

# CLEDDAU CATCHMENT MANAGEMENT PLAN ACTION PLAN 1995



## KEY DETAILS

### GENERAL

|                                 |                     |
|---------------------------------|---------------------|
| <i>Area</i>                     | 810 km <sup>2</sup> |
| <i>Population (1991 Census)</i> | 73,450              |
| <i>Population Density</i>       | 91 km <sup>2</sup>  |

### TOPOGRAPHY

|                                   |                         |             |
|-----------------------------------|-------------------------|-------------|
| <i>Ground Levels</i>              | Max height              | 536 m AOD   |
| <i>Sea Levels (Milford Haven)</i> | Mean High Water Springs | 3.29 m AOD  |
|                                   | Mean Low Water Springs  | -3.01 m AOD |

### WATER QUALITY

|   |                         |                |                   |        |
|---|-------------------------|----------------|-------------------|--------|
| <i>Length of Classified River in 1992</i> | Class A                 | 59.1 km        | Class E           | 0.0 km |
| <i>General Quality Assessment (GQA)</i>   | Class B                 | 19.8 km        | Class F           | 0.0 km |
|   | Class C                 | 5.7 km         | Insufficient Data | 3.2 km |
|   | Class D                 | 0.8 km         |                   |        |
| <i>Cleddau Estuary (1990 Survey):</i>     | Class A (highest class) | 34.7 km (100%) |                   |        |

### WATER RESOURCES

|                                       |                    |
|---------------------------------------|--------------------|
| <i>Annual Average Rainfall</i>        | 1250 mm            |
| <i>Principal Reservoirs (volumes)</i> | Llysyfran 10350 M1 |
|                                       | Rosebush 640 M1    |

### FLOOD DEFENCE

|  |        |
|--|--------|
| <i>Length of Designated Main River</i>   | 181 km |
| <i>Length of River on which Flood Alleviation/Drainage Schemes implemented</i> | 30 km  |
| <i>Length of River covered by a Flood Warning Scheme</i>                       | 20 km  |

### FISHERIES

|   |        |           |
|---|--------|-----------|
| <i>Average Annual Declared Catches</i>  |        |           |
| <i>Rods (10 Year Average 1982-1991)</i> | Salmon | Sea trout |
| <i>Eastern Cleddau</i>                  | 52     | 629       |
| <i>Western Cleddau</i>                  | 27     | 332       |
| <i>Nets (10 Year Average 1983-1992)</i> | 30     | 10        |

## THE AREA MANAGER'S VISION FOR THE CLEDDAU CATCHMENT

The Cleddau catchment is central to the popular holiday area of Pembrokeshire and is rich in wildlife, scenic attractions and opportunities for leisure activities. Some 75,000 people live within an area whose economy relies heavily on tourism and agriculture. The remote geographical location has largely deterred industrial development, apart from the oil industry centred around the deep natural harbour of Milford Haven. During the life of this Plan, we wish to see significant progress in:

- **improving water quality** - the impact of existing sewage discharges will largely be addressed as the phased programme of improvements to infrastructure and sewage treatment works detailed within Dŵr Cymru's second Asset Management Plan (AMP2) become operational. The sewage disposal schemes for Pembroke/Pembroke Dock and Milford Haven, which should be completed by 2000, will be particularly welcome. Since the pace of remedial works is determined by AMP2, which reflects Regional priorities, there will be some sewage related issues that will not be addressed during the period of this Plan. The impact of agriculture on water quality, and therefore on fisheries, is another major cause for concern within the catchment, particularly in the smaller streams which are so important as nursery areas for migratory fish. It is essential to ensure that farmers construct appropriate effluent storage systems and implement effective management regimes in order that the full potential of the catchment can be realised.
- **protecting river corridors and floodplains** - the concept of "buffer zones" alongside watercourses needs to be developed, in rural and urban areas, to encourage the formation of natural river corridor habitats where waterside flora and fauna can thrive. Wherever possible, new development should be

directed away from floodplains, unless appropriate flood defence works are in place or alleviation works form part of the proposal.

