



**Department of Communications,  
Marine and Natural Resources**

**Roinn Cumarsáide, Mara agus  
Acmhainní Nádurtha**

# Value-For-Money Review of Coast Protection Programme

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Part One                      Context Statement

Part Two                      Report

July 2004



Department of Communications,  
*Marine and Natural Resources*

Roinn Cumarsáide, Mara agus  
Acmhainní Nádurtha

**CORPORATE FINANCE &  
PLANNING DIVISION**

**Finance Unit  
Evaluation Section**

**Part One:**

**Context Statement for Value-For-  
Money Review of Coast Protection  
Programme**

July 2004

## Introduction

The establishment of a formal process for reviewing government expenditure was proposed in the Government publication, *Delivering Better Government* and introduced in 1997. The objectives of the Expenditure Review Initiative (ERI) are

1. To analyse in a systematic manner what is being achieved by Exchequer spending and
2. To provide a basis on which more informed decisions can be made on priorities within and between programmes.

It moves the evaluation of public expenditure away from a focus on inputs (the traditional audit perspective) towards a focus on outcomes and effects (which is more consistent with the thrust of SMI).

The expenditure reviews are carried out by spending Departments, with input from the Department of Finance. The process is overseen by the Expenditure Review Central Steering Committee (ERCSC), chaired by the Secretary General, Department of Finance.

In June 2001 the then Department of Marine and Natural Resources commissioned Fitzpatrick Associates to conduct an expenditure review of the Coast Protection Programme over the years 1998-2000. This review called on the consultants to examine the Coast Protection programme over the period in question and to:

- a) Evaluate the effectiveness of the programme
- b) Evaluate the extent to which the objectives of the programme are being realised
- c) Evaluate existing performance indicators and specify possible future indicator
- d) Comment generally on
  - The organisational and management structures, workloads and work methods for each programme;
  - The scope for alternative management or organisational approaches to achieve current and future objectives, strategies and functions on a more efficient and effective basis;
- e) Make any recommendations for change which this review may indicate for adapting policy in order to improve efficiency and effectiveness.

### **Coast Protection Programme**

The Coast Protection programme is designed to address the problem of erosion along Ireland's coastlines. The Irish coastline provides economic opportunities and other benefits in the areas of fisheries, aquaculture, tourism and residence to the economy. Erosion can destroy these benefits by damaging the coastline and destroying beaches and infrastructure. The overall goal of coastal protection is to ensure the sustainable development and management of the marine coastal zone by addressing priority coast protection requirements. These requirements are addressed via a programme of individual public works carried out on coastlines around the country. These projects can range from the large-scale "hard" engineering solutions such as using rock revetment or the construction of concrete walls to protect the coastline to "soft" solutions such beach nourishment, dune stabilisation and other methods that seek to work in unison with the natural elements.

### **Findings of Expenditure Review**

The following section contains information on the progress of the implementation of the recommendations contained in the consultants' report within the relevant Line Division. It should be noted that resource allocation within Government Departments is a multi-faceted and dynamic process and decisions are made based on a range of factors which may or may not include an expenditure review or report depending on the particular circumstances. Therefore the conclusions and recommendations of any value-for-money review are only one of many inputs to Departmental decision-making process on any policy. In addition, changes in the environment and/or in a programme area over time may also render conclusions reached in any report invalid or redundant. It is also the case that the period 2002/2003 saw all Government Departments subject to extraordinary budgetary restraints in light of the changed economic circumstances which undoubtedly reduced the resources available for programmes and in some cases funding was curtailed. Therefore it should be clear that subsequent actions do not reflect the Departments' judgement on the merits of any particular programme or report.

In general, it was found that the programme operated effectively and efficiently and achieved the established objectives. However, the report highlighted the need for a more strategic framework for the programme. The limited level of funding available in past years resulted in priority protection schemes being undertaken on an ad-hoc basis. The report found that in many instances a piecemeal approach to protection was taken which resulted in inefficiencies in programme delivery.

In order to address this concern a major Coastal Protection Strategy Study commenced in 2003. The study will address the nature and extent of erosion at various locations and different types of coastline in Ireland and seek to identify the most effective means, technically, financially and environmentally, in responding to particular instances and types of erosion.

The Consultancy Study will proceed in four phases:

Phase 1: An aerial survey of the Irish Coastline using oblique digital video photography has been completed as part of the first phase. The completed survey provides a useful baseline for the preparation and commissioning of future surveys. The filming aspect of the survey commenced in mid- September 2003 and was undertaken from a helicopter, using a gyro-stabilised high quality digital camera system. The coastline was flown in an anti-clockwise direction beginning at Lough Foyle and ending at Carlingford Lough. The results of the survey are presented as a series of overlapping digital images of the coastline linked to interactive maps, which enable the digital images of any particular section of the coastline to be examined.

Phase 2: Main study and report. In addition to the discussion of policy and development of strategy the report will be expected to specify the requirements for a national coastal database to underpin effective decision making. This will include for each segment of coast, information on the current and historic position of the coastline, the nature of the coast, its vulnerability to erosion and the nature of the hinterland in terms of economic, heritage and environmental assets. In addition the report will be expected to recommend and specify a structured and flexible database and Geographic Information System (GIS) for data collection, collation and analysis. The report will be expected to set out target standards of protection and consider the necessity for localised coastal flood warning systems. Finally the study will be expected to develop an explicit set of criteria to guide decision making in relation to prioritising Coastal Protection Projects.

Phase 3: Development of database and GIS including supply of all software customisation (main database, GIS and hardware will most likely be tendered separately by Department to consultant specification). Carrying out of pilot survey of a short length of coastline and initialising database and GIS.

Phase 4: Drawing up of tender documents and specification for a national coastal survey to complete database and GIS.

Financial resources are being assigned to the Coastal Protection Strategy Study at present. It is expected that when this study is completed a more targeted approach to programme delivery will enable a greater level of efficiency to be achieved.

**Part Two:  
Coast Protection  
Programme – Value-for-  
Money Review**

**Final Report**

**February 2002**

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## **Chapter 1 Introduction**

### **1.1 Background**

This is a Report of the value-for-money review of the Coast Protection Programme carried out on behalf of the Department of the Marine and Natural Resources by Fitzpatrick Associates.

Coastal erosion affects all coastal counties and is particularly prevalent on the softer coastline in the southeast of the country. The Department's Coast Protection Programme seeks to address the most urgent instances of erosion on the Irish coastline.

Limited public funding for coast protection was provided under the Operational Programme for Environmental Services in the period 1994-99. A higher level of funding is provided under the Economic and Social Infrastructure Operational Programme of the NDP in the period 2000-06.

### **1.2 Objectives of the Review**

The overall objective of the value-for-money reviews is to :

- *"provide a systematic analysis of what is actually being achieved by expenditure in each programme"; and*
- *"provide a basis on which more informed decisions can be made on priorities within and between expenditure programmes".*

The central requirements of the current assignment are to undertake an evaluation of the Coast Protection Programme in the period 1998-2000, with particular focus on programme objectives and value-for-money. The consultants also understand that this report will inform future strategy and policy insofar as the Coast Protection Programme under the National Development Plan, 2000-2006, is concerned.

The specific Terms of Reference of the review are outlined in Figure 1.1.

**Figure 1.1: Study Terms of Reference**

The requirements of the review are to:

- (a) Evaluate the effectiveness (Value-for-money) of the relevant programme over the period 1998 to 2000 or such other period, to be agreed between the Consultants and the Department, as would meet the expenditure review requirement;
  - (b) Evaluate the extent to which the current and future aims and objectives of each programme are being realised taking into account the mission and the current strategy of the Department;
  - (c) Evaluate existing performance indicators and their adequacy for monitoring and assessing the impact of each programme and specify the performance indicators which can be used to monitor and evaluate each programme in the future and on other measures which might be used to assess level of activity;
  - (d) Comment generally on
    - (a) the organisational and management structures, workloads and work methods for each programme;
    - (b) the scope for alternative management or organisational approaches to achieve current and future objectives, strategies and functions on a more efficient and effective basis;
- And
- (e) Make any recommendations for change which this review may indicate for adapting policy in order to improve efficiency and effectiveness.

### **1.3 Method**

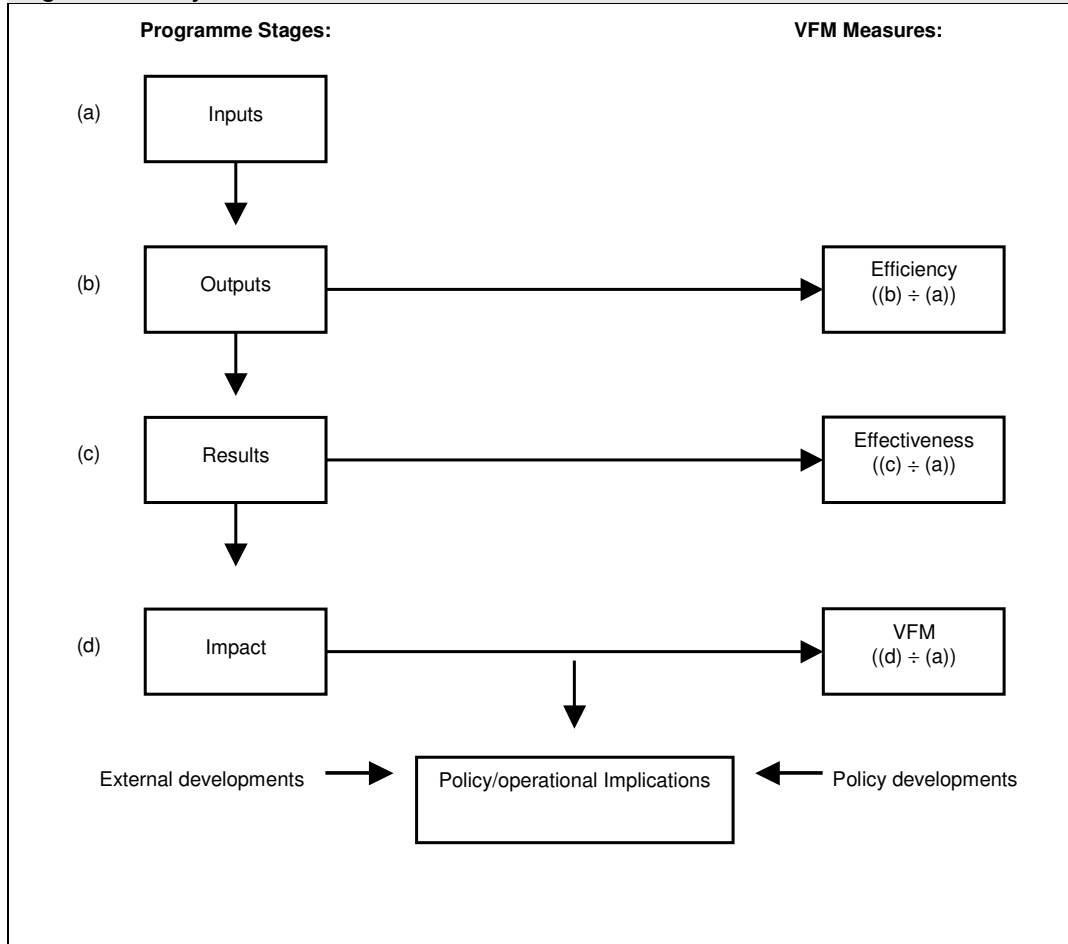
The methodology for this review involved desk research and literature review, consultations with stakeholders and a series of county-based case studies.

A number of consultations have taken place with key stakeholders and informants and these have been very useful in aiding our understanding of the key issues surrounding the programme.

Counties Louth, Clare and Wexford have been selected for case study purposes. The case studies include cost-benefit analyses and were instrumental in informing us in relation to the value-for-money of the Coast Protection Programme. The framework for analysis for the county case studies is outlined in Chapter 4.

