of Ireland with over 52% of this farmland classified as pasture and a further 40% as hay/silage or rough grazing.[10] There is no reason to assume that the proportions of coastal land use are any different from the national average. In many cases, farmland near the coast differs little from its inland counterpart except in relation to its exposure to wind and salt spray. However, certain coastal ecosystems such as sand dunes, salt marshes and various coastal wetlands are unique to the coastal zone and they require environmentally sensitive land management if they are to survive.

7.52 There has never been a full land use survey of Ireland. Therefore, it is not possible to present a detailed classification of land constituting the rural environment of the coastal zone. However, the use of aerial photography and satellite imagery has allowed remotely sensed data to be converted to map form. The CORINE Land Project of the EU provides a land cover database for Ireland at a scale of 1:100,000. Grassland is the predominant vegetation in most coastal areas as high rainfall, unsuitable soils and poor drainage generally preclude extensive cultivation of crops. Exceptions to this are in parts of the east coast which have lowest rainfall amounts in the country and where tillage may exceed 24% of all improved land.[11]

7.53 Agriculture has changed rapidly since Ireland's accession to the EEC (now the EU) in 1973, and the adoption of the Common Agricultural Policy (CAP). Throughout the 1970's there were substantial increases in agricultural production in Ireland until it became evident in the 1980's that the necessary high price supports could not be sustained indefinitely. Reform of the CAP in the 1990's brought a range of measures, including quota restrictions, on volume output, reduced levels of price support for products in surplus, more selective use of the intervention system and financial incentives for afforestation and for leaving some land fallow.

7.54 Agriculture now accounts for some 12.6% of employment, so it is still a vital part of the economy.[12] Nevertheless, the agricultural sector has a number of persistent structural problems such as a decline in number of farms, an ageing farming population and low farm income. The most dramatic change in livestock numbers has been the expansion of the national sheep flock which doubled in the period 1985-1990. The bulk of the expansion occurred in dry, low-lying areas with substantial increases in stocking rates.[13]

7.55 Overgrazing is a significant problem for certain sensitive coastal ecosystems mainly in the west of Ireland. Grazing by livestock is an integral part of the development of the sandy machair plains and many salt marshes in the western coastal region but overgrazing can cause the break-up of the vegetation cover leading to serious erosion[14]. This is most evident from many of the machair sites in Galway and Donegal. An indirect effect of intensification of agriculture on coastal land is the tendency to splitting up of commonage into individual holdings as has already occurred on many sand dunes and machair sites. This facilitates individual treatment of each holding, including the use of artificial fertilisers and subsequent loss of the characteristics of the overall system.

7.56 The designation of Environmentally Sensitive Areas (ESA) has been operating in Northern Ireland since 1989 under an EU regulation allowing payments to farmers who manage their land in accordance with conservation prescriptions.[15] In the Republic of Ireland there was very slow progress in accepting the concept, and only two pilot ESAs were designated, one of which included coastal lands around Slyne Head, Co. Galway. The scheme was seriously under funded and the pilot areas were never fully evaluated.

7.57 The introduction of the Rural Environmental Protection Scheme (REPS) in 1995 has provided a new opportunity for environmentally sensitive farming practises in the coastal zone to be supported by EU subsidies. This is suitable for coastal lands in any part of the country, a high proportion of which is listed as proposed Natural Heritage Area (NHA) and thus qualifies for supplementary payments if certain farming practises are maintained or adopted. These might include, for example, limitations on stocking densities, use of artificial fertilisers, etc. However, there have been a number of significant problems with the scheme, as some important habitats have been omitted entirely from individual farm plans and some REPS planners are not recommending sufficiently strong measures to ensure conservation of habitats. Until these problems are rectified, the scheme will be of limited value to ICZM.

7.58 Most of the waste discharges to water from agricultural activities are likely to enter freshwaters, in contrast to the situation regarding the discharge of domestic and industrial effluents, most of which enters estuaries and coastal waters. There may be some localised problems associated with the land spreading of fertilisers, slurry or silage effluent within the catchment of coastal lagoons or other enclosed waters. These are generally regarded as non-point sources. Observance of the 'Code of Good Agricultural Practice to Protect Waters from Pollution by Nitrates' (issued by the Department of Agriculture and Food and the Department of the Environment and Local Government) would assist in the reduction of such sources of pollution. This code has been prepared to fulfil obligations arising under Council Directive 91/676/EEC concerning the protection of waters against pollution caused by nitrates from agriculture. The effectiveness of this voluntary code will be assessed by local authorities through their monitoring programmes. The local authorities can require farmers to prepare nutrient management plans, and these powers would also assist in addressing the issue.

7.59 Coastal erosion is already affecting some areas of farmland, particularly those on the east coast which are low-lying with extensive areas of glacial drift. Others areas at risk from sea-level rise and consequent flooding in the near future include many low-lying areas of farmland around estuaries, some of which were originally claimed from the sea in the nineteenth century[16]. Sea-level rise may also cause salt-water intrusion inland in some areas, 'contaminating' ground water with chloride ions and rendering it unsuitable for some agricultural purposes. The agricultural value of such land is almost always exceeded by the cost of coastal engineering works to protect it from erosion. There is a need to establish new policies for such areas, including the creation of new inter-tidal habitats.

Forestry

7.60 Within the EU, Ireland has the lowest level of forestry at 7% of land area despite potential annual growth rates over three times the average (measured in cubic metres per hectare) [17]. However, recent reform of the CAP and the consequent reduction of market-price supports for many agricultural products have made forestry a realistic alternative for many landowners. In the 1980's private planting expanded rapidly with the incentive of attractive grants. The area of new forestry planting in the Republic of Ireland each year trebled between 1982 and 1991 with expansion of both state and private planting programmes.[18] The total area of new planting had reached 23,710 hectares in 1995 with some 73% on private land and the remainder on land owned by Coillte.[19] The data do not permit separation of forestry on coastal lands.

7.61 State forestry has tended to avoid planting on coastal land due to higher land prices compared with upland or peatland areas inland, and because of the high proportion of coastal land which is proposed as Natural Heritage Areas. Afforestation on coastal lands may also be subject to a number of natural constraints such as wind throw, salt spray and lack of soil nutrients. Most experiments with forestry on sand dune sites (e.g. The Raven, Co. Wexford) have not been a commercial success. Even more exposed sites on the south and west coasts would not represent a commercial proposition.

7E Principal Issues Relating to Agriculture and Forestry

- Generally, there is little distinction between agriculture and forestry in the coastal zone and that in inland areas.
- Overgrazing is a significant problem for certain sensitive coastal ecosystems mainly in the west of Ireland.
- The use of Environmentally Sensitive Area designation has not been pursued as a means of reconciling agriculture with conservation.
- The Rural Environmental Protection Scheme provides opportunities for environmentally sensitive farming practises in the coastal zone, but some significant problems limit its usefulness in ICZM.
- The impact of agriculture and forestry on water quality is of concern.
- Coastal erosion and flooding reduce the stock of agricultural land, but protection measures are seldom economic.
- Afforestation in the coastal zone raises issues of nature conservation, landscape preservation and amenity use.

7.62 Afforestation in the coastal zone raises issues of nature conservation, landscape preservation and amenity use. The land drainage, which is usually required for forestry, can cause permanent damage to sites of nature conservation value especially where these are dependant on a hydrological regime. Forestry on sand dunes causes irreversible modification of the natural vegetation and limits their coastal protection value as resources for sediment exchange with the beach/shore area. Forestry in coastal areas may also cause conflict with recreation and tourism interests which seek access to beaches and generally unobstructed views from coastal roads to the sea. However, recent planning controls and the requirement of EU grant aid to avoid proposed NHAs should ensure that forestry does not become a major land use in the coastal zone in the foreseeable future.

Administration and Organisation

7.63 The administration of both agriculture and forestry is the responsibility of the Department of Agriculture and Food. This is both the regulatory authority and the funding body in its role as the national authority for EU subsidies and grants. Teagasc is the state agricultural research and advisory agency which has also adopted a central role in the preparation of farm plans under the Rural Environment Protection Scheme. Coillte is the state owned forestry company which is the biggest single owner of forest land in the Republic of Ireland.

INFRASTRUCTURE IN THE COASTAL ZONE

7.64 There is a high demand for infrastructural services in the coastal zone due both to the nature of the area, and the high concentration of population. Typical services include:

- transportation, including ports and harbours;
- sanitary services - sewage and effluent treatment (see Chapter 5); water supply and waste disposal;
- power/energy;
- military infrastructure;
- navigation and safety infrastructure;
- coastal defence and protection works (see Chapter 9);
- communications infrastructure; and
- tourism and leisure infrastructure, including slips, pontoons, moorings, marinas, etc.

7.65 **Ports and Harbours:** In Ireland it is estimated that there are approximately 950 'harbours' ranging in size and importance from nationally significant ports to small landing areas including:

- 27 Commercial Harbours;
- 5 Fishery Harbour Centres; and
- about 900 Secondary Harbours.

7.66 Twenty five of the commercial harbours were designated under the Harbours Act 1946 to be operated and maintained by a Board of Harbour Commissioners, representative of the harbours users, local authorities, and commercial and labour interests. In addition, Rosslare is under the control of CIE, whilst Dun Laoghaire was directly administered by the Department of the Marine and Natural Resources. Under the Harbours Act 1996, new semi-state bodies are established to control 12 of the larger harbours, including Dun Laoghaire Harbour. The remaining harbours will continue to operate under the Act of 1946 . Rosslare will remain under the control of CIE. The Department of the Marine and Natural Resources is responsible for the regulatory, financial and development aspects of the harbours.

7.67 The five fishery harbour centres of Howth, Dunmore East, Castletownbere, Rossaveal and Killybegs are managed by the Department of the Marine and Natural Resources. The day-to-day operational tasks are performed by the Harbour Master who is independent in running the harbour except for financial and budgetary issues. The function of the centres is to provide industrial type units where the fish catch can be landed and processed. Each has ice plant, auction house, and handling facilities and a land bank for the development of processing facilities by the private sector.

7.68 There are over 900 secondary harbours dotted around the coast of Ireland. They vary in size from small harbours to landing areas. They cater for both local fishing interests and tourism and recreation activity. They serve an important function in that they provide boating access to the sea, and many are also used as storm refuges. The secondary harbours are mainly under the control of the local authorities. The responsibility of maintaining these harbours has proved a major financial burden to the local authorities, resulting in much disrepair.

7.69 Ireland is more dependent on its ports and harbours than any other EU country. The peripherality of the country places a total reliance on sea and air transport for access to international markets. The sea accounts for 35 per cent of all passenger traffic to and from Ireland. The sea is the dominant form of access for merchandise trade. Irish ports account for 76 per cent of the volume of trade and 60 per cent of the value of exports[20]. The Department of the Marine and Natural Resources estimate that 7 harbours handle 90 per cent of the country's shipping. Consequently priority will be given to further investment in the ports of Cork, Dublin, Rosslare and Waterford, whilst proposals for further investment in Dun Laoghaire, Foynes and Limerick will also be evaluated. Investment is also available for the regional ports to assist in maintaining existing capacity and employment.

7.70 The fisheries industry is totally dependent on the existing network of ports and harbours. There are about 30 harbours, including the Fishery Harbour Centres, that service the bulk of the motor vessel fishing fleet. Investment is targeted at developing onshore facilities and additional berthage works in these harbours.

7.71 There has also been a significant increase in leisure boating and watersport activities in recent years, but the development of facilities for this sector has not kept pace with the rate of growth in the activities themselves. In addition, the planning of new and upgraded harbours and ports has not always provided for leisure activities. A more integrated approach is desirable.

7.72 National policy for commercial harbours is contained principally in the Harbours Act 1996, which replaces the Harbours Act 1946, and in the Operational Programme for Transport. The policy, however, is deficient in terms of establishing a clear national strategy for commercial harbours, and in identifying clear policies for each harbour. The need for investment and development is recognised - high volumes of Ro/Ro traffic, for example, use Larne, where the range of facilities and number of sailings is greater than at any harbour in the Republic.

7.73 Current policy is to seek for competition in and between ports, and to encourage multiple use (e.g. fishing, commercial, ferries, etc.) of the facilities.

7.74 The development of ports is currently controlled primarily by the Harbours Acts. Development authorised by a Harbour Works Order under the 1946 Act is exempted development for planning purposes. However, the Harbours Act 1996 requires new port companies to operate under the local authority planning system.

7.75 In terms of volume, Dublin is the largest port in the country, but significant volumes are handled at other ports, notably Cork and Waterford. The principal passenger ferry terminals are at Dublin, Dun Laoghaire, Rosslare and Cork. Road and rail access, and land for the further development of port facilities and related industry, are important to each port. Investment in the period 1994 to 1999 is set out in the Operational Programme for Transport, with a planned expenditure of £77m. There is also £50m available under the INTERREG Initiative for harbours between Dublin and Waterford (in association with Wales). Access to the port of Dublin is also addressed in the Operational Programme, and in the Dublin Transportation Initiative.

7.76 **Roads and Railways:** The road and rail network in Ireland is heavily influenced by the distribution of population. As a result a relatively high proportion of the trunk road and rail network is located in the coastal zone, particularly in the vicinity of the major urban settlements.

7.77 The roads and railways provide important access linkages to and from the coastal zone. Their development is a key element in offsetting the negative effects of Ireland's peripherality. Therefore a significant proportion of future investment in the road and rail network is targeted at improving access to the major ports and airports.

7.78 **Airports:** All of Ireland's three state airports, Dublin, Shannon and Cork, are located in the vicinity of the coast. However their location is influenced by proximity to the three largest urban settlements, rather than a particular need for a coastal location.

7.79 **Water Supply:** Water supply in Ireland is either sourced from river catchments (75 per cent) or groundwater resources (25 per cent). Therefore the provision of water supply services has little impact on the coastal zone.

7D Electricity Generating Stations on the Irish Coast

Station	Fuel	Capacity (MW)
Aghada, Co. Cork	Gas	525
Cahirciveen, Co. Kerry	Peat	5
Clady, Co. Donegal	Hydro	4
Great Island, Co. Wexford	Oil	240
Marina, Co. Cork	Gas	115
Moneypoint, Co. Clare	Coal	915
North Wall, Dublin	Gas/Oil	259
Poolbeg, Dublin	Gas/Oil	668
Tarbert, Co. Kerry	Oil	620

Source: *Electricity Supply Board*

7.80 **Power/Energy:** There are a number of power stations located on the Irish coast (Table 7D), ranging in size from the relatively small hydro-station at Clady, County Donegal to Moneypoint, County Clare, Ireland's largest station producing a quarter of country's electricity supply. The value of these generating stations makes them sites of national importance. They are therefore priority developments that take

precedence over other proposed developments that may interfere with their effective operation.

7.81 **Military Infrastructure:** There are a number of military installations at strategic locations along the coast of Ireland. The larger installations include the naval base at Haulbowline in Cork Harbour, Camp Finner in County Donegal and Gormanstown Camp in County Meath. Other establishments include forts (Berehaven, Bantry, Co. Cork) and barracks (Youghal Barracks), many of which are either disused or rarely used.

7.82 In general, public access to these areas is restricted. For example the beach and inshore area adjacent to Gormanstown Camp is used as a shooting range. The public obviously cannot access these areas when the range is in use even though it is part of the foreshore, and as such, is perceived as a public space.

7.83 **Navigation and Safety Infrastructure:** Navigation and safety requirements give rise to infrastructure located on the coast. Such infrastructure is essential to assist the safe passage of all classes of mariners in general navigation. The number and type of aids located in the Irish coastal zone are listed in Table 7E.

7E Aids to Navigation in Ireland (including Northern Ireland), 1995[21]

Lighthouses	80
Manned	5
Automated	75
Light Vessels	2
LANBYs	2
Fog Signal Stations	1
Buoys 145	
Lighted	119
Unlighted	26
Visual Beacons	48
Lighted	3
Unlighted	45
Electronic Beacons	24
Radiobeacons	8
Radar Beacons	16
Decca Stations	2

7.84 In terms of land requirements, this type of infrastructure is inconsequential, but it has priority over all other types of development. The Commissioners of Irish Lights who are responsible for the maintenance of the navigation aids, must approve all foreshore license applications to ensure that proposed developments do not interfere with safe navigation. Similarly the local authorities cannot build any navigation aids, or even erect bright lights in certain areas, without statutory permission from the Commissioners of Irish Lights.

7.85 **Communications Infrastructure:** Communications installations have a negligible impact on the coastal zone. Apart from navigation aids, the only coastal specific installations are those which cater for international communications cables. These are minor developments and few in number.

7F Principal Issues Relating to Infrastructure

- Certain infrastructural developments in the coastal zone, such as navigation aids and military installations, must have precedence over other developments and uses.
- The provision and development of infrastructure, including essential infrastructure, can give rise to conflicts with existing uses and with conservation requirements.
- Proposals for infrastructural development must increasingly take account of environmental factors.

7.86 **Priority Developments:** In general, infrastructural developments located in the coastal zone are priority developments, on sites of strategic importance. They take precedence over all other proposed developments that may interfere with their effective operation. For example, military infrastructure is related to the defence of the state and therefore proposed developments must not hinder this function. Similarly, navigational aids provide safe passage, and proposed developments must not interfere with their operation.

Administration

7.87 Table 7G outlines the main organisations responsible for the administration of the various infrastructural services in the coastal zone. The organisations vary from government departments to state agencies and local authorities.

7G Administrators of Infrastructure in the Coastal Zone

Infrastructure Service	Administrator
Ports	Department of the Marine and Natural Resources, Harbour Commissioners, Local Authorities
Roads	Department of the Environment and Local Government; National Roads Authority, Local Authorities
Railways	Iarnrod Eireann
Airports	Aer Rianta
Electrical Energy	Electricity Supply Board
Sewage and Effluent Disposal	Department of the Environment and Local Government; Local Authorities
Water Supply	Department of the Environment and Local Government; Local Authorities
Navigation and Safety	Commissioners of Irish Lights
Coastal Defence	Department of the Marine and Natural Resources, Local Authorities
Military Uses	Department of Defence, Defence Forces
Communications	Telecom Eireann; E-Sat

1 Brady Shipman Martin and Niall Hyde, 1973, *National Coastline Study*, Bord Failte Eireann, An Foras Forbartha

2 *Regional Distribution of Tourism in Ireland, Response to Changing Market Trends*, Irish Tourist Confederation, April 1996

3 The Marine Institute, *Marine and Freshwater Tourism in Ireland*, Dublin, 1997

4 Wexford County Council, Brady Shipman Martin, 1992, *Wexford Coastline; Coastal Zone Management Plan*

5 Department of the Environment, 1997, *A Strategy for Sustainable Development - A Strategy for Ireland.*

[6] *Op. Cit.* The Marine Institute

[7] *Op. Cit.* Wexford County Council, Brady Shipman Martin

[8] OECD, 1993, *Coastal Zone Management: Integrated Policies*

[9] *ibid.*

[10] Walsh, J.A., Agriculture as a land use in Ireland, In: A. Fenton & D.A. Gillmor (eds.), *Rural Land use on the Atlantic Periphery of Europe : Scotland and Ireland,* pp 55-73. Royal Irish Academy.

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[16] Carter, R.W.G, 1994. Sea-level changes. In. B.E. Williams (ed.), *Climate Change: Studies on the implications for Ireland*. 2nd Edition. Department of the Environment, Dublin.

[17] *op cit.*, Ireland Community Support Framework 94-99.

[18] Convery, F.J. and Clinch, J.P. 1994. Forestry as a land use in Ireland. In: A. Fenton and D.A. Gillmor (eds.) *Rural Land Use on the Atlantic Periphery of Europe: Scotland and Ireland*, pp 131-142. Royal Irish Academy.

[19] Forest Service Data

[20] Ireland Community Support Framework, *Operational Programme for Transport 1994-1999,* Government Publications.

[21] General Lighthouse Authorities, November 1995, *Marine Aids to Navigation into the 21st Century: A Joint View Issued by the General Lighthouse Authorities for the United Kingdom and the Republic of Ireland*

Figure 7.1
Designated Seaside Resorts

● Resort Areas as designated for the Pilot Tax Relief Scheme


Buncrana Harbour Commissioners
Ballyshannon Harbour Commissioners
Sligo Harbour Commissioners
River Moy Commissioners
Greenore Ferry Services Ltd
Dundalk Harbour Commisioners
Westport Harbour Commissioners
Drogheda Port
Dublin Port
Dun Laoghaire Harbour
Galway Harbour Commissioners
Wicklow Harbour Commissioners
Arklow Harbour Commissioners
Kilrush Harbour Authority
Limerick Harbour Commissioners
Foynes Harbour Trustees
New Ross Harbour Commissioners
Wexford Harbour Commissioners
Tralee and Fenit Pier and Harbour Commissioners
Waterford Harbour Commissioners
Rosslare Harbour (C.I.E.)
Dingle Harbour Commissioners
Youghal Harbour Authority
Port of Cork
Bantry Bay Harbour Commissioners
Kinsale Harbour Commissioners
Baltimore and Skibbereen Harbour Commissioners
Figure 7.2
Harbour Authorities
Harbour Authorities

8. MARINE RESOURCE DEVELOPMENT

Ireland has a vast marine resource, covering an area of over 900,000 sq. km., which includes fisheries, aquaculture, minerals and hydrocarbons. The coastal zone provides access to this resource. Future developments in technology, relating to aquaculture, wave energy, hydrocarbons, etc., will greatly increase the wealth creation and employment opportunities in the coastal zone and offshore sector.

The Irish fisheries industry is an important sector of the economy and a significant source of employment. Despite quotas and other controls, it has scope for further development, and increasing attention is being paid to encouraging opportunities in under exploited species and quotas. Balancing the conservation of resources with the socio-economic dependency of fishing communities is one of the most difficult current issues in the coastal zone, and requires to be addressed across a number of sectors. Therefore, the current and projected state of fishing stocks in Irish waters, and the levels of exploitation of the resource, are matters of concern.

In terms of numbers, the Irish Fleet is predominantly inshore, and operated by a large number of fishermen. Congestion is a problem at many fishing ports, as is conflict between fishing and other uses. There are perceptions that overfishing at sea is impacting on the capacity of the angling industry.

Aquaculture accounts for an increasing proportion of Irish fish production and is of growing importance as a raw material for the processing industry. Within the aquaculture sector, shellfish production has the capacity to expand further. Whilst salmon and trout farming face increasing competition, the potential exists for value added products, quality branded identification and for the development of new species. However, the potential for conflict between aquaculture and other users of the coastal zone may increase.

Sand and gravel extraction and oil and gas exploration and production in the coastal zone are both likely to increase in the future. In particular, it is probable that demands for the export of sand and gravel from Irish waters will increase. Renewed interest in off-shore oil and gas, such as the Connemara field, will provide new employment and service opportunities in coastal areas. However, the resources are finite, and there can be significant environmental impacts. Development of the opportunities therefore needs to be balanced with management procedures to protect sensitive coastal and marine ecosystems and environmental quality.

8.1 Ireland has a vast marine resource, covering some 90% of the national territory and extending over an area of over 900,000 sq. km., which includes fisheries, aquaculture, minerals and hydrocarbons. The coastal zone, which itself contains a wealth of resources of economic, social, cultural, environmental and nature conservation value, provides access to the marine resource, and is also the access route for over 90% of Ireland's foreign trade (exports and imports).

8.2 The value and potential of Ireland's marine resources are increasingly recognised. In its report for 1994, the Marine Institute identified the following sectors as priority development areas that have primary (extraction), secondary (processing and manufacturing) and tertiary (service-based) business opportunities:

1. Marine Food, including fisheries, aquaculture and food processing;

2. Marine Tourism and Leisure;

3. Seaweed-based Industry, including food-based and chemical/pharmaceutical-based activities;

4. Marine Technology and Instrumentation;

5. Ocean Energy, including wind and wave energy;

6. Seabed Resources, including oil, gas and mineral deposits;

7. Shipping and Boating; and

8. Off-shore Industries and Ocean Engineering.

8.3 The full utilisation of this extensive resource may lie somewhere in the future, but developments in technology are rapidly opening up the possibilities. The management of the resources, to allow for sustainable economic development, will require research and development activities that also offer opportunities for commercial enterprise.

8.4 The development of Ireland's marine resources will require onshore supply, processing and services facilities, which may conflict with other activities and demands in the coastal zone. For example, Ireland has one of the highest wave energy climates in the world (50 kW/metre annual mean) which is 13 times the current generating capacity of the Electricity Supply Board. The Marine Institute has established a number of working groups to assess this resource in terms of available technology, suitable sites and other issues, including socio-economic and environmental matters.

8.5 It is clear that future developments in technology, relating to aquaculture, hydrocarbons, etc. as well as wave energy, will greatly increase the wealth creation and employment opportunities in the coastal zone and offshore sector. These opportunities must be managed so as to ensure the sustainable use of the resources, and to balance development with the requirements of nature conservation and environmental protection. The reconciliation of competing demands, together with the full realisation of the sustainable development opportunities, will place heavy demands on the management of coastal areas in the future.

FISHERIES

8.6 The Irish fishing industry is an important sector in the national economy, and is of economic, social and cultural significance to the coastal zone. Its contribution to the economy has increased over the last decade in terms of employment, output and exports. In many coastal areas, particularly peripheral areas, the fishing industry has both a direct and indirect impact on the welfare of much of the population.

8.7 Table 8A shows the number employed in the fisheries sector in 1992 and 1995. Note that the figures refer to the seafish industry and do not include inland fisheries, which can have a significant indirect socio-economic impact in the coastal zone particularly where visiting anglers are attracted.

8.8 The 12,860 people employed in the fisheries sector represents 1.14 per cent of the total working population in the country[1]. The industry is mainly located in areas with little alternative employment opportunities, and is labour intensive. Fishing also supports a wide range of local services and is therefore very important to local populations, and there is a high level of dependency on the industry in many communities. In some communities 25 per cent of the local working population is directly employed in the fisheries industry. Fishing is of socio-economic importance in the south east, south west, west and north west regions.

8A Employment in the Seafish Industry

	1992	1995
Fleet	7,780	7,700
Processing	1,460	3,400
Ancillary[2]	1,000	1,760
Total	10,240	12,860

Source: *1992: Operational Programme for Fisheries 1994-1999. 1995: Marine Institutes*

8.9 As shown in Table 8A, the fishing fleet accounts for most of the employment in the fisheries sector. Seafish landings have increased over the last number of years, from 213,000 tonnes valued at £90m in 1989 to 290,900 tonnes in 1994. Seafish exports have increased from 178,400 tonnes valued at £155m in 1990 to 248,500 tonnes valued at £185m in 1994. Fishing activity is mainly concentrated on demersal species such as whiting, cod, haddock (valued at £40.4m), pelagic species such as seasonal herring, mackerel and sprat (valued at £33.9m), and various shellfish species including nephrops, crab, lobster and whelk, with an annual value of £34.9m[3]. In 1995, there were 1,385 registered Irish fishing vessels, down from the total of 1,460 in 1993, when they totalled approximately 56,000 Gross Registered Tonnes.

8.10 The waters around Ireland are governed by the Common Fisheries Policy (CFP), which gives vessels of other EU Member States fishing rights under a complex system of controls with national, trans-national and community competence, with the objective of achieving sustainability of the fish resource through the prevention of overfishing. The controls include quotas on size of catch for certain species, limits on accidental by-catch and limits on particular boats fishing in certain areas (defined as sub-divisions of ICES areas and the 'Irish Box').

8.11 General fleet productivity and profitability is constrained by two principal factors:

1. The small vessel size. The vast majority of fleet vessels are inshore and mid-water boats, which are seasonal, weather dependent, and at most spend only a few days at sea at a time. Over half the fleet is comprised of inshore vessels under 12m in length.

2. The age profile of the fleet shows that most vessels, especially in the inshore segment, are between 20 and 30 years old, some of which are poorly equipped in terms of modern facilities. A large proportion of the fleet is approaching, or has reached, its optimum lifespan and certain segments are in need of modernisation or renewal. Without modernisation it is difficult to encourage the fishing of non-quota species and under-utilised quotas, and the fishing of under-utilised areas. This fleet profile is common to many European countries. Spain operates a 'scrap and build' policy which is reducing fleet capacity but with re-investment to support modernisation of remaining vessels.

8.12 The objectives for the future development of the fishing fleet, as contained in the Operational Programme for Fisheries, are:

- to facilitate the modernisation of the fleet in conformity with EU targets;
- to facilitate the introduction of a limited number of modern vessels;
- to maximise on a sustainable basis the quantity, value, quality and hygiene of landings;
- to increase the take-up of under exploited fishing opportunities including non-quota species and under-utilised quotas;
- to support land-based developments such as handling, processing and service industries;
- to ensure maximum provision of employment opportunities in the catching sector; and
- to enhance operational safety.

Processing Industry

8.13 Although the Irish fish processing industry has an estimated annual value of £125m, it remains relatively under-developed. Of all the seafish landings in this country, it is estimated that about 60 per cent is processed. There are approximately 220 firms engaged in processing, employing 3,400 full and part-time persons.[4]

8B Marine Food - Value and Employment

Total Landings, 1995	£175 million
Processing, 1995	£125 million
Total, 1995	£300 million
Employment, 1995 (Full-time equivalents)	15,470

Source: *Marine Institute*

8.14 The industry is mainly concentrated in Donegal (20 per cent, Killybegs in particular), Galway, Kerry, Cork, Wexford and Dublin. The processing sector is characterised by small plants engaged in whitefish, salmon and shellfish processing, but is dominated by larger firms involved in mackerel and herring. As a result, approximately 30 firms are responsible for 70 per cent of the industry's output, whilst half of the existing firms employ less than five people. Most processing firms engage in some form of export activity, and most deal in fresh fish which involves rapid processing of the product. There has been increased development of new products and by-products, for example crabs, shellfish etc.

8.15 The general objective for the processing industry is to develop the industry, maximise raw material utilisation and employment potential, improve quality and hygiene standards. The total output from the sector is targeted to increase from 125,100 tonnes, valued at £125.6m in 1992, to 164,000 tonnes, valued at £192m by 1999.

Fisheries Harbours

8.16 Port infrastructure and facilities are obviously important factors in the development of the fishing industry. There are over 900 harbours in Ireland ranging in size from small harbours, with limited or no on-shore facilities, to major landing areas. There are approximately 25 harbours providing more developed facilities which service most of the fishing fleet's needs. These include the five Fishery Harbour Centres at Killybegs, Rossaveal, Castletownbere, Dunmore East and Howth. Current policy is concentrated on maintaining a network of strategic harbours around the coast. It is intended that the larger harbours, the Fishery Harbour Centres in particular, will service the needs of the fishing industry. These harbours will be places in which landing, auctioning, processing and marketing, as well as servicing of the fleet, can all be undertaken.

8.17 **Fishery Harbour Centres:** The five fishery harbour centres are managed by the Department of the Marine and Natural Resources. These centres were selected in 1960's to create industrial type units where the catch could be landed and processed. Each has an ice plant, auction house, handling facilities and land for the development of processing facilities by the private sector.

8.18 The Department of the Marine and Natural Resources control both the water and the land bank. The policy is to lease land and property to private developers, although some sites have been sold to processing industries, in Killybegs for example.

8.19 Current problems with the Fishery Harbour Centres include:

- access by road (to Castletownbere, in particular) and resource limitations on the local authorities restricting road maintenance and development;
- conflict between local and foreign users;
- congestion and a lack of moorings, particularly during storms, coupled with use by larger boats than designed for;
- major investment requirements;
- conflict with leisure and other non-fishing users (national policy is that fishing uses have priority, but demand for other uses is increasing).

8.20 **Secondary Fishery Harbours:** Most of these harbours are in the control of the local authorities who are responsible for the running/maintenance costs, which has proved a major financial burden, and has resulted in many going into disrepair. Gaeltacht harbours are dealt with by the Department of the Marine and Natural Resources on an agency basis for the Department of Arts, Heritage, Gaeltacht and the Islands.

8.21 The development of fishery harbours is eligible for grant-aid under the Fisheries Operational Programme. Some £12m is available over the 1994-99 period to invest in priority projects including the development of the ice plant network.

8.22 **Congested Harbours:** A common problem at many ports and harbours is a lack of sheltered moorings to accommodate all vessels. Even some of the larger harbours in the country lack adequate quay space. There are frequent conflicts between fishing, leisure and ferry uses. For example, at Rossaveal Fishery Harbour Centre fishing uses compete for moorings space with the large number of ferry vessels serving the Aran Islands. The growing popularity of watersports has resulted in a corresponding demand for moorings and access to landing facilities.