- **developing an abstraction licensing policy** - abstraction uses must be balanced against the environmental needs of the river system, and we propose to implement an objective methodology for assessing the state of the catchment in water quantity terms.
- **the management of conflict amongst users** - the NRA recognises the high profile now being given to the competing uses of the Haven and Daugleddau. The initiatives by the Milford Haven Port Authority and the Pembrokeshire Coast National Park to manage the recreational activities are welcomed; enforcement of the zoning arrangements has emerged as a serious issue that needs resolution. The NRA will continue to play a constructive role with other agencies where integrated management solutions are required in this, and other parts of the catchment. In particular, the NRA anticipates that this Plan will significantly influence the planning policies of local authorities.

Implementation of this Action Plan will ensure that the problems that have been identified are addressed. The NRA's vision will be achieved through a balanced management approach to all activities. We will encourage imaginative proposals to allow sustainable economic and community development to proceed whilst ensuring protection and improvement of the water environment. We will collaborate activity with all users of the catchment and all those statutory bodies that can assist us in striving to achieve this vision.



David Walker  
Area Manager - South West Wales



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# THE CLEDDAU CATCHMENT



## KEY

- ..... CATCHMENT BOUNDARY
- DISTRICT COUNCIL BOUNDARY
- PEMBROKESHIRE COAST NATIONAL PARK
- TOWN
- { } CLEDDAU BRIDGE

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Class No

Accession No

AP102

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## INTRODUCTION

### THE CONCEPT OF CATCHMENT MANAGEMENT PLANNING

The rivers, lakes, estuaries and coastal waters of England and Wales have never before been subject to such large and rapidly increasing demands from the users of water. Many different uses interact, or compete for water or water space, and will inevitably come into conflict with one another. The National Rivers Authority (NRA) is the major manager of the water environment in England and Wales and aims to harmonise conflicts between competing water uses. Our Mission Statement expresses the following principles:

"We will protect and improve the water environment by the effective management of water resources and by substantial reductions in pollution. We will aim to provide effective defence for people and property against flooding from rivers and the sea. In discharging our duties we will operate openly and balance the interests of all who benefit from and use rivers, groundwaters, estuaries and coastal waters. We will be businesslike, efficient and caring towards our employees".

We have chosen to use Catchment Management Plans (CMPs) to translate these principles into action. The plans describe our vision for each catchment, identify problems and issues and propose actions that may be

taken to resolve them. The plans also provide the means of promoting two key aspects of environmental management - land use planning and water quality objectives.

### THE RELATIONSHIP BETWEEN LAND USE PLANNING AND CATCHMENT MANAGEMENT PLANNING

The broad objectives of catchment management planning are to conserve and enhance the total river environment through effective land and resource



The Milford Haven Waterway



management. However, while the NRA is well placed to influence some of the factors affecting the water environment, particularly in relation to the river corridor itself, it has very little control over the mechanisms which determine land use change on a catchment-wide basis. This is largely the responsibility of local planning authorities through the implementation of the Town and Country Planning Acts; the NRA is a statutory consultee under this legislation.

The policies in statutory development plans are important in this regard in that they set out the framework for land use change, and provide the key reference in determining development applications; the NRA encourages the inclusion of policies which reflect its concerns and responsibilities.

As guidance for local authorities, the NRA has prepared a set of statements relating to the broad headings of water quality and water resources, flood defence, fisheries, conservation, recreation and mineral workings and waste disposal. These statements are summarised in the NRA's "Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans"

This CMP Action Plan sets out Issues and Actions specific to the Cleddau catchment which have been agreed within the framework of these Guidance Notes.



Otter

This plan also outlines how the concerns of the water environment should influence the location and nature of development and land use change within the catchment.

The first phase of the second Asset Management Plan (AMP2) of Dŵr Cymru for the period 1995 to 2000 is currently being finalised following approval by the Director General of OFWAT. The phased programme of improvements to sewerage infrastructure and sewage treatment works identified within AMP2 will determine the pace of future remedial measures. This will have an important effect on both improvements in water quality and development/planning control as indicated within the Actions identified within this plan.