The overall analytical framework used to assess the effectiveness, efficiency and value-for-money of the Coast Protection Programme is outlined in Figure 1.2.

**Figure 1.2: Analytical Framework**



The four programme stages are:

1. **inputs** – all resources including direct and overhead costs allocated to the programme;
2. **output** - the immediate direct output from any expenditure, ie the number of coast protection works undertaken;
3. **result** - the immediate advantages of the Programme for direct beneficiaries, eg the length of road protected by the works;
4. **impact** - the eventual consequences or benefits of a programme, eg increased economic activity in an area as a result of protection works undertaken.

The "resources/inputs" are the denominator in a value-for-money indicator. Measures of "output", "result" or "impact" are the numerator or the benefit and the ratio measures something different at each level:

- "cost effectiveness" in the case of unit cost of results;
- "cost efficiency" refers to the relationship between outputs and inputs;
- "value-for-money" in the case of the unit cost of impacts.

In relation to the current review the efficiency of the programme can be measured by comparing the total amount of resources allocated with the number of coast protection projects undertaken. The effectiveness of the programme can be assessed by analysing the value of public property protected vis-à-vis total costs. The overall value-for-money of the programme can be determined by comparing the eventual consequences such as increased economic activity in coastal areas with the programme costs.

## **1.4 Report Structure**

The following chapters of the report are structured as follows:

- Chapter 2 sets out the Department's strategy and the objectives of the Coast Protection Programme. It also reviews external factors which impact on the programme;
- Chapter 3 examines programme activity over the review period and reviews the areas of project selection and performance indicators;
- Chapter 4 provides an overview of the three county case studies;
- the management and administration contexts within which the programme operates are reviewed in Chapter 5;
- Chapter 6 outlines the review conclusions and recommendations.

## **Chapter 2 Programme Objectives**

### **2.1 Department's Strategy**

The overall mission of the Department of the Marine and Natural Resources Strategy Statement 2001-2003 is to make *"the most of Ireland's Marine and Natural Resources"* by promoting and managing the safe and sustainable use and development of Ireland's marine and natural resources in support of national, coastal and rural development policy objectives.

Conservation and protection of the coastline poses a major challenge for all maritime countries and especially for island nations such as Ireland. Equally important is the fact that the Irish coastline provides economic opportunities and other benefits in the areas of fisheries, aquaculture, tourism and residence. The Department of Marine and Natural Resources has responsibility for the regulation and management of the marine coastal zone<sup>1</sup> (including the State's foreshore) and is responsible at central level for coast protection policy. The overall goal of this policy is to ensure the sustainable development and management of the marine coastal zone. Part of this overall goal is the key objective of addressing priority coast protection requirements.

### **2.2 Programme Objectives**

The existing programme objective is to address, in accordance with clearly defined criteria and priorities the most urgent and important instances of coastal erosion on the Irish coastline. The policy is to pay particular attention to the protection and preservation of:

- State owned foreshore;
- property owned by Local Authorities;
- public infrastructure;
- public and tourist amenities (including beach and dune systems);

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<sup>1</sup> 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.

- areas of ecological importance.

The strategy to deliver on this objective gives priority to works which:

- protect public safety;
- support the economic development or increase the economic potential of coastal regions;
- provide essential environmental protection for features of ecological importance;
- avert the need for costly remedial works, or replacement of infrastructure, at a later stage.

The policy is implemented via a programme of individual public works. Projects vary in scale and in terms of the form of protection to be provided, depending on the nature of the erosion problems at particular locations and the optimal means, environmentally, technically and financially, of dealing with it. The programme of coast protection works is to be complemented and underpinned by a research programme (scientific and technological). Performance will be monitored by reference to the number of projects undertaken and the extent of the protection provided by those projects, as well as the nature and value of property, amenities or natural or ecological features to which protection is given.

### **2.3 Relevant Legislation**

No single coherent piece of legislation exists to cover coastal protection. The Coastal Protection Act 1963 is in disuse. Additional pieces of legislation that are linked to coastal protection are varied and complex. A new Coastal Zone Management Bill is expected in 2002. Aspects of European Union legislation dealing with coastal protection impose a responsibility on central government. The government is responsible for transposing the relevant EU legislation into the national context. If the European Union regulations are not adhered to, then the central government can be sanctioned or fined. At a local level, if the authorities are not implementing the relevant pieces of legislation, they risk losing financial transfers from the European Union via the central government. This threat acts as an incentive to the authorities to implement the relevant EU legislation.

The relevant pieces of legislation for coast protection are outlined in Table 2.1.

**Table 2.1 Overview of Relevant Legislation**

<b>Coast Protection Act 1963</b>	This statutory provision was drafted to enable works to be undertaken to protect the Irish Coastline. Based on the level of damage by the encroachment of the sea, the Act allows for a county council to declare that promotion of a coast protection scheme is expedient, and that the relevant Commissioners should be asked to carry out a preliminary investigation.
<b>Fisheries (Amendment) Act 1997 and the Fisheries and Foreshore Act 1998</b>	Provides for a comprehensive new licensing procedure for aquaculture activities
<b>Foreshore Acts 1933 &amp; 1992</b>	Convey comprehensive powers to combat damage, whether caused knowingly or unwittingly to beaches, sand dunes and seashore eco-systems
<b>Wildlife Act 1976</b>	This is the principal national legislative instrument governing nature conservation in Ireland
<b>Local Government (Planning and Development) Acts 1963-1998 and Planning and Development Act 2000.</b>	Provide for the planning and control of physical development in all areas, including coastal areas. The legislation gives planning authorities duties and powers relevant to protection of the environment and biodiversity.
<b>EU Legislation:</b> <b>European Communities (Environmental Impact Assessment - EIA) Regulations 1989</b>  <b>European Communities (Natural Habitats) Regulations 1997</b>	<b>Environmental Impact Assessment:</b> Provides for the incorporation of EIA into a number of statutory procedures under which approval is given to proposed developments, subject to EIA and additional supplied information.  <b>Natural Habitats:</b> A significant piece of natural heritage legislation, providing for the designation and protection of Special Areas of Conservation (SACs) and for the special protection measures that apply to Special Protection Areas (SPAs) (designated under the Wild Birds Directive).

## 2.4 External Developments

Some of the key external factors that impact on the Coast Protection Programme are:

- **Environmental:** climate change will result in increased storm frequency and intensity, rising sea levels and more adverse impacts from flood erosion and abrasive wave action. Sea level change poses a serious threat to the coastline. Sea level change around the coast of Ireland is estimated at 17-31 cm over the next quarter of a decade. Human activities such as sand gravel removal from beaches, dredging, afforestation, land reclamation and shoreline protection measures also impact upon coastal erosion and deposition. Overall some 176,000 Ha of coastal land is at risk from sea-level change<sup>2</sup>.
- **Settlement:** the coastal zone is affected by population shifts and the related human settlement impact. Almost all coastal towns with a population of greater than 2,000 have experienced population growth in the period 1991-96. The urbanised area in the coastal zone has increased by 10.3%. The number of houses in the coastal counties increased by between 47% and 180% in the period 1994-97<sup>2</sup>. Spatial population growth is linked to local authority planning permission and related property tax incentives. Increased human recreational activity in coastal areas has placed greater pressure on the coastal zone and has in particular impacted on the stability of sand dune systems.
- **Infrastructure Investment:** there has been a substantial increase in investment in roads and services in coastal areas in recent years. The increased value of public property in the coastal zone therefore results in a higher level of benefits accruing from coast protection schemes.
- **Economic activity:** apart from settlement, there has also been an upsurge in usage in parts of the coastline for various purposes, most notably tourism and leisure.

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<sup>2</sup> Department of the Environment and Local Government (Spatial Planning Unit). *Coastal Zone Management*. May, 2001.

## **2.5 Rationale for Coast Protection**

### **2.5.1 Introduction**

In responding to the threat of coastal erosion the options available to policy makers are three-fold:

- “retreat” ie allow erosion to take its course;
- “accommodate” ie accommodate forces of the sea and protect selected areas of the coastline of the highest socio-economic and environmental importance;
- “total protection” ie protect all areas of the coast against erosion.

In Ireland, as in most other countries, a policy of “accommodation” is implemented whereby priority coast protection works are undertaken. A stark contrast to this operates in the Netherlands where a policy of total coast protection is preferred and protection works are put in place to ensure that the coastline is not breached at any point by the sea. This policy is extremely costly and is only justifiable in a country where geographical characteristics necessitate such total defence against the sea.

Ireland’s policy on coast protection involves selective investment in coast protection schemes where justification can be provided on the grounds of public safety, loss of public property, economic or environmental losses. In many cases the potential benefits of protection works would not justify their costs. In such circumstances the line against the sea is not defended and considerable areas of land are therefore lost to sea each year.

Expenditure on coast protection in Ireland remains very small in comparison to expenditure on infrastructure programmes. Although funding under the NDP has been increased five fold to €52m it constitutes only 3% of the Department’s total investment across all expenditure programmes over the period 2000-06.

### **2.5.2 Coastal Erosion in Ireland**

A 1992 survey<sup>3</sup> of coastal Local Authorities provided detailed information on the vulnerability of the coastline to erosion. Of a total coastline length of 5,800 km, 3,000 km were classified as 'soft'. About half of the 'soft' coastline was deemed to be at risk from erosion with 490 km being under immediate threat.

Wexford was found to have the highest proportion of vulnerable coastline with 100 km or 40% of the coastline requiring immediate protection. The threat of erosion to sandy beach coast is of particular concern to Wexford as its beaches are a major recreational and tourism asset. Cork has the greatest length of coast, 149 km, in need of protection while counties Mayo, Clare, Kerry, Waterford, Wicklow and Louth also have a significant length of vulnerable coastline.

The problem of coastal erosion in Ireland is believed to be increasing as a result of increased human activity in coastal areas and factors associated with climate change. These and other external factors that are impacting on the issue have been discussed in Section 2.4. Many parts of the Irish coastline are eroding at a rate of up to 2.0 metres per year but accretion also takes place on an on-going basis. Public and private property and areas of environmental or heritage significance are under continual threat from coast erosion.

In addition to the economic benefits accruing to the State from protecting certain parts of the coastline, Ireland is also subject to EU legislation relating to the protection of areas of environmental or heritage significance. Coastal areas that have been designated as National Heritage Areas (NHAs), Special Protection Areas (SPAs) or Special Areas of Conservation (SACs) must be protected from erosion. The legislation relevant to these issues is outlined Table 2.1. If these assets cannot be protected then the State must finance the cost of re-instating them.

### **2.5.3 Methods of Coast Protection**

In protecting the coastline, there are two types of technical solutions which may be implemented:

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<sup>3</sup> Coastal Zone Management – A Case for Action. Published by Eolas on Behalf of the County and City Engineers Association.

- 'hard' engineering solutions;
- 'soft' engineering solutions.

'Hard' solutions usually involve the use of rock revetment or the construction of concrete walls on the coastline. Solutions of this nature can have adverse environmental impacts but in some cases they offer the only effective solution to the problem. 'Soft' engineering solutions include beach nourishment, dune stabilisation and other methods that seek to work in unison with the natural elements. 'Soft' solutions are therefore likely to have much less harmful effects on the environment and are now used more commonly in Ireland in cases where they can provide the required level of protection.

While coast protection works have been undertaken in Ireland for many centuries, the understanding of coast erosion continues to evolve and in particular the implications of various types of coast protection are becoming more apparent. 'Hard' protection works can very often have adverse effects on adjacent parts of the coastline through their effect on wave action. 'Soft' protection works can become ineffective if they are not properly maintained. The Department recognises the need for research in the area and to this end it plans to undertake extensive research as part of the 2000-06 Coast Protection Programme.