Fisheries and Tourism

8.23 The fisheries industry has many interactions with the tourism and leisure industry. Tourism angling is a specialist activity of increasing importance to the Irish tourism industry. Overseas anglers are proving to be a valuable source of revenue. Bord Fáilte estimates that each sea angler spends £434 per visit. In 1994 approximately 56,000 sea anglers visited Ireland generating associated revenue of £24.3m. This compares with 45,000 anglers in 1992 with associated revenue of £17m[5]. Coarse and game angling attracted 140,000 overseas visitors in 1994, generating revenue of £47m.

8.24 In terms of impact, angling has more positive than negative effects. The associated revenue is a valuable source of income, particularly in the more peripheral coastal areas. The angling industry is very conservation oriented, with most of the catch returned alive, especially during competitions. In physical terms the sea angling industry is undeveloped, with very few facilities to assist angling access i.e. stands, footbridges etc.

8.25 There are also interactions with the Irish seafood industry. Tourists provide an additional market for seafood, while the fisheries industry supplies raw material to shops and restaurants. Many fishing harbours have established international reputations as seafood centres, for example Kinsale, County Cork and Dunmore East, County Waterford.

8.26 Concern was expressed during the consultations that over-fishing at sea could deplete angling stocks, including specimen fish which are of no interest to commercial fishermen. In Scotland, inshore fisheries legislation provides for the establishment of 'static gear reserves' areas where there are seasonal or permanent restrictions on the use of mobile gears to minimise conflicts between the two sectors of the industry. Many angling groups believe that some form of zoning is required to prevent trawlers from fishing too close to the shore. There is a need to balance the needs of all the various fishing interests including inland angling, estuarine netting, inshore angling, inshore trawling and offshore trawling.

Balancing Conservation and Socio-economic Dependency

8.27 The fish resource, although renewable, is limited. Fisheries need to be managed and fish stocks conserved, which is the basis of both national and international policy. Fishing is controlled and restricted by a number of measures including quotas, restrictions on access, prohibition of certain types of fishing gear, and incentives to reduce fleet capacity. However the fishing industry is an important sector of the Irish economy, particularly at local level where, due to a lack of alternative employment, many peripheral communities are dependent on fishing, both directly and indirectly.

8.28 One option that is currently being discussed by the International Council for the Exploration of the Sea (ICES), the European Commission and parties to the North Sea Ministerial Meetings is the possibility of marine refuges as an extension to fisheries boxes. The Netherlands have identified two areas within their sector of the North Sea where they would like to see a ban on extraction of living and non-living resources in order to gauge the impact of fisheries. In other parts of the world refuges have been used to enhance fisheries (by protecting spawning concentrations and enhancing migration), support tourism (by attracting visitors to successful marine parks) and facilitate nature conservation (by protecting marine wildlife and habitats in the sanctuaries).

8.29 Whilst many fishing communities are understandably greatly concerned at conservation controls, it would be economically disastrous in the medium to long term, and sometimes in the short-term, not to apply appropriate controls. Greater encouragement of under exploited fishing opportunities, including non-quota species, under-utilised quotas and under-utilised fisheries, is necessary, and the Department of the Marine and Natural Resources and the Marine Institute are both seeking to encourage the exploitation of such stocks at sustainable levels.

8.30 The potential of inshore fisheries for a number of species, including crustacea, shellfish and seaweeds, both at a commercial and cottage industry level, need to be examined in order to assess their contribution to sustainable fisheries in the future and their environmental impact.

8.31 The impact of fisheries on conservation areas, such as important bird sites, in particular sea cliffs, requires consideration in the future planning of the industry.

8.32 The fisheries resource is complex, and the resources required to adequately research and manage it are extensive. Current resources available for research and management are inadequate, but huge increases in man-power, equipment and finance are unlikely, emphasising the need for prioritisation in the context of overall Integrated Coastal Zone Management. The Marine Institute has identified the following areas for priority research:

- a major programme of exploratory fishing to chart fishing grounds;
- a comprehensive national survey programme on fish stock levels to be drawn up with particular attention paid to non-quota species;
- investigations of a number of key fish stocks with a view to expanding landings;
- investigations of fisheries for new species such as Squid, Red Fish, Albacore Tuna, Blue Fin Tuna and Grenadiers should be investigated;
- investigations into the most suitable fishing technology to enable both sustainable fishing and to maximise the returns to the fleet;
- investigations into the efficiency of the fleet in terms of fuel economy and fishing gear;
- establishment of an economic research and analysis unit to guide and support the industry's development; and
- research into countering the effects of the explosion of the seal population along the west coast of Ireland.

Administration and Organisation

8.33 The main bodies responsible for the administration of the fisheries industry are:

- the European Commission;
- the Department of the Marine and Natural Resources;
- the Central and Regional Fisheries Boards; and

- Bord Iascaigh Mhara.

8.34 In addition, the Marine Institute has an important role in research and development relating to fisheries, and incorporates the Fisheries Research Centre (see Chapter 4). There are also numerous fishermen's associations, organisations and co-operatives representing the views of the industry.

8.35 **The European Commission:** Irish fisheries policy is controlled to a large extent by the Common Fisheries Policy (CFP). The CFP divides Irish waters into three distinct fishing zones, in which various restrictions apply:

- 0-6 miles - Republic of Ireland and Northern Ireland boats only;
- 6-12 miles - boats from the UK, France, the Netherlands, Germany and Belgium are allowed to fish for specified species, in specified areas;
- 12-200 miles - all EU member states and some non-members, for example, Norway.

8.36 Fishing rights and entitlements are based primarily on traditional and historical fishing patterns. In each zone there are also quotas on various species of fish, size and class of boat, time allowed in water etc.

8.37 The basis of the CFP is the system of total allowable catches (TACs) and quotas. The basic share allocations between countries were set in 1983 and were based on fishing patterns and landings over the preceding years. Ireland's share varies from 96% for some stocks to as low as 3% for others.

8.38 The TACs are established each year by the Council of Ministers, by means of a regulation, for most stocks of commercial interest found in EU waters. The TACs are based on the recommendations of the Commission, the Scientific and Technical Committee for Fisheries and ICES. Once the TACs have been established, they are divided into national quotas in accordance with a pre-determined 'key' defined in the Common Fisheries Policy and the Hague Agreement. The quotas take account of the needs of certain regions dependent on fishing (which includes Ireland); and the losses of catch due to non-Member States having extended their fishing limits to 200 miles. Typically the quotas are based on the 1982 quotas, with some minor modifications.

8.39 ICES carries out annual scientific assessments of the state of over 70 fish stocks in the North-East Atlantic, North Sea and Baltic Sea, and calculates the catches which these stocks can yield in the coming year under various fishing scenarios. The Fisheries Research Centre spends over 50% of its annual budget investigating the major fish stocks in order to provide input to the international assessments. The work includes a heavy programme of seagoing investigations to survey the abundance of young and adult fish, intensive monitoring of the landings and of discards-at-sea.

8.40 Where fish stocks migrate between EU waters and non-EU nations, the TACs are established by agreement with the other nation. The TACs have often been increased above the figures recommended by the scientists, primarily for unquantified socio-economic and political reasons, to avoid excessive reductions in catches.

8.41 **The Department of the Marine and Natural Resources:** Within the Department of the Marine and Natural Resources there are two principal divisions responsible for the industry - Inland Fisheries and Sea Fisheries, both of which have policy making, regulation and development roles.

The former is responsible for policy formulation in relation to all fresh water fish and all salmonid fish out to the 12 mile limit.

8.42 The responsibilities of the Sea Fisheries Division includes policy making in relation to all commercial fishing activity, for example licensing/registration of the fishing fleet, monitoring of landings, control of fish quality and hygiene standards, development of the processing industry and enforcement of the Common Fisheries Policy. Their policy making functions are curtailed to a large extent by the CFP. It is not possible to take a national initiative which will interfere with EU rights in Irish waters i.e. national initiatives can only affect the Irish fleet.

8.43 However, in the enforcement of the CFP, Sea Fisheries decides, in consultation with industry organisations, how the established quotas are allocated amongst the Irish fleet. Each Member State can decide, for example, to divide its quotas so that they are taken at different times of the year or are allocated among different sections of the fleet.

8.44 **Central and Regional Fisheries Boards:** The Central and Regional Fisheries Boards are essentially the implementation authorities for inland fisheries policy made at a national level. The Central Fisheries Board is the primary inland fisheries development agency. It is a statutory state body established under the Fisheries Act, 1980. It is responsible for the co-ordination and control of the activities of the Regional Fisheries Boards in the protection, conservation, management and development of Ireland's inland fisheries and sea angling resources. The Board provides scientific, financial, personnel, promotional and planning support services to the Regional Boards.

8.45 The seven Regional Fisheries Boards were established under the Fisheries Act, 1980. Each are responsible for the development and protection of inland fisheries in their respective regions, and for the development of angling.

8.46 **Bord Iascaigh Mhara:** BIM is a state agency responsible for the development of the seafish industry. It provides financial, technical, training, resource development and marketing support services to the industry. BIM is sub-divided into four divisions, each responsible for the implementation of its primary development functions.

8.47 The functions of the Fleet Development division include the modernisation and decommissioning of selective vessels to ensure that the fleet develops in a manner consistent with the most economic and balanced exploitation of resources. Assistance is provided for the acquisition of new vessels, equipment and vessel improvement. The aim is to improve fleet efficiency, provide new fishing opportunities and to provide for sustainable development.

8.48 The Aquaculture and Planning division is responsible for the development of aquaculture through the provision of financial, technical, scientific and marketing assistance. Planning and economic research is conducted on markets for farmed and wild fish.

8.49 The aim of the Market Development division is to develop both the home and export market, with a particular emphasis on fish processing. This marketing function is to be transferred to An Bord Bia.

8.50 The Marine Services division provides education and training services to the fish industry at the National Fishery Training Centre, Greencastle, Co. Donegal and on the Coastal Training Unit. The division also supplies and maintains ice facilities at strategic locations around the coast.

8.51 BIM are also involved in the modernisation and development of fish processing premises and in encouraging expansion in production capacity.

Principal Legislation

8.52 **International Legislation:** As discussed above the Irish sea fisheries industry is controlled to a large extent by the Common Fisheries Policy, which is basically a package of fisheries management measures, in the form of EU Regulations. The most important of these are:

- Regulation 3760/92 establishes a framework for the regulation of access, management and monitoring of fishing activities, as well as the requisite means and procedures. For example provisions allow the Council to determine the total allowable catch and/or total allowable fishing effort for each fishery in EU waters. The rights of certain Member States to areas within the 6-12 mile fishing zone, and the species allowed to be caught are also listed. The Regulation replaces Regulation 170/83.

- Regulation 172/83 establishes total allowable catches and quotas. This Regulation provides the 1983 base from which subsequent TACs and quotas are established.

- Regulation 3094/86 establishes technical conservation measures. Measures include gear restrictions, minimum fish sizes, closed seasons and closed areas. The objective is to protect immature fish, spawning and nursery grounds. The Regulation replaces Regulation 171/83, but has been amended on numerous occasions due to its complexity.

- Regulation 2847/93 imposes certain duties on Member States to implement a system of control covering all aspects of the CFP. These controls include monitoring for conservation and resource management measures, structural measures and measures concerning the common organisation of the market.

- Regulation 4028/86 attempts to encourage a reduction in the size of fishing fleets by the provision of financial aid to Member States. The aid includes grants for scrapping vessels and grants for fishing for under-utilised species or areas previously under fished.

8.53 **National Legislation:** The principal legislation governing fisheries is the Fisheries (Consolidation) Act 1959, known as the Principal Act, which governs both inland and sea fisheries. Measures relevant to the former include fishing licences, regulations on nets, regulations on obstructions to the passage of fish, restrictions on the times of fishing for certain species and provisions relating to oyster fisheries.

8.54 Part XIII of the Principal Act relates to sea fisheries, but this has been substantially amended by the Fisheries (Amendment) Acts of 1962, 1978, 1983 and 1994. Relevant provisions which still apply relate to the making of ministerial orders for undersized fish and the use of beaches for the purposes of sea fishing.

8.55 The principal purpose of the Fisheries (Amendment) Acts is the conservation of fish stocks and the rational exploitation of fisheries. The Act of 1959 includes measures concerning prohibition on landing, selling, or being in possession of undersized fish, and powers to inspect seafish. All of these were amended under the Fisheries (Amendment) Act, 1978. The Act of 1978 includes provisions relating to the exclusive fishery limits of the State, particularly foreign vessels in Irish waters, provisions relating to undersized fish and provisions relating to enforcement, including powers of detention and increased fines. The Fisheries (Amendment) Act, 1994 further amends the Principal Act, in relation to:

a) according equal treatments to the nationals and bodies corporate of community state under Irish legislation governing the ownership, licensing and registration of fishing vessels;

b) increasing penalties for breaches of fishery regulations

c) providing for the confiscation in certain circumstances of vessels convicted of fishery offences.

8C Principal Issues Relating to the Fishing Industry

- The fisheries industry is an important sector of the economy, and has scope for further development.
- The industry, including fish processing, is concentrated at a number of locations around the coast.
- The sea fisheries industry is controlled to a large extent by the Common Fisheries Policy of the EU.
- The Department of Marine and Natural Resources and the Marine Institute are both encouraging opportunities in under exploited initiatives and quotas.
- Balancing conservation of resources and the environment with the socio-economic dependency of fishing communities is one of the most difficult current issues in the coastal zone.
- In terms of numbers, the Irish Fleet is predominantly inshore, and operated by part-time fishermen.
- Congestion is a problem at many fishing ports, as is conflict between fishing and other uses.
- There are perceptions that overfishing at sea is impacting on the capacity of the angling industry.

8.56 The Fisheries Act, 1980 relates primarily to the inland fisheries industry. The main provisions of the Act include:

- the establishment of the Central and Regional Fisheries Boards, including their functions, responsibilities, composition etc.;
- provisions relating to legal proceedings and increase of fines listed in the Principal Act;
- the establishment of procedures designating areas in which it is lawful to engage in aquaculture;
- provisions to allow the Minister to impose a levy on salmon;
- prohibition on the sale of certain type of fish and the use of certain types of fishing gear.

8.57 **Enforcement:** The large areas of sea under the jurisdiction of Ireland make policing and enforcement expensive. The complexity of the legislation and regulations, together with traditional fishing rights and practices further compound the difficulties. There is a significant level of illegal fishing in the form of poaching, illegal netting, etc. These are problems faced by many coastal nations. One option which is currently under consideration by the European Commission is satellite tracking of fishing vessels. Trials are being carried out to highlight problems with the methodology and equipment.

AQUACULTURE

8.58 Aquaculture is a growing sector within the Irish fisheries industry. Production in 1992 was estimated at 31,000 tonnes with a total value of £41m. In the same year there were some 2,612 people directly employed (859 full-time and 1,753 part-time) on 195 finfish and shellfish operations. By 1995 employment in aquaculture had increased to 2,946 (860 full-time and 2,086 part-time). Much of the industry is located in peripheral coastal regions, along the south-west, west, and north-west coast, where little alternative employment exists. Aquaculture accounts for an increasing proportion of Irish fish production (40 per cent in 1995) and is of growing importance to the processing industry.

8.59 Although the home market has expanded in recent years, a high proportion of the aquaculture product is exported. From 1989 to 1992, an average of 55-60 per cent of output was exported, while in 1995 exports accounted for almost 80% of output (90-95% shellfish, 65% finfish). Traditionally France has been the dominant market for Irish aquaculture. In recent years increasing exports have been sold to Germany, Spain, the UK and the Benelux countries.

8.60 National development aims for the industry include:

- to continue sustainable expansion of output, increase productivity, competitiveness and employment, and to meet the demand for raw materials from the processing sector;
- to stimulate investment in new aquaculture products and, in particular, to develop production methods for new species, particularly shellfish species;
- to encourage modernisation and expansion of existing projects and, in particular, to bring about more efficient production of priority species;
- to achieve self sufficiency in seed supplies and equilibrium in smolt supplies;
- to minimise disease incidence;
- to encourage the adoption of more cost effective and environmentally friendly production techniques.[6]

8.61 The target for total output is £103m by 1999. Most of the projected output is expected in the shellfish sector, almost 44,000 of the targeted 69,000 tonnes.

Finfish

8.62 It is estimated that Irish finfish production has increased from 6,300 tonnes in 1990 to almost 13,300 tonnes in 1995[7]. The industry has developed a niche in European markets and has a reputation for high quality product. Norway, with estimated production levels of 300,000 tonnes per annum and Scotland (50-60,000 tonnes per annum) are the main competitors.

8.63 Salmon farming is the most common form of production, accounting for 89 per cent of finfish production in 1995. Salmon are grown in fresh water hatcheries and are then transferred to sea cages after about 2 years. Sea trout (3.5%), freshwater trout (7.5%) and turbot (0.1%) are the other forms of finfish farming. Finfish production is mainly concentrated on the south-west, west and north-west coast. Concentrations of operations are evident in Cork, Kerry, Galway, Mayo and Donegal. Freshwater trout farming is mainly concentrated in the south-east, County Wicklow in particular, with some operations in Cork and Donegal. Irish freshwater trout production in 1995 totalled about 1,000 tonnes, with an estimated value of £2m.

8.64 The value of the finfish industry in 1995 is estimated at over £42m. Salmon production accounts for £36.8m, representing 87 per cent of the total value. There were 899 people employed in the finfish sector in 1995 (499 full-time and 400 part-time or casual)[8]. Employment levels have remained relatively static over the last four years. In addition to direct employment, there is significant indirect employment in servicing the industry.

8.65 The Irish finfish industry may have reached market capacity, even though European salmon consumption has increased. Finfish production peaked in 1993 with production levels of almost 14,000 tonnes. Prices have declined from a high of between £5-6,000 per tonne in the late 1980s, to current prices of £3-3,500 per tonne[9]. This decline has been offset by increased efficiency, and therefore lower costs in production.

Shellfish

8.66 The principal farmed shellfish in Ireland are mussels and oysters. Clams, scallops and abalone have become increasingly important in recent years. There are two methods of shellfish production - extensive and intensive. The former includes bottom cultivation of mussels, oysters and scallops. Intensive methods include mussel growing on suspended ropes and oyster growing using bags and trestles.

8D Estimated Irish Shellfish Production, 1995

	Tonnes
Mussels	
Suspended rope	5,501
Bottom cultivation	5,501
Oysters	
Native flat species	397
Pacific cupped	2,539
Clams	103
Scallops 28	
Total	14,069

Source: *Bord Iascaigh Mhara*

8.67 Bord Iascaigh Mhara estimates that almost 14,100 tonnes were produced from Irish shellfish operations in 1995. As shown in Table 8D, mussel cultivation at over 11,000 tonnes accounted for the bulk of production (78.2%), followed by oysters (20.9%), clams (0.7%) and scallops.

8.68 Shellfish operations are located off the coasts of Counties Clare, Cork, Donegal, Galway, Kerry, Louth, Mayo, Sligo, Waterford and Wexford. Major concentrations are evident in Carlingford Lough, Clew Bay, Cork Harbour, Dungarvan Harbour, North Clare/Inner Galway Bay, South Wexford, and parts of Donegal. Employment levels are outlined in Table 8E. Total levels have increased since 1992, when the Operational Programme for Fisheries 1994-1999 estimated total shellfish employment at 1,574 (244 full-time, 1,330 part-time).

8E Employment in Shellfish Operations, 1995

	Employment
Intensive	
Full-time	302
Part-time / Casual	1023
Extensive	
Full-time	59
Part-time / Casual	663
Total	2,047

Source: *Bord Iascaigh Mhara data*

8.69 Shellfish production is geographically dispersed around the Irish coast, with a large number of small, independent operations. Nevertheless due to such factors as expanding markets, current low levels of production, increased knowledge and technology, there is much potential for expansion in the shellfish industry.

Aquaculture and Fisheries

8.70 The aquaculture industry has important interactions with the fisheries sector, in particular fish processing, and also with fisheries related infrastructure. Although the means of production in the aquaculture and fisheries sector are very different, the processing and marketing of the end product are the same. The same facilities are used and both sectors are promoted jointly by the same agency - Bord Iascaigh Mhara. Aquaculture accounts for an increasing proportion of Irish fish production, from 25 per cent in 1992, to 40% in 1995. It is also of increasing importance to the processing industry, as it has proved to be a reliable source of raw material, supplementing that available from the fisheries sector.

8.71 The harmonious and integrated development of both fishing and aquaculture can be mutually beneficial. They can both help sustain the processing sector, with its associated employment. Aquaculture can be further developed as a source of juvenile specimens for re-seeding natural shellfish beds, and existing fisheries infrastructure, including co-operatives, can provide a base for the further development of aquaculture.

The Impact of Aquaculture

8.72 Aquaculture has both positive and negative interactions with the tourism industry. Positive interactions include the need to maintain good water quality and a clean, biologically attractive environment. The presence of aquaculture operations can promote high quality treatment of existing or potential discharges to coastal waters. Tourists provide an additional market for seafood, while aquaculture operations provide a reliable supply of locally produced, quality, raw material to shops and restaurants.

8.73 Aquaculture is widely perceived as having negative interactions on a broad front, extending beyond tourism. These include visual intrusion in scenic coastal areas, the use of water space in direct competition with other users, including fishing and water sports, competition over limited on-shore development land, the use of chemicals such as biocides, and potential conflict with other forms of wildlife, such as birds and dolphins, and potential impact on the benthos. The significance of many of these conflicts are more perceived than real, but important issues remain to be addressed.

8.74 The development of aquaculture illustrates many of the difficulties of the coastal zone, with issues of co-ordination, integration, consultation, public participation, and the balance between development and conservation to the fore.

8.75 The collapse of wild sea trout stocks in the west of Ireland has been attributed to the growth of finfish farms and the subsequent increase in the local population of sea lice. However other reasons may have contributed to the problem including global warming, pollution, increased acidification from forestry, natural cycles resulting in increased numbers of sea-lice, etc.

8.76 Many of the pollution and disease problems associated with aquaculture are due, at least in part, to previously flawed methods of choosing sites for operations. Most of the sites were chosen due to ease of access, i.e. in close proximity to the operators base. There was little or no consideration of oceanographic features. Many of the sites were ill-suited, and inadequately flushed out by the sea. The result was a build up of waste from the operations, pollution and disease. A requirement for Environmental Impact Statements in advance of licensing of finfish proposals has been in place for some time, and consequently some newer aquaculture developments avoid many of these problems.

8.77 **Future Development:** It has been widely acknowledged that aquaculture, the shellfish sector in particular, has much potential for expansion. Projected output is estimated at 69,000 tonnes by 1999, compared to current levels of 27,441 tonnes (1995). Almost 64 percent of the increased output is expected to occur in the shellfish sector.

8.78 The projected growth represents a major increase in the number of aquaculture operations, and/or expansion of existing operations. The number of locations where aquaculture occurs is likely to increase. Thus the potential for conflict with other users of the coast is also likely to increase. This highlights the future need for some form of strategic planning as to where operations should locate and the size of operations at particular locations.

8.79 Planning for aquaculture must take account of potential impacts on the natural environment, including the potential for the introduction of exotic pest species, such as *Bonamia* which has been introduced, and the effect on native populations, the potential for conflict with SPAs, etc.

Administration and Organisation

8.80 The administration and development of the Irish aquaculture industry is the responsibility of the Department of the Marine and Natural Resources, along with Bord Iascaigh Mhara and Udarás na Gaeltachta. The local authorities also have a significant role in relation to the control of land-based aquaculture operations, including service buildings, etc.

8.81 The Department of the Marine and Natural Resources is the regulatory authority for marine based operations. Land-based operations are regulated by both the Department of the Marine and Natural Resources and the relevant local authority. The Aquaculture Division within the Department of the Marine and Natural Resources is responsible for the vetting and licensing of all operations. Environmental Impact Assessment is required for salmon farming proposals with a projected output in excess of 100 tonnes per annum.

8.82 All aquaculture operations are assessed by the Department of the Marine and Natural Resources according to the provisions of the Foreshore Act 1933, the Fisheries (Consolidation) Act 1959, the Fisheries Act 1980 and the Fisheries (Amendment) Act

1997, and where relevant by the local authorities, under the provisions of the Local Government (Planning and Development) Acts. Each aquaculture application is assessed by a 'vetting committee' comprised of Department of the Marine and Natural Resources, Central Fisheries Board and the Marine Institute technical and administrative staff. Certain bodies are formally consulted during the course of the assessment procedure, including the Department of the Environment and Local Government, the local authorities, NPWS, Bord Fáilte, etc. Successful applicants are issued with an aquaculture and foreshore licences. Under the provisions of the Fisheries (Amendment) Act 1997, decisions of the Minister for the Marine and Natural Resources in relation to aquaculture licences can be appealed to an Aquaculture Licences Appeals Board.

8.83 The Aquaculture and Planning Division of Bord Iascaigh Mhara are responsible for the development and expansion of the aquaculture industry, and the Central Fisheries Board also has a role to play. Scientific, technical, financial and marketing assistance is provided under the National Aquaculture Grants Scheme. Market research into both home and export markets is also undertaken by the division, with a view to assisting in the marketing of the aquaculture product.

EU Directives and Regulations

8.84 The principal EU Directives affecting aquaculture are:

- Council Directive Laying Down the Health Conditions for the Production and Placing on the Market of Live Bivalve Molluscs (91/492/EEC);
- Council Directive Laying Down the Health Conditions for the Production and Placing on the Market of Fishery Products (91/493/EEC);
- Council Directive Concerning the Animal Health Conditions Governing the Placing on the Market of Aquaculture Animals and Products (91/67/EEC);
- Council Directive Concerning Quality Required of Shellfish Waters (79/923/EEC).

8.85 The first three listed above, as their titles suggest, refer to fish health and the marketing of aquaculture products. The Directive concerning shellfish water quality requires the designation of areas in which shellfish production can take place. These waters must then be continuously monitored. There are 12 such designated waters in Ireland which are separate from the areas designated under the Fisheries Act 1980.

8.86 European Council Regulation 4028/86 also relates to the fisheries and aquaculture sector. This regulation requires that structural measures be implemented within the framework of multi-annual programmes which ensure that community measures are compatible with national and regional objectives.

Principal Legislation

8.87 The principal national legislation governing the aquaculture industry deals mainly with licence requirements and includes the following:

- Foreshore Act, 1933;
- Fisheries (Consolidation) Act, 1959;

- Fisheries Act, 1980;
- Fisheries (Amendment) Act, 1997; and
- Local Government (Planning and Development) Act, 1963.

8.88 Licensing of aquaculture operations varies, depending on whether they are land or marine based.

8.89 **Land-Based Operations:** Land based operations may require the following licences or permits:

1. Planning permission from the relevant local authority, in compliance with the Local Government (Planning and Development) Acts.
2. An effluent discharge licence from the relevant local authority, in compliance with the Local Government (Water Pollution) Act 1977.
3. An aquaculture licence, under the Fisheries (Amendment) Act 1997.
4. A foreshore licence from the Department of the Marine and Natural Resources, under the Foreshore Act 1933. A licence is only necessary where any part of the proposed development crosses or impinges upon the foreshore (the area from the average High Water Mark to the 12 mile limit).
5. An EIS must also be submitted with applications for salmonid farms where yearly output exceeds 100 tonnes.

8.90 **Marine-Based Operations:** For marine-based operations, an aquaculture licence under the provisions of the Fisheries (Amendment) Act 1997 is required. In addition, the placement of seafarm cages or structures on the foreshore require to be licensed under the Foreshore Act 1933.

8.91 An application for an aquaculture licence is made to the Minister for the Marine and Natural Resources, as licensing authority. Generally the Minister is obliged to determine an application within four months of the date on which the applicant has complied with the requirements of the regulations.

8.92 At the time of writing, the regulations have not been published, but are likely to include, *inter alia*, provision for the making of public notices and for public access to the application documents, a requirement for environmental impact statements for certain applications, the making of submissions and observations by the public, and the submission of additional information on the application. Statutory consultations with specified bodies are also likely to be required under the regulations. The legislation also allows for the issue of trial licences to facilitate investigations and experiments.

8.93 Decisions by the Minister for the Marine and Natural Resources on aquaculture licences can be appealed to an Aquaculture Licences Appeal Board, representative of the various interests in aquaculture. The Board has the discretion to hold oral hearings as it sees fit. Generally, appeals should be determined within a four-month period.

8.94 The matters to be considered in assessing applications or appeals are set out in Section 61 of the Fisheries (Amendment) Act 1997. These include, as appropriate to the circumstances of the case:

- the suitability of the place and waters;
- other existing or potential beneficial uses of the place or waters;
- the statutory status, if any, of the place or waters;
- the likely effects on the economy of the area;
- the likely ecological effects;
- the effect or likely effect on the environment generally; and
- the effect or likely effect on the man-made environment of heritage value in the vicinity.

8.95 The licensing system introduced under the Fisheries (Amendment) Act 1997 closely parallels the established physical planning system, and allows for a good level of public involvement. However, there is no provision for overall guidance in the form of an 'aquaculture strategy', analogous to the Development Plans of local authorities, within which each application could be assessed, and which would establish suitable 'carrying capacity' thresholds for particular areas. In Scotland, the Highland Regional Council has instituted 'Framework Plans' identifying areas suitable for development.

8.96 The new system is more straightforward than the former system under the Fisheries Act 1980, which sought to designate areas in which aquaculture could take place with just a single public hearing. However, in practise, the designation of areas in which aquaculture could take place proved very difficult, and public perception interpreted the designation as giving priority to aquaculture over alternative uses. As a result proposed designations were strongly opposed, leading to difficulties in granting licences.

8F Principal Issues Relating to Aquaculture

- Aquaculture is an important industry that provides a good example of the type and range of issues that can be more effectively dealt with through ICZM.
- Aquaculture is accounting for an increasing proportion of Irish fish production and is of growing importance as a raw material for the processing industry.
- Within the aquaculture sector, shellfish has the capacity to expand further, but finfish aquaculture may be close to the market limits.
- The potential for conflict between aquaculture and other users of the coast, including fishing and water sports, is likely to increase.
- Aquaculture competes with other sectors for limited on-shore development land.
- Aquaculture can give rise to perceived and real environmental impacts, including visual intrusion, the effects of chemicals and conflict with other forms of wildlife.
- There are both positive and negative interactions between aquaculture and the tourism industry.

8.97 For most forms of aquaculture, a foreshore licence is required in addition to an aquaculture licence. There are, at present, no time limits on the determination of foreshore licences, and this may prove to be a constraint on the development of the industry, now that the aquaculture licence system has been radically improved.

MINERAL EXTRACTION

8.98 Commercial exploitation of Ireland's mineral reserves of oil, gas, sand and gravel can make a major contribution to the country's economic development. This has been demonstrated by the positive economic benefits of natural gas from the Kinsale Head and Ballycotton Fields. The government is therefore committed to realising the full potential of mineral resources in the coastal zone.

8.99 Mineral extraction is an important wealth and job creating industry but can have significant environmental impacts. The biodiversity of the coastal zone, in particular, can easily be affected by uncontrolled activity.

Sand and Gravel Extraction

8.100 **Removal of Beach Material:** Beaches and dunes have been traditionally regarded as legitimate sources of sand and gravel, both for agricultural and construction purposes, e.g. shell sand for fertiliser, aggregate for concrete. Small amounts have also been removed for other reasons, such as for use in bunkers on golf-courses, or for gritting roads. While such extraction was carried out at small scale, for example dug by hand and transported by horse-carts, the dangers to the coastline and hinterland were small and localised.

8.101 Modern machinery, however, has the capability to greatly increase rates of extraction from beaches, which can result in significant impacts on natural sediment transport processes. In addition, deposits of sand and gravel on the near-shore seabed are attractive sources of construction material, and have been increasingly exploited elsewhere in north-west Europe. Even a modest dredger can remove sand and gravel deposits at a rapid rate, compared to natural transport processes. However, at present the abstraction of beach materials in Ireland is not on a large scale.

8.102 Over-exploitation of beach material can result in the following problems:

- local lowering of beach levels, leading to increased risk of flooding or erosion;
- disruption of alongshore sediment movement, leading to erosion elsewhere; and
- damage to the natural beach/dune sediment exchange, leading to implications for sand dune conservation.

Uncontrolled sand and gravel removal can, therefore, cause serious local damage to fisheries, flora and fauna through the destruction of seabed habitats and loss of marine life itself.

8.103 **'Offshore' Dredging:** The dredging of seabed sediment deposits has become an increasingly important industry in other parts of Europe, particularly as a supply source for the construction industry. Although it is recognised that there are significant reserves of sand and gravel off the coast of Ireland, these have as yet, been largely unexploited. However, submerged banks are a habitat listed under the EU Habitats Directive.

8.104 It is known that a number of British and Dutch dredging companies are interested in commercial extraction of construction materials in Ireland's waters. An application for permission to explore for such material, off the Waterford coast, has already been made. If seriously pursued, such commercial enterprises would expect to pay royalties to the State as owners of the seabed, on the basis of the quantities of material removed. In the UK, this is a significant and growing industry, which contributed over £10 million to the Crown Estate in 1994/95. Whilst the geological situation in

Ireland is rather different to the south-east part of the UK, where marine sand and aggregate fills an important role in reducing land-based extraction, it is still probable that pressure to dredge, and probably to export sand and gravel from Irish waters will grow.

8.105 The possible disadvantages of offshore dredging include:

- impeding navigation;
- adversely affecting fishing or fisheries;
- damaging the benthic marine biotopes of the seabed and adjacent waters;
- lowering natural sea defences through increased wave surges; and
- altering waves at the coast, or adversely affecting sediment supply to it.

8.106 Dredging for sand and gravel for construction purposes is usually carried out in water depths of between 15m and 30m (below lowest tide level). Material is transported to wharves where it is washed and sorted before sale as primary aggregate. On occasions, dredged material is also used directly as 'fill' for land reclamation schemes. Where extraction takes place in water depths of more than 20m, it can be expected, but not assumed that impacts on the shoreline will be small.

8.107 If dredging takes place in shallower water, either for construction material or for other purposes, the dangers of adversely affecting the coastline increase. For example, nearshore dredging around Youghal, between 1850 and 1900, led to beach lowering and shoreline erosion. The quantities removed (estimated at 275,000 cubic metres/year) were substantial, but much greater rates of extraction could be achieved with a single modern dredger.

8.108 Offshore dredging can have important positive interactions with navigation and coastal defence. In recent years most dredging operations in Ireland have been carried out in order to deepen navigation channels to existing ports and harbours. Sand and gravel has also been an important source for beach nourishment operations. For example, the material used for beach nourishment at Rosslare was dredged off the coast. Elsewhere suitable dredge spoil, extracted for navigation reasons, has been used for indirect beach nourishment.

8.109 The majority of the sand and gravel deposits around the coastline of Ireland are an inheritance from past geological eras. The quantity of such material is finite (although large), and prolonged extraction is thus not sustainable. Improved technology has allowed greater extraction rates, highlighting the need for greater control of sand and gravel removal.

8.110 The increasing commercial interest in Ireland's sand and gravel deposits highlights the need for a national strategy to control the location and quantity of extraction. Applications for operations located on the foreshore are assessed by the Department of the Marine and Natural Resources who are capable of a national perspective. Local authorities, however, may not fully appreciate the wider impacts of such developments.

8.111 The deposits are also marine biotopes, and their conservation value must be considered, perhaps by referring licence applications to the NPWS. In addition, the sediment released by gravel/sand extraction can have a detrimental effect on the benthos for some distances from the point of extraction.

Petroleum

8.112 Current policy in relation to oil and gas exploration is to encourage the private sector to invest in the search for, and production of, oil and gas in Irish waters, through the use of favourable taxation legislation. The ultimate objective is to achieve optimum recovery of the resource whilst conducting exploration activities in an efficient, safe and environmentally acceptable manner.

8.113 There are currently 24 Exploration Licences, which grants the licensee the exclusive right to search for petroleum within a specified area. There are various categories of licence - Standard, Deepwater and Frontier - which are determined according to depth of water and the existing physical conditions. The duration of each category varies, from six years for a Standard Licence, twelve years for a Deepwater Licence and a minimum of fifteen years for a Frontier Licence. At present there are 10 Standard Licences, 1 Deepwater Licence and 13 Frontier Licences existing off the Irish coast.

8.114 There are seven Petroleum Leases existing in Irish waters. When a commercial discovery has been established the operator must apply for a Lease in order to exploit the discovery. The period of the Lease is decided by the Minister for Public Enterprise.

8.115 There are also eight Licensing Options existing in Irish waters. A Licensing Option grants the holder the first right to an Exploration Licence in a specified area.

8.116 As described above, there are a number of exploration and development activities occurring in Irish waters. These operations, however, are mainly located in offshore waters, varying from 10 km to over 200 km from the coastline. Whilst it is acknowledged that oil and gas operations offshore can have serious local environmental effects, the impact on the core coastal zone is therefore limited.

Administration and Organisation

8.117 **Sand and Gravel Extraction:** Extraction operations occurring above Mean High Water Mark are controlled by the local authorities. Applications are determined according to the provisions of the development plan and the interests of 'proper planning and development'.

8.118 Sand and gravel extraction operations that take place below Mean High Water Mark (i.e. on the foreshore, out to the 12 mile limit) are the responsibility of the Department of the Marine and Natural Resources. The foreshore is 'state-owned', and its management and control is vested in the Department of the Marine and Natural Resources. Applications for offshore dredging are therefore determined by what is in the best 'public interest', and the Foreshore Acts also enable the public to seek prohibition orders in relation to 'disturbance of the seashore'. Sand and gravel areas are habitats for biological communities, and NPWS consequently contribute to the assessment of proposals.

8.119 **Petroleum:** The Department of Public Enterprise is responsible for the issue of various licences and leases necessary to undertake petroleum exploration and development operations. The terms and conditions of these permits ensure that the Department has an interactive role with the licensee for the duration of the permit. For example, the holder of a Standard Exploration Licence must submit a work programme for the first three years of the Licence and a further programme for the remaining three years. The Minister for the Marine and Natural Resources has specific responsibility for Offshore Industry, under the terms of the Energy (Miscellaneous Provisions) Act 1995.

Principal Legislation

8.120 **Sand and Gravel Extraction:** The legislation governing sand and gravel removal is determined by the location of the operations. Operations that take place below Mean High Water Mark are governed by the Foreshore Act 1933 and Amendment Act 1990. Operations above Mean High Water Mark come under the provisions of the Planning Code and related legislation. Applications for extractions from beaches are consistently refused by the Department of the Marine and Natural Resources, as would offshore extraction likely to cause or contribute to erosion.

8.121 **Petroleum:** There is a wide range of legislation relevant to oil and gas exploration and development. The principal act is the Petroleum and other Minerals Development Act, 1960. The various licensing and leasing arrangements are set out in this Act. These provide an operational framework for petroleum exploration and production in Irish waters.

8.122 Operations which occur within 12 nautical miles of the coastline require a foreshore lease in order to accord with the provisions of the Foreshore Act, 1933, and Foreshore (Amendment) Act, 1990. Alternatively pipes and cables which use the seabed in this area will also require a lease (even though they may be servicing an operation located outside the 12 mile limit).

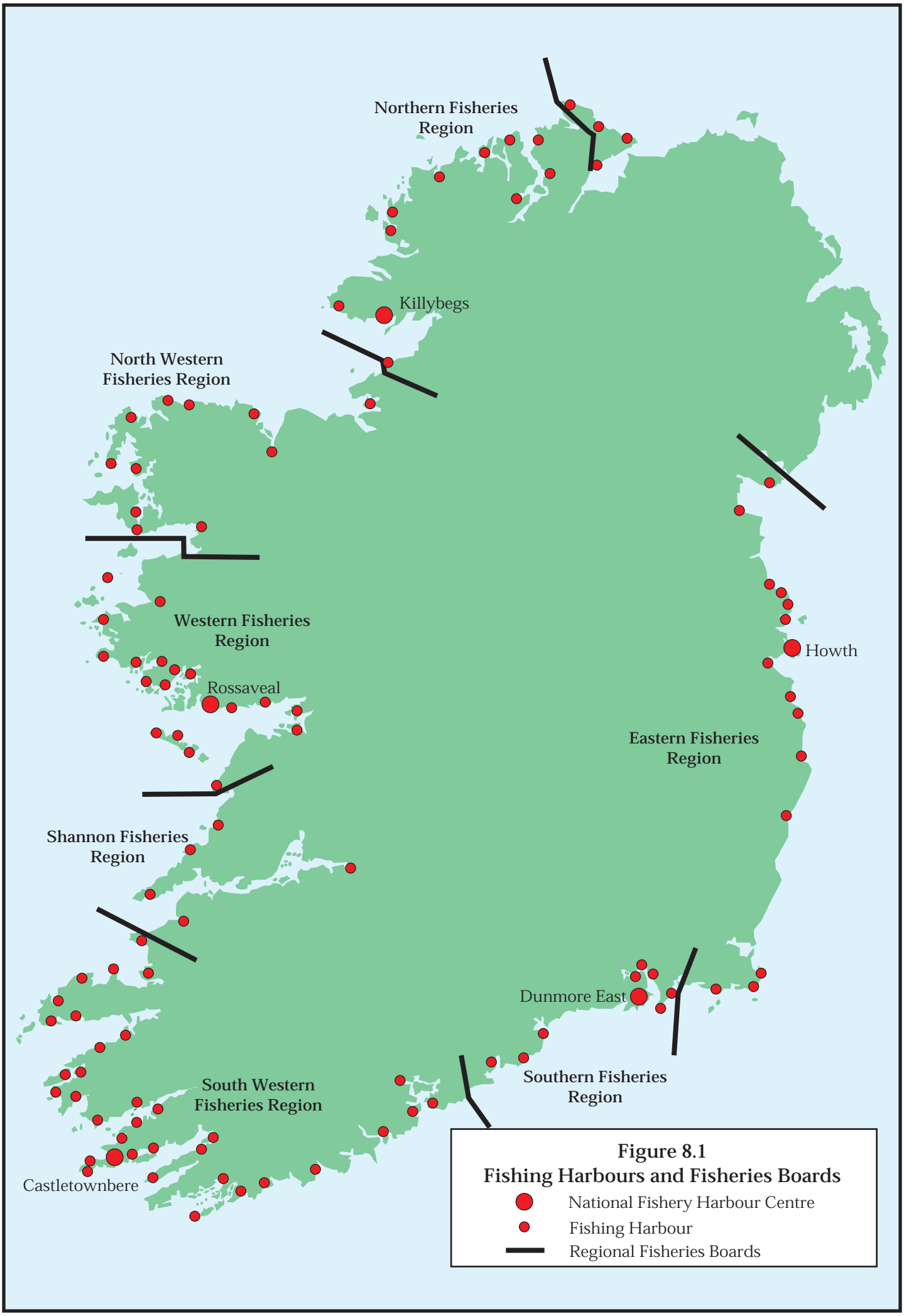
8G Principal Issues Relating to Mineral Extraction

- Mineral extraction in the coastal zone, especially of petroleum, can have significant benefits for the national economy, but the resource is finite.
- Mineral extraction can have significant environmental impacts, and is particularly of concern in relation to sand and gravel extraction.
- It is probable however that demands for the export of sand and gravel from Irish waters will grow.

8.123 There is also a range of legislation to ensure the safe and environmentally friendly operation of exploration and production activities, including:

- Dumping at Sea Act, 1996;
- Safety, Health and Welfare (Offshore Installations) Act, 1987;
- Safety, Health and Welfare at Work Act, 1989;
- Sea Pollution Act, 1991; and
- European Communities (Environmental Impact Assessment) Regulations, 1989.

[1] Labour Force Survey, 1991
[2] Includes employment in boatbuilding and repair, equipment supply, transport, distribution and retailing.
[3] Bord Iascaigh Mhara estimates
[4] Bord Iascaigh Mhara estimates, 1993
[5] Central Fisheries Board estimates.
[6] Operational Programme for Fisheries 1994-1999
[7] Bord Iascaigh Mhara estimates
[8] Bord Iascaigh Mhara estimates
[9] Department of the Marine and Natural Resources estimates


Northern Fisheries Region
Killybegs
North Western Fisheries Region
Western Fisheries Region
Rossaveal
Howth
Eastern Fisheries Region
Shannon Fisheries Region
Dunmore East
Southern Fisheries Region
South Western Fisheries Region
Castletownbere
Figure 8.1
Fishing Harbours and Fisheries Boards
National Fishery Harbour Centre
Fishing Harbour
Regional Fisheries Boards

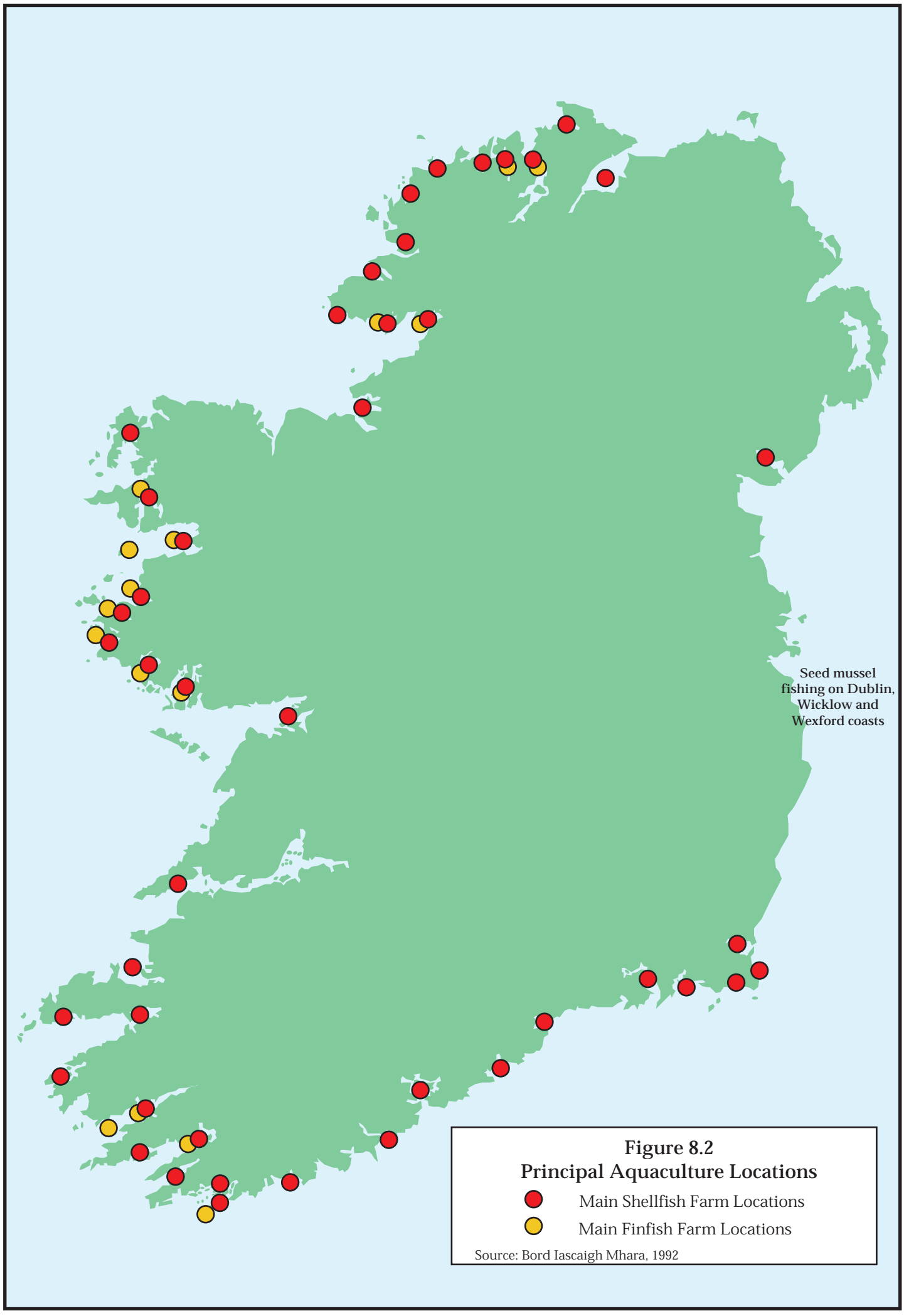


Figure 8.2
Principal Aquaculture Locations

Main Shellfish Farm Locations

Main Finfish Farm Locations

Source: Bord Iascaigh Mhara, 1992

9. COASTAL PROTECTION

The coastal area is very dynamic and erosion is a natural and widespread process around the coastline of Ireland.

For most of the coast, the present policy of accepting natural shoreline changes, and accommodating the problems they cause, is likely to be the most appropriate response. Some areas, however, will require continued or improved protection to avoid substantial financial and social losses. Setting priorities for protection schemes, and deciding on the most appropriate methods, bearing in mind cost, public access and safety, environmental impacts, etc. are matters appropriate to ICZM plans.

At present, the resources devoted to coastal protection are minimal, and additional resources will be required in the future.

Present erosion problems may worsen as a consequence of climatic change, which may increase sea levels, and possibly storminess, leading to larger wave heights. Flooding of low-lying coastal areas is also likely to become more frequent.

9.1 Coastal protection policies and works are just one element of Integrated Coastal Zone Management. Policies of protection or acceptance of natural shoreline changes with accommodation of the problems they cause, and the priorities to be accorded to protection works, are all matters appropriate to ICZM plans, and the balance between these may vary from one part of the coast to another. In some countries, policy has generally been to plan for the development of areas, and to then consider the works required to protect them. This has resulted in huge expenditure on coastal protection schemes that could have been avoided by adopting a better planning policy. The likelihood of erosion and recession of the shoreline, and the great expense of coastal protection must, therefore, be integrated fully into all other aspects of ICZM policy making.

Existing Threats to the Coastline

9.2 The coastal area is very dynamic and a shoreline may advance or retreat in an unpredictable manner. Overall, however, long-term erosion, and hence recession, is a natural and widespread process around the coastline of Ireland.

9.3 As a general rule, coastlines exposed to significant wave action will erode. Whilst expensive coastal protection schemes will slow, and temporarily arrest, this erosion process, the risk of land loss remains. In most cases the rate of such erosion is modest, the areas affected can be rapidly identified, and a more accurate estimate of erosion rates obtained. In Ireland, such problems tend to occur on the east coast, and even here rates of erosion are generally less that 0.5 metres per year (i.e. landward recession of the high water mark or of the cliff top).

9.4 Research work estimates that coastal erosion causes a loss of land area of between 160 and 300 hectares a year around the coast of Ireland[1]. About 300 localities are involved, mainly on the east coast. At roughly 2 metres per year, the recession of the cliff top in the Carnsore Point area, Co. Wexford is probably the most rapid long-term erosion rate, although faster recession may occur cyclically, for example along

Magilligan Strand, Co. Derry. More typically, erosion rates on the east coast are less than 0.5 metres per year, and even lower along the west coast.

9.5 In general, erosion of a coastline takes place gradually, as a result of the everyday action of waves and tides. This continuous attrition will sometimes lead to sudden, more spectacular changes, for example the triggering of a cliff slip or the failure of a concrete sea wall.

9.6 Problems related to flooding of the coastal hinterland also exist, both in developed and rural areas. Mean sea level has risen globally by about 1 mm per year over the last century or so. At the coastline, however, there is an added effect due to vertical (isostatic) movements of the land mass. These land mass movements may be due to a number of factors, for example:

1. gradual compression and settlement of soft sedimentary rocks which were not overlain by glaciers during the last glaciation (south of a line roughly between Dublin and Galway);

2. upward 'rebound' of rocks that were overlain by ice sheets in the last ice age. This occurs in the northern part of Ireland, and sea levels are apparently falling relative to the land at Malin Head (although as with all such records, the effects may be very localised);

3. tectonic movements which may produce either upward or downward movements.

To establish the effects of these combined sea level and land level changes requires long-term tidal level recording, and such records are sparse in Ireland[2].

9.7 Significant areas of previously inter-tidal land have been reclaimed for agricultural and commercial/industrial usage over the last 200 years or so. Since the time at which these areas were enclosed, mean sea level has risen, and a substantial amount of reclaimed land is now below the level of the highest tides. Traditionally, such reclamation took place on areas which were still occasionally flooded, but which had already developed a good vegetation cover and were being grazed. Since their reclamation, such areas typically tend to 'settle' downwards, as the water content of the soil decreases. Placing a figure on the proportion of such land at risk from flooding, without extensive research, is impossible, but probably almost all land reclaimed in the last few hundred years would be at risk. Lack of maintenance of some defences has also contributed to the risk of flooding.

9.8 As sea levels continue to rise, and the rate accelerates as a consequence of global warming, the threat to low-lying areas will increase. The latest predictions by the Intergovernmental Panel on Climate Change (IPCC; established by the World Meteorological Service and the United Nations in 1990), are for a world-wide average rise in mean sea level of 50 cm. by the year 2100.

9.9 In addition to the increase in mean sea level, there is also a danger of greater 'storminess' leading to higher maximum tidal levels, and also to larger wave heights. Measurements of wave and tidal levels, over the last decade in particular, have shown a significant increase in the North Atlantic and over the north-west European continental shelf. All these factors will contribute to the gradual erosion of the coastline, but more significantly to the risk of flooding. The major areas at threat from marine inundation are generally adjacent to estuaries, and the coastlines of Lough Foyle, Lough Swilly, Tralee Bay and the Shannon Estuary in particular have been identified as being at risk in the future.[3]

9.10 In predominantly agricultural areas, the occasional inundation of low-lying (and perhaps reclaimed) areas is generally so damaging, economically, as to justify the expense of improving flood defences. The management and maintenance of flood defences in these areas has therefore largely been left to individual land-owners. The Department of Agriculture and Food recognise land as a key resource, but currently have no policy concerning the loss of agricultural land to coastal erosion, or to tourism or urban development.[4]

9.11 The economic and social consideration of flooding becomes more serious, of course, when greater assets are at risk. The threat to the railway line between Greystones and Wicklow, for example, is well known, and installations such as power stations must be accorded a degree of priority.

9.12 Even in areas where existing flood defences are adequate to prevent direct inundation from the sea, a combination of heavy rainfall and high tidal levels can lead to repeated flooding problems. This type of problem affects Dublin and Cork, and the continued development of these cities, coupled with ever increasing high tide levels, will make the management of temporary storage and drainage of flood waters ever more difficult. Areas where marine flooding is a risk will also tend to be areas where ground water will suffer increased saline intrusion.

9.13 The National Coastal Erosion Committee of the County and City Engineers Association carried out a 'needs study' of the Irish coast in 1992.[5] The study identified the Irish coastline as having a total length of about 5,600-5,800 km, of which 3,000 km are classified as 'soft', including sandy beaches, glacial cliffs and about 600 km of dune coast. A total of 1,500 km is considered at risk from coastal erosion, with 490 km requiring immediate attention. The cost is estimated at £125 million to protect some 287 sites at risk.

Potential Solutions

9.14 There are three options in relation to coastal erosion:

1. protect with 'hard' works;
2. mitigate specific impacts through 'soft' works; or
3. accept natural shoreline changes and accommodate the problems they cause.

9.15 The first, known as 'hard' solutions, have traditionally been used in Ireland. It is estimated that artificial constructions protect 3.8 per cent of the coastline. These are mainly flood protection works which date from the last century. Many are famine relief works, carried out as a means of offering much needed employment.

9.16 'Hard' solutions include:

- sea walls;
- sea dikes or mounds;
- rock revetments to existing cliffs or dunes;
- gabion structures (wire cages filled with stone or rock);
- sheet piling; and
- groynes perpendicular to the coast.

9.17 These 'hard' solutions often give rise to significant impacts on the coastline adjacent to the frontage being protected, and sometimes further afield. For example, a cliff or dune protection scheme can deprive the coast of fresh supplies of beach sediment, while groynes will interrupt the natural pattern of transport of such sediment along the coast, 'starving' other parts of the shoreline, and leading to erosion. Such effects can lead to a requirement for further coastal protection works.

9.18 'Soft' solutions usually involve the manipulation of natural processes. The coastline is allowed to adjust to the changing environment with protection or reduction of the physical impact at selected locations.

9.19 Typical 'soft' solutions include:

- dune nourishment;
- beach renewal or nourishment;
- stabilisation and improvement of existing dune systems through the use of vegetation and/or temporary fences to encourage accretion; and
- removal of impacts such as human pressure and grazing.

9.20 The third option, acceptance of natural shoreline changes with accommodation of the problems they cause, is an appropriate choice where the economic, social and environmental benefits of undertaking protection works are less than the costs. This approach involves allowing coastal erosion to occur while preventing development within a certain distance of the coast.

9.21 Acceptance of natural shoreline changes with accommodation of the problems they cause is a suitable option for many parts of the Irish coast. However, since many infrastructural facilities and urban development works are located on the coast, this cannot be a universal option.

9.22 Modern thinking about coast protection schemes has increasingly turned towards 'soft' engineering. Traditional rigid, impermeable and 'brittle' structures, for example mass concrete or masonry walls, are now less favoured than techniques which encourage the dissipation of wave and tidal energy. The beach nourishment at Rosslare Strand is the first large-scale example of this approach in Ireland.

9.23 Soft solutions can sometimes be of lower capital cost than traditional defences, have fewer adverse effects on adjacent parts of the coast, and are usually more environmentally-friendly. The need to maintain such defences on a more regular basis is often quoted as a disadvantage, but this does allow periodic reviews of the desirability and need for continued protection. The monitoring of soft solutions should include both the effects at the site and away from the site.

9.24 The present resources for protecting the coastline against flooding or erosion are inadequate, both financially and in terms of human resources. There are well-recognised dangers in being over-ambitious in seeking to defend a coastline, and the level of available resources has effectively ensured that Ireland has not followed this path.

9.25 The best policy for Ireland is probably to accommodate natural changes by preventing or reducing development and investment in areas at risk. Nevertheless, the present resources for coping with the risks of erosion and flooding are likely to remain inadequate for the future. At the very least, more study and analysis is needed to quantify the losses that will result if the problems identified in the report prepared by the City and County Engineers Association are not tackled in the near future.

9.26 Due to the limited available budget for coast protection and the likelihood of an increased need for protection, a national strategic approach is required. There is a need to prioritise those areas that require action against erosion and also the type of response most appropriate.

9.27 In the present situation of climate change resulting from pollution, and with a widely accepted expectation that sea levels will rise more rapidly than in the recent past, the standards of flood defences continually need to be re-assessed, and action taken, if necessary, to reconcile land usage with the standards of defence provided. This reconciliation may take the form of increasing the capabilities of the flood defence system (for example, by raising a seawall). However, in the future it may be more cost-effective, taking a long-term view, to accept or deliberately effect a reduction in the value of the assets at risk.

9.28 **ECOPRO:** The Department of the Marine and Natural Resources is a participant in the EU funded ECOPRO research study of environmentally-friendly methods in coastal protection. The programme, managed by Forbairt, included:

- the development of coastline monitoring methods adaptable to various types of coastline;
- the further development of a sensitivity index by which a coastline's susceptibility to erosion is graded;
- an evaluation of various coastal protection and management methods;
- case histories of a number of these methods;
- the preparation of a Code of Practice based on the above; and
- consideration of improved means of co-ordination.

9.29 The report identifies a number of solutions to the erosion problem, and recognises that cost is a major factor in the selection of technique. The report also emphasises the importance of cost-benefit analysis, and the need to consider impacts on the environment.

8A Principal Issues Relating to Coastal Protection

- Coastal erosion and flooding are likely to become increasingly important issues with rising sea levels and increased levels of storminess and wave height.
- Acceptance of natural shoreline changes, and accommodation of the problems they cause is the best option for much of the country, but particular areas, such as urban infrastructure, will require protection works.
- Areas at risk require to be prioritised for protection.
- Additional resources for coastal protection are required.

Administration and Organisational Structure

9.30 Primary responsibility to protect coastal property from erosion or flooding lies with the property owner, whether that be a local authority, private individual or group. However, all but the most minor schemes are referred to the Engineering Branch of the Department of the Marine and Natural Resources, who provide assistance and design services, and who usually supervise construction of the major schemes (e.g. the nourishment of Rosslare Strand and the planned coastal defences at Bray).

Arterial drainage and flood relief are the province of the Office of Public Works (OPW).

9.31 Impacts of coast protection and flood relief works can be far-ranging, and can have significant implications for nature conservation. There is, therefore, a need to co-ordinate the interests of the various central government and local authority departments with other interests in the coastal zone.

9.32 Public money is made available by the Department of the Marine and Natural Resources to the local authorities for coast protection schemes. The Operational Programme for Environmental Services 1994-1999 provides £5.2m over the period for coast protection, only about £1 million per year. This will only allow one major scheme and a number of smaller protection schemes to be undertaken over the period. The previous budget was only £100,000 per annum.

9.33 The aim of national policy is to address the most urgent coastal erosion problems identified on the Irish coast. The primary objective is the preservation of:

- the State owned foreshore;
- local authority owned property including county road networks;
- tourist amenities including beach and dune systems;
- natural habitats/areas of ecological importance; and
- private property[6].

9.34 Preservation is the objective where it can be undertaken at economic costs. Private property is generally only protected if there is a public benefit, i.e. where there are valuable flora or fauna species.

Principal Legislation

9.35 The Coast Protection Act, 1963 has been the main legal instrument for coastal works. However, the Act is widely criticised as being unwieldy to use and insufficient in scope. Although still on the statute books, the Coast Protection Act is no longer in use. Its main objective was the direction of the OPW in the undertaking of coastal works. Since the OPW's responsibilities have been transferred to the Department of the Marine and Natural Resources, the provisions of the Act effectively no longer apply.

9.36 Coastal protection works are therefore governed by the provisions of either the Foreshore Act or the Planning Code, depending on their location. Works located on the landward side of Mean High Water Mark generally come under the jurisdiction of the Planning Code. Those works located on the seaward are generally governed by the Foreshore Act.

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1 Carter R.W.G. and Johnstone T.W. '*Ireland - the shrinking island*' in Technology Ireland, Vol. 14, No. 3, pp 22-28, 1982.

2 A description of the situation is given in Carter R.W.G. and Johnstone T.W. '*Ireland - the shrinking island*' in Technology Ireland, Vol. 14, No. 3, pp 22-28, 1982.

3 Carter R.W.G. '*Sea Level Changes*' in McWilliams B.E. (Ed.) Climate Change: Studies on the implications for Ireland, Department of the Environment, 1991.

[4] Neither the CSO nor the Department of Agriculture and Food have figures on the amount of agricultural land lost every year. The Census of Agriculture 1980 and 1991 shows the amount of land lost during the 1980s but does not give an indication as to what this land was lost to.

[5] National Coastal Erosion Committee, 1992, *Coastal Management - A case for action*, County and City Engineers Association and The Irish Science and Technology Centre.

[6] Community Support Framework, *Operational Programme for Environmental Services 1994-1999*.

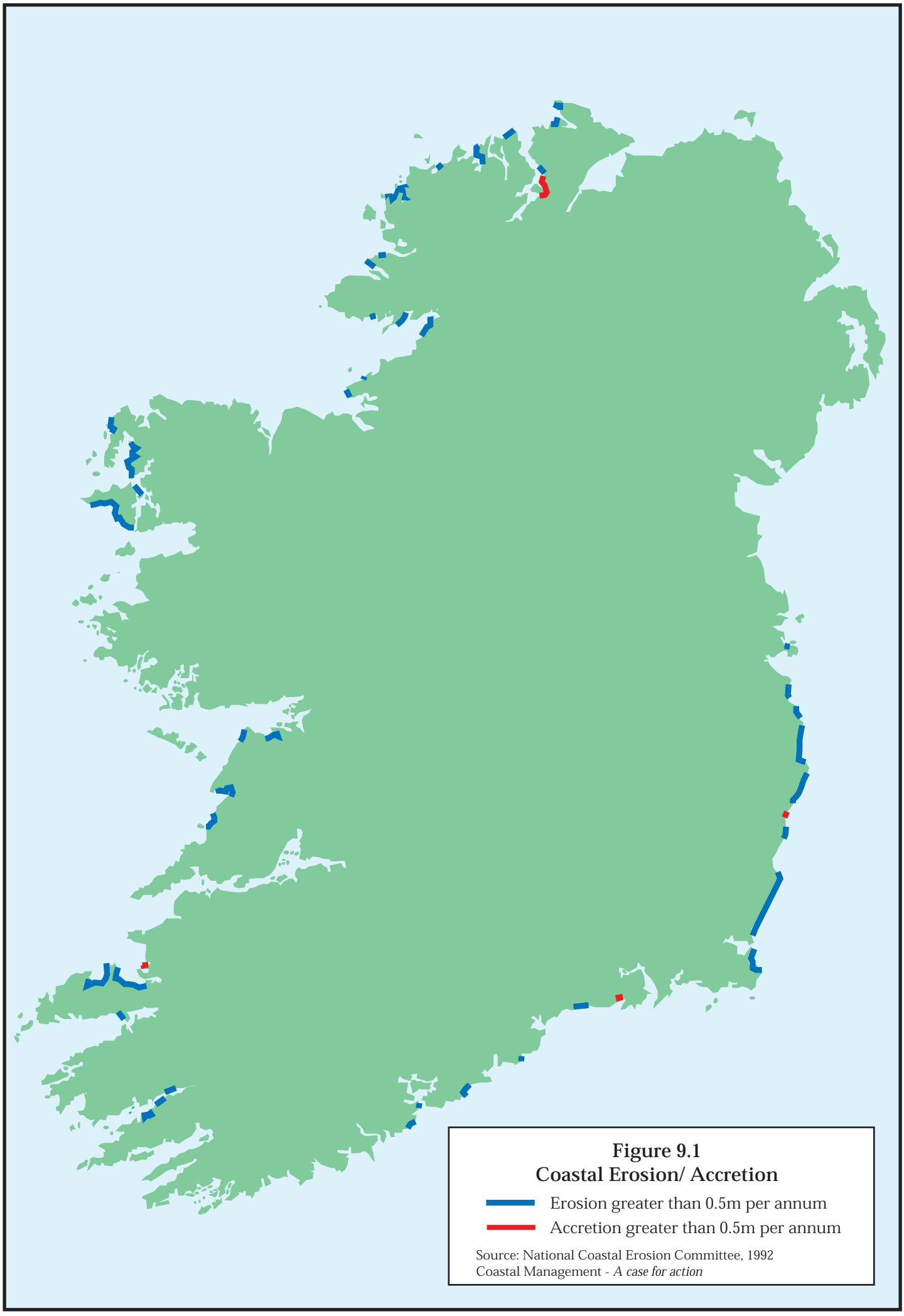

Figure 9.1
Coastal Erosion/ Accretion

Erosion greater than 0.5m per annum

Accretion greater than 0.5m per annum

Source: National Coastal Erosion Committee, 1992
Coastal Management - *A case for action*

10. KEY ISSUES

Management of the coastal zone is growing increasingly complex, reflecting the complexity and dynamism of the coast itself, increasing levels of use, increasing pressures for development, the growing requirements of conservation, and requirements arising from international obligations. This complexity is set to increase in the future.