## **Chapter 3 Programme Activity**

### **3.1 Introduction**

This review covers expenditure under the Coast Protection Programme during the period 1998-2000. The review period therefore involves an examination of the Coast Protection Measures of both the Operation Programme for Environmental Services 1994-1999 and the Economic and Social Infrastructure Operational Programme under the NDP 2000-2006. Projects undertaken under the 1994-1999 Operational Programme received 75% funding from the European Regional Development Fund. There is no EU Co-Financing for this measure under the current NDP.

This Chapter provides an overview of programme activity in the review period and examines the central issues of project selection and performance indicators.

### **3.2 Project Selection**

#### **3.2.1 Introduction**

This section examines how schemes are selected for funding under the Coast Protection Programme and provides an overview of the project appraisal process.

#### **3.2.2 Applications**

The Department requests Local Authorities in all coastal counties to submit a list of priority coast protection projects on an annual basis. The Local Authorities are requested to provide a brief description of the nature of the problem and an outline of proposed solutions. Applicants are also asked to provide a brief economic assessment of the benefits and costs associated with the project.

The Department has issued standard application forms to Local Authorities for the first time in 2001. Prior to this the Department did not issue Local Authorities with a template application form or detailed guidelines as to how the applications should be completed.

In addition to priority coast protection projects identified by the Local Authorities, the Department's regional engineering staff also advises of the need for urgent coast protection work.

### **3.2.3 Selection Criteria**

The Department does not operate a structured project selection technique but it has identified a number of project selection criteria that are considered in the course of project selection. These are set out in Figure 3.1.

**Figure 3.1 Project Selection Process**

1. protect public safety, public property or infrastructure;
2. protect socio-economic, tourism or recreational importance;
3. support the economic development, or increase the economic potential (of the area);
4. provide essential protection for areas or features of environmental or heritage significance;
5. avert the need for costly remedial works at a later stage.

### **3.2.4 Selection Process**

The project selection process is closely linked to the management and administration of the programme and is therefore outlined in detail in Chapter 5. It is important to note here, however, that a structured selection process is not used. Projects are selected based on the criteria outlined in Figure 3.1 but no weightings are applied to the criteria and a scoring system is not applied to projects.

The initial step in the project selection process is to review existing projects on the Department's database and subsequently invite applications for funding from Local Authorities. An analysis is then carried out of the projects not completed in the previous year and the reasons for 'carry-over' are examined. The selection criteria outlined in Figure 3.1 above are then applied and projects are ranked in order of priority.

Following the categorisation of projects a draft plan is forwarded to the Department's regional engineers for verification. A final draft of the plan is then sent for ministerial approval.

In the case of costly protection works, the Department may initially grant funding to Local Authorities to commission feasibility studies. The main objectives of feasibility studies are to:

- identify and quantify the nature and scale of the problem;
- review the various engineering solutions or coast protection options;
- undertake an environmental appraisal of the project;
- compare the economic costs and benefits of the proposed protection works;
- recommend the optimum protection solution.

Once projects are selected, funding is either awarded to the relevant local authority to commission contractors to undertake the protection works or the project is managed centrally by the Department. Projects managed by the Department's own engineers are normally very large or particularly complex from an engineering perspective. Local Authorities must provide 25% of total project costs, irrespective of whether the projects are managed by the Department or Local Authorities.

### **3.3 Coast Protection Works Undertaken, 1998-2000**

#### **3.3.1 Protection Works and Feasibility Studies**

Reflecting increased funding, the level of Programme activity increased greatly between 1998 and 2000. In 1998 only 5 coast protection schemes were funded while 23 were funded in 1999 and 43 in 2000. The number of projects, categorised as either road/public infrastructure or beach/sand dune protection projects is outlined in Table 3.1. The Department project managed 4 of the schemes undertaken in 1998, 6 in 1999 and 7 in 2000. A more detailed analysis of projects undertaken in the period is presented in Annex 1.

**Table 3.1 Programme Activity, 1998-2000**

<b>No. of Projects</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>
Protection of roads or other public infrastructure	3	15	29
Sand dune/beach protection	2	8	14
Feasibility studies	3	7	3
<b>Average Funding Per Project, €</b>			
Protection of roads or other public infrastructure	498,959	215,209	272,261
Sand dune/beach protection	36,190	39,865	58,281
Feasibility studies			
Total Expenditure on Above	1,578,378	3,731,561	8,853,633

<sup>1</sup>The same scheme may have received funding over a number of years.

**1998:**

Expenditure in 1998 was largely concentrated on the major protection scheme undertaken in Bray, Co. Wicklow. Between 1998 and 2000 a total of €5.0 m was spent on protecting the pier and beach at Bray from erosion.

Other large projects undertaken in 1998 were strand protection at Rosslare and the commencement of coast protection works at Annagassan, Co. Louth. A total of three feasibility studies were also undertaken in 1998.

**1999:**

Programme activity increased significantly in 1999 and 23 coast protection projects were funded in 13 different counties. A number of larger projects funded in 1998, such as the Bray and Annagassan works, also received funding in 1999. In 1999, 15 of the schemes funded were undertaken in order to protect roads or other public infrastructure. The remaining 8 protection schemes related to dune management and beach protection. These schemes tended to be of much smaller scale with the average level of expenditure being circa €38,000. The average level of expenditure on schemes designed to protect roads or infrastructure was circa €215,000. A total of 7 feasibility studies were commissioned in 1999 at an average cost of €27,000.

**2000:**

Of the 43 coast protection schemes funded in 2000, 29 related to the protection of roads or other public infrastructure while 13 sought to protect sand dunes or beaches. One scheme was also undertaken with the specific aim of protecting an area of environmental importance. This involved protection works on Tawin Island, off the coast of Galway, where the habitat of Brent geese was under threat from erosion.

The largest scheme funded in 2000 was the protection of the R561 Dingle to Castlemaine road, which is an important tourist route. Expenditure on this project in 2000 was €3.0 m. The average level of expenditure on projects undertaken with the purpose of protecting roads or other public infrastructure in 2000 was circa €272,000. Expenditure on dune/beach protection projects averaged €63,400.

The number of feasibility studies funded in 2000 declined to three and the average cost of these was €47,400.

### **3.3.2 Other Programme Expenditure**

In addition to expenditure on protection works and feasibility studies, funding was also allocated to general programme research in 1999 and 2000. A total of €183,350 was spent on research projects in 1999. The majority of this funding was allocated to a coast survey in Louth, a national coast survey, and an aerial survey of the Carnsore to Killiney coastline. Over €38,000 was also allocated to a GIS project while just under €12,700 was spent on a wave buoy project.

In 2000 a total of €91,880 was allocated to programme research. Projects financed included coastal surveys, GIS maintenance and further expenditure on a wave buoy project.

### **3.3.3 Planned Expenditure 2000-2006**

Total expenditure on the coast protection measure under the NDP is estimated at €52 m, an increase of 500% over the level of expenditure in the 1994-99 period. This very substantial increase in expenditure will result in a much greater number of protection works being undertaken on an annual basis and will have significant implications for the administration and management of the programme. While the increased level of funding will enable a much more comprehensive approach to coast protection it will also result in a number of challenges in relation to issues such as project selection and monitoring.

One of the key priorities for the programme in the coming years is increased expenditure on research. It is forecast that increased use of coastal zones for recreational purposes and effects of climate change on sea levels and storm

frequencies will result in increased levels of erosion on the Irish coast. Project selection has also become more complex as a result of the substantive increase in the programme budget. The Department therefore feel that a comprehensive research programme would greatly improve the effectiveness of the Coast Protection Programme.

### **3.3.4 Research Programme**

A total of €6.9 m has been allocated for research into coastal erosion under the NDP. The research programme will focus on:

- a National Coastal Database and Protection Needs Study;
- technical information and pilot project studies;
- a basic research programme on fundamental topics and statistics of extremes.

## **3.4 Programme Indicators**

### **3.4.1 Current Programme Indicators**

In the Programme Complement of the Coast Protection Programme under the NDP the only performance indicator given is the number of coast protection works undertaken. A target of undertaking 25 coast protection schemes by the programme mid-term was set, while the final target for the programme was 50 protection schemes. Given that a total of 43 schemes were funded in 2000, the indicator would appear to have very limited usefulness in terms of programme evaluation.

The Department is currently collecting data on the length of coastline protected under the programme. No targets have been set for the length of coastline to be protected over the duration of the programme.

### **3.4.2 Criteria of Effective Indicators**

Programme indicators provide quantified information which assists in the decision making process. Indicators should in effect inform programme managers whether a

particular public intervention is a success or failure. The EU Means Collection<sup>4</sup> states that effective indicators should possess the following features:

- **relevance** - the indicator should encapsulate the policy objective;
- **availability** - crucial for an indicator is its actual existence, ie it must be quantified at regular intervals and the cost of collecting measurements should not outweigh the usefulness of the indicator;
- **meaning** - a good indicator must be clearly defined and understood without ambiguity by everyone who uses it. The indicator should accurately reflect the concept to be measured;
- **freshness** - the relevant information should be reasonably regularly available and it should be available when required;
- **sensitivity** - the quantity in question should be directly responsive to the activity whose performance is being measured, and ideally changes in the quantity should be directly attributable to the activity in question;
- **reliability** - a measure undertaken by two different people should produce the same indicator;
- **comparability** - ideally an indicator should allow for comparison across a range of different areas, particularly when used for resource and location decisions;
- **normativity** - any value given to an indicator should be comparable to a norm, ie it should be amenable to the setting of targets or benchmarks against which outcomes can be compared.

As outlined in Section 1.3 there are four different stages at which indicators should be applied in a measurement process – input, output, result and impact. The unit cost of outputs, results and impacts allow an assessment of efficiency, effectiveness and value-for-money respectively. The indicators currently available for the Coast Protection Programme only enable analysis of the programme's efficiency and there is a lack of information in relation to overall effectiveness and value-for-money.

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<sup>4</sup> *Evaluating Socio-economic Programmes: Selection and Use of Indicators for Monitoring and Evaluation*. European Commission, 1999.

### 3.5 Issues Arising

The key issues arising are:

- there is an inadequate system of performance indicators in place for the Coast Protection Programme. In particular no data exists for the purpose of evaluating the effectiveness or the value-for-money of the programme. A number of recommendations are outlined in Chapter 6 for possible programme indicators. However, given the lack of research available it is very difficult to develop effective indicators for the programme. A key objective of a performance indicator is to assist policy makers in determining whether a programme is meeting its objectives or not. This involves the comparison of indicators against established targets. The difficulty in relation to the current programme is that it is not known how much of the coast or what value of public property is under threat from erosion. In the absence of this and other similar information it remains very difficult to set meaningful targets for programme delivery.
- the number of feasibility studies undertaken has not risen in line with the increase in the number of schemes funded. In 1998, three feasibility studies were undertaken while 5 schemes were funded. The number of schemes funded in 1999 increased to 23 and the number of feasibility studies to 7. In 2000, however, the number of schemes funded grew to 43 while the number of studies declined to 3.
- the level of expenditure available for coast protection in 2000-06 period is 5 times greater than that available in 1994-99 period. The increase in funding has presented a number of challenges for programme management and administration.
- much needed funding (€6.9 m) has been allocated for research on coast protection under the NDP.

## **Chapter 4 County Case Studies**

### **4.1 Introduction**

The overall purpose of the county case studies is to provide a practical insight into the operation of the programme and also assist in developing overall conclusions on the effectiveness, efficiency and value-for-money of the programme. Counties Clare, Wexford and Louth have been selected. They represent a balance between large and small-scale projects and varying methods of coast protection. The nature of the problem of coast erosion is also quite different between the 'harder' coastline of County Clare and the 'softer' coastline of County Wexford.