The principal issue is the suitability and capacity of current management regimes and practices to deal effectively with the growing complexity of the coastal zone. In particular, levels of co-ordination and integration of action remain relatively low, whilst co-ordination of policy and integration of forward planning is inadequate, and there is little strategic guidance.

Other key issues arise from the character of the coast itself, from changing environmental circumstances, such as potential climatic change, and from the ways in which the coastal zone is perceived, used and developed. These require to be acknowledged and addressed at both national and local level.

10.1 In common with coastal zones everywhere, management of the Irish coastal zone is growing increasingly complex. This reflects the complexity and dynamism of the coast itself, increasing levels of use, increasing pressures for development, the growing requirements of conservation, and requirements arising from international obligations.

10.2 The principal issue to be addressed is the suitability and capacity of current management regimes and practices to deal effectively with the growing complexity of the coastal zone. Whilst much has been done, and continues to be done, to improve management structures and practices, the level of co-ordination and integration remains relatively low, and is confined, for the most part, to consultation procedures. Co-ordination of policy and integration of forward planning is inadequate, and there is little strategic guidance, especially of a spatial nature, for the future planning of the coastal zone.

10.3 Other issues arise from the character of the coast itself, from changing environmental circumstances, such as potential climatic change, and from the ways in which the coastal zone is perceived, used and developed. These require to be acknowledged and addressed at both national and local level.

Difficulties of Co-ordination

10.4 The evidence of the consultative procedure, and from the submissions received by the consultants, suggests that there are problems of co-ordination between and amongst the principal government departments, agencies and authorities having responsibility for the management of the coastal zone.

10.5 Such problems are to be expected, and exist in almost all large administrative systems. Many of the difficulties arise from the basic structure of the system, which is largely organised on a sectoral basis, with an emphasis on vertical integration rather than on horizontal connections between departments and agencies. The division of responsibility around the land/sea divide is the most obvious case in relation to the coastal zone.

10.6 Partly as a result of this structure, national policy is formulated mainly on a sectoral basis, and apart from matters such as the National Road network, rarely contains a spatial dimension. National strategic guidance, useful to the direction of Integrated Coastal Zone Management, is consequently limited mainly to sectoral policies, with little integrated formulation of priority on existing and potential uses, or relating to specific areas and issues. The land-use guidelines, currently being prepared by the Department of the Environment and Local Government, should help in this regard, but are of necessity limited to the terrestrial situation only.

10.7 These difficulties of co-ordination and integration affect a number of operational areas, such as the relationship between Harbour Works Orders or Foreshore Licence applications and the physical planning system operated by the local authorities. More importantly, they affect the formulation of policy and the integration of forward planning at both national and local level. At present, policy and planning are integrated primarily through the Operational Programmes, which have limited spatial content and are not specific to the coastal zone, and through a range of consultative procedures that vary in effectiveness.

10.8 Whilst the underlying cause of many of these problems is the nature of the administrative system itself, with its strongly sectoral structure, fundamental restructuring of legislation or administrative responsibility is not a realistic, or indeed desirable, option. All large administrative systems must be sub-divided for efficiency, and sectoral splits in function are the most usual, and probably the most effective. In addition, the European Union and other international bodies observe such sectoral splits, and the obligations they impose on government are most readily dealt with in a similar sectoral way.

10.9 However, the problems which result from the division of responsibility must be addressed, as far as possible without creating greater complexity than is necessary, and with the fewest possible problems of co-ordination on the boundary between any new system and the existing structure.

10.10 As the principal problem is one of co-ordination, the situation can be greatly eased by:

- streamlining and enhancing the arrangements for consultation, co-operation and co-ordination between government departments, and within and between divisions;
- strengthening the links and the arrangements for consultation, co-operation and co-ordination between the various levels of administration, national, regional and local;
- the further development of cross-sectoral strategic planning at national level;
- greater emphasis on strategic spatial planning at national level to provide a framework for spatial planning at local level; and
- new procedures to ensure co-ordination of planning at all levels, and across all relevant government departments and agencies, through regular joint issue of guidance notes and similar measures.

10.11 Some of these difficulties may be illustrated in relation to the Department of the Marine and Natural Resources. The diverse functions of the department include not only the formulation of policy in regard to the development of fisheries and aquaculture, but also the supervision and management of its implementation and the control/management of State property on the foreshore. The department is also responsible for the funding of small piers and harbours, which are administered by the local authorities. This 'mixing' of policy, property management and

implementation is unwieldy, particularly in the absence of a coherent structure of local administration (as, for example, the local authorities and the Department of the Environment and Local Government) and having regard to the reported inadequacy of financial and human resources available to the Department of the Marine and Natural Resources. Some, at least, of these issues are currently being addressed within the department.

10.12 These issues of consultation, co-operation and co-ordination are central to the concept of Integrated Coastal Zone Management. Whilst the issues can be addressed within the existing structures, the case for a more formal system of integration is strong.

European Union Considerations

10.13 Coastal processes do not respect administrative boundaries, and natural planning units for the coastal zone often extend across such boundaries. Within Ireland, the planning of the coastal cell units that embrace Carlingford Lough and Lough Foyle cannot be effectively undertaken without regard to the situation in Northern Ireland.

10.14 Many countries, including other EU member states, are considering the potential of ICZM, or are in the process of implementing policies and plans in that regard. It is, therefore, sensible to seek to collaborate with these states in advancing the development of coastal areas, and to co-ordinate activities where this is appropriate. Existing collaborative management systems, such as that for the Wadden Sea, may provide useful models and examples in this regard.

10.15 Membership of the European Union also brings with it obligations and requirements for the concertation of policy with other Member States. EU Directives, and agreements such as the Community Support Framework (CSF), inform and direct many domestic policies, and effectively limit the scope for action, at least in the short term. The impact of these EU measures varies from sector to sector, but is especially strong in relation to agriculture, fisheries, nature conservation and environmental protection.

10.16 The value of ICZM in addressing coastal issues is increasingly recognised within the European Union, and Ireland must have regard to these trends. In addition, an Integrated Coastal Zone Management System can assist with the integration of many EU policies and measures into national policy.

Conflicts of Interest and Value

10.17 As mentioned above, potential conflict arising from competition for the use and control of coastal resources is likely to increase. This competition may take many forms, some of it based on conflicts of interest between different sectors of activity, between uses and activities and, not least, between conservation and development interests. Conflict can also arise out of differing value perceptions.

10.18 These conflicts can occur amongst national agencies, which generally have a single and focused mandate, between national and local levels, and between national and sectoral interests across a wide range of issues.

10.19 The limited extent of national strategy and guidance contributes to the difficulties of resolving conflicts of uses and interest within the coastal zone. Such resolution is also hindered by lack of suitable local structures and by the strong vertical structure of administrative systems.

10.20 Consequently, many conflicts within the coastal zone are not resolved either quickly or at the lowest possible level, and have to be resolved at national level. This absorbs valuable national resources, and also reinforces the perceptions of remote decision making frequently encountered among local communities.

10.21 An important role of ICZM is to provide structures for the resolution of conflicts within the coastal zone. As far as possible, such structures should allow for the resolution of conflicts at the lowest feasible level, which may or may not be the local level, depending on the issue. ICZM plans, especially if formally adopted by all of the main players, can have an important role to play in integrating and co-ordinating decision making, and in this sense, provide one means of reconciling differences and conflicts.

Establishment of a Baseline for Planning

10.22 Data and information on the Irish coastal zone are gathered by a number of agencies. With such an extensive coastal zone, it is hardly surprising that there are considerable gaps in the level of data and information for different areas, and for different sectors.

10.23 It would be impossible to address all of these gaps in the short-term, even if the level of available resources were to be vastly increased. If a decision is taken to adopt a formal ICZM system for the country, it will, therefore, be necessary to proceed on the basis of the best available information, as the assembly of fully comprehensive sets of baseline data would delay the process to an unacceptable level.

The Complex and Dynamic Character of the Coastal Zone

10.24 Coasts are among the most dynamic and complex of all environments. Physical processes alter the shape and character of the coast over relatively short periods of time, and the impact of anticipated changes in climate will be most readily felt at the coast. The interaction of populations and activities within the coastal zone changes both seasonally and over time. Natural communities at the coast respond to physical changes and human activities, and are themselves also in a constant state of change. Coastal areas are the focus of much economic and social activity, not least in Ireland, and this, too, is subject to constant change.

10.25 It is, therefore, neither feasible nor desirable to plan for some future 'fixed state' of the coastal zone - rather it is necessary to plan for a state of constant change.

The Diversity and Variety of the Coastal Zone

10.26 The Irish coastal zone is characterised by considerable diversity, both in natural terms and in the range and extent of human activity. With nearly 60% of the population living within the coastal zone and few people living more than 70 km. from the coast, the area is representative of the cultural and social profile of the Irish people and is the location of many sites and areas of cultural and historic significance.

10.27 Having regard to the relatively small size of the country in European terms, the physical (marine and terrestrial) environment is extremely varied, ranging from the rugged cliffs and fjord-like inlets of the north and west Atlantic to the relatively low lying sandy shores of the east and south east coasts and the Irish Sea. This variety of land- and marine-scape is matched by an equally diverse range of land and marine biotopes on the coast.

10.28 This diversity is in itself a precious resource, both in national and European terms, and ought, as a matter of priority, be maintained. The diversity of the coastal zone and the variation in the extent of current and likely future pressure, again emphasise the need for careful planning at regional and local level, within a national strategic framework.

The Coastal Zone as a Finite Resource

10.29 The coastal zone of Ireland, both land and sea, is a finite resource, which has already been significantly developed, although as yet not so extensively as many other West European countries. However, the pace of development is accelerating and since the 1970s significant areas and stretches of the coastline, especially in the vicinity of major settlements and on the east coast, have been substantially built up. Elsewhere, tourism and recreation pressures are now widespread and many hitherto 'isolated' areas are coming under development.

10.30 Ireland has a vast marine resource, and its potential will undoubtedly be increasingly realised over the coming decades. This development will require to be serviced from the coast, and will place additional pressure on coastal land and increase the intensity of use and development in coastal inshore waters.

10.31 The requirements of nature conservation have led, or are leading to, the designation of substantial parts of the coastal zone as NHAs, SACs, SPAs, etc. Whilst such designation does not necessarily prohibit all forms of development within these areas, it does undoubtedly restrict their capacity for future development, which, in turn, can increase pressure on adjacent non-designated areas.

10.32 As a consequence the extent of the coastal zone that is readily available and suitable for development (and redevelopment) purposes is significantly constrained by evolving patterns of use, and by the requirements of nature conservation.

10.33 There is, therefore, a clear need for careful and detailed economic and spatial planning at all levels of the administrative hierarchy, along with a need to prioritise uses, activities and designations. Overall policy and guidance on the balance between development, leisure/tourism and conservation will require action at national level.

Maintenance of Infrastructure in the Coastal Zone

10.34 An issue in the coastal zone (shared with other parts of the country) is the extensive endowment of infrastructure that requires on-going maintenance. In the coastal zone, this includes a large number of small harbours and piers, built at a time when the population of rural areas was considerably greater, and in some cases were public works constructed to alleviate poverty. Many coastal protection works fall into the same category.

10.35 The level of current resources available to maintain this infrastructure is inadequate to ensure their on-going maintenance and repair, and certainly insufficient to develop them further. The condition and usefulness of this endowment, and the level of

resources appropriate to its on-going maintenance and development, are matters that will require on-going assessment and consideration.

The Impact of Global Warming and Climate Change

10.36 It is now generally accepted that global warming, with its attendant sea level rise, changing weather patterns, surges, etc., is an established fact. The latest predictions by the IPCC are for a world-wide average rise in mean sea level of 50 cm. by the year 2100. However, for the Irish coast the more important change may be that associated with possible shifts in wind direction from prevailing south-west to east and south-east, which may expose the south-east coast in particular to storms of increased frequency and severity. This is one of the most 'vulnerable' coastal cells and an area which already sustains significant erosion and re-deposition each year. Although the process overall will be gradual it is likely that in the south east the effects of global warming will be felt, and be visible, sooner than elsewhere.

10.37 The impacts of these changes are potentially significant. In addition to loss of agricultural and other productive land, coastal tourism will be affected, as beaches are eroded and deposited and weather patterns change. Coastal infrastructure, including harbours, roads, railway lines, etc. will come under threat. Off-shore there will be implications for fisheries.

10.38 Policies are required to address this situation, based on a long term view. With certain obvious exceptions, the present policy of accepting natural shoreline changes, and accommodating the problems they cause, is the only feasible option. However, it will also be necessary to acknowledge the economic value of certain urban and port areas, and to review coastal protection policies in tandem with a complete reappraisal of land use and development policy, flood risk prevention and control, etc. Ideally, the local authorities in the most affected cells would adopt set back policies in order to minimise the generation of 'economic gain', and hence ultimate loss, in the areas at hazard.

10.39 Climate change will also affect flora, fauna and ecology, with potential changes in distribution that may have implications for nature conservation designations.

10.40 As an issue, the question of climate change will become increasingly important, and will require a planned response across a range of matters. Questions relating to the valuation of land and property will need to be dealt with before the event and some equitable system of valuation which takes account of the inevitability of loss devised. The early identification and classification of economic areas and of areas at risk can go some way towards easing the debate on valuation.

Loss of Land and Scenery

10.41 Coastal scenery is a valuable asset both in terms of its contribution to the tourism industry and to general quality of life. However, increasing pressure for development is placing some of these landscapes under threat, and extending areas of development into parts of the coastal zone that hitherto have enjoyed a measure of 'natural' protection. The designation of areas for nature conservation or landscape protection can actually increase pressure on un-designated areas, so a balanced and planned approach is essential, particularly if lower standards of development control are to be avoided.

10.42 Existing policies and measures designed to protect highly scenic land- and sea-scapes will require to be reviewed. The impact of climatic change of the quality of landscape, through changes in vegetation for example, will also require to be considered, as will policies of landscape improvement or rehabilitation, where these are appropriate.

10.43 Measures which help to maintain high environmental standards, such as the EU 'Blue Flag' beach scheme, the 'Tidy Towns' competition, etc., ought to enjoy support at the highest level as measures which publicise the relationships between the diverse elements of the coastal zone and help increase awareness at local level.

The Coast as a 'Highway'

10.44 The coast is a natural highway with capacity for the transport of freight and people for commercial as well as for leisure purposes. Other aspects of marine commerce concern the maintenance of marine cables and pipelines all of which are of importance both nationally and internationally.

10.45 Allied to this are the networks of navigation aids, emergency services and port and harbour infrastructures which facilitate and secure marine commercial activity. These networks and systems are in constant change and development and these changes in turn impact upon the welfare of the national and local economies, on local populations, leisure, tourism, etc. The significance of navigation, safety and port facilities needs to be fully recognised in determining future policies for the coastal zone, and specific policies may be required in key sub-zones and areas where concentrations of activity occur.

Funding

10.46 Current levels of funding for the management of the coastal zone are difficult to determine, as most of the resources are organised on a basis that does not readily allow for the separation of the costs associated with coastal areas. Nevertheless, large levels of expenditure are made each year within the coastal zone, both for capital development and for on-going maintenance.

10.47 Some specific coastal sectors are, however, relatively poorly funded. For example, the total resources allocated to coastal protection works is only £1m per year, whilst levels of funding for smaller ports and harbours are also generally regarded as inadequate.

10.48 The introduction of more integrated policies and planning has the potential to ensure that the resources devoted to the coastal zone are used to best advantage, and that actions and expenditure by one body is reinforced by others. However, the integration of policies and planning carries with it costs that must be adequately funded if it to be successful.

Enforcement Difficulties

10.49 The consultations revealed fairly wide held perceptions that the fiscal and human resources available to fully and properly enforce a number of regulations pertaining to the coastal zone are inadequate. Among the matters mentioned as falling into this category are aquaculture, drift netting, and compliance with foreshore licence conditions. The relevant authorities are aware of the shortfall in enforcement, and are conscious of the need to review the situation.

10.50 Increases in enforcement activity require both better public understanding of the need for enforcement, and adequate resourcing. These can best be addressed through an integrated system of administration, in which the links between the various elements can be clearly demonstrated.

Limitations in Technical ICZM Expertise

10.51 There is a wide range of technical knowledge, experience and skills throughout the public sector, within institutions of higher education and in the private sector relating to many aspects of the coastal zone. Generally these are highly specialist, usually scientific, knowledge bases and skills, and are a very valuable resource for the management of coastal areas.

10.52 The particular skills required to integrate and synthesise the specialisms, and to manage the coastal zone, are less readily available. The land/sea divide is again evident here. Whilst many marine scientists have a comprehensive understanding of the coastal environment, they seldom have a parallel knowledge of development issues and of administration. Similarly, those involved on the terrestrial side seldom have a comprehensive understanding of marine issues. Even professional planners, with their specialist skills of synthesis, do not generally have a detailed understanding of marine matters.

10.53 If a system of ICZM is to be introduced, appropriate technical support and training will be required, both in relation to policy formulation and the preparation and implementation of effective plans.

11. THE NEED FOR ICZM

The need for a formal Integrated Coastal Zone Management system arises from the necessity to address a wide range of existing and future issues in the coastal zone, and in particular the increasing competition for the use and control of coastal resources. The introduction of ICZM can potentially ensure that resources devoted to the coastal zone are used to best advantage, and that actions and expenditure by one body are reinforced by others. However, ICZM itself requires adequate resourcing if it is to be successful.

If the emerging and increasingly complex issues are to be adequately addressed, the existing problems of co-ordination between, and amongst, the principal Government Departments and agencies having responsibility for the management of the coastal zone must be remedied. Allied to this is the need for national policy that transcends the normal sectoral structure of administration, and which also contains a wider spatial dimension.

An Integrated Coastal Zone Management system or process for Ireland is, therefore, necessary and desirable.

11.1 The need for a formal Integrated Coastal Zone Management system arises from the necessity to address the range of existing and future issues discussed in the previous chapters. In summary the principal issues are:

- increasing competition for the use and control of coastal resources, which may give rise to levels of potential conflict greater than those of the present;
- increasing pressure for development which is placing many coastal landscapes under threat, and extending areas of development into parts of the coastal zone that hitherto have enjoyed a measure of protection due to their location;
- the obligations and requirements of membership of the European Union (Directives, etc.), and the need to collaborate with other Member States;
- the need, as a result of changing conditions, to re-appraise land-use and development policy in tandem with coastal protection policies;
- the need to maintain and develop the coast as a 'highway' for navigation, and to provide access to the vast marine resource of the country, together with the networks of navigation aids, emergency services and port and harbour infrastructures;
- the need to address gaps in the baseline data and information on the Irish coastal zone; and
- anticipated sea level rise, changing weather patterns, surges, changes in prevailing winds, etc., exacerbated by global warming, leading to loss of agricultural and other productive land, threats to coastal infrastructure and coastal tourism and impacts on flora, fauna and ecology.

11.2 The increasing competition for the use and control of coastal resources arises in part from conflicts of interest between different sectors of activity, between uses and activities, between conservation and development interests, and from differing value perceptions.

11.3 Large levels of expenditure are made each year within the coastal zone, both for capital development and for on-going maintenance. The introduction of ICZM can potentially ensure that the resources devoted to the coastal zone are used to best advantage, and that actions and expenditure by one body are reinforced by others. However, ICZM itself requires adequate resourcing if it is to be successful.

11.4 If the emerging and increasingly complex issues are to be adequately addressed, the existing problems of co-ordination between, and amongst, the principal Government Departments and agencies having responsibility for the management of the coastal zone must be remedied. Allied to this is the need for national policy that transcends the normal sectoral structure of administration, and which also contains a wider spatial dimension.

11.5 If the current system of administration and management of the coastal zone is continued without significant change, it is likely that the problems and issues will continue to expand and grow more complex, whilst existing shortcomings in integration and co-ordination will be exacerbated, leading to increasing stress on the existing arrangements.

11.6 Continuation of the current situation is, therefore, untenable, and changes to the system are inevitable. An Integrated Coastal Zone Management system or process is, therefore, both necessary and desirable.

11.7 The introduction and adoption of Integrated Coastal Zone Management represents a conscious decision on the part of the principal actors to commence a process of replacing fragmented, sectoral approaches to the management of the coastal zone with a more co-ordinated management system.

11.8 The commissioning of this report is an indication that the relevant authorities at national level recognise the need for more integrated and holistic management, and have commenced the process of introducing Integrated Coastal Zone Management to Ireland.

DEFINITION

11.9 The definition of Integrated Coastal Zone Management was discussed in Chapter 2, where the following definition was adopted:

ICZM is a continuous process of administration which seeks, through more efficient and holistic management:

- ***to establish and maintain the sustainable use and development of the resources of the coastal zone so as to improve the quality of life and of human communities dependent on these resources; and***

- ***to maintain the biological diversity and productivity of coastal ecosystems, and to improve the quality of the coastal environment.***

THE PROCESS OF ICZM

11.10 It has been emphasised throughout the report that ICZM is a process, the ultimate aspiration of which is to achieve an *integrated* system of management. As noted in Chapter 2, this requires that certain pre-conditions be met, including:

- mutual awareness of the issues involved by the various interests in the coastal zone;
- a shared and thorough understanding of the coastal dynamic and of the problems and procedures, the difficulties, etc., that must be dealt with;
- identification of a common cause or purpose;
- a shared vision of the quality of environment that is to be sustained;
- a real prospect of mutual benefit, or of potential benefit; and
- widespread consensus and commitment.

11.11 The investigation and analysis has revealed that, at the present time, these pre-conditions are not yet met in Ireland. In particular:

- Whilst there is undoubtedly growing awareness of the issues involved in ICZM, this awareness is neither evenly spread, comprehensive or mutual;
- There is only partial understanding of coastal dynamics, data is scattered and there are significant gaps in the research and monitoring systems in place. There is, as yet, no comprehensive and systematic mechanism for sharing an understanding of coastal dynamics.
- There is, as yet, no common cause although the commissioning of this study represents an important beginning. At present, there are many 'causes' depending upon the perspective of the actors concerned. In some instances these are confrontational or competitive.
- There is no shared vision of the future of the coastal zone. Each sector is seeking to maximise its own activity, if necessary, to the exclusion of others.
- There is a measure of consensus amongst actors that there is merit in co-operation to secure the benefits of improved management. However, it is extremely difficult to measure the extent of benefit likely to accrue.
- The level of consensus and commitment to ICZM amongst the principal actors has yet to be tested. Implementation of the recommendations in this report will prove the case

11.12 Accordingly, the process by which Integrated Coastal Zone Management is introduced and integrated into the Irish administrative system must be one that will gradually lead, over a period of time, from the present situation to a more co-ordinated and integrated administrative situation in the future. The process must facilitate the meeting of the pre-conditions set out above, and this will take time to achieve.

11.13 However, the resolution of many of the conflicts and issues, current and anticipated, in the coastal zone should not have to await the establishment of a fully integrated system. Many of these issues are urgent, and the process should allow for them to be properly addressed in parallel with the evolution of suitable structures and

arrangements. Indeed, addressing the issues will assist in reviewing and assessing progress in the implementation of ICZM.

PERCEPTIONS OF ICZM

11.14 The need for a suitable ICZM system was widely recognised during the consultation process. However, there are considerable differences of understanding, in both the public and private sectors, of the scope and purpose of ICZM.

11.15 People and administrations define ICZM in terms of their own interests, and their expectations of the ICZM process vary according to the detail level of their own operations. In this way, some interests expect that the introduction of a process of Integrated Coastal Zone Management will of itself bring about a solution to their problems, others regard ICZM as having the sole or principal function of conserving or protecting nature, whilst others see it as being primarily concerned with coastal defence or protection.

11.16 The limited level of public awareness and understanding of ICZM is hardly surprising, given that it is a relatively new topic. There is clearly a need to raise awareness of the purpose and scope of ICZM, to explain its function in relation to existing management systems, and to canvass the support necessary for the successful introduction of ICZM to Ireland. These matters must be addressed in the process of ICZM itself.

12. THE SCOPE FOR ACTION

The principal and over-riding policy objective is to establish a process that will lead, over a period of time, to an integrated system of management for the coastal zone in Ireland.

Existing and future issues in the coastal zone can best be addressed by streamlining and enhancing the arrangements for consultation and co-operation, in planning and operation, between, and within, the various departments, authorities and agencies responsible for the management of the coastal zone.

The process will take time to achieve. However, the resolution of many of the issues and conflicts, current and anticipated, in the coastal zone should not have to await the full establishment of a more integrated system. Many of these issues are urgent, and the process should allow for them to be properly addressed in parallel with the evolution of suitable structures and arrangements.

Integrated Coastal Zone Management policies must, therefore, focus on a process that includes a flexible development 'path', the formulation of a suitable framework or structure that meets the needs of the Irish situation and that incorporates public participation, monitoring, review and adaptation procedures.

A number of models of ICZM have been used in different parts of the world, but there is no single model that is overwhelmingly superior and universally applicable. In each case, the selected model has been created for, or adapted to, the particular circumstances of the country. Four options for the introduction of ICZM to Ireland are explored in this chapter.

POLICY OBJECTIVES

12.1 The principal and over-riding policy objective is to establish a process that will lead, over a period of time, to an integrated system of management for the coastal zone in Ireland. The objectives of that process include:

1. The provision of national direction and guidance for ICZM;
2. The provision of an effective, co-ordinated and ultimately integrated planning and administrative system for the coastal zone;
3. The provision of structures and mechanisms for the resolution of conflicts in the coastal zone at appropriate levels;
4. The provision of adequate and appropriate technical support for ICZM;
5. The extension and enhancement of public awareness and appreciation of ICZM through active involvement; and
6. Collaboration, as appropriate, with other countries in relation to ICZM.

12.2 The 'path' to be followed in achieving the objectives must be flexible, with monitoring, review and adaptation as integral parts of the process. Moreover, even when a developed ICZM system is in place, it will require to continuously adapt to the ever-changing circumstances of the coastal zone.

12.3 Coastal Zone Management policies must, therefore, focus on a process that includes the development 'path', the formulation of a flexible framework for an ICZM structure that meets the needs of the Irish situation, and a programme of appropriate measures and actions. These are not separate entities, but are closely related and integrated, and, as previously stated, the process requires to be monitored, reviewed and adapted as necessary.

THE SCOPE FOR ACTION

12.4 In deciding on the most appropriate model for the introduction of ICZM to Ireland, regard must be had to:

- the existing legislative and administrative arrangements, especially the relationship between the principal existing actors and managers in the coastal zone;
- the scope for action in terms of the realistic levels of change achievable within moderate time frames;
- the involvement of the public; and
- the scale of potential resources likely to needed for ICZM.

12.5 However ideal a particular structure or arrangement may be, it will be of little practical benefit to the country if it cannot be implemented.

12.6 The current administrative structure is unlikely to have the capacity to undertake a programme of Integrated Coastal Zone Management without improvements to the completeness and quality of its networks and communications systems, the availability of suitable management instruments, increased human and financial resources and the training necessary to achieve the competence to implement ICZM.

12.7 The ICZM model selected for Ireland must place emphasis on the relationships between the existing actors and managers in the coastal zone. At the heart of this relationship will be Integrated Coastal Zone Management Plans drawn up jointly by the principal actors and managers, and adopted in accordance with national policy. These plans are major tools for the implementation of ICZM policy, but are just one element in a system that must also include:

- the development and provision of advice to Government on policy relating to the coastal zone and the co-ordination of Government policy and practice in the coastal zone;
- the raising of awareness and understanding of ICZM;
- public involvement and participation;
- enhanced management capacity;
- provision of strategic overviews or visions along with appropriate guidance;
- amendments to legislation, policy and procedures;
- conflict resolution mechanisms;
- research and scientific and technical support; and

- monitoring, evaluation and review.

12.8 The system must also have adequate funding. Initially, it is possible that the requirements might be met from re-deployment of existing resources, and by increasing the mobility of existing resources, but ultimately some additional resources will be required. These resources will be required in any case to meet the needs of increasing levels of development and activity in the coastal zone.

12.9 The selected ICZM model should allow for the incorporation of all of the above elements. However, structures, arrangements and procedures are only tools for the effective management of the coastal zone, and should not become ends in themselves. They should be reviewed regularly and amended, adjusted or abandoned as required.

12.10 As far as possible, Integrated Coastal Zone Management should integrate 'seamlessly' with other aspects of government and public administration. There is no point in introducing unnecessary arrangements, and further complexity in the system. Therefore, the simplest structure, consistent with the needs of the time, should be adopted.

12.11 The different levels of authority, European, national, regional and local, are ideally seen as partners in a programme in which responsibility for different aspects of Integrated Coastal Zone Management overlap, but are clearly defined. Concertation of effort and output is essential. This concept is illustrated in Table 12A.

12A Levels and Products of Concertation in Irish ICZM *

Level	Product
European / trans-national	Vision / Perspective
National	Strategy / Policy Perspective
Coastal Cell (inter-regional)	Perspective / Strategy / Plan
Local	Programme / Action Area Plan

* Based on a table in '*Communication from the Commission to the Council and the European Parliament on the integrated management of coastal zones*' (COM (95) 511 final/2); Commission of the European Communities.

12.12 Basic policy, by its nature, must be determined at national level. However, each Government Department is strongly compartmentalised, reflecting its statutory basis. There are generally strong vertical links from each department to the relevant implementation agencies at national, regional and local level. Horizontal links between the various departments, and between the various agencies, is weaker, and usually indirect. The selected ICZM model must ensure co-ordination and integration of policy across and between all relevant departments and agencies.

12.13 Integrated management should be based on natural coastal units or cells. '*Administrative responsibilities should match the coastal dynamics as the reverse will never happen*'[1] This implies the preparation of ICZM plans across a number of administrative areas, and encompassing a range of agencies. A sub-national or regional level based on natural coastal cells is, therefore, the most appropriate level for detailed policy and plan-making purposes.

12.14 As far as possible, implementation is best undertaken at the lowest feasible level, which may or may not be the local level, depending on the nature of the policy and of the relevant administrative system. It should also be carried out by existing agencies, wherever possible. These agencies, including the local authorities in particular, will therefore continue to play a key role in the management of coastal areas.

12.15 ICZM requires resources, the availability of which is critical. These will empower the management structure, and ensure that its mandate is effectively carried out. Without such resources, the ICZM system will be wholly dependent on the co-operation of the various bodies involved, many of which have significant resource difficulties of their own.

12.16 Consideration of the above points indicates that there is considerable scope for action, but that the best means of addressing existing and future issues in the coastal zone is by streamlining and enhancing the arrangements for consultation and co-operation, in planning and operation, between, and within, the various departments, authorities and agencies responsible for the management of the coastal zone.