### **4.2 Case Study Template**

To ensure that a consistent framework for analysis was applied across all three case studies a detailed template was developed. The template identified the data and information required for the evaluation of each scheme and acted as a checklist for site visits. The template is presented in Table 4.1.

**Table 4.1: Framework for Analysis**

**Cost Benefit Analysis**

**baseline "do nothing"**

- cost of reinstating assets lost to erosion
- losses due to temporary disruption

**baseline "do something"**

- what are the options - different approaches (managed retreat/alternative timing)?
- Probabilities of erosion/flooding under "do nothing" or "do something"

**Identify benefits**

- Private property (undertake analysis with and without)
- Public property such as roads, rail, water and waste infrastructure.
- Indirect losses such as traffic disruption, social and health impacts of flooding
- Recreational/tourism impacts – has the number of visitors increased/decreased
- Environmental/heritage impacts

**Identify costs**

- All costs in undertaking the work
- Future repair and maintenance costs
- Include costs to both the Department and the Local Authorities

**Compare Costs and Benefits**

**Value-for-Money Analysis**

**Inputs : Resources Used**

- Direct expenditure
- O/h's in Department
- O/h's in local authority

**Outputs : Immediate Direct Output**

- property protected
- Coastal Zone Management implications

**Results :immediate advantages of the expenditure**

eg road can be travelled

**Impacts : eventual consequences of the programme**

eg increased economic activity

**Effectiveness**

relationship between results and inputs

**Efficiency**

relationship between outputs and inputs

**Value-for-Money**

relationship between impact and inputs

**Project Management**

who? – why?

**Project Selection Criteria**

Is it clear why this project was undertaken?

- risk to public safety, property or infrastructure?
- promote aspects of socio-economic, tourism or recreational importance?
- support economic development in the area?
- protect features of environmental or heritage significance?
- avert the need for costly remedial works at a later stage?

**Administration and Managerial Contexts**

- workloads
- work methods
- systems
- co-operation between DMNR and Local Authorities

**Environmental Impacts**

- type of protection used
- wider effects
- consultations by Department on protection works

**Monitoring and Evaluation**

Project Monitoring?

**External Environment Analysis**

- Policy Environment
- Socio-economic factors
- Climate Change

**Communication Between Stakeholders**

### 4.3 Overview of Case Study Projects

#### 4.3.1 Expenditure on Coast Protection Schemes in Case Study Counties

Expenditure details of the projects reviewed in the selected counties are outlined in Table 4.2.

<b>Table 4.2: Coast Protection Expenditure in Case Study Counties, 1998-2000<sup>1</sup> (€)</b>			
	<u>1998</u>	<u>1999</u>	<u>2000</u>
<b><u>Wexford</u></b>			
Courtown		90,151	
Rosslare Main Scheme	59,308	30,756	19,657
Rosslare New Scheme	13,072	7,380	
Rosslare NE Spit			75,675
Cullenstown		34,786	145,639
Rosetown		6,389	
Ballyconnigar		126,974	
Curraclloe		38,092	
<b>TOTAL</b>	<b>72,380</b>	<b>334,528</b>	<b>240,971</b>
<b><u>Louth</u></b>			
Annagassan	238,717	25,395	118,299
<b><u>Clare</u></b>			
Quilty		1,029,317	269,551
Seafield			27,299
Ballyvaughan <sup>2</sup>			155,646
<b>TOTAL</b>	<b>0</b>	<b>1,029,317</b>	<b>452,497</b>
<p><sup>1</sup> Includes 25% contribution by Local Authorities</p> <p><sup>2</sup> Department records show that expenditure on coast protection works at Ballyvaughan in 2000 was €155,646. Clare County Council had estimated in their application to the Department that the cost of the protection scheme at Ballyvaughan would be €88,882. The Department allocated a total of €203,158 for expenditure on the scheme in 2000 but actual expenditure, as recorded by Clare County Council, was only €105,191.</p> <p>Clare County Council also spent €93,774 on a coast protection scheme at Clahanes in 2000. However, the Department has no record of expenditure on this scheme in 2000. Coast protection work at Clahanes was funded by the Department in 2001. The Department is currently seeking clarification from Clare County Council in relation to expenditure on the Coast Protection Programme over the period 1998-2000.</p>			

#### 4.3.2 Description of Case Study Projects – Louth

A brief overview of the case study projects is presented here and a more detailed analysis is outlined in Annex 2.

The only coast protection scheme undertaken in County Louth in the review period was at Annagassan. The village of Annagassan is located on the southern end of Dundalk Bay. A number of private properties in and around the village and the public road (R166) to the south and north of the village have been under threat from coastal erosion for many years. Heavy rain and high seas have also combined to cause extensive flooding in the village on many occasions.

Coast protection works were funded by the Department in 1998 (Phase 1) for the purpose of protecting dwelling houses and commercial properties in the village from flooding and erosion. Additional funding was awarded in 2000 (Phase 2) to undertake rock revetment work on the coastline directly north of the village. The work protects 14 houses on the coast side of the public road from erosion/subsidence and also provides protection to the road that may otherwise have been affected by subsidence.

The key issues arising are:

- the protection works undertaken at Annagassan greatly reduced the probability of flooding occurring in the village;
- a large number of private dwelling houses have been protected from erosion;
- it does not appear that any public property was under immediate threat from erosion;
- a local action group had campaigned local and national politicians for many years to have the protection works undertaken;
- the rock revetment put in place during Phase 1 did not protect all of the coastline at the rear of the village due to lack of available funding. As a result of this erosion has intensified in the unprotected length of adjacent coastline. Louth County Council is currently seeking to complete coast protection works on this segment of coastline. Overall programme efficiency would have been much greater if the entire length of the affected coastline had been protected from the outset;
- the net present value (NPV) of the benefits associated with the protection scheme far exceed the costs incurred. However, a large proportion of the benefits accrue to private residents rather than to the State. Given the large number of dwellings involved, however, a strong case exists for deeming the benefits accruing to individual homeowners as public benefits rather than private benefits.

### **4.3.3 Description of Case Study Projects – Clare**

Coast protection schemes were undertaken in County Clare at Quilty, Ballyvaughan, Clahanes and Seafield during the review period. It was noted in Table 4.1 that the Department's records do not show any expenditure at Clahanes in 2000 but Clare County Council's files show expenditure of €93,774.

#### **Quilty**

The scheme at Quilty was by far the largest of those undertaken. The village of Quilty is located on the national secondary road N67, between Kilkee and Lahinch. The road and a large number of private dwelling houses were under threat from erosion and flooding. A third class road between Quilty and Seafield was also under immediate threat from erosion. Both roads are significant tourist routes.

In excess of €1.26 m was spent on coast protection works at Quilty in 1999 and 2000. The protection scheme was technically difficult in that a considerable length of high cliffs had to be protected. While there are a large number of dwellings houses on the seaward side of the Quilty to Seafield road, the road itself would also have been eroded if the protection scheme had not been undertaken. A total of 23 dwelling houses were protected by the scheme.

The key issues arising are:

- the NPV of the benefits associated with the protection works greatly exceed the costs incurred;
- while the immediate threat to dwelling houses was a significant factor in project selection, segments of both the N67 and the Quilty to Seafield road were also under threat from erosion;
- the protection scheme has been very effective in protecting the assets at risk.

#### **Seafield**

Seafield is located circa 2 miles south west of Quilty. Funding of €27,300 was awarded for a reclamation project in 2000. The protection scheme involved the reclamation of land that had suffered from erosion. Blow-holes had formed on an area of commonage agricultural land by the shore. Soil was brought into the area

and the holes were repaired. The adjacent beach is popular for amenity and recreational purposes.

The key issues arising are:

- the scheme did not provide protection to any public property;
- while there have been some limited benefits from a recreational and amenity viewpoint, the main objective of undertaking the scheme was to protect commonage agricultural land;
- Clare County Council did not apply for funding for this project. It was selected by the Department but was undertaken by the local authority.

### **Ballyvaughan**

Clare County Council undertook coast protection works at Ballyvaughan in 2000. A third class road between the village and the old pier at Ballyvaughan was under immediate threat from erosion. The road was the only access route to the pier and one dwelling house.

The protection scheme involved circa 100 metres of concrete work and 250 metres of rock revetment. The scheme cost a total of €105,191 and was very effective in providing protection to the affected road.

The key issues arising are:

- the affected road is the only access route to a pier used by fishermen and tourists;
- tourism is very important to local economy and the affected road is of major recreational and amenity value;
- the NPV of the benefits accruing from the scheme outweigh the costs incurred.

### **Clahanes**

Clahanes is a rural coastal area a few miles west of Lahinch. A network of third class roads forms an important tourist route between Liscannor and the Cliffs of Moher. A considerable length of the road at Clahanes has been subject to flooding on an annual basis. Following each incidence of flooding the road has been left unpassable due to a significant amount of remaining debris and rock.

Clare County Council undertook coast protection works at Clahanes in 2000 and also in 2001. It is envisaged that further investment in protection works will also take place in the coming years.

The key issues arising are:

- considerable inconvenience had been caused to the local community as a result of the road being un-passable for many months each year;
- the route is of major tourist significance;
- significant costs were incurred by the local authority on an annual basis as a result of having to remove rock and debris from the road;
- the NPV of the benefits associated with the scheme far outweigh the costs;
- the project selection process for funding in 2000 appears to have been circumvented by Clare County Council.

#### **4.3.4 Description of Case Study Projects – Wexford**

Coast protection works in Wexford were undertaken at Rosslare, Cullenstown, Ballyconnigar and Courtown in the 1998-2000 period. Feasibility studies on proposed coast protection schemes at Rosetown and Curracloe were also funded in the review period. The schemes at both Rosslare and Courtown are elements of larger on-going coast protection schemes. In general, Wexford suffers from some of the most severe incidences of coastal erosion in Ireland and it also has some of the country's most important tourist beaches. A combination of these factors results in the issue of coast protection being a very high priority in the county.

##### **Courtown**

Courtown is one of the region's most popular seaside resorts. A previous study by Kirk McClure Morton estimated that 170,000 annual visitors to Courtown resulted in revenues to the town of €23m. The sand dune system at Courtown strand has suffered from erosion for many years. At the rear of the sand dunes are an area of high environmental importance and a canal which connects to Courtown harbour.

Rock revetment protection works have been undertaken at Courtown over a long period of time and these have been relatively effective in stabilising the dune system. However, technical experts believe that a series of breakwaters may be needed in order to provide long-term protection to the beach and sand dunes.

The key issues arising are:

- the economy of Courtown and the surrounding area is heavily dependent on the tourism and amenity facilities at Courtown strand and the value of the tourism industry more than justifies significant investment in coast protection works;
- the area is of high environmental importance and there is strong merit in protecting the dune system on environmental grounds alone.

### **Rosslare**

Erosion of the strand and sand dunes at Rosslare has been a significant problem for many years. It is believed that the rate of erosion greatly intensified following the construction of Rosslare Harbour in the 1860's as it interfered with the natural alongshore movement of sediment into Rosslare Bay. The OPW began extensive protection works in 1957 and these have been supplemented over the years with a combination of hard protection works and dune stabilisation projects.

The coast protection which was funded during the review period involved the maintenance of previous schemes and some additional rock revetment at the northeast spit. All of this work was undertaken by the Department. Given the seriousness of the coastal erosion problem at Rosslare, the Department has always regarded coast protection work there as a high priority.

Similar to Courtown, Rosslare strand supports a very valuable tourism industry. Rosslare Point is an area of significant ecological importance and it also provides shelter and protection for Wexford Harbour.

The key issues arising are:

- the NPV of the benefits arising from the protection of the strand and sand dune system at Rosslare far exceeds the cost of coast protection schemes there;
- severe erosion of Rosslare strand would have long-term adverse impacts on the tourism industry and the local economy;
- protection works at Rosslare are also strongly justified on environmental grounds.

**Ballyconnigar**

Ballyconnigar is situated near Blackwater on the east coast of Wexford. The beach at Ballyconnigar is also an important tourist amenity and considerable holiday home and tourism development has taken place in the area in recent years. The cliffs immediately north and south of the access point to the beach are extremely soft and are very fragile. Erosion is occurring at a rapid rate over a long length of coastline in this area. One of the most striking images of coastal erosion in Ireland can be seen at Ballyconnigar where three quarters of a dwelling house has collapsed over the cliff edge.

A total of €127,000 was spent on rock revetment work at Ballyconnigar in 1999. Circa 300 metres of coastline were protected by the scheme. Assets identified as being under immediate threat were a car part and toilet facilities at the beach access point and a road. The road is the only access route to both the beach and a caravan park situated nearby.

The key issues arising are:

- the NPV of the benefits accruing from the protection works greatly exceed the costs incurred;
- the area is a popular tourist area and the economy of Blackwater and the surrounding area is heavily dependent on the sector;
- it was noted that a number of sand quarries are being operated very near to the already fragile cliffs.

**Cullenstown**

Cullenstown is situated on the south coast of Wexford near Wellingtonbridge. The soft fragile cliffs are subject to continuous erosion and the problem is further exacerbated by the fact that a river enters the sea here after flowing parallel to the coast for a considerable distance. The point of entry of the river to the sea has tended to change over time as a result of flood and current actions and this has added to the problem of erosion.

Coast protection works have been funded at Cullenstown since 1999 and further expenditure will be required in 2002. The work has proved to be technically difficult

as a result of the unstable state of the cliffs and it not yet known what the final cost of the coast protection scheme will be.

While no public property or private dwellings appeared to be under immediate threat, a nearby third class road and a number of houses may have been affected in the medium-term. The beach at Cullenstown, while not of major tourism significance, is an important amenity for local residents.

The key issues arising are:

- it is unclear as to whether the NPV of the benefits accruing will exceed the final cost of the coast protection works (scheme is ongoing);
- while there was a serious threat from coastal erosion in the area, with both public and private property at risk in the medium term, it is not clear that work at Cullenstown should have been a higher priority than the completion of coast protection work at Courtown.

## **4.4 Impact of Case Study Schemes**

### **4.4.1 Introduction**

This section addresses the issue of the impact and value-for-money of the coast protection schemes undertaken in the case study counties.

### **4.4.2 Louth**

The coast protection scheme at Annagassan had a significant impact on the village and local community. The scheme resulted in a reduced risk of flooding and associated disruption to traffic, the avoidance of losses to public and private property and an elimination of the considerable stress and anxiety which the risk of erosion had caused for local residents. If the protection works had not been undertaken it is clear that there would have been significant adverse socio-economic impacts on the local community.

The total cost of coast protection work at Annagassan was €430,950. Given the level of impact which the scheme has had on the local community, this relatively small level of expenditure represents good value-for-money. While it could be argued that public money was used for the purpose of protecting private property, the use of

public money at Annagassan can be justified by the fact that the protection of a large number of properties or a community results in private benefits becoming public benefits. Where this arises public funding of coast protection schemes can be justified on socio-economic grounds.

#### **4.4.3 Clare**

The total level of expenditure on coast protection schemes in County Clare in the review period was just over €1.5m. In general the programme has had a significant impact on the quality of life and socio-economic development of coastal communities in the county. Expenditure under the programme has also resulted in benefits for tourism in the county.

The majority of expenditure in Clare in the review period was at Quilty. The protection works at Quilty have had a very positive impact on the area through a reduced risk of flooding and subsequent traffic disruption on a national secondary road, the protection of at least 14 houses that were under immediate threat of collapse and the protection of a third class road of both local and tourist importance. If the affected houses at Quilty had been lost to erosion there would have been significant long-term negative socio-economic impacts for the surrounding area. The protection works therefore provided good value-for-money.

The protection works at Ballyvaughan and Clahanes have also had a significant impact on the socio-economic development and quality of life of the affected communities. In both these cases it is also clear that good value-for-money was achieved. Although the level of expenditure at Seafield was relatively small, it is not believed that good value-for-money was achieved.

#### **4.4.4 Wexford**

A total of just over €635,000 was spent on coast protection schemes in County Wexford in the period 1998-00. A number of the projects were stages of much larger ongoing coast protection schemes. All of the schemes were undertaken for the purpose of protecting beaches/sand dunes of amenity or ecological importance. A number of the protected areas, such as Courtown and Rosslare, are major tourist resorts and of vital economic importance to the region. It is important that these assets are protected and expenditure on coast protection works to date has provided

value-for-money. However, the value-for-money achieved under the programme could have been increased if a more long-term strategic approach to the problem of coastal erosion had been adopted. This is particularly evident at Courtown where substantial investment is currently being considered for a series of breakwaters. If the funding had been available for such protection at the outset, greater overall impact could have been achieved from a lower level of inputs.

#### **4.5 Issues Arising**

The key issues arising are:

- some coast protection works have been undertaken for the primary purpose of protecting private property;
- action groups have campaigned local and national politicians in relation to particular coast protection projects;
- the NPV of the benefits associated with the majority of the schemes examined exceeds the cost. However, in relation to two of the schemes, a greater level of value-for-money could have been achieved if more urgent instances of coastal erosion had been addressed;
- a piecemeal approach to coast protection has resulted in inefficiencies in programme delivery in the past;
- where tourist beaches are under threat, the benefits associated with coast protection works tend to greatly outweigh the costs.

## **Chapter 5 Management and Administration**

### **5.1 Introduction**

The objective of this section is to comment on:

1. the organisational and management structures and work methods of the Coast Protection Programme;
2. the scope for alternative management or organisational approaches to achieve current and future objectives.

In particular, the focus of this section is to:

- document the project selection process for the Coast Protection Programme;
- establish the roles, responsibilities, timescales and decision making levels;
- identify process changes required to ensure a more structured approach to programme management.

### **5.2 Process**

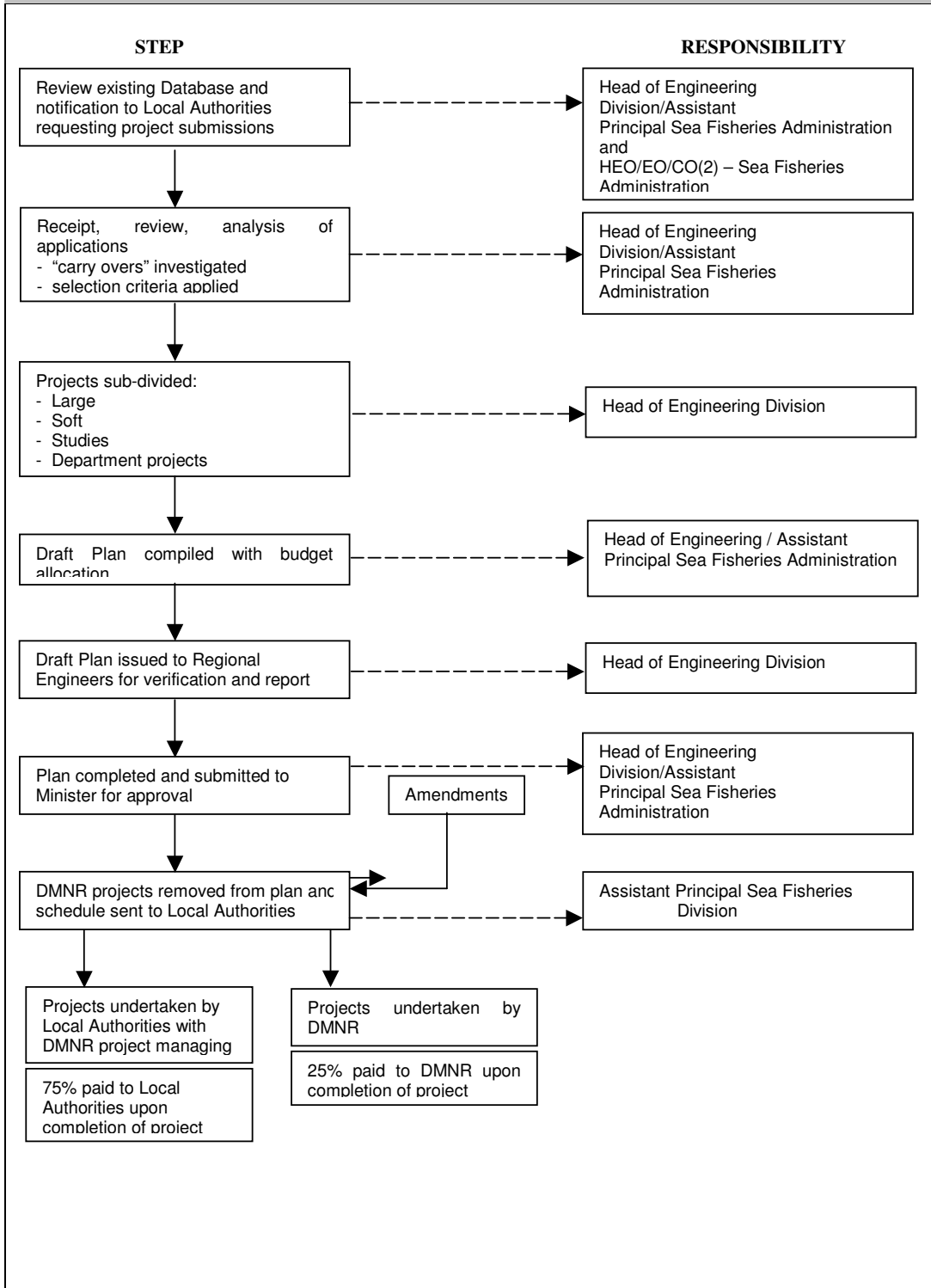
#### **5.2.1 Introduction**

The focus in this Section is to examine the managerial and administrative roles involved in the process. Projects are selected annually from applications received from Local Authorities and the selection is undertaken by two divisions within the Department, the Sea Fisheries Administration Division and the Engineering Division, with final approval being granted by the Minister.

#### **5.2.2 Project Selection**

The project selection process is divided into 8 stages (see Figure 5.1 below).

**Figure 5.1 Coast Protection Project Selection**



**Step 1: Review Database, Invite Proposals**

In advance of contacting Local Authorities for new proposals, a review is undertaken of the existing database (Excel spreadsheet) of potential projects which have been identified over the years. This database contains projects submitted over a period of 3 or 4 years. This task normally takes place in September.

The Department then writes to the Local Authorities in October requesting that they submit their applications for the following year's programme. Applicants are asked to prioritise projects and to provide a brief analysis of the costs and benefits associated with each. The deadline for the receipt of applications is usually in the first week of November. Local Authorities can put forward applications at other times. However, if they submit mid-year the application is left until the November review unless it relates to an urgent requirement.

**Step 2: Review Carry-overs and New Applications**

Once the applications are received by the HEO of the Sea Fisheries Division, copies are sent to the Head of Engineering. He initially reviews applications and compares them to the existing database. The applications are then jointly assessed with the Assistant Principal Sea Fisheries Division.

"Carry-overs" where funding has not been used in the previous year of allocation are also reviewed. The reasons for under-spends are investigated and are usually related to planning or statutory difficulties or where the Local Authorities did not get around to undertaking the work.

A discussion takes place between the Engineering and Sea Fisheries divisions in relation to the "carry-overs" which are not sanctioned unless there is a good explanation for them. The decision for this is made jointly.

The next task is to look at the remaining applications and apply selection criteria ie:

- protect public safety, public property or infrastructure;
- protect areas of socio-economic, tourism or recreational importance;
- support the economic development, or increase the economic potential (of the area);

- provide essential protection for areas or features of environmental or heritage significance;
- avert the need for costly remedial works at a later stage.