12.17 Fundamental restructuring of legislation, or administrative responsibility and procedure, is not a realistic, or indeed desirable, option, given that the EU and other international bodies observe similar sectoral splits in function.

12.18 However, some restructuring of the administrative system, to separate policy and operational matters for example, is required.

STRATEGIC OPTIONS

12.19 A number of models of ICZM have been used in different parts of the world, and some of these have been outlined in Chapter 3. There is no single model that is overwhelmingly superior and universally applicable. In each case, the selected model has been created for, or adapted to, the particular circumstances of the country.

12.20 Integrated Coastal Zone Management will affect, and therefore must involve, all of the managers and users of the coastal zone. These include state and other public agencies, landowners, residents, business interests of all kinds, including farmers, fishermen, tourism enterprises, marine transport, etc., and the general public who visit and use the coastal zone. However, the management of the zone is primarily the responsibility of the public sector, and therefore the structures discussed below relate mainly to the public sector system.

12.21 There is clearly a spectrum of potential ICZM models, especially in relation to future structures, that might be applied to Ireland. From this spectrum, four models or options are specifically considered:

1. Inter-Departmental Committee.

2. Inter-Departmental Unit.

3. Independent Unit.

4. Agency or Authority.

12.22 The essential characteristics, along with the major advantages and disadvantages, of each model are set out in the boxes.

Option 1. Inter-Departmental Committee

Structure:	Committee representative of the Departments of the Environment and Local Government, Marine and Natural Resources, and Arts, Heritage, Gaeltacht and the Islands.
Role:	Achieve more integrated administration of the coastal zone through enhanced co-ordination.
Advantages:	Simple structure; established formula; no significant administrative changes required; minimal resource implications.
Disadvantages:	Nature of structure limits capacity to relatively simple measures such as guidelines and the introduction of additional consultative procedures; lacks independent resources; primary responsibility of representatives remains to parent departments; very limited public involvement.

12.23 Inter-Departmental Committees are an established administrative mechanism. They are relatively easy to establish, and have limited resource requirements. By their nature, they lack independent resources, and do not readily allow for meaningful public participation. Moreover, the primary responsibility of the representatives must be to the policies of their parent departments, rather than to the objectives of the inter-departmental committee. Consequently, such committees are better suited to the co-ordination of specific policy issues than to the development of broad-based policies and strategies such as ICZM.

12.24 An extension to the concept of an inter-departmental committee is the formation of an inter-departmental unit or permanent working group, directed by an inter-departmental steering committee. The role of such a unit, and its relationship to the 'parent' departments, could be defined by written agreements or 'concordats'. These would be public statements of co-operation between the agencies involved, contributing to a high level of 'transparency'.

Option 2. Inter-Departmental Unit

Structure:	Permanent working group, with some independent resources (from existing departments), directed by inter-departmental committee representative of the Departments of the Environment and Local Government, Marine and Natural Resources, and Arts, Heritage, Gaeltacht and the Islands.
Role:	Achieve more integrated administration of the coastal zone through enhanced co-ordination and co-operation in accordance with written 'concordat', setting out formal relationship to government departments, etc.
Advantages:	Relatively simple structure; permanent, dedicated executive; could be staffed and resourced through re-deployment; could be extended to embrace other interests relevant to ICZM; would have own resources to promote ICZM.
Disadvantages:	Major investments in coastal zone would continue to be responsibility of existing departments and agencies; limited public involvement; overall Ministerial responsibility could be an issue.

12.25 The unit could be operated through re-deployment of staff and other existing resources from the relevant departments. However, it should have some resources of its own with which to implement ICZM (promotional and educational material, subvention of ICZM plans, etc.), but all major investments in the coastal zone would continue to be the responsibility of existing departments and agencies. It would be

relatively easy to extend the structure beyond the three primary departments, if that were deemed useful.

12.26 The existence of a permanently staffed working group, with appropriate office facilities, etc., together with a clearly defined and formal co-ordination remit for the unit, would significantly extend the capacity for integration. The formal structure, especially if accompanied with adequate resources, would allow a degree of freedom, within well-specified limits. In particular, the availability of staff dedicated to ICZM would allow for a wider range of activities, including the dissemination of knowledge about ICZM, the development of data bases, etc.

12.27 However, the unit would remain relatively closely tied to the 'parent' departments, and major investment in the coastal zone would continue to be responsibility of existing departments and agencies. Whilst public involvement could be facilitated through a range of measures, the structure does not directly facilitate such involvement.

12.28 In many respects, an independent unit would be similar to the inter-departmental unit (option 2), but the permanent unit would work under the direction of a board or commission, appointed by the relevant Ministers, but independent of the departments concerned. Its remit could be established through written agreements or 'concordats', as suggested above. The unit would require direct resourcing, but it might be possible to re-deploy some resources from within the existing public service.

12.29 The independence of the unit would afford it a greater degree of freedom than an inter-departmental unit. It might also have advantages in terms of public perception and participation, and would certainly make a strong statement about the significance of ICZM. Membership of the board or commission could be extended to include representatives of major private sector interests in the coastal zone, such as fishing and tourism.

Option 3. Independent Unit

Structure:	Permanent working unit, with independent resources (provided directly), directed by committee appointed by relevant Ministers.
Role:	Achieve more integrated administration and management of the coastal zone through enhanced co-ordination and co-operation in accordance with written 'concordat', setting out formal relationship to other bodies and the public.
Advantages:	Independent of government departments; potentially wide representation of coastal zone interests; high degree of freedom within 'concordat'; permanent, dedicated executive; would emphasise importance of ICZM; public involvement facilitated.
Disadvantages:	Independence of unit could distance it from the day-to-day difficulties of co-ordination within government departments, etc.; major investments in coastal zone would continue to be responsibility of existing departments and agencies; overall Ministerial responsibility could be an issue.

12.30 However, the very independence of the unit could distance it from the day-to-day activities of the principal agencies, and from the difficulties of co-ordination, etc. Major investment in the coastal zone would continue to be responsibility of existing departments and agencies.

12.31 The creation of a major agency or authority with responsibility for almost all aspects of the coastal zone and with comprehensive powers to carry out its duties, would be a major step. In some countries, such as New Zealand and Sri Lanka, major new structures have been created dedicated to the management of the coastal zone.

12.32 Coastal zone authorities, or new government departments, have the advantage of clearly identifying the coastal zone as a particular place with particular resources and issues. By definition, co-ordination and integration of policy and action are assured. However, this model requires the creation of new public bodies, adding to the complexity of public administration. Clear and definite boundaries must be assigned to the coastal zone, and the problem of integration at those boundaries remains. There would also be significant resource implications.

Option 4. Agency or Authority

Structure:	Major agency or authority directed by board appointed by relevant Ministers; significant independent resources. Board representative of wider coastal zone interests.
Role:	Directly administer many aspects of the coastal zone and ensure close co-ordination and co-operation with other bodies, in accordance with written 'concordat'.
Advantages:	Very high degree of independence and freedom within 'concordat'; should achieve high level of integration of management; potentially wide representation of coastal zone interests; permanent, dedicated executive; would emphasise importance of ICZM; public involvement facilitated and formalised.
Disadvantages:	Requires major re-structuring of central and local government; requires clear definition of geographical jurisdiction; integration of management at boundaries of defined coastal zone remain; significant resource implications; independence of agency could distance it from the day-to-day difficulties of co-ordination within other bodies; overall Ministerial responsibility could be an issue.

12.33 The creation of a major new administrative agency in Ireland, taking over powers and responsibilities from existing agencies such as the local authorities, would further compound the existing complexities of administration, and would not resolve the difficulties of integration at the boundaries of the defined coastal zone. Such an agency cannot be justified, unless it were to be introduced as an element of a more widespread and comprehensive reform of the administration of the country.

12.34 On the other hand, informal or voluntary methods are unlikely to succeed, especially if no agency is given a clear mandate to lead the process.

12.35 Each of the models raises questions of overall responsibility. Ultimately, if the ICZM structure is to have authority and funding, the system must be answerable to a government minister. The integration of policy and action across a number of government departments is one of the principal objectives of ICZM, and it may therefore, be necessary to formally place responsibility for this on one minister, possibly the Minister for the Marine and Natural Resources. This has implications for the independence of other departments.

[1] House of Commons Environment Committee, 1992. Second Report. *Coastal protection and planning*. HMSO.

13. THE RECOMMENDED FRAMEWORK

A phased approach to the introduction of ICZM in Ireland is recommended.

Phase 1 is a relatively short inaugural stage, intended to initiate the process, and which should be directed by an inter-departmental committee. Increasing awareness of ICZM, achieving commitment of the principal actors, and the identification of issues are among the principal tasks envisaged for this phase.

As the programme develops into Phase 2, an inter-departmental unit with dedicated staff is recommended. The unit should be supported by a Coastal Zone Management Advisory Committee, representative of the wider range of users and managers in the coastal zone, and a Technical Advisory Group of specialists. The remit of the unit should be set out in published 'concordats' or written agreements, which should also address its relationship to the public in general. In addition to continuing the tasks from Phase 1, the unit should implement actions to redress identified legislative and administrative issues, implement pilot demonstration ICZM projects and oversee pilot ICZM plans for selected coastal cells. Guidance, the provision of scientific and technical support, and initiating local conflict resolution mechanisms on a pilot basis should also be undertaken.

A major review of the ICZM process should be undertaken about 16-18 months after the initiation of Phase 2.

Phase 3 will extend and develop the activities of Phase 2. The administrative structure for this phase can be either an inter-departmental unit or an independent unit.

Phase 4 is a mature stage of ICZM, with the structures and methods firmly established. Monitoring and review, followed by adaptation of the approach and activities, will become increasingly important. The envisaged structure for this phase is an independent unit, which would build on the experience of the inter-departmental unit, but which would have a greater degree of freedom, and be directed by a council representing a wider range of coastal zone interests.

13.1 The four options outlined in Chapter 12 illustrate a range of potential models for the introduction of ICZM in Ireland. These options, however, refer only to the national level structure, and each has advantages and disadvantages.

13.2 Whilst the relatively simple inter-departmental models offer opportunities for rapid introduction and easy integration with the existing administrative structure, they lack independence and do not readily allow for extensive public involvement. On the other hand, an independent unit, agency or authority will require time to establish and to achieve an adequate level of integration with other aspects of public administration. All of the models raise questions of overall responsibility.

13.3 Despite their shortcomings, the models are progressive and offer the possibility of introducing ICZM in an 'organic' manner, developing over time into an increasingly more integrated and sophisticated system.

13.4 As mentioned above, the options considered relate to possible structures at national level. Appropriate structures will also be required at the regional and local levels, and the recommended overall structure therefore comprises:

1. A permanent body at national level, that progressively moves from an Inter-Departmental Committee, in a number of steps or phases, to an Independent Unit. The phases should be seen, not as discrete time frames, but as steps in an on-going process leading to a fully-developed ICZM system. The body will develop and co-ordinate national policy in respect of the coastal zone and oversee the implementation of national ICZM policy;

2. Plan-making, monitoring and review bodies at regional (coastal cell) level to prepare and monitor ICZM plans; and

3. Implementation through existing agencies at local level.

13A Recommended Administrative Structure

Level	Role	Phase 1	Phase 2	Phase 3	Phase 4
National	Policy making; 'Driving force' Co-ordinate national policy	Inter-departmental Committee	Inter-departmental Unit	Inter-departmental or Independent Unit	Independent Unit
Regional (coastal cell)	ICZM plan making; Monitor and review	None	Pilot Regional Plan Teams and Pilot Demonstration Projects	Regional Plan and Review Teams	Regional Plan and Review Teams
Local	Implementation	None	Existing agencies	Existing agencies	Existing agencies

13.5 Each phase of the programme will require:

1. a 'driving force', especially at national level;

2. a suitable management structure, at national, regional (coastal cell) and local level, for its implementation;

3. a set of measures or actions that take the process forward;

4. measures for meaningful public participation; and

5. adequate funding.

13.6 A considerable amount of 'driving force' for the introduction of ICZM already exists, both within national level bodies and at local level, as is demonstrated by the commissioning of this report. However, much of the effort is fragmented, and there are contrasting, and sometimes conflicting, views on the scope and purpose of ICZM. It is, therefore, important that a strong 'driving force', with a clear understanding of ICZM, be established at national level. In practice, this must be the national-level management structure.

13.7 Effective ICZM also requires a certain level of collaboration with other jurisdictions and countries, to ensure an integrated and co-ordinated approach across coastal borders, and to benefit from experiences elsewhere.

PHASED PROGRAMME

13.8 The programme for the introduction of ICZM should be phased, both in terms of the range of actions and measures, which will grow more extensive and comprehensive with time, and in terms of the management structure which should respond to the changing requirements.

13.9 A summary of the principal tasks and major outputs for each of the proposed phases of ICZM is given in Tables 13B to 13E. Each phase will require resources in terms of manpower, facilities and finance.

Phase 1

13.10 Phase 1 is a relatively short inaugural or start-up stage, which has already commenced with the preparation and dissemination of this report. The principal Phase 1 tasks include:

- consideration of responses by the public to this report and adoption of policy (by Government);
- increasing the awareness and understanding of ICZM in the relevant agencies;
- achieving commitment by all the principal actors and managers in the coastal zone to the introduction of ICZM;
- the identification of issues, including amendments to legislation and improvements to consultative procedures, that require to be addressed within the public service and undertaking initial actions to redress these issues;
- preparing for Phase 2 of the programme;
- initiating international contacts; and
- monitoring and review.

13.11 The structure required to carry out the above tasks can be relatively simple and straightforward, and an inter-departmental committee, based on the Steering Group for this study, is proposed. This should be given a finite time-span in which to move to Phase 2. A period of 12 months, or even less, would seem appropriate.

13.12 The Inter-Departmental Committee should comprise representatives of:

- Department of the Environment and Local Government;
- Department of the Marine and Natural Resources; and
- Department of Arts, Heritage, Gaeltacht and the Islands (National Parks and Wildlife Service).

13.13 To carry out its tasks, the committee will require support. Given the need to start up the ICZM process without delay, and the relatively short time period proposed for Phase 1, at least one full-time facilitator will be required. A person on temporary secondment from within one of the relevant government departments would be appropriate, as having a good knowledge of the existing administrative structure. In addition, some part-time assistance from officers in the various departments may be required, together with office support.

13.14 Among the key actors in the coastal zone, the local authorities have a particular and major role to play. Whilst national policy in relation to the local authorities is the responsibility of the Department of the Environment and Local Government, which will be represented on the inter-departmental committee, inputs at a more local level are desirable, even at the initial stage. The inter-departmental committee should, therefore, hold regular meetings with the representative bodies for senior local authority officials, such as the County and City Managers Association and the County and City Engineers Association, to discuss relevant matters. Informal meetings should also be held, as necessary, with other actors in the coastal zone, including the private sector.

13B Summary Table for Phase 1

Management Structure	Duration	Principal Tasks	Major Outputs
Inter-Departmental Committee. Informal liaison with local authorities and other key actors.	12 months or less	Disseminate Draft Policy and consider public responses; Adoption of national policy (by Government); Increase awareness and understanding of ICZM among relevant agencies; Identify legislation requiring amendment; Identify policies requiring amendment; Identify procedures requiring amendment; Guidelines on concept of ICZM; Identification of research priorities; Achieve commitment by all principal actors and managers to ICZM; Initial actions to redress identified amendments; Initiation of international contacts; Preparation of Terms of Reference and draft 'concordats' for Phase 2 management structure; Monitoring, evaluation and review.	Draft Policy Document Response to submissions Seminars on ICZM for principal actors. Guidelines. Internal working papers. Terms of Reference for Phase 2 management structure. Draft 'concordats' for Phase 2 arrangements.

13.15 The inter-departmental committee must adopt the role of a 'driving force' for the introduction of ICZM. This will require actions to raise the profile of ICZM, initially among the major actors and managers in the coastal zone, and later among the public generally. An 'up-beat' positive image should, therefore, pervade all of the actions and activities of the committee.

13.16 The principal tasks of the inter-departmental committee will relate to the establishment of a more formal ICZM management structure, and the preparation of the various actors in the coastal zone for the introduction of that structure, through education and training measures. An important task of the committee will be to draw up terms of reference for the inter-departmental unit to be established as Phase 2 of the programme. The committee should also prepare draft 'concordats', setting out the relationship between the proposed unit and all of the principal actors in the coastal zone, especially the three main government departments, and between the principal actors themselves. When approved at the commencement of Phase 2, these would become public statements, demonstrating a commitment to ICZM.

13.17 The principal costs for Phase 1 will be salaries for the full-time facilitator and secretarial staff, for the preparation and dissemination of promotional material, guidelines, terms of reference and draft 'concordats', for organising and holding seminars, etc., and for technical support and assistance. It may be possible to meet these costs directly from the budgets of the departments involved, but an allowance for additional funds will probably be required.

13.18 No new structures at regional or local level are envisaged during Phase 1.

Phase 2

13.19 After the completion of the initial tasks, the programme for developing ICZM can move to a new, more active level. However, as the process will still be at an early stage, and much of the emphasis will be on pilot projects and arrangements, a relatively flexible management structure, allowing for close liaison with the three key central government departments, is recommended. A suitable structure for this is an inter-departmental unit, which should be formed at the commencement of Phase 2.

13.20 The unit should be directed by either the existing inter-departmental committee, or a similar new committee, that would represent:

- Department of the Environment and Local Government;
- Department of the Marine and Natural Resources;
- Department of Arts, Heritage, Gaeltacht and the Islands (National Parks and Wildlife Service);
- as the need arises and the process evolves, other government departments and national agencies with a major role in ICZM (possibly including the Department of Defence; Department of Tourism, Sport and Recreation; Department of Public Enterprise; the Heritage Council, etc.); and
- the local authorities.

13.21 The committee and the unit should work within the framework set out in the published 'concordats' referred to above. These are important in informing the public of the role and remit of both the unit and the principal actors in the coastal zone. Regular and meaningful consultations with representatives of the major managers and users of the coastal zone, including private sector interests, will be an important task of the unit.

13.22 It is anticipated that Phase 2 would have a duration of between 18 and 24 months, depending on the rate of progress. After 16 to 18 months, a major review of all aspects of the process should be undertaken, with particular attention paid to ways of more formally involving a wider range of coastal interests, including private sector interests, in the direction and operation of the unit. This, in turn, may give rise to a requirement to re-establish the unit on a more independent footing, as described for Phase 4 below.

13.23 The unit should be supported by a Coastal Zone Management Advisory Committee, which would be representative of the wider range of users and managers in the coastal zone, including all of the principal statutory agencies, major NGOs with interests in the coastal zone, and private sector interests such as fishing, tourism, marine transport, etc. If the committee is large, consideration could be given to forming specialist interest groups for working purposes.

13.24 This committee would advise the unit on a broad range of issues relating to ICZM. The committee would also assist the unit through inputs to the preparation of various documentation, including training material, terms of reference for the pilot ICZM plans, etc. The committee would also have an important role to play in developing the common vision for the future state of the coastal zone, and in reviewing the state of the coastal zone.

13.25 Further support would be provided by a Technical Advisory Group comprised of specialists in coastal and marine disciplines, including ICZM. The group would be composed of selected, invited experts, and might include a number of internationally recognised persons. The composition could vary from time to time, depending on availability and on the topics under consideration.

13C Summary Table for Phase 2

Management Structure	Duration	Principal Tasks	Major Outputs
Inter-Departmental Unit. Coastal Zone Management Advisory Committee. Technical Advisory Group. Pilot Regional (coastal cell/sub-cell) Plan Teams.	18-24 months	Develop policy and provide advice to government on matters relating to CZ; Co-ordinate Government policy and practice in the CZ; Approve and publish 'concordats'; Increase awareness and understanding of ICZM among users of the CZ and the public; Raise management capacity of principal actors in the CZ; Produce report on current 'state' of the CZ; Continue actions to redress identified amendments to legislation, policies and procedures; Develop common vision of the future state of the CZ; Prepare Terms of Reference for preparation of ICZM Plans; Identification of pilot ICZM plan areas; Initiation of pilot ICZM plans; Oversee completion of pilot ICZM plans, including public display; Guidelines on incorporation of ICZM plan objectives and policies into other relevant plans, such as Development Plans, and/or adoption by appropriate agencies; Establishment of international contacts; Initiation of joint projects with international partners; Establish data bases; Initiate and oversee selected research on identified CZ issues; Provide scientific and technical support to agencies; Initiate local conflict resolution mechanisms on pilot basis; Monitoring, evaluation and review.	Published 'concordats'. Publicity and educational material for public use. Seminars on ICZM for interested parties. Training material and workshops for CZ managers. Report on current 'state' of the CZ. Revised legislation, policies and procedures. Vision statement. Terms of Reference for ICZM plans. Pilot ICZM plans. Guidelines. Data Bases. Research reports. Scientific and technical support. Pilot conflict resolution system.

13.26 The group would meet as required. The members of the group would keep the unit appraised of developments in coastal zone management, and in the various relevant sectors. The group would also be available to assist the unit in relation to scientific and technical matters, and would provide advice and assistance similar to that provided by the Coastal Zone Management Advisory Committee. The Technical Advisory Group would also have a role to play in the provision of scientific and technical support to agencies within the coastal zone, such as the local authorities.

13.27 It is envisaged that a small number, probably two, Integrated Coastal Zone Management Plans would be prepared on a pilot basis during Phase 2. This will require the formation of a regional structure in the selected coastal cells, and the inter-departmental unit will require to liaise closely with that structure.

13.28 The unit will require a base and executive staff. In addition to a Director, an Assistant Director, an Administrative Officer and a Regional Liaison Officer are envisaged at national level, together with secretarial staff. At regional level, two ICZM Plan Facilitators will be required, one for each of the proposed pilot ICZM plans. The unit could be staffed through secondment of existing officials from the three principal government departments involved. Some tasks, such as the development of a vision for the future state of the coast, draft terms of reference for ICZM plans, etc., could be contracted to other public sector agencies or the private sector, as appropriate.

13.29 Whilst the unit could be located, in physical and organisational terms, in an existing government department, it should have a sufficiently separate identity to allow easy recognition and access by the public.

13.30 The unit will require independent financial resources to undertake tasks such as education and training, the preparation of documentation and databases, the provision of scientific and technical support, etc.

13.31 **Regional Structure:** The regional level structure should be based on the natural coastal cells, which are the primary units for the preparation of ICZM plans. These cells do not correspond to local authority or regional authority boundaries, and this undoubtedly increases the complexity of the system. However, the conventional wisdom is that ICZM plans must be based on natural units and, as it is unrealistic to seek for changes in long-established administrative boundaries, the complexity must be accepted.

13.32 The regional level structure is required to:

- prepare ICZM plans, based on national policy, on a coastal cell basis;
- to ensure the co-ordination of the ICZM plans with other policies and plans; and
- to monitor, evaluate and review progress in the implementation of the ICZM plan.

13.33 The selection of coastal cells for the preparation of ICZM plans should be taken at national level. In many of the cells, it may be appropriate to identify sub-cells, and prepare plans on a two-tier basis:

1. strategic ICZM plan for entire coastal cell; and
2. detailed ICZM plans for identified sub-cells.

13.34 When it is decided to prepare an ICZM plan for an identified cell, it is recommended that a Regional Plan Team be formed, possibly under the aegis of the Regional Authority, which has an existing co-ordination role in relation to the activities of the local authorities and other public agencies. Where the cell extends across more than one region, the Regional Authority most directly involved should be nominated as lead authority. The Regional Authorities currently have very limited financial and staffing resources, and would require specific resources for the preparation of plans.

13.35 The Regional Plan Teams should include representatives of all of the relevant public agencies responsible for managing the coastal zone in that cell, including the Regional Authority, local authorities, harbour authorities, fisheries boards, local representatives of the Department of the Marine and Natural Resources, the National Parks and Wildlife Service, etc. The teams should also include representatives of the principal private sector interests in the coastal cell. The teams will thus be large in number, especially for some of the larger coastal cells. To facilitate efficient progress,

it is recommended that management of the preparation of the plan be entrusted to a small working group. Where a two-tier approach is adopted, separate working groups could be formed for each sub-cell for the second stage of the exercise.

13.36 The Regional Plan Teams will require the support of a full-time facilitator for the duration of the plan preparation period. In addition, either full-time staff to prepare the plans, or external technical assistance, will also be required.

13.37 Close liaison between the national level unit and the Regional Plan teams will be essential, and it is recommended that a representative of the unit be a member of both the Regional Plan Team, and the working group for the management of the plan.

13.38 Following completion of the ICZM plan, which should be adopted by the Regional Plan Team and approved by the national unit, the regional team should assist in ensuring that the objectives and policies of the ICZM plan are incorporated into the plans and programmes of all the relevant bodies, including the statutory development plans of the local authorities. The teams should also meet on a regular basis to monitor and review progress on the implementation of the plan, and make formal reports to the national unit.

13.39 The cost of establishing and operating the Regional Plan Teams will vary from cell to cell, depending on the extent and complexity of the cells. The principal costs will relate to the provision of the ICZM Plan Facilitator, and to the technical preparation of the ICZM plan.

13.40 **Local Structure:** At local level, it is intended that the existing agencies, with additional powers and responsibilities as necessary, will implement ICZM policies. These agencies will be represented on the Regional Plan Teams, and will have access to the national-level units through appropriate representation on the Coastal Zone Management Advisory Committee. No significant new structures are, therefore, envisaged at the local level.

13.41 Where the need to amend the powers and/or responsibilities of existing agencies is identified as part of the ICZM programme, the case for change can be made by the national-level unit, and presented for consideration by the appropriate decision makers.

13.42 **Public Participation:** Meaningful public participation is essential to ICZM. At the regional level this will be facilitated through invitations to make submissions to the preparation of ICZM plans, and through response to the draft plans, when placed on display. In addition, major interest groups would be consulted as part of the plan preparation programme.

13.43 Additional public participation during Phase 2 of the ICZM process would be facilitated through a number of measures, including:

- responses to the 'concordats';
- publicity and educational material;
- involvement in seminars; and
- response to draft vision statement.

Phase 3

13.44 Phase 3 will extend and develop the work of Phase 2, but with less emphasis on pilot projects and schemes. The Phase 2 activities should considerably broaden and

deepen the knowledge and understanding of ICZM among the principal actors in the coastal zone, and among the public generally. The experience gained during the pilot projects and schemes will provide the basis for more established and permanent arrangements. A key element of Phase 3 will be the preparation of a full set of ICZM plans for the country, on a cell by cell basis.

13.45 The most appropriate administrative structure for Phase 3 can be considered at the time of the major review suggested for the end of Phase 2. If the arrangements for Phase 2 are seen to be working well, these might be left in place. Alternatively, an independent unit could be created, as described for Phase 4 below. This would be particularly suitable if there is a recognised need to extend representation on the inter-departmental committee to include a wider range of interests in the coastal zone.

13D Summary Table for Phase 3

Management Structure	Duration	Principal Tasks	Major Outputs
Inter-Departmental Unit or Independent Unit. Coastal Zone Management Advisory Committee. Technical Advisory Group. Regional (coastal cell/sub-cell) Plan and Review Teams.	18-24 months	Develop policy and provide advice to government on matters relating to CZ; Co-ordinate Government policy and practice in the CZ; Continue to increase awareness and understanding of ICZM among users of the CZ and the public; Continue to raise management capacity of principal actors in the CZ; Produce report on current 'state' of the CZ; Continue actions to redress identified amendments to legislation, policies and procedures; Detailed evaluation and review of pilot ICZM plans; Prioritise CZ cells for preparation of ICZM plans; Revise Terms of Reference for preparation of ICZM Plans; Initiate full set of CZ plans; Revise guidelines on incorporation of ICZM plan objectives and policies into other relevant plans, such as Development Plans, and/or adoption by appropriate agencies; Oversee completion of ICZM plans, including public display and incorporation of objectives and policies into other relevant plans and/or adoption by appropriate agencies; Identify issues in CZ and relating to ICZM that require guidance; Produce guidelines for identified issues; Development of international contacts; Development of joint projects with international partners; Continue compilation of data bases; Continue to initiate and oversee selected research on identified CZ issues; Provide scientific and technical support to agencies; Evaluate and review pilot conflict resolution mechanisms, and establish permanent conflict resolution system; Monitoring, evaluation and review.	Publicity and educational material for public use. Seminars on ICZM for interested parties. Training material and workshops for CZ managers. Report on current 'state' of the CZ. Revised legislation, policies and procedures. Revised Terms of Reference for ICZM plans. ICZM plans. Guidelines. Data Bases. Research reports. Scientific and technical support. Conflict resolution system.

13.46 As in Phase 2, the committee and the unit should continue to work within the framework set out in the published 'concordats', and be supported by the Coastal Zone Management Advisory Committee and the Technical Advisory Group.

13.47 The duration of Phase 3 would be open to review, as the programme proceeds and develops. However, the intention should be to move on to the establishment of an independent unit (if not already in place), and to more formal and mature arrangements. Phase 3 would be expected to commence about 18-24 months after the commencement of Phase 2, and a similar period of 18 to 24 months is suggested as indicative of the timescale for the duration of Phase 3.

13.48 The unit will continue to require a base and executive staff, and its requirement for resources will inevitably grow with the expansion of its work. Even if the unit remains as an inter-departmental one, consideration should be given to the recruitment of external staff, especially people with specific training in ICZM.

13.49 Towards the end of Phase 3, it may be useful to formally examine the benefits of investing resources in the unit, in terms of the improved administration of the coastal zone and the consequent savings in the relevant departments and agencies

13.50 As the preparation of ICZM plans will be a major feature of Phase 3, the relationship of the unit to the regional structure will be important, and will require to be reviewed from time to time. As ICZM plans are produced and adopted, the relationship with the implementing agencies on the ground will also become more important.

13.51 Public participation in the ICZM process, during Phase 3, would be facilitated through similar measures to those for Phase 2.

Phase 4

13.52 Phase 4 is a mature stage of ICZM, with the structures and methods firmly established. The activities of the previous phases will be continued, but monitoring and review, followed by adaptation of the approach and activities, will be increasingly important.

13.53 The management structure for this phase should reflect the maturity of the programme, as well as the experience gained during the earlier phases. The recommendation is for the inter-departmental unit to be developed into an independent unit, directed by a board representing a wide range of coastal zone interests, and established on a statutory basis. This will give the unit a greater degree of freedom and make it more representative.

13.54 The board should be representative of the principal government departments, the local authorities and the other major users and managers of the coastal zone. However, the board should concentrate on the direction of the unit, and will require to be relatively modest in size, to allow for efficient operation. A maximum of about 12 members would seem appropriate. As this number could not adequately represent all of the varied interests in the coastal zone, the role of the advisory group will become increasingly important, and will require to embrace a wide representation of interests. The advisory group should be raised in status to a Coastal Zone Management Advisory Council, with membership, as of right, by a wide range of coastal zone interests. The council should concentrate on matters of policy, closely advising the board, and the formal links between the two should be clearly established. The council would also be supported by the Technical Advisory Group.

13.55 The 'concordats', setting out the role and remit of the unit, and the relationship between the unit and the major actors in the coastal zone, should be revised in the light of the changed management structure.

13.56 An independent base and executive staff, including experts in ICZM, will be required at this stage. Whilst this will increase the requirements for resources, these should be viewed in the context of the savings to be achieved through the more integrated and co-ordinated management of the coastal zone, including the benefits of concerted planning by a range of agencies.

13.57 The relationship of the unit to the regional and local structures will require on-going review, especially as during Phase 4 the emphasis at regional and local level will shift from plan preparation and adoption to implementation, monitoring, evaluation and review.

13E Summary Table for Phase 4

Management Structure	Duration	Principal Tasks	Major Outputs
Independent Unit. Coastal Zone Management Advisory Council. Technical Advisory Group. Regional (coastal cell/sub-cell) Plan Teams.	On-going	Develop policy and provide advice to government on matters relating to CZ; Co-ordinate Government policy and practice in the CZ; Revise 'concordats'; Continue to increase awareness and understanding of ICZM among users of the CZ and the public. Continue to raise management capacity of principal actors in the CZ; Produce regular (3-year) reports on current 'state' of the CZ; Continue to review and redress amendments to legislation, policies and procedures; Detailed evaluation and review of ICZM plans; Produce Terms of Reference for preparation of revised ICZM Plans; Initiate revision of CZ plans as required; Oversee revision of ICZM plans, including public display and incorporation of objectives and policies into other relevant plans and/or adoption by appropriate agencies; Continue to identify issues in CZ and relating to ICZM that require guidance; Produce guidelines for identified issues; Continue development of international contacts; Continue development of joint projects with international partners; Continue compilation of data bases; Continue to initiate and oversee selected research on identified CZ issues; Provide scientific and technical support to agencies; Evaluate, review and amend conflict resolution system; Monitoring, evaluation and review.	Revised 'concordats'. Publicity and educational material for public use. Seminars on ICZM for interested parties. Training material and workshops for CZ managers. Reports on current 'state' of the CZ. Revised legislation, policies and procedures. Terms of Reference for revised ICZM plans. Revised ICZM plans. Guidelines. Data Bases. Research reports. Scientific and technical support. Conflict resolution system.

13.58 The independent unit would represent the final stage in the evolution of the management structure, at least for the foreseeable future. As ICZM is an on-going process, there is no fixed 'end-state', but Phase 4 should provide a mature, yet flexible and adaptable, system for the integrated management of the coastal zone. A major benefit of ICZM in the longer term will be the establishment of a range of integrated management techniques and practices that can be applied to other geographical areas.

RESOURCE REQUIREMENTS

13.59 Adequate funding is essential if ICZM is to be introduced and is to work. Whilst the use of ICZM can lead to greater integration and co-ordination of development proposals and of activities in the coastal zone, which will in turn lead to greater efficiencies and savings, the system must be put in place first.

13.60 The principal costs associated with the introduction of ICZM include:

- cost of establishing and maintaining the national level units with the executive, the proposed Coastal Zone Facilitator, the Coastal Zone Management Advisory Committee or Council, and the Technical Advisory Group;
- publicity and education costs of raising awareness of ICZM;
- training costs;
- costs of preparing ICZM plans;
- costs of research funded by the national level body; and
- funds to assist with the implementation of measures identified in ICZM plans (topping-up funds).

13.61 An indication of the manpower requirements for each phase are given in Table 13F.

13F Indicative Manpower Requirements

Phase	Indicative Manpower Requirements
1	Full-time Facilitator; Assistant Facilitator; Part-time Administrator; Secretarial support
2	Director; Assistant Director; Administrative Officer; Technical Officer; Regional Liaison Officer; Coastal Zone Facilitator; 2 ICZM Plan facilitators (employed at regional level); Secretarial Support
3	Director; Assistant Director; 2 Administrative Officers; 2 Technical Officers; Regional Liaison Officer; Assistant Regional Liaison Officer; Coastal Zone Facilitator; 4 ICZM Plan facilitators (employed at regional level); Secretarial Support
4	Director; Assistant Director; 3 Administrative Officers; 4 Technical Officers; Regional Liaison Officer; Assistant Regional Liaison Officer; 2 ICZM Plan facilitators (employed at regional level); Secretarial Support

13.62 An indication of the costs of establishing and operating the national and regional level structures are given in Table 13G. These figures are, of necessity, broad estimates. The actual costs will depend on the details of the selected structure and progress with the implementation of the system. An allowance has been made for the subvention of coastal zone management activities by the local implementation authorities.

ROLE OF THE LOCAL AUTHORITIES

13.63 The local authorities have a wide range of responsibilities that extend into the coastal zone, and also have detailed knowledge of their jurisdictions. They are, therefore, particularly important managers of the coastal zone, at the local level. It has been suggested that increased responsibilities for the local authorities in ICZM would help

resolve some of the current administrative shortcoming, and there is certainly a need for greater co-ordination and formal linkages between the local authorities and national policy making organisations.

13G Indicative Management and Administration Costs (per annum)

	Phase 1	Phase 2	Phase 3	Phase 4
Salaries, Allowances and other employment costs:				
National level	£96,000	£270,000	£384,000	£564,000
Regional level	£0	£78,000	£156,000	£78,000
Establishment Expenses[1]				
National level	£50,000	£85,000	£155,000	£180,000
Regional level	£0	£25,000	£50,000	£50,000
Coastal Zone Management Advisory Committee	£0	£20,000	£40,000	£40,000
Technical Advisory Group	£0	£30,000	£50,000	£50,000
Travel and Subsistence	£5,000	£20,000	£35,000	£40,000
Other Operational Expenses[2]	£35,000	£48,000	£120,000	£180,000
External Technical Assistance	£25,000	£50,000	£100,000	£100,000
Assistance to local implementation agencies[3]	£0	£150,000	£350,000	£350,000
TOTAL	£211,000	£776,000	£1,440,000	£1,632,000

[1] includes rent, maintenance, insurance, depreciation, etc.
[2] includes costs of printed material, seminars, technical advice to local authorities, etc.
[3] includes costs of preparing ICZM plans, and subventions towards implementation

13.64 A more active role for the local authorities in the foreshore lease/licence and aquaculture licence processes would help resolve some of the difficulties currently experienced. Improved liaison and co-ordination procedures with the Department of the Marine and Natural Resources and the National Parks and Wildlife Service require to be developed and implemented, and this should have a high priority. Among the matters to be considered in revising current practice are:

- greater involvement of the Department of the Marine and Natural Resources and NPWS in the making of statutory development plans, in so far as they affect the coast, and at an early, pre-draft, stage;
- formal and efficient procedures to enhance the inputs of the Department of the Marine and Natural Resources and NPWS in the consideration of planning applications, and of the local authorities and NPWS in the consideration of foreshore licence and lease applications and aquaculture applications; and
- time limits for the making of the relevant responses.

13.65 The extension of local authority jurisdiction out to sea, beyond the high water mark, would have the advantage of reducing the impact of the administrative land/marine divide and provide an impetus for more co-ordination between the land and marine based decision makers. In some areas, such as the Shannon Estuary and Bantry Bay, local authority jurisdiction already extends beyond Mean High Water Mark.

13.66 It is recognised that there are difficulties with such an extension of jurisdiction, not least the competence and capacity of the local authorities to deal with marine matters. However, for effective ICZM, many of these difficulties must be overcome in any case, and the skills and capacities of the local authorities increased.

13.67 On balance, it is recommended that the role and jurisdiction of the local authorities, in respect of land below high water, be revised in relation to those uses and activities that require a physical link with the land or which are likely to impact significantly on the land. The effect of this will be to marginally extend planning control, which would then consider, for example, the full proposal for a marina, rather than for the land-based elements. Close liaison and integration of decision making with the Department of the Marine and Natural Resources and the National Parks and Wildlife Service would be essential.

14. OTHER RECOMMENDATIONS

Actions and measures to support and complement the introduction of a framework for ICZM are recommended, and include:

- *increasing awareness and understanding of ICZM among the existing managers and actors in the coastal zone, and among the public generally;*
- *increasing the technical and management capacity of the principal actors in the coastal zone;*
- *involvement of the public;*
- *strategic plans, visions and guidelines;*
- *amendments to legislation and to policies and procedures;*
- *a system to assist in the resolution of conflicts;*
- *environmental monitoring and research;*
- *scientific and technical support; and*
- *monitoring, evaluation and review of the ICZM programme.*

Recommendations for the preparation of ICZM plans, on a coastal cell basis, are also made.

14.1 The programme for the introduction of Integrated Coastal Zone Management in Ireland will require a range of actions and measures to be implemented at all levels, from the national to the local. It is not possible to set out a comprehensive list of these actions, as the details will vary from time to time with changing circumstances, and in response to the changing needs of the coastal zone. A broad outline of the principal measures and actions required is given in this chapter, but these will require on-going evaluation, review and amendment.

INCREASING AWARENESS AND UNDERSTANDING

14.2 Current levels of awareness and understanding of the concept and process of Integrated Coastal Zone Management are improving, but remain relatively limited. This was apparent during the consultation process for this study. The first priority is to raise awareness and understanding among the existing managers and major actors in the coastal zone. The second priority is to raise awareness and appreciation among the wider public.

14.3 Increasing the awareness and understanding of ICZM among decision makers and other key personnel in the relevant departments and agencies should be commenced as early as possible in the programme. It is suggested that the inter-departmental

committee organise seminars for existing managers of the coastal zone, during Phase 1 of the programme. The seminars would explain the concept, process and practice of ICZM, and allow the participants to relate it to their existing arrangements. These seminars should continue during the later phases, until there is a sound knowledge of ICZM among all of the principal actors in the coastal zone.

14.4 An important element of the awareness programme should be to achieve a commitment to ICZM from the existing managers of the coastal zone.

14.5 The support of the public is essential if ICZM is to be successfully introduced. Various forms of media, including newspapers, television, the Internet, etc., should be used to inform the public of the concept and benefits of ICZM, and to keep them abreast of progress with the programme. This should commence during Phase 1, but should be intensified during Phase 2 and the later stages, and include the organisation of seminars, similar to those outlined above, but for a wider audience.

14.6 In addition to media coverage and general seminars, consideration should be given to the production of publicity material on the general concept of ICZM, and on specific themes and issues. Some, at least, of this should be addressed to educational audiences, especially students taking relevant courses at universities and other third-level institutions. Public participation in the process is addressed below.

CAPACITY BUILDING

14.7 In addition to increasing awareness and understanding of ICZM, it will also be necessary to increase the technical and management capacity of the principal actors in the coastal zone, so that full benefit can be derived from the introduction of ICZM. Considerable levels of expertise, skill and experience exist within the public service, as well as in academic institutions and the private sector. These resources should be marshalled and supplemented, where required, by relevant overseas experience, including specialists in ICZM.

14.8 The measures to build the capacity of managers in the coastal zone should follow on from the seminars designed to raise awareness and understanding. They should focus on three areas in particular:

1. building up specialist capacity in ICZM;

2. ensuring that existing specialists can integrate their work into the wider concept of ICZM, by having a broader vision and view and by understanding how their specialisms interact with other aspects of the coastal zone; and

3. integrating existing management policies and practices with ICZM.

14.9 The measures to be used can include seminars and workshops on more specific ICZM topics, and other training material such as documentation, videos, etc. Overseas expertise should be used, as necessary.

PUBLIC INVOLVEMENT

14.10 In addition to a requirement to be informed about ICZM, the public must be afforded reasonable opportunities to participate in the process. Initially, public response to this draft policy document will provide an opportunity for the public, especially those with particular interest in the coastal zone, to make their views known prior to the adoption of policy by the government.

14.11 Following the initial, start-up phase, opportunities will occur at a number of levels for direct and indirect involvement of the public. These will include:

- on-going access to the process through elected representatives;
- responses to the 'concordats';
- involvement in seminars, etc. as outlined above;
- response to draft vision statement and other draft strategic documents (see below); and
- submissions to the preparation of ICZM plans, both strategic and detailed, and responses to the draft plans, which would be placed on display.

14.12 The national level bodies, during all phases, should adopt an 'open door' approach, with a willingness to meet with representatives of all coastal zone managers, and other interest groups, including the private sector. At regional level, the involvement of the public will be principally through the ICZM plan process, and the Regional Plan Teams should seek for widespread consultation and involvement in the plan preparation process.

STRATEGIC PLANS, VISIONS AND GUIDELINES

14.13 An important function of the national-level unit will be to provide a strategic context for the individual ICZM plans. This will comprise three elements:

1. an agreed vision of the future desired state of the coastal zone;
2. strategic briefs setting out conditions and parameters that must be accommodated within individual ICZM plans; and
3. guidelines.

14.14 During Phase 2 of the programme, the inter-departmental unit should seek to develop, through a series of consultations and possibly seminars, a vision of the future desired state of the coastal zone. This should be produced as a draft vision statement, to which public response should be invited. The purpose of the vision statement is to provide a general, agreed context for the development of ICZM, and to provide guidance in relation to the development of more specific strategic briefs. The vision statement can be reviewed and amended as necessary, but should provide a relatively 'fixed' framework for ICZM.

14.15 Preparation of the vision will require a review of the current state of the coastal zone. To some extent, this draft policy document meets that requirement at this point in time, but the details need to be brought together in a relatively succinct format, and possibly held as a data base.

14.16 This review of the state of the coastal zone should be renewed on a regular basis, say at intervals of about three years. The reviews should provide a summary picture of the state of the coastal zone in terms of environmental quality, development pressure, etc., identify and discuss the principal issues affecting the zone, and assess progress towards achievement of the vision. The review document should also report on progress in the implementation of the programme of ICZM. The reviews should be public documents.

National Strategy

14.17 An important requirement for the preparation of ICZM plans is a clear national strategic context within which the objectives and policies of the coastal cell plans can be placed.

14.18 Pressure on Ireland's coastal lands and inshore waters is increasing. This is due not only to population increases and increasing urbanisation in the coastal zone, but also to the introduction of new uses and activities, the diversification of agriculture and major increases in tourist numbers. The coastal resource is finite in extent and capacity, and its management requires that these pressures be brought under more stringent control.

14.19 As the pace of development increases, decisions as to the strategic importance of certain uses, or of certain sites or areas, become a matter of increasing urgency. There is no longer scope for a *laissez faire* attitude to development or conservation. As noted in the County Wexford Coastal Review[1], many of the 'easy' development options have in effect been used up. The implementation of conservation measures, such as the EU Birds and Habitat Directives, will further reduce the options. There is a need for a strategic approach to development and conservation and for priorities to be set at the highest level.

14.20 Whilst the preparation of local development plans and Integrated Coastal Zone Management Plans for the coastal cells are important and can resolve many spatial and resource use issues, their scope and effectiveness is limited by lack of perspective. Certain decisions and choices, which have spatial as well as economic and environmental consequences, must be made at national level in order to guide and direct local and regional (coastal cell) planning.

14.21 A national strategic perspective is required on a range of policy matters, many of which have a spatial dimension. These include urbanisation, coastal protection, on- and off-shore mineral extraction, navigation infrastructure, and military and security issues. The implementation of many EU Directives also requires a national perspective.

14.22 An example of the need for a national strategy are the pressures arising from increasing tourism and recreation numbers on both natural and infrastructural resources in certain parts of the coastal zone. Whilst existing numbers are by no means at a level that could be described as 'mass tourism', there is a tendency in that direction and, other things being equal, forecast growth suggests that there will be no slackening in the pace of development. It is perhaps time, therefore, for a review by the authorities of national tourism policy particularly in regard to the issue of numbers versus quality/value and to the spatial impact of tourism, not least on the coast.

14.23 Similarly, the aquaculture industry, particularly the shellfish sector, is widely acknowledged as having great potential for expansion. Projected output by 1999 is estimated at 69,000 tonnes, compared to 1995 levels of 27,441 tonnes. Such projected growth implies a major increase in the number of aquaculture operations, and/or expansion of existing operations, and, as a consequence the coastal land take and the impact on inshore waters is likely to increase accordingly.

14.24 A major re-appraisal of sites for nature conservation is underway which includes the introduction of new forms of designation and possible new or amended restrictions on the use of land and water in the coastal zone. Early indications are that virtually the whole of the coast has some value in conservation terms, so that the need to be selective and to prioritise as between sites at international, national, regional and local level is clearly crucial at this stage. The levels of control on development in such

designated areas should reflect the importance of the site and its priority for conservation.

14.25 As with tourism and aquaculture, the potential for conflict with other interests is highly significant. Initially, at least, these conflicts will occur locally but they cannot be resolved locally. Their occurrence can, however, be minimised by forward strategic planning at national, sectoral, level which sets out the priorities for development and conservation in each sector and the spatial implications arising out of these priorities.

14.26 There is, therefore, a need for the national-level unit to provide guidance for the preparation of ICZM plans, in the form of briefs and guidelines that set out national policy and requirements. Much of the policy already exists, but has not been drawn together in a form that allows for ready incorporation into regional and local planning. In addition, relatively little policy is expressed spatially.

14.27 Given the constraints on development in the coastal zone, and the growing pressure on remaining development areas and sites, it is critical that adequate provision be made for essential developments of national importance, such as the expansion of ports, the reservation of key industrial sites and the provision of defence and navigation infrastructure, etc. Decisions on these must be made at national level, and the requirements, as set out in the briefs, must be accommodated in ICZM plans.

Guidelines

14.28 In addition to the strategic briefs mentioned above, the national-level unit should prepare and issue guidelines on a variety of topics related to ICZM. These can be issued as required, and may include:

- the identification of policy matters that are more appropriate to the regional or local level;
- guidance on the balance between development and conservation in the coastal zone; and
- guidance on the methodology for the preparation of ICZM plans.

LEGISLATIVE AMENDMENTS

14.29 Some significant legislative changes affecting the coastal zone are already in train. These include legislation in relation to the foreshore, whilst that in relation to aquaculture has recently been amended. An early task for the inter-departmental committee will be the identification of other laws and regulations concerning the coastal zone that require amendment, especially those that inhibit greater co-ordination and integration of procedure and policy, as well as enforcement and monitoring procedures relating to various acts.

Foreshore Act

14.30 The main shortcomings of the Foreshore Act are the lack of public access to the lease/license process and the lack of a determination time limit. These problems are compounded by the dual role of a foreshore lease/license. The foreshore lease/ license is both an agreement allowing the lease of state land and a grant of permission for particular activities and developments.

14.31 It is recommended that the development control aspects of the licensing process be separated from the leasing aspects, even if both these remain within the Department of the Marine and Natural Resources. The development control aspects should be revised to allow for more transparent and meaningful public involvement, and should also be subject to time limits. Formal consultation with the local authorities and NPWS should be incorporated as part of the process. The leasing aspects cannot be subjected to time limits, and should remain a bilateral agreement between the Department of the Marine and Natural Resources and the applicant.

Wildlife Act 1976 and Nature Conservation Designations

14.32 The legislative backing for the primary nature conservation designations (SPA, SAC, NHA) is either weak or non-existent. Appropriate legislation needs to be enacted in order to adequately protect these designations. This must adequately address the question of compensation for restrictions on development of private land and it must clearly define any non-compensatible developments.

Enforcement and Monitoring

14.33 There is inadequate enforcement and monitoring of some existing legislation, and of licences and permits in the coastal zone, resulting in uncontrolled development and uses. For example, the lack of monitoring of licenses for dumping at sea has resulted in dumping at locations not in accordance with the terms of the license. Similarly some aquaculture operations have expanded beyond the terms of their license due to a lack of monitoring. As identified earlier in the report, much of the difficulty lies in inadequate resourcing.

14.34 All legislation must be enforced in order to prevent unlicensed uses and developments, and all licensed uses and developments within the coastal zone must be monitored to ensure compliance with the terms and conditions of the license.

POLICY AND PROCEDURAL AMENDMENTS

14.35 It is to be expected that the adoption of ICZM will result in a number of amendments to existing policy affecting a range of issues in the coastal zone. Initially, these require to be identified. Similarly, there will be a considerable number of procedural changes required to co-ordinate and integrate the activities of the various agencies. These will require to be identified on an on-going basis, and appropriate actions taken by the national-level unit.

14.36 One particular example of an area that requires consideration is marine archaeology, which has been a somewhat neglected subject in this country. The importance of the inter-tidal zone, especially in estuarine areas, is acknowledged as are the many significant wreck sites (Armada, etc.) around our coasts. Key sites and areas need to be identified and a policy for their protection and exploration formulated similar to that in force on land.

CONFLICT RESOLUTION

14.37 The proposed ICZM management system, along with ICZM plans, provide important means of reconciling conflicting demands within the coastal zone. The resolution of competing demands should be a major objective of each ICZM plan.

14.38 Nevertheless, conflicts and disputes will inevitably continue to arise, many of them of a very local nature. As a means of assisting in the resolution of such disputes, it is recommended that the national-level unit make a Coastal Zone Facilitator available to arbitrate in disputes affecting the location and/or priority of uses in the coastal zone. This would not replace or preclude the use of any other methods of resolving disputes, including the legal system, by the parties concerned, but is intended to provide an opportunity to reconcile disputes at an early stage.

14.39 The facilitator would be available, on request, to any agency, organisation or person involved in a dispute concerning use or development in the coastal zone. The facilitator would meet the parties involved, and either issue a decision on the dispute or make a recommendation on how the matter could be taken forward. The decision of the facilitator would not be binding, and as mentioned above redress to him/her would not preclude other avenues of redress.

ENVIRONMENTAL MONITORING AND RESEARCH

14.40 One of the key issues identified is the limited extent of data and knowledge on many aspects of the coastal zone. A role of the national level unit will be to identify, in partnership with the Marine Institute and other relevant bodies, the requirements for additional monitoring and research, and to place relative priorities on these. The unit should ensure that the required research is undertaken, and will also need to keep abreast of the range of data being collected and analysed by other bodies.

14.41 It is recommended that there is greater co-ordination of information collection and collation, particularly across the land/marine divide, to prevent duplication of effort. The use of a single agency, for example the National Marine Data Centre, to collate all existing information on the coastal resource, both land and marine, would greatly help overcome the existing difficulties in ascertaining the extent of information that is available and its location.

14.42 Formal structures need to be established to ensure greater co-ordination between organisations currently involved in monitoring and data collection, especially across the land/sea divide, and this should be examined by a competent agency with a view to making appropriate recommendations, including recommendations on the appointment of a lead organisation to guide all monitoring efforts.

14.43 In due course, ICZM plans can be reviewed, and if necessary amended, in the light of the additional information as it becomes available.

SCIENTIFIC AND TECHNICAL SUPPORT

14.44 The requirement for capacity building has been discussed above. The limitations of many of the existing agencies and authorities in respect of specialist knowledge and skills, relating to marine matters in particular, is recognised. As these agencies, especially the local authorities, become more involved with matters that cross the land/sea divide, there will be a growing requirement for specialist scientific and technical knowledge.

14.45 The employment of coastal ecologists or environmental managers by local authorities would require considerable funding but would facilitate the greater involvement of the authorities in ICZM. Alternatively, a pool of appropriate experts drawn from a number of existing agencies, including the Marine Institute and NPWS, supplemented by the private sector, could provide specialist expertise to local authorities to assist in development control and planning in the coastal zone. However, it is recognised that these central agencies have limited resources, and the overall allocation of resources for specialist expertise will require to be increased.

14.46 A panel of specialists, some of whom might also serve on the Technical Advisory Group, should be identified by the national-level unit, and the availability and specialisms of these made known to the local authorities and others.

PROGRAMME MONITORING, EVALUATION AND REVIEW

14.47 Integrated Coastal Zone Management is a process. As emphasised above, there is a constant need to monitor, evaluate, review and amend the ICZM programme. The management system should include comprehensive measures and actions in this regard. These should include:

- regular (every 6 months) internal reviews of progress with the programme;
- periodic (every 3 years) review of the state of the coastal zone that should also include a progress report on the implementation of the ICZM programme;
- major review at end of Phase 2;
- formal reviews of all pilot actions, including pilot ICZM plans and pilot conflict resolution mechanisms;
- reviews of implementation of ICZM plans (in association with Regional Plan Teams); and
- on-going reviews of conflict resolution system.

ICZM PLANS

14.48 Preparation of Integrated Coastal Zone Management Plans is a key element of the ICZM programme. These plans relate to the coastal cell. In the first instance, plans should be prepared for one or two cells (sufficient to illustrate the range of geographical, economic and environmental conditions) on a demonstration basis.

Coastal Cells/Planning Units

14.49 The ICZM plans should be prepared on a natural coastal cell basis. Coastal cells are identified primarily on the basis of natural coastal processes, The 'ideal' cell is one which is entirely self-contained from a sediment transport viewpoint, that is, all beach material would remain within the cell. Cell boundaries reflect major changes of wave exposure to the coast. If this concept is applied to the Irish coast, only four such cells are identified for the whole coastline of the island:

- Fair Head to Greenore Point (Co. Wexford);
- Greenore (point) Head to Cape Clear;
- Cape Clear to Erris Head; and
- Erris Head to Fair Head.

These cells are too large to form effective planning units for the coastal zone.

14.50 At a detailed level, especially on rocky coastlines where sediment is sparse and beaches often confined to deeply indented bays, natural cells tend to be small and numerous. These are clearly too small to be used as planning units.

14.51 By taking other matters into consideration, such as secondary breaks in the transport of sediment, geology, physical character and orientation, a set of 13 cells can be identified around the coast of the Irish Republic. These are illustrated on Figure 14.1, and listed in Table 14A. The existing characteristics of each of these units is summarised in Appendix 1.

14A Coastal Cells and Planning Units

No.	Boundaries	Basis of Boundary
1.	Carlingford Lough to	One way drift headland
	Skerries	Drift divide headland
2.	Skerries to	Drift divide headland
	Wicklow Head	Drift divide headland
3.	Wicklow Head to	Drift divide headland
	Greenore Point	One way drift divide
4.	Greenore Point to	One way drift divide
	Hook Head	Drift divide headland
5.	Hook Head to	Drift divide headland
	Old Head of Kinsale	Drift divide headland
6.	Old Head of Kinsale to	Drift divide headland
	Cape Clear	Drift divide headland
7.	Cape Clear to	Drift divide headland
	Slea Head	Drift divide headland
8.	Slea Head to	Drift divide headland
	Loop Head	Drift divide headland
9.	Loop Head to	Drift divide headland
	Slyne Head	Drift divide headland
10.	Slyne Head to	Drift divide headland
	Erris Head	One way drift divide
11.	Erris Head to	One way drift divide
	Malin More	Drift divide headland
12.	Malin More to	Drift divide headland
	Malin Head	Drift divide headland
13.	Malin Head to	Drift divide headland
	Inishowen Head (and Lough Foyle)	One way drift divide

Plan Preparation and Scope

14.52 The preparation and scope of Integrated Coastal Zone Management Plans is basically the same as that of any other planning exercise, and comprises:

- background statement with descriptive material;
- analysis and listing of issues and objectives;
- consideration of scope and options, and selection of recommended option;
- strategic statement;
- recommended policies, measures and actions.

14.53 ICZM plans, however, will have a major co-ordination role, and the authors therefore will need to obtain the views, plans and expectations of the spectrum of public and private actors and interests having responsibility for, or concern with, the management of the coastal cell. It is different from other planning exercises, too, in that there should be no presumption in favour of either development or conservation and there should be no limitation on its scope arising from sectoral or other concerns. These aspects of the coastal zone planning process are of prime importance and both the methodology and the eventual output ought to reflect that fact.

14.54 As Integrated Coastal Zone Management Plans should be prepared on the basis of natural coastal units, they will generally involve a number of local authorities, perhaps more than one regional authority, as well as all of the other agencies involved in managing the coastal zone.

14.55 The preparation of an ICZM plan for a cell unit should be instigated by the national level unit. In this way, resources can be allocated on a rational basis to the cell units that are under greatest pressure and/or which urgently require strategic planning. It would be wise to undertake just one or two plans initially (perhaps of two quite different cells), and then review these before embarking on additional plans.

14.56 Where an ICZM plan is to be prepared, a Regional Plan Team should be formed, as described in Chapter 13. The role of the Regional Plan Teams will be:

- to prepare ICZM plans for the defined coastal cell units;
- to seek to co-ordinate implementation of the plan at local level; and
- to integrate the policies, proposals and recommendations contained in the ICZM plan with other plans, such as County Development Plans, Management Plans for Special Areas of Conservation, etc.; and
- to monitor and evaluate the progress in implementation of the plan.

14.57 The inland extent of the coastal zone to be considered in the ICZM plan should be determined as part of the plan preparation process, and might vary for different topics, and indeed from plan to plan. Each ICZM plan will be different. The emphasis placed on different topics will reflect the attributes of the relevant coastal cell unit, and the nature and extent of the pressures on the area.

14.58 The outputs of the plan preparation team will include:

- ICZM Strategy Plans (best prepared for the full coastal cell); and
- detailed ICZM Plans or Programmes of Action, identifying the implementation agencies for each action, funding sources and the ways in which the ICZM plans will be integrated with other plans. Where appropriate, these can be prepared for sub-cells of the main coastal cell.

14.59 The draft ICZM strategy and detail plans should be approved by the national-level unit to ensure compatibility with national objectives and policies, and to ensure integration with adjoining ICZM plans, etc., and be then placed on public display for observations and comments. Following any revisions, the plan should be formally approved by the Regional Plan Team, and should be adopted by each implementation agency, either through formal approval of the ICZM plan itself, or incorporation of the relevant objectives, policies and actions into their own plans and programmes, including the development plans of the local authorities.

14.60 In addition to public involvement at the time of the draft ICZM plan, the preparation of the plan should be publicly announced at the commencement of the exercise, and submissions from the public, including all of the various interest groups, invited, and these submissions should be taken into account in the preparation of the plan.

ICZM Plan Work Programme

14.61 A work programme for the preparation of ICZM plans is outlined, for the purposes of illustration, in Appendix 3. Specific work programmes will need to be prepared by the planning team responsible for each cell, tailored to the particular needs of ICZM in that cell.

[1] Wexford County Council, Brady Shipman Martin, 1992, *Wexford Coastline; Coastal Zone Management Plan*

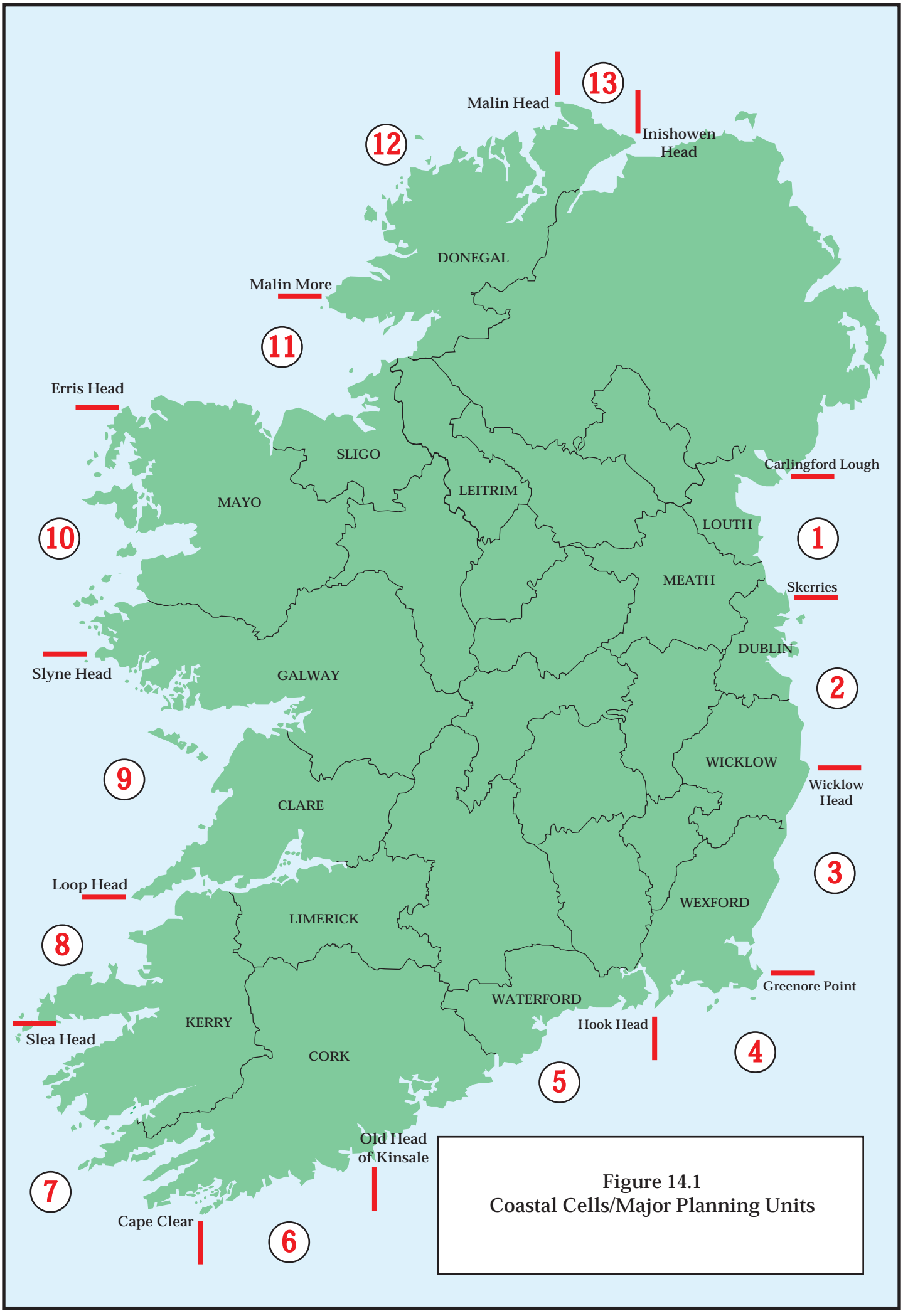

Figure 14.1
Coastal Cells/Major Planning Units

COASTAL ZONE MANAGEMENT

A DRAFT POLICY FOR IRELAND

APPENDICES

APPENDIX 1
DESCRIPTION OF THE IRISH COASTLINE

The following description of the coastline, given in summary form, follows the divisions of the coast identified as the major coastal process cells, and illustrated on Figure 14.1. These are also the recommended planning units for ICZM.