No formal weightings are applied to these criteria and the assessment is judged mentally. The highest priority criterion is public safety.

### **Step 3: Categorise Projects**

Once the projects have been reviewed in light of the criteria they are divided into four groups:

- large projects (ie rock revetment);
- soft projects (ie sand fencing);
- studies (feasibility studies);
- Department projects (strategic or technically difficult projects).

### **Step 4: Draft Plan**

When the budget for the programme is known a draft plan is compiled with the available funding allocated to individual projects. Only projects that are high priority on the listing are included in this plan due to budget constraints. Those not included remain on the database.

### **Step 5: Review and Finalisation**

The draft plan is issued to the Regional Engineers and they assess the projects relevant to their respective region. They discuss the submissions with the Local Authority Engineers and submit a report to the Department either verifying or amending the original submission.

When this information is received it is reviewed by the Head of Engineering and forwarded to the Assistant Principal Sea Fisheries who finalises the plan.

**Step 6: Approval**

Once the plan has been finalised it is submitted to the Minister for approval. Additional projects may be added to the plan at this stage.

**Step 7: Notification**

The Sea Fisheries Administration Division notifies the Local Authorities once the above is complete and inform them which projects have been approved. It also informs them that they have to provide 25% of the cost and take responsibility for on-going maintenance associated with the project.

**Step 8: Monitoring and Payment**

Once the funding has been allocated to the Local Authorities, the role of the Department is primarily project monitoring. Quarterly progress reports are submitted by the Local Authorities. However, due to lack of resources these reports have not been reviewed for the current period. If the project is undertaken by the Department the Regional Engineers produce monthly reports

Upon completion of projects, the Local Authorities are paid the balance of the project value ie 75%. Following completion of projects which the Department undertakes it claims 25% of the cost from the Local Authorities.

When the project is undertaken by the Local Authorities they certify that the work has been completed and the Department has no formal process in place whereby a percentage of completed works are monitored.

### 5.3 Roles and Responsibilities

The staff responsible for the project selection are the Head of Engineering and the Assistant Principal Sea Fisheries Division, with assistance from a Higher Executive Officer, Executive Officer, Clerical Officers and the Regional Engineers.

A breakdown of the resources is outlined in Table 5.1.

**Table 5.1 Breakdown of Roles and Responsibilities**

<b>Role</b>	<b>Responsibility</b>
Head of Engineering	Responsible for the successful identification of projects and allocation of funding
Assistant Principal Sea Fisheries Administration	Responsible for the successful identification of projects and allocation of funding
Higher Executive Officer	Monitors progress of the programme, prepares progress reports, responds to queries, ensures approval letters are issued on time, submits additional projects for approval
Executive Officer	Enters coast protection data to NDP / CSF computer system, issues approval letters responsible for recouping expenditure from Local Authorities, completes project authorisation forms, deals with queries
Clerical Officers	Responsible for quarterly progress reports issuing the reports, entering data on the Division's spreadsheets and filing the reports
Regional Engineers	Responsible for verifying applications from the Local Authorities

It is estimated that 33% of the Higher Executive Officer's, Executive Officer's and Clerical Officer's time is allocated to the Coast Protection Programme. The respective figure for the Head of Engineering and Assistant Principal Sea Fisheries Administration Division is 20%.

### 5.4 Timescales

The timescale from receipt of applications to approval is dependent on the following factors:

- late receipt of applications;
- the timing of the announcement of the Department of Finance budget allocation;
- the speed at which the Regional Engineers can revert with their findings;
- the availability of the Head of Engineering to review these findings;
- the time required by the Minister for perusal of the plan.

Without delay, the process would take about 6 weeks. However, in recent years Local Authorities have not been informed of project selections until early March. The time between receipt of applications and notification to Local Authorities is therefore circa 4 months.

In addition to the initial round of project selection in March, Local Authorities may be offered funding allocated to but not taken up by other counties. This second round of offers may not take place until the autumn and the reallocated funding would have to be spent before end November<sup>5</sup>. This can be difficult for Local Authorities, especially if a foreshore licence (see Figure 5.3) is required or if the contract is going out for tender. However, the delay in relation to reallocated funding primarily arises as a result of local authorities not informing the Department of project delays at a sufficiently early stage.

#### **Figure 5.3 Foreshore Licences**

*"The Foreshore Acts require that before the commencement of any works (including the erection of any structure) on State-owned foreshore a licence or lease must be obtained from the Minister for the Marine and Natural Resources."*<sup>6</sup> Many coast protection schemes therefore require a Foreshore Licence before work can commence. The Department guidelines indicate that the process should normally take between 21 and 25 weeks. In practice the process can often take much longer. Dúchas are consulted in the process and much of the delays arising can be as a result of issues of particular concern to them. This involvement of Dúchas in the Foreshore Licence process is their only formal involvement in the Programme.

## **5.5 Role Of Local Authorities**

### **5.5.1 Overview**

In the majority of instances the responsibility for programme delivery lies with the Local Authorities. The efficiency, effectiveness and overall value-for-money of the programme are therefore highly dependent on the manner in which Local Authorities manage and administer programme funding.

<sup>5</sup> All funding allocated under the programme must be drawn down before the end of November.

<sup>6</sup> Department of the Marine and Natural Resources. *Foreshore Acts 1933 to 1998 – General Guidance Notes*.

### **5.5.2 Programme Delivery**

The majority of coast protection works undertaken have initially been identified at Local Authority level. With the exception of the small number<sup>7</sup> of schemes that are managed directly by the Department, Local Authorities have responsibility for project management on coast protection schemes. In the majority of cases Local Authorities would engage contractors to undertake the work and to provide day-to-day site management. In a small number of cases Local Authority personnel undertake schemes.

A comprehensive code of practice<sup>8</sup> for coast protection was published in 1996. This acts as a very useful guide for all involved in the area. However, as a result of significant changes in personnel at Local Authority level in recent years, many of the engineers currently with responsibility for coast protection may not always have the sufficient knowledge and training to ensure optimum programme delivery.

Delivery of the Coast Protection Programme does not require a significant level of personnel resources at Local Authority level. Delays in programme delivery are therefore unlikely to be as a result of insufficient resources in Local Authorities.

### **5.5.3 Programme Administration**

Programme administration at Local Authority level involves the submission of applications for funding, responsibility for allocated funding and reporting to the Department on work undertaken. Considering that Local Authorities only undertake a small number of schemes each year, programme administration only requires minimal time input.

Applications are usually submitted by a Roads or Environment engineer with responsibility for coast protection. Information on schemes submitted is usually collected over the course of the year rather than from an extensive examination of the county's coastline. Other administration responsibilities for the programme are carried out by an administration officer in the department of the engineer with responsibility for coast protection.

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<sup>7</sup> The Department directly managed 4 schemes in 1998, 6 in 1999 and 7 in 2000.

<sup>8</sup> Government of Ireland. *Environmentally Friendly Coastal Protection – ECOPRO. A Code of Practice*. 1996.

## 5.6 Issues Arising

- **Planning:** there is an absence of an overall strategic plan for coast protection within which individual projects can be incorporated. Some projects have a lengthy project planning / lead in stage and as a result this has a major impact on the speed at which a project can proceed. The planning stage can be particularly difficult where a foreshore licence is required. In some instances lead in times have taken up to a year and this has resulted in project carry-overs.
- **Contract Price Increases:** a situation can occur where the price quoted originally for a project has increased by the time approval has been granted. This is due to factors such as market conditions or additional coastal deterioration. More specifically, criteria are needed for the allocation of additional funding to remove the subjectivity of an “administrative call”.
- **Emergency work:** unforeseen circumstances can arise where emergency repair work is required which has not been accounted for in the original plan. This can impact on the overall programme budget for the year.
- **Project Appraisal:** when selecting projects the application of the criteria is unstructured and reliant on the experience of the individuals applying the criteria.
- **Work Load Structure:** the structure of the workload is informal, ad hoc and varies between the two divisions with no specific time allocated. Although there is a December target date for submission of the following year’s programme to the Minister, deadlines do not exist within the Department for the other stages of the process.
- **Lack of Standardised Approach:** a standardised approach is lacking at all steps in the process. In particular, the issue of a procedures manual should be addressed whereby each stage of the process would be clearly documented. It is clear that the personnel who administer and manage the programme are vastly experienced and very knowledgeable in the area of coast protection. However, it is vital that this expertise is recorded in a structured manner and would be available to subsequent programme managers and administrators.

- **Local Authorities' Role:** a number of difficulties arise in programme delivery and administration in relation to the issues for which Local Authorities are responsible. Programme under-spends have occurred in the past as a result of delays in the project planning process. In many cases Local Authorities have been reluctant to notify the Department of delays in programme expenditure. This has resulted in the Department being unable to reallocate available funding. The Department has introduced a system of quarterly expenditure reporting in 2001 but this does not appear to have fully solved the problem.

Many of the Local Authority engineers with responsibility for coast protection appear to have limited training and expertise in the area. Given the significance of their role at both the project selection and programme delivery stages, the issue of training for engineers needs to be addressed.

## **Chapter 6 Summary: Conclusions and Recommendations**

### **6.1 Introduction**

This Chapter sets out the review conclusions and recommendations. The conclusions relate specifically to issues identified in the Terms of Reference while the recommendations are categorised by a number of key areas.

### **6.2 Conclusions**

#### **6.2.1 Validity of Programme Objectives**

The programme objectives as set out remain valid. Indeed the rationale for a coast protection programme will strengthen as the level of pressure exerted on the coastline increases. This increased pressure is the combined result of greater utilisation of the coastal zone and the effects of climate change. Human activity in coastal areas continues to increase as a result of population increases and greater use of the coastal zone for recreational and amenity purposes. Climate change will not only result in higher sea levels over time but also in the increased frequency and intensity of storms.

Increased public investment in coastal areas in roads and services under the NDP increases the need to ensure that this investment is protected. The total level of expenditure under the Coast Protection Programme under the NDP would only constitute a small proportion of expenditure in roads, water and sanitary services. It is therefore important that public investment in infrastructure continues to be protected from coastal erosion.

#### **6.2.2 Programme Performance Against Objectives**

Where protection works have been undertaken, the programme has achieved its stated objectives. The protection schemes have been effective in protecting the resources under threat. It is evident from the case studies undertaken during this review that the economic potential of the areas affected has been greatly improved.

In relation to the 1994-99 Operational Programme, a number of “*urgent and important instances of coastal erosion*” were unable to be protected as a result of limited resources. Given the significant increase in funding for the programme under the NDP it is envisaged that a greater proportion of urgent instances of coastal erosion will be addressed.

### **6.2.3 Suitability and Accuracy of Performance Indicators**

The level of performance indicators set out for the programme under the NDP is inadequate. The only performance indicator outlined in the programme complement, apart from expenditure, is the number of coast protection schemes to be undertaken. The target for this, for both the programme mid-term and programme end, was too low and needs to be reviewed. Work commenced in 2001 to calculate the length of coastline protected under the programme but no data are currently available from this process and no targets have been set for this indicator.

At the time of review, the level, suitability and accuracy of performance indicators for the programme are unsatisfactory. Recommendations as to how the gaps in performance indicators may be addressed are set out in Section 6.3.6.

### **6.2.4 Programme Effectiveness and Efficiency**

The programme is effective in that where expenditure has occurred there have been clear benefits for those directly affected by the problem of coastal erosion. However, it was noted that programme under-spends occurred in both 1999 and 2000 and this limited the effectiveness of the programme during those years. The under-spends occurred as a result of delays in project commencement due to difficulties in relation to foreshore licences and escalating construction costs.

Programme efficiency has been affected by the lack of a strategic framework for the programme. The ad hoc nature of programme delivery coupled with the fact that the limited level of resources available only enabled the most urgent instances of coastal erosion to be addressed resulted in a number of inefficiencies in the programme. In many instances a piecemeal or “fire-fighting” approach to protection had to be taken over a number of years rather than the implementation of the optimal solution from the outset. This resulted in higher unit costs than would otherwise have been incurred.

### **6.2.5 Overall Value-for-Money**

It is concluded that value-for-money is being achieved and that the Coast Protection Programme should continue to be funded. The overall impact, or eventual consequences, of the programme are sufficient to justify the level of resources employed. Although the level of impact is not directly quantifiable, it is clear from the research undertaken that it is significant. The impacts arising from expenditure under this programme are:

- sustainable tourism industries in coastal areas;
- greater amenity and recreational value of the coastal zone;
- increased economic activity in coastal areas previously affected by coastal erosion and flooding;
- improved quality of life for communities living in coastal areas;
- a coastal zone richer in terms of environmental and heritage significance.

## **6.3 Recommendations**

### **6.3.1 Introduction**

In general, it was found that the programme operates effectively and efficiently and achieves the established objectives. It remains vital to the interests of central government, Local Authorities and coastal communities that the issue of coastal erosion is addressed in a strategic and cost effective manner. The level of funding available for this issue under the NDP is significantly greater than that under the last Operational Programme and this has placed greater focus on the management and administration of the programme. It is therefore recommended that a number of changes should be made to the programme in order to ensure that the level of value-of-money achieved is maximised.

The recommendations presented here have been categorised as follows:

- policy;
- programme delivery;
- process;
- administration;

- performance indicators;
- other monitoring and evaluation;
- local authorities' roles.

### **6.3.2 Policy**

#### **(a) Strategic Framework**

The Coast Protection Programme addresses the most urgent instances of coastal erosion on the Irish coastline. For many years, the level of funding available for the programme was very limited. This resulted in priority protection schemes been undertaken on an ad hoc basis. Little or no funding was allocated to research and the overall approach of the programme was reactionary.

The level of funding available under the NDP is 5 times greater than that available under the 1994-99 Operational Programme. However, the overall approach to Programme delivery has remained largely unchanged. Although €6.9m has been allocated for the purpose of undertaking a research programme, projects continue to be selected on an ad hoc basis. While recognising the fact that the programme should continue to only address priority schemes, a national strategic framework for coast protection should be introduced.

This strategy should place a greater focus on medium and long-term planning issues. The long-term strategy for coast protection should be based on the findings of the proposed Protection Needs Study. It is important, however, that a steering group representing all agencies with responsibility for coastal zone management should be involved in formulating the strategy. In particular, the steering group should represent environmental and heritage interests, planning issues in the coastal zone, economic and budgetary issues and technical aspects.

The key steps in formulating an effective strategic framework for coast protection should be as follows:

1. Establish a steering group to represent the range of issues involved in coast protection. Suggested participants would be Dúchas, The Department of Environment, County Managers, the Department of the Marine and other technical experts.
2. Identify key issues to be addressed in the Protection Needs Study.

3. Co-ordinate the Protection Needs Study.
4. Form a long-term (probably 20 years) strategic framework for coast protection based on needs assessment, environmental and planning issues.
5. Develop a short-term plan (over the life of the NDP) to address the most urgent instances of coastal erosion.

The Protection Needs Study and strategic framework would result in reduced expenditure and time delays on feasibility studies for individual schemes as much of the information previously required for individual feasibility studies would be available.

### **(b) Protection of Private Property**

The programme objectives specify that, where economically beneficial to do so, public property should be protected from coastal erosion. In general, it is the Department's policy that schemes should not be funded for the sole purpose of protecting private property. In practice, a number of schemes protect both public and private property.

In cases where no public property is under threat there may still remain a strong case for the protection of private property. If a number of dwelling houses in a given area are under threat from erosion there is a substantial risk to the economic prosperity of the community. As the number of houses affected increases the benefits accruing to the individual house owners change from being 'private benefits' to 'public benefits'. The loss of one or two houses is therefore a private cost and the State has no responsibility to protect them. However, if a community is under threat it is justified to finance coast protection works with public funding. It should therefore be stated in the selection criteria that private property would only be protected where it can be demonstrated that protection constitutes a public good.

### **6.3.3 Programme Delivery**

#### **(a) More Targeted Approach to Funding**

This recommendation is linked to that in relation to the need for a more strategic framework for the programme. Given the inadequate level of funding available under

this programme in past years, many coast protection schemes were undertaken in a piecemeal approach. This resulted in the most urgent element of a particular scheme being undertaken in a given year and remaining elements of the scheme completed in subsequent years. This approach resulted in inefficiencies in programme delivery and should be avoided in the future.

A more targeted approach to programme delivery would result in a fewer number of schemes being funded per year but would enable a greater level of efficiency to be achieved.

### **(b) Training**

Coast protection and coastal zone management are complex issues. An extensive research programme is planned over the timeframe of the NDP and the level of knowledge and understanding of the area is expected to increase significantly. It is therefore vital that this information is disseminated by the Department to all practitioners in the field.

The following options may be considered:

- update existing manuals;
- training courses for Local Authority engineers (to include issues such as cost benefit analysis and value-for-money);
- seminars through the professional bodies.

### **(c) Foreshore Licences**

Delays in securing foreshore licences have resulted in many coast protection schemes not being undertaken as scheduled. It is recommended that there should be regular liaison between the Sea Fisheries Division and the Foreshore Licences Division in an effort to ensure that minimal delays are incurred in granting foreshore licences for coast protection work.

It is also believed that if Dúchas had a greater involvement in overall programme strategy, delays in securing foreshore licences could be greatly reduced. It would appear to be unsatisfactory that the only involvement Dúchas has in the programme is at the foreshore licencing stage.

**(d) Feasibility Studies**

The number of feasibility studies funded declined from 7 to 3 between 1999 and 2000 while the number of protection schemes funded increased from 23 to 43 in the same period. There were 3 studies funded in 1998. While it is difficult to form definite conclusions over such a short time series, it would not appear to be a positive feature that over a period during which programme expenditure increased from €1.5m to €8.9m, the number of feasibility studies undertaken remained the same.

It is unclear as to whether the main objective of feasibility studies is to ascertain whether it is justifiable on an economic basis to proceed with protection works or to identify what the optimal engineering solution would be. Clear guidelines for feasibility studies should be developed. It is recommended that, in addition to reports by engineering consultants, independent economic assessments should be undertaken for large projects (an estimated cost threshold should be used to define these).

**6.3.4 Administration and Funding****(a) Local Authority Contribution**

Local Authorities currently contribute 25% of the cost of schemes funded under the Coast Protection Programme. In past years when total programme expenditure was relatively low this requirement did not pose a major difficulty for Local Authorities. However, given the substantial increase in programme expenditure under the NDP the level of contribution required from Local Authorities has also increased. The concept of Local Authorities making a contribution to the cost of protection works remains a sound one and it is vital that Local Authorities should continue to have an element of ownership in programme delivery. It is not believed that any coast protection schemes have been postponed as a result of the required contribution. It is therefore recommended that the 25% contribution should continue to be sought for all coast protection projects.

However, this requirement should be reviewed periodically and a reduction in the level of contribution may be merited in the future. Future reviews of this requirement should consider whether local authority contributions should be capped in cases of extremely large projects of regional or national significance. It should also be considered whether the contribution should be reduced for schemes that seek to

protect sand dune systems or areas of environmental or ecological importance. This recommendation is based on the perception that some Local Authorities may place a greater level of importance on schemes that protect infrastructure than on other schemes.

### **(b) Timing of Funding Allocations**

Local Authorities are normally notified of programme funding allocations in early March. In many cases, Local Authorities then have to undertake the process of inviting tenders for the schemes and, where applicable, apply for foreshore licences. In general, Local Authorities are unable to undertake coast protection schemes during the summer tourist season. This results in work on many schemes not being commenced until the autumn months and consequently not completed within the calendar year.

It is recommended that the Department should endeavour to notify Local Authorities of funding allocations by mid January at the latest. Such a development would greatly reduce delays in programme delivery.

In addition to the initial round of funding allocations, the Department also offers funding to Local Authorities when it becomes apparent that previously approved schemes will not proceed in the current calendar year. However, in some instances Local Authorities do not inform the Department at a sufficiently early stage in order to allow funding to be reallocated to other counties. The Local Authorities should therefore take greater responsibility in ensuring that they inform the Department of any delays on individual protection schemes.

### **(c) Multi-annual Budgeting**

Under the current programme, if Local Authorities are unable to complete coast protection schemes within the calendar year, they must re-apply for funding the following year. This results in additional administrative costs and delays in programme delivery.

The current system of funding allocation also makes it much more difficult for Local Authorities to manage their budgets. A system whereby Local Authorities would know the estimated level of expenditure on coast protection works over a medium-term planning horizon would greatly improve overall programme efficiency. A system

of multi-annual budgeting similar to that used for a number of other infrastructure programmes should be introduced for the Coast Protection Programme.

#### **(d) Operating Procedures**

It was found that operating procedure manuals are not available for the programme. Clear guidelines and procedures for programme management and administration should be drawn up. These should incorporate a detailed system for project appraisal. Deadlines should be set and adhered for each stage of the project cycle.

#### **(e) Contingency Funding**

Since the programme will inevitably receive applications for emergency funding during the year, it is desirable to plan for this via a contingency budget. A proportion (perhaps 10% – 20%) of the budget should be held over and, if unused, reallocated in mid-year, along with under-utilised funding from other projects.

### **6.3.5 Project Selection Process**

#### **(a) Project Appraisal**

In England and Wales, nationally funded projects for flood alleviation and coast protection are subjected to a rigorous appraisal process. Economic appraisal is particularly detailed and substantial resources have been allocated for the purpose of developing a comprehensive framework for appraisal<sup>9</sup>. Individual project appraisals are also extensive and can require significant resources to be completed. The central element of the appraisal process is a cost benefit analysis. These can be difficult to undertake and can often require a high level of both technical and economic expertise. Therefore, while it is recognised that an appraisal system such as that used in England and Wales is very structured and comprehensive, the resources that it requires would not be justified for the programme currently under review. Cost benefit analyses should continue to form a vital component of feasibility studies.

It is recommended that a scoring weighting ranking (SWR) system that considers criteria relevant to the programme objectives, environmental issues and economic

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<sup>9</sup> Department for Environment, Food and Rural Affairs. "Flood and Coastal Defence Project Appraisal Guidance: Procedural Guidance for Operating Authorities". 2000/01.

aspects would be the most appropriate and cost-effective method of project selection for the Coast Protection Programme. The main advantages of this method are that:

- it provides a structured framework for the appraisal of projects;
- it encourages programme managers to identify all relevant evaluation criteria;
- it allows the relevant importance of the evaluation criteria to be clearly identified;
- it provides a transparent and open basis for project appraisal.

The main limitation of this method in the current context is that the multiplicity of programme objectives makes the use of common criteria more difficult. It is suggested that this issue could be overcome by firstly separating all applications into four categories such as schemes to protect roads or other public infrastructure, schemes to protect sand dunes or beaches, schemes to protect sites of environmental or heritage significance and feasibility studies. Once all schemes have been categorised, core programme evaluation criteria could be applied to all proposed schemes and a group of category specific criteria could also be applied.

The steps in formulating the system are as follows:

- Step 1: Identify the criteria against which all applications should be appraised;
- Step 2: Assign a weighting to each individual criterion based on its importance;
- Step 3: Review and score each application against the various criteria;
- Step 4: Rank the applications against each other;
- Step 5: Allocate funding to the highest-ranking projects, subject to the total level of programme funding available.

In order to develop an effective SWR system, output from the strategic framework for coast protection would be required. It is therefore recommended that if a system is developed prior to the availability of the necessary research it should be revised at a later stage.