1. CARLINGFORD LOUGH TO SKERRIES

Physical features and habitats

Predominantly lowland coast with many beaches interspersed with rocky headlands. Sandy bays and beaches occur at Dundalk Bay and between Clogher Head and Skerries. Significant areas of saltmarsh fringe Dundalk Bay. There are small areas of intertidal mudflat at Ballymascanlon Estuary and the Boyne Estuary. Sand dunes occur on either side of the Boyne Estuary.

Principal land uses, activities and settlements

The north of the area is principally devoted to agriculture. The urban influence of Dublin is noticeable in the south of the area which is well within the commuting belt of the capital. There are popular holiday beaches between Clogherhead and Balbriggan which service a large number of day-trippers from Dublin during the peak summer months. This area also has a number of caravan parks and other tourist accommodation. The Clogherhead and Bettystown/Laytown/Mosney districts contain areas designated under the Pilot Tax Relief Scheme for Resort Areas. There is a major military establishment at Gormanstown and part of the coastline in this area is used as a gunnery range with restricted public access. The principal towns are Dundalk (population of 30,061), an important service town and major brewing centre with a port, Drogheda (population of 23,914), a commercial port with several large industries and important market functions, Balbriggan (population of 7,714), a commuter town within the greater Dublin area, and Skerries (population of 7,032), an expanding commuter town servicing the Dublin area.

Principal marine uses and activities

Inshore fisheries include lobster potting. Coastal waters include plaice nursery grounds and herring spawning grounds. There is a developing aquaculture industry in Carlingford Lough involving oysters, clams and cockles. The Boyne estuary has a traditional mussel fishery. Recreational activities include sailing in summer at Dundalk, Drogheda and Balbriggan. There are three commercial harbours in the area, at Dundalk, Drogheda and Greenore. There are a number small fishing ports at Giles Quay, Annagassan, Clogherhead, Balbriggan and Skerries .

Nature conservation areas

Designated SPAs include Dundalk Bay, Boyne Estuary and Rockabill Island. These are internationaly important areas for birds. Most of the coastline in Carlingford Lough and Dundalk Bay is proposed as NHA. Smaller areas of rocky shore, sand dunes and estuary in the southern part of the cell are also proposed NHAs.

Areas at risk from sea-level rise

The main urban centres affected would be Dundalk, Drogheda and Greenore. The industrial zones at Dundalk and Drogheda are close to sea level which may impair operations. The coast road at Annagassan and north of Clogherhead could be increasingly susceptible to storm damage. The coastline around Laytown and Mosney may be vulnerable to erosion, where the railway runs parallel to the clifftop.

Principal Authorities

Border Regional Authority; Mid-East Regional Authority; Dublin Regional Authority; Louth County Council; Fingal County Council; Meath County Council; Drogheda Corporation; Dundalk UDC; Dundalk Harbour Commissioners; Drogheda Harbour Commissioners; Greenore Ferry Service Ltd; Midlands-East Regional Tourism Authority; Dublin Tourism.

2. SKERRIES TO WICKLOW HEAD

Physical features and habitats

Mainly a rocky shore with extensive sandy beaches in the northern part of the cell around Skerries, Rush and Donabate and in Dublin Bay. There are high cliffs at Lambay Island, Howth Head, Bray Head and Wicklow Head. Mud flats and saltmarsh also occur in the northern part of the cell at Rogerstown Estuary, Malahide Estuary, Baldoyle Estuary and North Bull Island in Dublin Bay. There are large sand dune systems at Portrane, Malahide, Portmarnock and North Bull Island. The southern half of Dublin Bay has extensive sandflats. From Dun Laoghaire to Bray Head is mainly rocky or shingle shore. From Greystones to Wicklow the coast is fringed by a continuous shingle beach.

Principal land uses, activities and settlements

The coastline is heavily urbanised especially between Portmarnock and Bray. Between Skerries and Rush and between Greystones and Wicklow agricultural use is predominant. The north Dublin coast is a popular holiday and recreation area with a significant area devoted to golf courses and caravan parks. There are popular bathing beaches at Skerries, Rush, Portrane, Donabate, Portmarnock, Howth, Dollymount, Sandymount, Killiney, Bray and Greystones.

Major port developments are located at Dublin and Dun Laoghaire. The Dublin to Wexford railway line follows the coast of south Dublin Bay and from Killiney Bay to Wicklow Town. The infrastructure of the entire region is centred on Dublin city. There is a major refuse tip in Rogerstown estuary. The principal settlements are Dublin (the three Dublin counties and Dublin County Borough have a combined population of 1,025,304), Bray (25,138), Greystones (10,778) and Wicklow (5,847).

Principal marine uses and activities

Dublin Bay has the most important shipping ports in the country with Dublin Port (commercial and passenger) and Dun Laoghaire (mainly passenger). Howth has a major fishing port and is one of five Fishery Harbour Centres. Smaller fishing ports exist at Loughshinny, Rush, Bray, Greystones and Wicklow. Inshore fisheries include lobster potting and whelk potting with some seed mussel fishing off the Dublin and Wicklow coasts. Inshore waters have important plaice nursery grounds with a scallop bed off the North Wicklow coast. Sewage sludge is currently dumped off Dublin Bay.

The coast serves an important recreational function for the greater Dublin area. Dublin Bay and surrounding coasts are the most popular sailing waters in the country with main centres of activity at Howth and Dun Laoghaire. Malahide Estuary and Dublin Bay are extensively used for wind surfing. The North Wicklow coastline is an important sea angling match venue.

Nature conservation areas

Designated SPAs include Lambay Island and most of the estuarine areas of north Dublin including Rogerstown Estuary, Malahide/Swords Estuary, Baldoyle Estuary, North Bull Island, Tolka Estuary and Sandymount Strand. There are Nature Reserves located at Rogerstown Estuary, Baldoyle Bay and North Bull Island. Virtually the entire coast, including the islands of Lambay and Irelands' Eye, is proposed as a NHA.

Areas at risk from sea-level rise

Virtually the entire coast from Rush to Bray could be affected by sea-level rise. Reclaimed land around the north Dublin estuaries of Rogerstown, Malahide, Baldoyle including lands developed for housing and recreational use may become increasingly waterlogged. The heavily developed area around Dublin Bay in vulnerable especially from easterly winds and storm surges which may result in structural damage and flooding. The boulder clay cliffs between Killiney and Bray and between Bray and Greystones are highly vulnerable as they are already in retreat. The low-lying land between Greystones and Wicklow is likely to suffer increased flooding and the shingle barrier of the Murrough may migrate inshore with the railway line becoming increasingly threatened by erosion. The area south of Bray is already subject to considerable annual erosion.

Principal authorities

Dublin Regional Authority; Mid-East Regional Authority; Fingal County Council; Dublin Corporation; Dun Laoghaire-Rathdown County Council; Wicklow County Council; Bray UDC; Wicklow UDC; Dublin Port and Docks Board; Department of the Marine and Natural Resources (advised by Dun Laoghaire Harbour Board); Wicklow Harbour Commissioners; Midlands-East Regional Tourism Authority; Dublin Tourism.

3. WICKLOW HEAD TO GREENORE POINT

Physical features and habitats

Mainly sandy coasts interspersed with low rocky and clay cliffs. The area is subject to considerable marine erosion. There is a major area of intertidal mud and sand flats located in Wexford Harbour. Large dune systems occur at Brittas Bay, Courtown, Curracloe and Rosslare. Offshore sand bars fringe the entire coastline.

Principal land uses, activities and settlements

Most of the coastline is devoted to agriculture, principally grassland. There is a large forestry plantation at the Raven (Curracloe) which is now included in a nature reserve. Infrastructure is not heavily concentrated on the coast. There are small urban developments at Courtown and Rosslare. The principal coastal towns are Wexford (9,544) and Arklow (7,978) both of which function as market towns for the surrounding rural population.

Popular holiday beach areas are used for recreation and amenity uses including Brittas Bay, Arklow, Courtown, Curracloe and Rosslare. Many parts of the north Wexford coastline are developed for caravan parks and holiday chalets. Arklow and Courtown are both designated under the Pilot Tax Relief Scheme for Resort Areas. Rosslare is also an important tourist resort. The entire cell is a popular day-trip destination, easily accessible from Dublin. A long-distance walking route follows the Wexford coastline.

Principal marine uses and activities

Inshore fisheries include whelk and lobster potting with a number of seed mussel fishing areas. Wexford Harbour has important extensive cultivation of mussels. Main fishing ports are at Arklow, Wexford and Rosslare with a small port at Courtown. A major ferry and container port has been developed at Rosslare Harbour, which serves as an important passenger entry point from continental Europe. Arklow and Wicklow are other commercial ports.

Local sailing activities in summer are concentrated at Arklow, Courtown and Wexford with wind-surfing at Rosslare. Sea angling boats are based at Arklow and Courtown. There is an important shore angling competition area near Cahore Point.

Nature conservation areas

Designated SPAs and nature reserves are located at North Slob and Raven Point on north side of Wexford Harbour. Brittas Bay, Cahore Marshes, Wexford Harbour and adjoining coastlines are major areas proposed as NHAs. Other proposed NHAs are relatively small in area. Shallow inshore waters are very important for feeding and moulting seabirds in summer/autumn.

Areas at risk from sea-level rise

South Wicklow beaches and sand dunes are liable to erosion and storm damage. Low-lying land at Arklow is also vulnerable to flooding. Existing sea defences here may have to be upgraded to protect the port. The east Wexford coast may suffer increased frequency and magnitude of erosion mobilising large volumes of sediment which may accumulate in the offshore banks and enter Wexford Harbour. Reclaimed land around Wexford Harbour may suffer increased flooding.

Principal Authorities

Mid-East Regional Authority; South-East Regional Authority; Wicklow County Council; Wexford County Council; Arklow UDC, Wexford Borough Council; Arklow Harbour Commissioners; Rosslare Harbour Authorities; Wexford Harbour Commissioners; Wicklow Harbour Commissioners; South Eastern Regional Tourism Authority; Midlands-East Regional Tourism Authority.

4. GREENORE POINT TO HOOK HEAD

Physical features and habitats

Most of the coast is low-lying with almost continuous beaches between Carnsore Point and Hook Head. From Rosslare to Carnsore Point is mainly small coves and rocky shore. Barrier beaches fringe the eastern part of the cell with two large coastal lagoons at Lady's Island Lake and Tacumshin Lake. There are sand dune systems at Ballyteigue and at Big Burrow near Fethard. Hook Head is a rocky headland with wave-cut platforms. Bannow Bay and The Cull contain mudflats and saltmarsh. There are high cliffs at the Saltee Islands.

Principal land uses, activities and settlements

Much of the coastline land is used for agriculture, principally grassland. There are popular holiday beaches at Kilmore Quay and Fethard-on-Sea but many of the beaches are not heavily developed for tourism. There are a number of caravan and camping parks located between Greenore Point and Carnsore Point. The main coastal town is Kilmore Quay (424) which is a significant fishing port. Infrastructure is not generally concentrated on the coast. A long distance walking route follows the coastline.

Principal marine uses and activities

Inshore fisheries include lobster, crawfish and whelk potting, with herring spawning grounds in winter. Offshore waters support an important scallop fishing ground. Aquaculture is mainly concentrated in Bannow Bay with oyster trestles, clam cultivation and a public cockle fishery. Scallop and oyster operations also occur at Carne and Duncormick respectively. Kilmore Quay is an important fishing port and a centre for boat based sea angling. Smaller fishing ports are located at St. Helens and Carne. Shore angling competitions use the beaches at Ballyteige Bay and Lady's Island Lake. Sub-aqua diving is popular around Saltee Islands and Hook Head.

Nature conservation areas

There are designated SPAs at Tacumshin Lake, Lady's Island Lake, Saltee Islands, Ballyteige, the Cull, and Bannow Bay. There is a statutory nature reserve at Ballyteige Burrow. Most of the coastline is proposed as a NHA including substantial areas at Lady's Island Lake, Tacumshin, Ballyteige, Bannow Bay and Hook Head. Saltee Islands hold the largest seabird colony on the south-east coast.

Areas at risk from sea-level rise

The barrier coasts between Carnsore and Kilmore Quay may increasingly migrate inland and the level of coastal lagoons may rise causing flooding on surrounding land. Reclaimed land at Ballyteige Bay and Bannow Bay may see an increase in flooding as a result of groundwater rise.

Principal authorities

South-East Regional Authority; Wexford County Council; Wexford Harbour Commissioners; South Eastern Regional Tourism Authority.

5. HOOK HEAD TO OLD HEAD OF KINSALE

Physical features and habitats

The majority of the coastline is comprised of low cliffs interspersed with small coves. Major river estuaries with intertidal mudflats and saltmarsh occur at Waterford Harbour, Tramore Back Strand, Dungarvan Harbour, Youghal Harbour, Ballymacoda, Ballycotton, Cork Harbour and Kinsale Harbour. There are sandy beaches at Tramore, Annestown, Bunmahon, Clonea, Dungarvan, Ardmore, Whiting Bay, Youghal, Shanagarry. Some of the headlands such as Helvick Head and Old Head of Kinsale have high rocky cliffs. Sand dune systems occur at Tramore, Bunmahon and Shanagarry.

Principal land uses, activities and settlements

Main coastal land use is agriculture except around the urban areas of Waterford and Cork. There are popular holiday beaches at Tramore, Bunmahon, Ardmore, Youghal, Garryvoe. The largest tourist resorts in the area are at Tramore and Kinsale with significant numbers of holiday based and day-trip visitors, serving as important destinations for visitors from Waterford and Cork. Kinsale, Tramore and Youghal are designated under the Pilot Tax Relief Scheme for Resort Areas.

The main coastal settlements are Cork City (127,253), Waterford (40,328), Cobh (8,219), Dungarvan (6,920), Tramore (6,064), Midleton (5,951), Youghal (5,532) and Kinsale (2,751). The greatest urbanisation is on the west side of Cork Harbour which has a major industrial zone. Cork Harbour also has a power station and oil refinery. Infrastructure is concentrated along the coast especially in east Waterford and around Cork Harbour.

Principal marine uses and activities

Inshore fisheries includes some lobster and crawfish potting. Herring spawning grounds extend west to Tramore and between Ballycotton and Kinsale. Offshore fishing ports are located at Dunmore East (a Fishery Harbour Centre), Helvick, Cobh and Kinsale. Other minor fishing ports are located at Slade, Ballyhack, Dunncannon, Passage East, Ardmore Youghal, Ballycotton and Crosshaven.

There are commercial shipping ports at Cork (including Cobh and Ringaskiddy), Waterford, Dungarvan, Kinsale, New Ross and Youghal.

Aquaculture is well developed in many of the sheltered bays and estuaries including Waterford Harbour (mussels), Cork Harbour (oysters and clams), Oysterhaven (oysters and abalone). Dungarvan Bay contains a number of significant oyster and mussel operations.

Water sports including sailing are popular especially around Cork Harbour, Kinsale, Dunmore East, Dungarvan and Youghal. There are marinas at Crosshaven, and Kinsale. Deep sea angling boats are based at Ballycotton and Kinsale.

The natural gas fields of Ballycotton and Kinsale are located off the coast. Natural gas is piped into Whitegate and Cork Harbour from where it is distributed around the rest of the country.

Nature conservation areas

There are designated SPAs at Tramore Back Strand, Dungarvan Harbour, Youghal Harbour, Ballymacoda, Ballycotton, Old Head of Kinsale and five areas of Cork Harbour. Most of the east Waterford coast, most estuarine areas and most of the intertidal area of Cork Harbour are proposed NHAs. The estuaries are of special importance for wintering waterfowl.

Areas at risk from sea-level rise

The barrier estuaries at Tramore and Dungarvan and the river estuary leading up to Waterford Harbour are vulnerable to marine inundation and flooding of surrounding land. Over 5,000 hectares around Cork Harbour have been identified as being at risk from flooding. Much urban development and infrastructure here is vulnerable. Other coastal bays such as Youghal Bay and Ballycotton Bay and river valley mouths such as Kinsale are at risk from increased flooding.

Principal authorities

South-West Regional Authority; South-East Regional Authority; Waterford County Council; Waterford Borough Council; Cork County Council; Cork Borough Council; Wexford County Council; Dungarvan UDC; New Ross UDC; Youghal UDC; Cobh UDC; Midleton UDC; Kinsale UDC; Port of Cork Harbour Authority; Kinsale Harbour Commissioners; Youghal Harbour Authority; Dunmore East Fishery Harbour Centre; New Ross Harbour Commissioners; Waterford Harbour Commissioners; South West Regional Tourism Authority; South Eastern Regional Tourism Authority.

6. OLD HEAD OF KINSALE TO CAPE CLEAR

Physical features and habitats

Mainly a rocky coastline with soft-sediments in embayments and estuaries. Cliffs are located at Seven Heads, Galley Head, Toe Head and Cape Clear Island. Sandy beaches occur at Garrylucas, Inchadoney, Owenahincha and Tragumna with smaller sandy coves throughout the area. Major sand dune systems are located at Courtmacsherry, Inchadoney and Owenahincha and saltmarshes occur in Courtmacsherry Bay. There are unique marine communities at Lough Hyne.

Principal land uses and activities and settlements

Agriculture is the main coastal land use. Small areas around holiday beaches at Clonakilty and Rosscarbery are used for recreation and amenity purposes. Clonakilty (2,812) and Skibbereen (1,892) are the largest coastal towns. Both are market towns and significant tourist resorts. Clonakilty is designated resort under the Pilot Tax Relief Scheme for Resort Areas. There are no major urban or industrial areas on this coastline. As a result infrastructure is not generally concentrated on the coast.

Principal marine uses and activities

Union Hall at Glandore and Baltimore are both significant offshore fishing ports. Other small fishing harbours are located at Rineen and Cape Clear. Inshore fisheries includes lobster potting. There are autumn herring spawning grounds located in inshore waters. Aquaculture is well established in many of the bays and islands including Rosscarbery (oysters), Glandore (scallops), Sherkin and Cape Clear Island (oysters, clams and turbot). Water sports include sailing at Glandore Harbour, Castle Haven and around Cape Clear Island and shore angling at Courtmacsherry, Clonakilty, Rosscarbery and Glandore.

Nature conservation areas

There is a statutory Nature Reserve at Lough Hyne, and a designated SPA at Clonakilty Bay. Proposed NHAs are relatively small and are confined mainly to rocky headlands, estuaries and offshore islands. There are no major seabird colonies in this area but important feeding grounds are located in inshore waters.

Areas at risk from sea-level rise

Various river valley mouths such as Timoleague, Clonakilty, Rosscarbery, Glandore and Castlehaven may suffer increased flooding. The complex ecology of Lough Hyne may be altered by raised sea levels.

Principal authorities

South-West Regional Authority; Cork County Council; Clonakilty UDC; Skibbereen UDC; Baltimore and Skibbereen Harbour Commissioners; South West Regional Tourism Authority.

7. CAPE CLEAR TO SLEA HEAD

Physical features and habitats

This cell is characterised by a series of drowned river valleys interspersed with mountainous peninsulas. The coastline is mainly composed of rocky shores with many offshore islands and high sea cliffs at the western end of all peninsulas. There are numerous smaller islands in the sheltered bays of Roaringwater, Dunmanus Bay, Bantry Bay and Kenmare River. Small areas of saltmarsh occur at the heads of inlets and in sheltered parts of Castlemaine Harbour which has major areas of intertidal mudflats. Major sand dune systems are located at Rossbehy and Inch in Dingle Bay. Sandy beaches are mostly limited to Rossbehy, Inch, Ballinskelligs Bay and Barley Cove.

Principal land uses, activities and settlements

The main coastal land use is agriculture principally extensive sheep grazing. Some small areas around popular holiday beaches in Ballinskelligs Bay and Dingle Bay are used for amenity and recreational purposes. The main towns are Bantry (2,777), Kenmare (1,366) and Dingle (1,272) which are all important tourism centres. Tourism is an increasingly important contributor to the local economy. Some areas of coast are used for forestry in Bantry Bay and Kenmare Bay. Due to the mountainous country inland, many roads and other infrastructure are concentrated along the coast. There are three long-distance footpaths in the area which have extensive coastal sections.

Principal marine uses and activities

The number of fishing ports bears witness to the importance of fishing to the area. Major offshore fishing ports are located at Castletownbere (a Fishery Harbour Centre), Dingle, and Valentia. There are smaller ports at Schull, Renard, Bantry, Dunmanus, Dursey, Ventry, Kenmare and Ardgroom. There are herring spawning grounds in autumn in Bantry Bay and Dingle Bay.

Aquaculture is widespread in the sheltered bays especially Roaringwater Bay, Inner Bantry Bay, Kenmare River Bay, Dingle Bay, Ventry Harbour and the Castletownbere area. The Inner Bantry Bay area (particularly Killmakilloge and Ardgroom) and Kenmare Bay have a thriving mussel cultivation industry and are both designated aquaculture areas. Small scale oyster cultivation and cage culture of salmon and turbot are the other main enterprises.

Between Roaringwater Bay and Dingle are the most popular holiday sailing areas in the country with many visiting cruisers. The areas is also of high value for sub-aqua diving and sea angling.

Nature conservation areas

There are designated SPAs at Bull and Cow Rocks, Skellig Islands, Puffin Island, Castlemaine Harbour and Blasket Islands group. Statutory Nature reserves are designated at Skelligs, Puffin Island, Castlemaine Harbour and Inishtearagh (Blasket Islands). Most of the major seabird colonies on the offshore islands are legally protected but other habitats are poorly covered. Numerous areas are proposed NHAs covering a significant part of the coastline.

Areas at risk from sea-level rise

There are a number of shallow embayments where even a small rise in water level will cause problems. There is a large area of low-lying vulnerable land around Castlemaine Harbour. The natural sand dune spits which protect the estuary may undergo erosion and movement as sea level rises. Other areas where low lying marginal land will suffer increased flooding include Lough Currane in Ballinskelligs Bay the Valentia River Channel, Dingle Harbour and Ventry Harbour.

Principal authorities

South-West Regional Authority; Cork County Council; Kerry County Council; Bantry Bay Harbour Commissioners; Dingle Harbour Commissioners; South West Regional Tourism Authority.

8. SLEA HEAD TO LOOP HEAD

Physical features and habitats

The shoreline is mainly rocky with some high cliffs between Slea Head and Brandon Point. Extensive sandy beaches and dune systems are located in Brandon Bay, Tralee Bay and Ballyheige Bay with important sand dunes, saltmarsh and mudflats in Inner Tralee Bay, Barrow Harbour and Carrohane Strand. Between Kerry Head and Loop Head the mouth of the Shannon forms a major marine inlet with mainly rocky and shingle shorelines. East of Foynes Island, the coastline is mainly soft mud and saltmarsh with considerable areas of sea defences protecting low lying land. The Shannon/Fergus Estuary has the largest area of intertidal mudflat in the Republic of Ireland.

Principal land uses, activities and settlements

The main coastal land use is agriculture which is dominated by livestock farming. Tourism is an important industry in the north Kerry area with coastal land devoted to caravan parks, golf courses and general amenity use around Castlegregory, Ballyheigue and Ballybunnion which are all important tourist resorts. Ballybunnion, on the Mouth of the Shannon, is a designated resort area. The major coastal settlements are Limerick (52,083), Tralee (17,862), Ennis (15,598) Shannon (7,920) and Kilrush (2,740), all of which serve important industrial, service and tourist functions.

The Shannon Estuary has two power stations (Tarbert and Moneypoint) and a number of major industries which rely on deep-water port facilities. The Shannon Estuary is recognised as one of the best natural deep water harbours in the world with much potential for further industrial development. The State owns a large land bank in the area (SFADCo, Forbairt, etc.) which will assist in its the long-term development. Much of the land around the Shannon/Fergus estuary is reclaimed and protected from flooding by nineteenth century sea defences. The international airport at Shannon is on coastal land.

Principal marine uses and activities

The fishing ports of Foynes, Fenit, Brandon, Scraggane, Dromatoor, Cashen and Carrigaholt are all relatively small in national terms. The Shannon Estuary is of major importance to commercial shipping serving the commercial ports of Limerick and Foynes, power stations and industry located around the estuary. Fenit is another commercial port. Autumn spawning grounds of herring occur in inshore waters between the Mouth of the Shannon and Brandon Head. Aquaculture is mainly devoted to oyster production in the Shannon Estuary with a concentration around Carrigaholt. There are also a number of oyster operations in Tralee Bay.

A water sports activity centre is located at Castlegregory and there are small sailing clubs each with a marina at Kilrush and Foynes. A resident population of dolphins in the outer Shannon Estuary has become the focus of dolphin-watching boat trips based at Carrigaholt.

Nature conservation areas

Designated SPAs are located at Lough Gill, Tralee Bay and Derrymore Island. The latter two sites are also statutory nature reserves. Most of the coastline and offshore islands between Sybil Head and Ballyheige are proposed as NHAs. The entire Shannon/Fergus Estuary east of Foynes Island is proposed as a NHA as are smaller areas of intertidal land in the outer estuary. Both Tralee Bay and the Shannon Estuary are of international importance for wintering waterfowl.

Areas at risk from sea-level rise

Mobilisation of sediment from sand spits in Brandon Bay and Derrymore Island may cause silting up of Inner Tralee Bay and shifts in the river channel. Between Fenit and Ballyheige the narrow barrier dunes could rapidly break down leading to flooding of the land behind. Coastal defences at Ballybunnion could be undermined and sediment released to fill the adjacent Cashen River estuary. The Shannon Estuary is very vulnerable to sea level rise with possible effects along several hundred kilometres of low-lying shoreline and affecting over 19,000 hectares of land. It is predicted that the estuary will become narrower and steeper leading to an increase in the tidal amplitude which is already high.

Principal authorities
South-West Regional Authority; Mid-West Regional Authority; Kerry County Council; Limerick County Council; Clare County Council; Limerick County Borough Council; Tralee UDC; Tralee and Fenit Pier and Harbour Commissioners; Foynes Harbour Trustees; Limerick Harbour Commissioners; Kilrush Harbour Authority; Shannon Development.

9. LOOP HEAD TO SLYNE HEAD

Physical features and habitats

The west coast of Clare is mainly rocky with some high cliffs near Loop Head and the Cliffs of Moher. There are similar rocky shores and high cliffs on the Aran Islands. Sand dune systems occur at Doonbeg, Lahinch and Fanore. Inner Galway Bay from Ballyvaughan to Galway is mainly low-lying sheltered coastline with extensive shingle barriers, grazed saltmarsh and intertidal mudflats in the inner bays. From Galway City west to Golam Head is low rocky shoreline. The inlets of Kilkieran Bay and Bertraboy Bay provide shallow, sheltered conditions. Near Slyne Head there are extensive sand plains or machair.

Principal land uses, activities and settlements

Agriculture is the main use of coastal lands with extensive sheep grazing as the most common practice. Coastal grassland in the Burren, Aran Islands and Connemara is extremely rocky. Saltmarsh is extensively grazed in Galway Bay. There are popular bathing beaches at Kilkee, Spanish Point, Lahinch, White Strand, Fanore, Salthill, Spiddle, Inveran, Roundstone and Ballyconneely, all of which have a certain amount of tourist related development including caravan parks and golf courses. The principal tourist resorts are Salthill, Kilkee, Lahinch, Ballyvaughan and Roundstone. The first three are designated resorts under the Pilot Tax Relief Scheme for Resort Areas.

The main urban and industrial development is centred around Galway City (50,853). In south Connemara, settlement is heavily concentrated along the coastline due to the extensive bogs inland and the traditional dependence of these communities on the sea.

Principal marine uses and activities

The main offshore fishing ports are Rossaveel (a Fishery Harbour Centre) and Galway. There numerous minor ports, mainly engaged in lobster potting and other inshore fisheries including Liscannor, Kilronan, Spiddal, Ardmore, Carna and Roundstone. The entire coast is a nursery area for herring. Aquaculture is well established on the coastline with oysters, mussels, clams and abalone in Inner Galway Bay and the south Connemara bays particularly Kilkieran/Camus/Greatman's Bay and Roundstone/Bertraghboy Bay. There are a large number of caged salmon farms in the Connemara bays (especially Kilkieran Bay). Galway port has a limited amount of commercial shipping. Sailing and other water sports are popular in Inner Galway Bay.

Nature conservation areas

Designated SPAs include the Cliffs of Moher, Mutton Island, Mattle Island, Co. Clare and the entire area of Inner Galway Bay including the coastline from Galway City to Ballyvaughan. Proposed NHAs include most of the North Clare Coast, all of the Aran Islands, all of Inner Galway Bay and the entire Slyne Head Peninsula. Many of the islands off Connemara are also proposed NHAs.

Areas at risk from sea-level rise

Most of the coastline of Co. Clare is composed of relatively resistant rock and any serious impacts are likely to be limited to the embayments such as Lahinch where sediment starvation and increased storm frequency may further erode the dune system. In Inner Galway Bay, a small rise in sea level could disrupt communications for the scattered community and cause salt water incursion. The waterfront of Salthill and Galway city will be increasingly vulnerable to storm surges. The machair plain west of Ballyconneely is particularly vulnerable as increases in beach and dune erosion may release large volumes of blowing sand and create local instability.

Principal authorities
Mid-West Regional Authority; West Regional Authority; Clare County Council; Galway County Council; Galway County Borough; Galway Harbour Commissioners; Rossaveal Fishery Harbour Centre; Western Regional Tourism Authority; Shannon Development.

10. SLYNE HEAD TO ERRIS HEAD

Physical features and habitats

This is a heavily indented coastline with many large and small islands. The Connemara coast is mainly rocky with some sand dune machair in Mannin Bay. From the narrow fjord of Killary Harbour to the north there is a barrier coastline backed by machair plains, storm beaches and a series of coastal lakes. Clew Bay is a drowned glacial landscape with an archipelago of islands and spits. Inishbofin, Inishturk, Clare Island and Achill Island all have high cliffs on their west and north facing sides. Achill Sound has sheltered muddy shorelines with fringing blanket bog. The coast from here to the Mullet Peninsula has an extensive area of machair sand plains and sheltered low-lying bays.

Principal land uses, activities and settlements

Agriculture is the main coastal land use but is not intensive. There are popular holiday beaches at Louisburgh, Bertragh, Mulranny, Achill Island and Belmullet. Only Achill Island has any major tourist developments such as caravan parks and golf courses on the coast. Most of this coastline is relatively undeveloped with a largely dispersed population. As a result infrastructure is not particularly focused on the coast. The largest coastal settlements are Westport (3,688) and Clifden (900). Both serve as market towns and are popular tourist destinations. Westport and Achill are designated under the Pilot Tax Relief Scheme for Resort Areas.

Principal marine uses and activities

There are no major fishing ports on this coast although inshore fishing including salmon netting is widespread. There are minor ports at Cleggan, Achill, Westport, Blacksod, Newport and Killary. Herring spawning grounds surround the Mullet Peninsula. Aquaculture is concentrated in the Streamstown/Ballinakill area, Killary Harbour, Clew Bay

and Achill Sound. Mussel and oyster cultivation are the most common shellfish enterprises, interspersed with some scallops, clams and abalone operations. There are a number of caged salmon farms throughout the area with major concentrations at Mannin Bay, Killary Harbour, Ballinakill Harbour, Clare Island, Clew Bay and Bellacragher Bay.

Sailing is popular in Clew Bay with a marina at Westport from which there is some cruising among the offshore islands. Surfing is carried out on some west Mayo and Achill beaches. Sub-aqua diving occurs around most of the offshore islands.

Nature conservation areas

Designated SPAs include Blacksod Bay, the Inishkea Islands, Inishglora and Inishkeragh off Co. Mayo, and High Island off Connemara. Extensive areas of coastal lands are proposed as NHAs around Mannin Bay, Killary Harbour, Clew Bay, Achill Island, Blacksod Bay and the Mullet Peninsula. Many offshore islands, dune/machair systems and estuarine areas are also proposed NHAs.

Areas at risk from sea-level rise

In Clew Bay minor parts of the archipelago may become flooded with breaking down of the seaward barriers and increased erosion of the more exposed sites. The finer sediment is likely to be deposited in extensive tidal flats. The low shorelines around Achill Sound and Blacksod Bay are likely to be affected by increased flooding. The sand dune coast of the Mullet peninsula will probably suffer increasing instability and large amounts of sand may be transported inland.

Principal authorities

West Regional Authority; Galway County Council; Mayo County Council; Westport UDC; Westport Harbour Commissioners; Western Regional Tourism Authority.

11. ERRIS HEAD TO MALIN MORE

Physical features and habitats

The North Mayo coast is largely a rocky shore and with some high cliffs. The exception is Killala Bay which has large sand dune systems and sheltered muddy shores. West Sligo is also rocky. Sligo Bay contains three separate estuaries with extensive sand and mudflats. From Sligo Bay to Inner Donegal Bay there are a number of long sandy beaches and extensive dune systems. The South Donegal coast is mainly a low-lying rocky shore with some very high cliffs around Slieve League.

Principal land uses, activities and settlements

Agriculture is the predominant land use with some forestry on sand dunes in Donegal Bay. Popular holiday beaches include Killala, Enniscrone, Strandhill, Rosses Point, Mullaghmore, Bundoran and Rossnowlagh. The main tourist resorts are at Enniscrone, Bundoran, Mullaghmore and Sligo. The first two are designated under the Pilot Tax Relief Scheme for Resort Areas.

Sligo (17,971), Ballina (8,167), Ballyshannon (2,838) and Donegal (2,193) are the main coastal towns. Each serve important industrial and retail functions. Population densities are very sparse in the areas west of Killala and west of Killybegs. There is an army training ground at Finner near Ballyshannon.

Principal marine uses and activities

Killybegs is the most productive fishing port in the country and therefore an important employment centre. Other minor fishing ports in the cell include Mullaghmore, Sligo, Killala, Kilcummin and Belderrig. Inshore fisheries including lobster potting and salmon netting are widespread all along this coastline. There is a herring nursery area between Killybegs and Killala Bay.

Aquaculture is concentrated in the Sligo estuaries where oysters and clams are the main species cultivated. Oysters, mussels and clams are also cultivated at Teelin, MacSwynes Bay and the inner Donegal Bay areas. There are a number of salmon farms particularly at Inver Bay and MacSwynes Bay. Sailing is carried on in Killala Bay, Sligo Bay and Donegal Bay while surfing is particularly popular on all these coasts.

Nature conservation areas

Designated SPAs include the estuarine areas of Broad Haven, Killala Bay, Cumeen Strand and Drumcliff Bay and the small islands of Stags of Broadhaven, Illaunmaister and Inishmurray. Proposed NHAs include extensive coastal lands on the north Mayo cliffs, Killala Bay, Sligo Bay, north Sligo coast, inner Donegal Bay and the Slieve League areas as well as numerous other smaller sites.

Areas at risk from sea-level rise

Killala Bay has barrier dune systems which are unstable and may become mobile. The low lying coasts and estuaries of Sligo Bay are likely to be inundated as the low barriers are breached by high tides and storm surges. Between Sligo and Inner Donegal Bay there is likely to be a combination of flooding and slow landward transport of sediment from beaches and dunes.

Principal authorities

Border Regional Authority; West Regional Authority; Mayo County Council; Sligo County Council; Leitrim County Council; Donegal County Council; Sligo Borough Council; Ballina UDC; Bundoran UDC; Killybegs Fishery Harbour Centre; Sligo Harbour Commissioners; Ballyshannon Harbour Commissioners; River Moy Commissioners; North West Regional Tourism Authority; Western Regional Tourism Authority.

12. MALIN MORE TO MALIN HEAD

Physical features and habitats

The west and north coasts of Donegal are highly indented with areas of rocky shore, boulder beach and cliff interspersed with sand dune systems and machair in the bays. The Malinmore to Slievetooey area has very high cliffs. Between Ardara and Arranmore Island there are a number of sandy bays and estuaries with some large dune systems. From Arranmore Island to Bloody Foreland the coastline is partly rocky, partly sandy machair plain. There are several large sand dune systems on the north coast between Ballyness and Doagh Isle. Between Horn Head and Malin Head a series of sheltered inlets including Sheep Haven, Mulroy Bay, Lough Swilly and Trawbeaga Bay are intersected by rocky headlands. Lough Swilly is the largest marine inlet on the north-west coast and contains a substantial area of intertidal mudflats.

Principal land uses, activities and settlements

Agriculture is the principal land use with extensive grazing the most common practice on coastal lands. There are some coastal forestry plantations in Sheep Haven. Popular holiday beaches include Narin, Marble Hill, Portsalon and Rathmullen. Some of these have associated tourist developments such as caravan parks, chalet developments and golf courses. Most of the flat machair plains have at least one sports pitch. The main tourist resorts are the Ardara, Portnoo, Dunfanaghy and Buncrana (a designated area under the Pilot Tax Relief Scheme for Resort Areas) which are all popular with visitors from Northern Ireland.

There are few large settlements but the population is quite dispersed in the coastal region especially in the Rosses and Gweedore areas in west Donegal. Letterkenny and Buncrana, with populations of 10,726 and 4,388 respectively are the largest settlements. Infrastructure is quite highly concentrated around the coastal strip due to the population distribution and the mountainous nature of the interior.

Principal marine uses and activities

This coast includes a number of medium-sized fishing ports including Burtonport, Kincasslough, Bunbeg, Downings, Ballyness and Rathmullan. The inshore waters have an important herring spawning area and are extensively used for salmon netting and lobster potting. Aquaculture in widespread. The western bays between Ardara and Sheep Haven are mainly devoted to intensive oyster cultivation. In Mulroy Bay, Trawbrega Bay and Lough Swilly the enterprises are more varied with a significant number of salmon farms as well as oyster, clam, scallop and mussel cultivation.

Water sports are mainly concentrated around the holiday areas of north Donegal where some of the west-facing beaches are popular for surfing. Sub-aqua diving is carried on around Arranmore Island and between Tory Island and Horn Head.

Nature conservation areas

Designated SPAs are all on the north coast of Donegal and include Inishtrahull, Inishdooey, Inishbeg, Greer's Island, Tory Island, Horn Head Cliffs, Dunfanaghy New Lake, Lough Swilly and Trawbreaga Bay. Extensive areas of the coast are also proposed as NHAs including sections from Malin More to Dooey Point, Burtonport to Bloody Foreland and most of the north Donegal coast east of Ballyness. Most of the offshore islands are also proposed NHAs.

Areas at risk from sea-level rise

Many of the west-facing inlets such as Loughos More Bay, Loughros Beg Bay, Gweebarra Bay and Trawbreagh Bay, are likely to experience a combination of flooding and slow landward transport of sediment. Although the north Donegal coast is among the most energetic in Europe it is the least likely coast in Ireland to be affected by near-future sea-level changes. Shoreline erosion will release more sediment into the estuaries, wetlands may expand and sand dune spits will progress. Sand dunes and machair may become unstable and begin to migrate downwind. The dunes at Falcarragh, Rossapenna and Horn Head are likely to be affected. Reclaimed land around Lough Swilly is likely to experience an increase in flooding and sediment is likely to accumulate in the southern parts of the Lough.

Principal authorities

Border Regional Authority; Donegal County Council; Letterkenny UDC; Buncrana UDC; Buncrana Harbour Commissioners; North West Regional Tourism Authority.

13. MALIN HEAD TO LOUGH FOYLE

Physical features and habitats

Malin Head to Inishowen Head is mainly rocky coast with some high cliffs. The western shore of Lough Foyle is mainly rocky with some shingle and a few areas of intertidal mud towards the south. There is a machair dune site at Culdaff.

Principal land uses and activities

The main land use is agriculture. The main areas of settlement are dispersed along the western shore of Lough Foyle. Moville with a population of 1,392 is the largest settlement.

Principal marine uses and activities

Greencastle and Moville are important fishing ports. Portmore and Culduff are small fishing ports. There is some aquaculture, involving oysters, clams and mussels, on the west side of Lough Foyle. Commercial shipping enters Lough Foyle to serve the port of Derry.

Nature conservation areas

Part of Lough Foyle on the Donegal coast is a designated SPA, and the entire coastline from Malin Head to Inishowen Head is a proposed NHA.

Areas at risk from sea-level rise

Sea-level rise could cause further erosion of the foreland at Magilligan leading to rapid infilling of Lough Foyle and siltation of navigation channels. A number of small deltas near the Northern Ireland border may suffer erosion.

Main authorities

Border Regional Authority; Donegal County Council; North West Regional Tourism Authority.

APPENDIX 2
DRAFT ICZM PLAN
WORK PROGRAMME

This work programme is produced here for the purposes of illustration only. Specific work programmes will require to be prepared by the planning team responsible for each cell, tailored to the particular needs of ICZM in that cell.

The work of preparing the plans is in itself an on-going 'process', the principal elements of which are outlined below.

Stage 1: INCEPTION

Principal Aims:

1. Mobilisation of key personnel, structures and resources.

2. Identifying the significant characteristics of the cell zone - familiarisation.

3. Understanding how the cell zone is managed at present.

4. Recognising key management problems and likely/potential solutions.

5. Designing the appropriate actions for the second stage of the work.

Principal Tasks

This is essentially a scoping exercise during which the principal characteristics of the coastal cell's existing administrative, operational and legislative systems, together with key issues will need to be established. The inception stage will also identify the general scope for action, and will be used to generate the on-going work plan for the project. To achieve these ends the planning team will need to acquire a comprehensive overview of the situation as quickly as possible. In carrying out this stage of the work the team will address the 'key issues' of the context for ICZM, the relationships with the overall national ICZM framework and identification of issues of particular relevance to the cell under examination. The work will include the following sub-tasks:

1.1 Preliminaries: Start up planning team meetings and meetings with certain key agencies to:

- identify key actors;
- agree approach/methods of liaison/working;
- deal with problems of definition, adopt standard definitions;
- assign tasks (possibly 'working papers') and agree reporting schedule;
- signal major developmental issues and trends;
- assembly of relevant documentation;
- initiate data bases; and
- selection of base maps, scales, etc.

1.2 Initial Surveys: Familiarisation with coastal zone by the team:

- review aerial and other records;
- survey tour of coast, land and air if necessary;
- video or photo. record (desirable); and
- preliminary map record - visual appraisal of coastal/marine environment.

1.3 Preliminary Analysis: Preliminary analysis of cell dynamic:

- key interactions/impacts;
- coastal sub-cells or planning units;
- general land and marine use and activity patterns;
- principal problem areas and conflicts observed;
- principal nature, landscape and environmental values observed; and
- transportation (including marine) patterns and issues (including access).

1.4 Document Review: This would include:

- national ICZM Framework, priorities and guidelines;
- existing plans and studies;
- basic reference data (including data bases, GIS, etc.) sourcing;
- legislation overview (as impacting on cell);
- administrative system, functions and procedures;
- relevant international studies and background data;
- international ICZM approaches and policy;
- international conventions; and
- sectoral plans, trends, etc.

1.5 Background Analysis and Review: A broad understanding of the existing situation in the coastal cell zone will be required to form a basis for the assessment of current policies and practices in the cell. This review will commence during the inception stage and will be based primarily on existing material, collated and compiled into a suitable format for the task in hand.

A very wide range of matters will need to be considered depending upon the characteristics of the individual cell. Where possible, the information and data should be compiled in map or tabular form, quantified as required. The matters are likely to include *inter alia*::

Administrative Structures and Management
- administrative units and boundaries;
- areas of designated high amenity or natural beauty;
- nature conservation designations;
- existing shoreline management.

Physical Environment
- geology and geomorphology;
- seabed sediments;
- intertidal substrata;
- topography and bathymetry;
- waves, tides and currents.

Natural Environment
- landscape character and quality;
- principal seabird and waterfowl breeding and feeding areas;
- principal coastal wetlands;
- off-shore habitats and communities;
- principal spawning grounds;
- main coastal habitats;
- marine mammals.

Human Environment
- land use;
- marine use
- location and character of urban areas, resorts, former and current military bases;
- commercial and fishing ports;
- existing or proposed coastal paths.

Coastal Activities
- principal fishing grounds;
- aquaculture;
- principal bathing beaches;
- shore and inshore angling locations;
- principal sailing areas;
- principal coastal wastewater treatment plants and outfalls;
- dredge, sludge and industrial dumping grounds.

The purpose of assembling the data is to gain a clear overall picture of the present situation and to identify the key issues for Integrated Coastal Zone Management in the cell.

1.6 Preliminary Consultations: These would be confined to key agencies and NGOs only this stage:

- establish agency/departmental functions/responsibilities;
- establish how the coastal zone of the cell is managed at present;
- determine present level of understanding and perceptions of ICZM;
- establish level and efficiency of linkage and networking amongst agencies;
- allocation and sourcing of human, fiscal and material resources.
- future plans and expectations of ICZM; and
- perceived key ICZM issues and problems and their possible solution.

1.7 Analysis of Consultations: This will allow for the identification of key issues:

- identify key ICZM issues and problems (short - long term);
- classify issues according to the degree of influence locally;
- possible objectives of ICZM policy (conservation/development);
- description of existing management system and its 'flaws'; and
- basis for 'integration' of policy and/or operations.

1.8 Public Participation: At this stage the principal elements will include:

- general publicity and awareness-raising;
- invitation and receipt of submissions and observations.

1.9 Environmental Overview: This will include:

- current state of the coastal environment;
- principal impacts and problem areas; and
- impacts likely to arise as a result of ICZM programmes.

1.10 Initial Findings: This may include, *inter alia*:

- possible preventive/curative measures or actions;
- draft options for strategic approach to ICZM plan;
- design of ongoing study work plan; and
- design of monitor and review system.

1.11 Potential 'Actions': Selected potential 'actions' may include:

- 'warranted' actions;
- identification and description of potential actions;
- reporting and dissemination; and
- presentation documentation (for possible workshops).

1.12 Review Process: This will consist of:

- consultation with national agencies;
- workshops; and
- feedback and review of report.

Stage 2: Preparation of ICZM Plan

Principal Aim:

1. To prepare an Integrated Coastal Zone Management Plan for the cell.

Principal Tasks

This is the core task, and an interactive process. The draft plan ought be subject to a series of reviews and revisions designed to ensure maximum participation and acceptance by the key actors and agencies concerned in the management of the coastal cell. The process will also allow refinement and deepening of the broad strategies for ICZM outlined during the inception stage.

A detailed work programme for the ICZM plan (taking account of long, medium and short term needs, phasing, etc.) will need to be drawn up during the initial stage of the project. The planning process will be similar to that outlined for the inception stage in that considerable reliance will be placed on the consultative process in order to establish past and future trends, identify areas of conflict/compatibility, identify curative and preventative actions and to confirm, in collaboration with those who will have ultimate responsibility for implementation, the most appropriate administrative framework for ICZM in the cell and relating this to the national frameworks.

Further to the review process initiated as part of Stage 1, the following sub-tasks (which are not necessarily listed in order) are indicated at this stage of the work:

2.1 Detailed Consultations: Detailed second round consultations with all relevant agencies at National, Regional and Local level, including port authorities, industrial and tourism authorities, etc. This should also include non-government organisations and other interested parties and will extend to the principal authorities in neighbouring regions and cells where cross border issues are indicated.

The consultations should be carried out on the basis of a predetermined agenda, designed to ensure consistency and comprehensive coverage of the issues at all levels of authority.

2.2 Public Participation: The process commenced in Stage 1 with the raising of general awareness and the invitation of submissions and observations, should be continued. The submissions should be analysed, and follow-up consultations undertaken where appropriate. The public should be kept abreast of progress with the plan and, where appropriate, informed of the key issues as they emerge. There will be further opportunities for public involvement in response to the draft ICZM plan.

2.3 Document Review. The document review, started during the inception stage, should be extended and deepened to include more detailed information and analysis of issues of particular relevance in the cell. This might include, for example:

- detail and status of existing infrastructural programmes and projects, e.g. where some road project is likely to 'open up' some new stretches of the coast;
- detail and status of selected major investment projects and proposals;
- environmental studies and EIA for problem areas, major projects already prepared, etc.;
- former and current environmental programmes/designations;
- examination of existing data bases, survey and monitoring systems;
- examination of local planning registers or their equivalent;
- ongoing analysis of the workings of the administrative system and procedures, etc.;
- current and predicted investment levels, cost estimates and other fiscal and economic data;
- demographic patterns, forecasts, patterns in employment, etc.; and
- tourism impacts, development of marine tourism, etc.

2.4 Selected Site Surveys: Based on the issues and problems which are identified during the inception stage and in the course of the detailed consultations, it may be necessary to undertake a programme of detailed and systematic site surveys in selected coastal areas in order to assist the planning team to come to a practical understanding of the scope of the problems and the capacity of the resource and of the different authorities and administrative systems in the locality to cope. This might include, for example;

- assessment of existing and proposed tourist resorts and centres;
- visits to designated areas and areas which are the subject of dispute;
- outline physical assessment of vulnerable areas, areas of development pressure, ports and harbours;
- overview of areas subject to erosion/deposition, areas vulnerable to storm surge etc.; and
- commissioning underwater surveys and studies of significant marine habitats considered to be under threat.

The purpose of these more detailed surveys would be to record accurately, on a sub-cell by sub-cell basis, the distribution and nature of the pressures on the coast and inshore marine, the quality and status of the coastal and marine environments and their apparent capacity and vulnerability. It should also facilitate confirmation of the potential of the coastal area for further development or redevelopment particularly for

tourism and leisure purposes and for uses and activities which are dependent upon coastal locations.

This process will assist the identification of alternative and complementary scenarios for future development/conservation and will help in the identification of priorities and in the delineation of areas for protection or other special purposes.

2.5 Sub-Studies: A series of sub-studies designed to chart the performance of the coastal zone in each sector of the economy will be required in order to help anticipate and forecast demand and future performance. For example, this would probably include reviews and detailed economic and trend assessments of:

- the fishing industry (offshore and aquaculture);
- tourism and leisure;
- coastal agriculture;
- on- and off-shore extractive industry;
- other (manufacturing and service) industry;
- transportation and access (including ports/trade); and
- urban development and renewal.

This analysis will be facilitated through the consultative process outlined in 2.1 above and will help to establish an economic baseline against which future performance can be measured. It will also assist in the identification of future problems as well as opportunities and will, in this way, help in the identification of both curative and preventative measures and actions which will later be addressed in the plan and/or in subsequent Action Plans.

An important objective of this stage of the work will be the identification of the sectors and activities that are currently, and potentially, driving the demand for change in the coastal cell zone. These will then become the main focus of attention in seeking for solutions. Potential conflict between competing uses and activities will also require to be identified.

2.6 Plan Review: As the review progresses, all relevant local development plans, action area plans, conservation management plans and studies will be examined with a view to securing complementarity of plans throughout the cell and with the emergent ICZM plan. Reference will also be necessary at this stage to the various international strategies and directives, guidance notes, etc. and care taken to ensure that the emerging ICZM plan is compatible across the spectrum of priorities - international through local.

2.7 Outline Environment Impact: As the plan develops it will be necessary to subject the proposals and recommendations to an Outline Environment Impact Evaluation. This exercise will seek to summarise the key characteristics and status of both the marine and terrestrial environments listing the principal threats, conflicts, values and problems, as well as possible curative actions. Vulnerable and other areas in need of protection and/or confirmation or amendment of former designations will also need to be identified.

This sub-task should also include examination of all proposals and projects mooted in the plan recommendations and their classification. The use of World Bank and EPA guidelines for such EIA is recommended.

2.8 Draft Recommendations: Arising out of the analysis of the findings of the above listed sub-tasks a range of recommendations covering all relevant conservation, development and operational areas within the cell can be made. In each case, the current and future desired situation should be considered in terms of:

- definition;
- policies;
- procedures;
- structures; and
- resources.

Wherever possible, a current and potential economic value should be identified, and appropriate aspects quantified. Value may take a number of forms.

The principal output of the plans will constitute a draft Integrated Coastal Zone Management Plan for the cell. Specific outputs will include recommendations for, *inter alia*:

- the identification of clear objectives for ICZM in the cell and how they relate to the national policy;

- overall strategies for the sustainable and sensitive development and conservation of the coastal zone and the balancing of competing demands for the shared resource;

- environmental overview and evaluation of the plan as a whole and of the specific recommendations;

- clear practical, integrated and prioritised proposals for, *inter alia:*

    - land-use planning and control, including urban expansion and development, industrial development, agriculture, recreation, leisure and tourism activities;

    - transport and services infrastructural development (ports, shipping, roads, railways, wastewater treatment plants, etc.);

    - coastal protection and defence, erosion, encroachment, and reclamation;

    - nature conservation, coastal and marine, including sensitive ecosystems;

    - marine resource development including in-shore fisheries, aquaculture, minerals, energy, dredging, harvesting of self-renewing resources, recreation, leisure and tourism;

    - maritime safety and navigation, dangerous substances, etc.;

    - management of living marine resources - fish, shellfish, etc.;

    - marine environmental protection, including pollution of coastal waters, protection of bathing waters, wastewater treatment, etc.

- policies for linking the various ICZM elements and for the eventual integration of economic, physical planning and environmental policies;

- practical criteria for the identification of vulnerable areas (biological diversity, ecological quality, environment, landscape value, natural and cultural heritage, capacity to sustain life and health, economic activities, social well being);

- practical, but flexible, criteria to be used in the designation and delimitation of the coastal zone (these will vary by sector and cell);

- the consideration of strategies to deal with the likely impact of climate change in the cell ;

- draft policies for the co-ordination of decision-making and administration into an *integrated* ICZM system, and for dealing with areas of overlap;

- the integration of ICZM plans with international requirements (legislation and commitments) affecting the coastal zone;

- draft policies for continuing public participation in the Integrated Coastal Zone Management process;

- a framework for the allocation of resources in terms of manpower and finance;

- tools for ICZM, including remote sensing, GIS and SMT (software management tools);

- priority action and demonstration programmes;

- suggested legislative and/or administrative changes, if required; and

- cost and funding implications of options.

2.9 Review: Following on from the drafting and dissemination of the ICZM plan for the cell a review process should be launched which would include:

- a series of meetings and presentations held to present the draft to the relevant parties (first interactive review);

- revision of the draft plan based on the first interactive review which will include draft management plans, listing of priority actions and related costs and will identify any outstanding issues which will need to be addressed in a second stage interactive review;

- a second round of interactive meetings and presentations will then follow to present and review the revised and updated draft plans;

- taking account of the findings of this review the final text of the report would be prepared, printed and distributed and

- seminars (one day) based on the final reports might then be organised and held, at regional and local levels throughout the cell and in neighbouring cells and with the national agency responsible for the ICZM planning process.

THE INTEGRATED COASTAL ZONE MANAGEMENT REPORT

The content of the Integrated Coastal Zone Management Plan report will obviously vary from one cell to another in detail. However, as implied above, the work should be comprehensive and ought include the elements outlined below. Particular reference is made to the content of the opening chapters which are important in so far as they 'set the scene' for Integrated Coastal Zone Management.

Background Statement

The introduction to the plan ought to review the context in which it is being prepared, summarising the main events and developments which have led to the decision to prepare the plan, the role of the plan in coastal zone management, the need for planning and a synopsis of the principal features of the cell under examination and the reasons for its designation as such.

The introductory section ought also to describe the principal actors who have come together to produce the plan and outline their roles in relationship to the management of the coast in that area and to one another. The relationships with the principal actors at national and regional level ought also be spelled out at this stage and the method of working/liaison, particularly in regard to public consultation and participation, described. This would of course include clarification as to the plan's relationship with the relevant Local Authority Development Plans and other (sectoral) plans and policy statements in circulation or under review.

Objectives Statement

A distinction ought be made here between the objectives of Integrated Coastal Zone Management and those of the study and of the resulting plan, which will be but one element in the overall management programme for the coast.

The overall objective of the operation is to facilitate the introduction of a management system which, guided by the ICZM plan and subject to regular review, can deliver sustainable development in the coastal zone. The plan should ensure the integration of environmental objectives into economic development of the area, taking into account the spatial aspects of both development and conservation in the context of the cell under review as well as its relationship to other cells and to stated national and international priorities.

The content and scope of any relevant guidance/policy documents available ought be referred to in this part of the document and the implications for the making of the plan outlined, e.g. in regard to setting, objectives, standards, targets, etc.

Definition

The plan ought to state the meaning of the various terms employed in its drafting and in particular the definition of key concepts such as 'sustainability', 'integrated coastal zone management', the extent of the 'coastal zone', etc. should be set out. Delineation of the physical extent of the zone may not be a realistic objective but a more precise description of the limits of the zone ought to result from the study and comprise a part of the recommendations.

Review

It is important to note that coastal management plans are not being prepared in a planning vacuum. The areas under consideration will have been the subject of numerous planning exercises and there will exist a substantial body of knowledge and commitment pertaining to the area. The process of preparing coastal management plans for the cells, which ought be based upon the best information readily available, ought not be deferred or delayed because of inadequacy of data. Gaps in information will exist of course and the identification of these gaps and recommendations for their elimination will form an important part of the plan output and continuing review.

When fully operational, the process of Integrated Coastal Zone Management , including planning, will be cyclical so that there will be opportunity in subsequent cycles to refine the plans. Thus whilst the plans should be as comprehensive as possible, it will be important to avoid becoming 'bogged' down in detail and the first 'round' of ICZM plans ought be concerned with establishing a baseline and with encouraging dialogue so that matters of principle can be established and the priorities for conservation and development within the cell identified.

The plan needs to bring together all relevant evidence/documentation concerning the physical, environmental, economic and social characteristics of the area highlighting unique or critical aspects and describing and, where appropriate, quantifying or qualifying the different elements within the cell. It may be useful also to compare the cell and its component elements with other cells and areas and with the overall national picture, in so far as this is possible.

This stage of the work will include extensive consultation both amongst local actors, the general public and with the key national agencies using techniques such as workshops, exhibitions, questionnaires, etc. The review ought to assess and report in as much detail as possible on the current and projected situation in respect of the:

- demographic characteristics of the zone (District Electoral Division level);
- settlement structures within and relating to the zone;
- macro and micro climatic conditions;
- transportation structures within and relating to the zone (land, air, marine);
- land and marine use patterns and types of uses and activities in the zone;
- geological and geomorphological characteristics of the zone;
- distribution and status of marine and terrestrial habitats;
- environmental characteristics (natural and built environment);
- marine and other emergency networks;
- the structure of administration in the zone and external linkages;
- distribution of infrastructure in the zone; and
- the legal framework affecting development/conservation.

In every case, the objective will be to assess and describe the status, condition and capacity of the coastal zone so as to be in a position to:

- measure the extent of existing and planned development in the zone;
- the nature of the coastal dynamic and the relative stability of the shoreline;
- identification of areas 'at risk' or hazard;
- identification of conflict or competition between/amongst uses or activities;
- identification of 'damaged' areas (marine and terrestrial);
- identification of the limitations on coastal access (land and sea);
- identification of the particular strengths and weakness of the zone; and
- gaps in information, in monitoring or in networking amongst actors.

Analysis

The objective of the analysis is to build up a reliable picture of need for development and/or conservation related to anticipated changes in the existing pattern of use and to opportunities which present to improve the existing environment and profile of use in the cell. It is also seeking ways to understand and resolve conflicts of interest and to improve working relationships and communications between the principal actors and between the principal actors and the general public. Not least it is concerned with establishing the scope for action and the likely consequences of action so as to provide a basis for outlining a 'future vision' of the coastal environment.

The scope of the analysis will vary from one cell to another. However, as a matter of course, the work ought to include consideration of the following:

- trends in development and conservation;
- trends in population growth, decline and migration;
- trends in the characteristics (and behaviour) of other resident and non-resident populations (tourists, minorities, day visitors, land and marine flora, fauna, etc.)
- trends in technology (especially communications and transport) which may affect development, etc. in the coastal zone; and
- the extent of prior commitment in the zone (i.e. designations, licenses, leases or permissions for use/development/conservation).

This in turn ought permit determination of need, as opposed to 'want', having regard to the findings of the review and of the trends analysis above, including:

- for land for various uses in the coastal zone;
- for land for conservation in the coastal zone; and
- the capacity of the zone to accommodate these needs.

Statement of Findings. Patterns of Change, Opportunity

This section of the report is employed to set out the issues and constraints which need to be dealt with in the plan. It ought also to describe the scope for action, and the options and related choices that are available with regard to the type and location of development and conservation.

Distinctions need to be made between development which has a strategic value, requiring a location in the coastal zone and that which serves solely private interests and/or could be located elsewhere. Equally distinctions need to be made between:

- issues to be addressed;
- key constraints;
- changing values;
- options;
- choices; and
- innovation; etc.

Consideration of Management Means and Methods

There is a popular misconception that zoning is the answer to all coastal problems. Certainly zoning is a useful tool but it is only one of many methods of managing development and conservation. This part of the plan ought be concerned with the full range of methods, including:

- public participation;
- function of the management plan;
- zoning;
- development control;
- licensing;
- designation;
- action planning;
- incentive planning; and
- networking and linkage; etc.

Consensus Seeking

Transparency and public participation is seen as an important part of the coastal zone planning process. Accordingly the ICZM plan ought to report on this aspect of the process describing the various methods used to disseminate the findings of the study section of the plan and to encourage debate on the issues and options for development and conservation and the conclusions drawn from this exercise. Of course it will not be possible to achieve full consensus with regard to the plan or its content, but the report ought nevertheless make clear those areas where there is broad agreement and at the same time clearly identify those issues and problems which proved impossible to resolve in this cycle, including:

- dissemination of findings and ideas;
- public debate;
- workshops;
- publications;
- conclusions drawn - consensus; and
- conclusions drawn - dissent.

Basis for Management Plan

This should include, *inter alia*:

- Strategic position.
- Targets/Goals.
- Development programme - key measures.
- Conservation programme- key measures.
- Implementation programme - key measures.
- Monitoring and evaluation schedules.

APPENDIX 3
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APPENDIX 4
LIST OF
CONSULTEES AND SUBMISSIONS

CONSULTEES

An Taisce

Bord Iascaigh Mhara

Aquaculture Division

Planning Division

Central Fisheries Board

Commissioners of Irish Lights

County and City Engineers Association

Department of Agriculture and Food

Environment Group

Rural Development

Department of Arts, Heritage, Gaeltacht and the Islands

National Monuments and Heritage Properties Service

National Parks and Wildlife Service

Policy and Planning Division

Department of the Environment and Local Government

Environmental Services

Local Government Section

Planning Section

Urban Waste Water

Water Quality Section

Water Services Section

Department of the Marine and Natural Resources

Aquaculture Division

Commercial Harbours Division

Engineering Division

Fishery Harbours

Foreshore Division

Inland Fisheries Division

Marine Environment Division

Marine Safety

Marine Survey Office

Property Division

Sea Fisheries Division

Shipping & Shipbuilding

SMI and Corporate Support Division

Department of Tourism, Sport and Recreation

Environmental Protection Agency

Irish Marine Emergency Service

Marine Institute

Fisheries Research Centre

Martin Ryan Marine Science Institute

National Marine Data Centre

Salmon Research Agency

SUBMISSIONS RECEIVED

Achill North-West Community Development Co.

Aer Rianta

Annagassan Harbour Committee

Aqua-Fact International Services Ltd.

Ballycotton Development Co. Ltd.

Bannow Bay Anglers

Border Regional Authority

Bray Urban District Council

County and City Engineers Association

Coastal Resources Centre, UCC

Coillte

Cork County Borough Council

Davis, Derek

Donegal County Council

Dublin Corporation

Dublin Regional Authority

Dun Laoghaire Angling

Dún Laoghaire-Rathdown County Council

Eastern Regional Fisheries Board

Environmental Sciences Unit, Trinity College Dublin

Federation of Irish Salmon and Sea Trout Anglers

Forbairt

Foyle Fisheries Commission

Geological Survey of Ireland

Herbst, Robert V.C.

Hook Tourism Development Association

Hydrographical Surveys Ltd.

Iarnrod Eireann

Irish Federation of Sea Anglers

Irish Marine Federation

Irish Sailing Association

Irish Shellfish Association

Irish Wildbird Conservancy

Killarney Sea Angling Club

Killybegs Fishermen's Organisation Ltd.

Knights of the Silver Hook Sea Anglers Club

Leinster Provincial Council - Irish Federation of Sea Anglers

Leitrim County Council

Limerick County Council

Lockhart, Geraldine

McNabola, J.

Martin Ryan Marine Science Institute, UCG

Meteorological Service

Mid-East Regional Authority

Munster Provincial Council - Irish Federation of Sea Anglers

North West Clam Marketing Group Ltd.

Northern Regional Fisheries Board

Rowe, John

S.W. Salmon Anglers' Council

Save Our Sea Trout Campaign

Shannon Regional Fisheries Board

Skerries Sailing Club

Skibbereen UDC

Sligo Borough Council

Sligo County Council

South East Tourism

South West Regional Fisheries Board

South-East Regional Authority

SWC Promotions

Teagasc Research and Development Centre

UCG Shellfish Research Laboratory

Udaras na Gaeltachta

Walsh, Ted , Consultant Ecologist

Western Regional Fisheries Board