#### **(b) Local Authority Applications**

Standard application forms for the Coast Protection Programme were issued to Local Authorities for the first time in October 2001 for the 2002 expenditure programme. Prior to this the Department wrote to the relevant Local Authorities requesting them to provide a list of priority projects, a brief description of the nature of the work to be undertaken, the estimated costs and the expected benefits for the area.

The introduction of a standard application form is a welcome development and it should continue to be used in the future. At present, application forms are accompanied by a cover letter that sets out the overall programme objectives and the criteria used in project selection. It is recommended that more detailed guidelines should be issued to Local Authorities. These guidelines should clearly state the full list of criteria used in project selection and weightings applied to individual criteria. They should also address administrative issues such as reporting obligations for the Local Authorities. If any changes are made to the project appraisal process it is important that these be reflected in the guidelines.

### **6.3.6 Performance Indicators**

It is clear that there is an inadequate system of performance indicators in place for the Coast Protection Programme. In particular no data exists for the purpose of evaluating the effectiveness or the value-for-money of the programme. It is therefore important that both result and impact indicators are developed for the Programme. A number of criteria of effective indicators are outlined in Section 3.4.2 and they have been considered here in relation to recommendations for the selection of additional indicators. One of the key criteria of effective performance indicators is the actual availability of the data and the consideration that the cost of collecting measurements should not outweigh the usefulness of the indicator.

The greatest difficulty in developing performance indicators for this programme is the fact that it has a wide range of objectives. In terms of programme delivery, a scheme to protect a road is very different to a dune restoration and management project. For this reason a single set of performance indicators could not be applied to the entire programme. It is recommended that projects should be categorised into 3 main scheme groupings as identified in Section 6.2.5 above (road and infrastructure protection projects, dune/beach management projects and environmental/heritage protection projects) and relevant performance indicators should then be applied.

#### **Road/Other Public Infrastructure Protection Schemes**

The performance indicators used for these schemes should encapsulate the objectives of protecting public infrastructure and public safety and supporting the economic development or increasing the economic potential of coastal regions. The output indicator should remain the number of schemes undertaken while result and

impact indicators should be selected. Suitable result indicators would be the length of coastline protected and the value of public property protected. It is acknowledged that the Department is currently working on developing the former. A suitable impact indicator would be the level of economic activity in coastal areas but it is not believed that it would be cost effective to collect the requisite data. It is recommended that the number of communities impacted by coastal erosion as a result of inaccessibility due to flooding or collapsed roads could be used as an impact indicator.

In order for the suggested indicators to be applied the Department must first determine what the baseline situation is and then outline targets for the programme. The baseline data required would be the length of coastline currently under threat from erosion, the value of public property under threat and number of communities suffering from disruption as a result of flooding and erosion. It is envisaged that these data would be collected in the course of the planned Protection Needs Study.

#### **Dune/beach Protection Schemes**

It is a stated objective of the Coast Protection Programme to protect public amenities and tourist facilities, including beach and dune systems. It is recommended that the number of dune/beach protection projects undertaken should be used as an output indicator and the area of dunes/beach protected as a result indicator. Possible impact indicators would be the level of economic activity in seaside resorts or the number of visitors to beaches. It is believed, however, that these indicators would have a number of limitations and would not be practical to apply.

It is recommended that the Protection Needs Study should identify the area of dunes/beaches under threat from erosion. Targets should subsequently be established for the area to be protected in the course of the current and any subsequent Coast Protection Programmes.

#### **Environmental/heritage Schemes**

It is an objective of the Coast Protection Programme to provide essential environmental protection for features of ecological importance. The performance indicators currently available do not provide any indication of whether this objective is being achieved. It is recommended that the number of schemes undertaken should be used as an output indicator while the number of sites of environmental or heritage significance protected would constitute a result indicator. It is not believed that a

suitable impact indicator could be established for this category of protection schemes. In order for targets to be established for the number of environmental/heritage sites to be protected baseline information on the number of sites under threat will be required from the Protection Needs Study.

### **6.3.7 Other Monitoring and Evaluation**

#### **(a) Project Monitoring**

Regular monitoring of projects should be undertaken in order to ensure that protection schemes remain in their most effective state. This is particularly important for soft engineering works. Dune protection works should be monitored on a regular basis to ensure that fences etc remain in place. The monitoring of protection schemes should take place at two levels. It should involve regular inspections from maintenance staff who could undertake general repair tasks and regular monitoring should also be undertaken by engineers for the purpose of assessing the overall effectiveness of the protection scheme. Guidelines for monitoring should be established and a database, which would record monitoring details for all schemes funded by the programme, should be set up by the Department.

#### **(b) Project Evaluation**

The Department should initiate project evaluations whereby a sample of projects is evaluated on an annual basis with a view to improving the overall effectiveness and efficiency of the programme. Project evaluation is essential in order ensure continuous process improvement. Guidelines and procedures should be drawn up in order to ensure a uniform approach to the task.

### **6.3.8 Local Authorities' Role**

The overall value-for-money achieved by the programme is strongly dependent on the manner in which local authorities deliver programme expenditure. Local authorities also have a responsibility to ensure that only the schemes that offer the greatest level of value-for-money are prioritised.

In particular, local authorities should:

- follow proper procedures in the allocation of programme funding to individual coast protection schemes;

- inform the Department at the earliest possible date of any delays with individual schemes;
- ensure that engineering staff responsible for programme management engage in any training activities provided by the Department.

#### **6.4 Objectives for the Next Review Period**

The objectives for the next review period are to ensure that the recommendations outlined here have been implemented. It is not possible at this stage, due to the lack of baseline data, to set quantified targets for the next review period. These targets should be established once the necessary research is available.

## Annex 2 Cost Benefit Analyses

### Introduction

A number of cost benefit analyses were undertaken in the case study counties. The template for the analyses is outlined in Table 1.

**Table 1 Cost Benefit Analysis for Coast Protection Schemes**

**Step 1: Identify the Baseline situation:**

baseline “do nothing”

- cost of reinstating assets lost to erosion;
- quantify losses arising from temporary disruption;
- cost of assets lost due to flooding;

baseline “do something”

- what are the options – managed retreat/alternative timing?

**Step 2: Probabilities**

Probabilities of flooding/erosion under “do nothing” and “do something”;

**Step 3: Identify Benefits**

- public property protected such as roads, rail, electricity, communications and other infrastructure;
- private property – the analyses will be undertaken with and without private property included;
- indirect losses such as traffic disruption, social and health impacts of flooding;
- the recreational and tourism impacts of the protection works;
- environmental and heritage impacts.

**Step 4: Identify Costs**

- all costs involved in undertaking the project;
- future repair and maintenance costs;

**Step 5: Compare Costs and Benefits**

- compare costs and benefits using a Net Present Value analysis.

## Annagassan, County Louth

**Table 2 Cost Benefit Analysis for Annagassan**

**Step 1: Identify the Baseline situation:**

baseline “do nothing”

- the village and public road would have continued to experience flooding;
- length of public road and a number of dwelling houses would be lost due to erosion.

baseline “do something”

- managed retreat was not an option as many of the properties were under immediate threat.

**Step 2: Probabilities**

Probabilities set out in the feasibility study have been used.

**Step 3: Identify Benefits**

- prevention of flooding and erosion to road, dwelling houses and commercial property (shop, public house and bakery);
- it is estimated that 31 dwelling houses were under threat from erosion;
- there had been disruption to traffic through the village
- a number of residents suffered from stress and anxiety as a result of the threat from erosion;
- threat of environmental impact as a result of damage to sewage systems;
- socio-economic impact as a result of loss of shop or public house.

**Step 4: Identify Costs**

- cost of feasibility study and rock revetment work;
- repair and maintenance costs unlikely to be significant for rock revetment.

**Step 5: Compare Costs and Benefits**

- NPV of benefits as shown in feasibility study - €476,152 (significant intangible benefits not included)
- Total identified costs of €430,950

**Conclusion:** Benefits exceed costs when private property is included.

## Quilty, County Clare

**Table 3 Cost Benefit Analysis for Quilty**

**Step 1: Identify the Baseline situation:**

baseline “do nothing”

- flooding of National secondary road N 67 between Kilkee and Lahinch;
- length of public road and a number of dwelling houses would be lost due to erosion.

baseline “do something”

- managed retreat was not an option as many of the properties were under immediate threat.

**Step 2: Probabilities**

Probabilities set out in the feasibility study have been used.

**Step 3: Identify Benefits**

- prevention of flooding and erosion to 2 roads and a large number of dwelling houses;
- it is estimated that 23 dwelling houses were under threat from erosion;
- a number of residents suffered from stress and anxiety as a result of the threat from erosion;
- threat of environmental impact as a result of damage to sewage systems;
- both roads are of significant tourist importance.

**Step 4: Identify Costs**

- cost of feasibility study, rock revetment and cliff reinforcement work;
- repair and maintenance costs unlikely to be significant for rock revetment.

**Step 5: Compare Costs and Benefits**

- NPV of tangible benefits as shown in feasibility study - €992,935 – work actually undertaken protected additional property – very significant socio-economic and other intangible benefits (tourism)
- Total identified costs of €1,362,355

**Conclusion:** Benefits exceed costs when private property is included.

## Courtown, County Wexford.

**Table 4 Cost Benefit Analysis for Courtown.**

**Step 1: Identify the Baseline situation:**

baseline “do nothing”

- Further erosion to sand dunes resulting in loss of area of environmental importance;
- Threat to road, canal and quality of beach.

baseline “do something”

- managed retreat was not an option as the dunes and beach must be protected.

**Step 2: Probabilities**

Probabilities set out in the feasibility study have been used.

**Step 3: Identify Benefits**

- prevention of loss of sand dunes;
- prevention of damage to beach;
- multi-million pound tourism industry could be lost if dunes and beach are not protected;
- area of major environmental importance;
- significant tourism and recreational benefits for local residents.

**Step 4: Identify Costs**

- cost of feasibility study and rock revetment;
- repair and maintenance costs unlikely to be significant for rock revetment.

**Step 5: Compare Costs and Benefits**

- Tourism is estimated to be worth (annually) circa €22.9m to the area in terms of private benefits while data from a similar resort (Laytown) estimates that public benefits (amenity and recreational) would be circa €3.3m.
- Protection works have been undertaken over a very long period – cost to date circa €500,000 (cost in review period €90,151).

**Conclusion:** Benefits greatly exceed costs due to value of tourism sector.

## Rosslare, Co. Wexford.

**Table 5 Cost Benefit Analysis for Rosslare**

**Step 1: Identify the Baseline situation:**

baseline "do nothing"

- The strand, sand dunes and much of the spit would suffer from considerable erosion;
- Loss of major tourist amenity and golf course;
- Rosslare Point currently provides shelter to Wexford Harbour and North Slobs.

baseline "do something"

- managed retreat was not an option as the dunes and beach must be protected.

**Step 2: Probabilities**

Probabilities set out in previous studies

**Step 3: Identify Benefits**

- area of major environmental importance;
- golf course generates considerable revenue for the local area;
- prevention of loss of sand dunes;
- prevention of damage to beach;
- multi-million pound tourism industry could be lost if dunes and beach are not protected;
- shelter provided by spit for Wexford Harbour.

**Step 4: Identify Costs**

- cost of studies, rock revetment and dune stabilisation;
- work has been undertaken at Rosslare over a number of decades;
- repair and maintenance costs unlikely to be significant for rock revetment but there is an on-going cost associated with dune stabilisation.

**Step 5: Compare Costs and Benefits**

- Estimates for the annual value of tourism to the Rosslare area range from €10m to €15m
- Protection works have been undertaken over a very long period and it was not possible to determine a total cost for all works undertaken. Expenditure under the current Coast Protection Programme totalled €206,000.

**Conclusion:** Benefits greatly exceed costs due to value of tourism sector.