### WATER QUALITY OBJECTIVES

The statutory Water Quality Objectives (WQO) scheme, introduced under the Water Resources Act 1991, is a new system for water quality planning which places water quality targets on a statutory footing. The scheme is based upon the recognised uses to which a river stretch may be put and is consistent with the principles of CMPs. These uses will include River Ecosystem (formerly identified as Fisheries Ecosystem in the Cleddau CMP Consultation Report), Special Ecosystem, Abstraction for Potable Supply, Agricultural/Industrial Abstraction and Watersports.

At present, only the standards for the River Ecosystem Use have been developed on a formal basis and, as a result, this is the first WQO Use to be introduced by the Government through The Surface Waters (River Ecosystem) (Classification) Regulations 1994. For each classified stretch within the Cleddau catchment a River Ecosystem (formerly Fisheries Ecosystem) Use class target was proposed and this CMP Action Plan identifies, where appropriate, the actions required to achieve these targets. At present, these targets will only be applied informally although it is hoped that in the near future they may be established as statutory WQOs by the Secretaries of State for the Environment and Welsh Office.

## REVIEW OF THE CONSULTATION PROCESS

The NRA published the Cleddau Catchment Management Plan (CMP) Consultation Report in February 1994, having been written during the period since March 1992. The plan was launched as a consultative document seeking comments from all those interested in the water environment. Around 80 individuals representing various key organisations attended the public launch in Haverfordwest on 8th February 1994. A display was subsequently placed in Milford Haven, Haverfordwest, Neyland and Pembroke Dock public libraries, explaining the CMP process and the key details and issues in the Cleddau catchment.

The report was placed in all libraries and local council offices within the catchment for members of the public to read and a press release was sent to local papers to raise awareness of the CMP and consultation period.

The official consultation period ran from the public launch through to March 31st, although several organisations and individuals provided written comments after this period. Around 350 copies of the Consultation Report have been circulated to external interests. A total of 44 written responses were received from the following individuals and organisations:

The Sports Council for Wales  
Dyfed Archaeological Trust Ltd  
ADAS  
The Royal Society for the Protection of Birds  
W. Roscoe Howells  
South Pembrokeshire District Council  
National Power  
Brian Oxenham  
The Ramblers Association  
Royal Commission on the Ancient and Historical Monuments of Wales  
Ambleston Community Council  
West Wales Maritime Heritage Ltd  
Milford Haven Port Authority  
Dyfed County Council  
South Wales Sea Fisheries Committee  
Milford Haven and District Netting Association  
South Pembrokeshire Partnership for Action with Rural Communities Ltd  
Preseli Pembrokeshire District Council  
Farmers' Union of Wales  
Welsh Federation of Coarse Anglers  
Dŵr Cymru Welsh Water  
Pembroke Dock Town Council

The National Trust  
Burton Community Council  
Welsh Canoeing Association  
Wales Tourist Board  
Herbrandston Community Council  
University of Wales - College of Cardiff  
The Forestry Authority Wales  
Land Authority for Wales  
Texaco Ltd  
Cadw Welsh Historic Monuments  
National Farmers' Union  
Pembrokeshire Coast National Park  
Dyfed Wildlife Trust  
Pembrokeshire Anglers Association  
Welsh Office  
Elf Oil UK Ltd  
Milford Port Health Authority  
Gulf Oil  
Countryside Council for Wales  
Forest Enterprise Wales

All of the comments received were taken into account when formulating the Action Plan for the Cleddau catchment. This Action Plan includes and reflects many of the comments received from these organisations and individuals.



## AN OVERVIEW OF THE CLEDDAU CATCHMENT

### GENERAL

The catchment is largely of a lowland nature, although both the major rivers, the Eastern and Western Cleddau, drain partially from the Preseli Mountains. The land is sparsely populated, with the centres of population in Pembrokeshire's former market town, Haverfordwest (population 13,000), and in communities around the Haven: Milford Haven (14,200), Pembroke Dock (10,200) and Pembroke (5,500).

The catchment is characterised by intensive agriculture - mainly dairy farming, although sheep rearing and early potato growing are locally important. Dairy farming in particular plays an important part in the local economy. As would be expected, these activities have a greater impact on the water environment than other uses, although the effects are largely confined to freshwater.

Below their tidal limits, the Eastern and Western Cleddau join to form the Daugleddau, an extensive tidal reach of important ecological value. Two smaller rivers, the Carew and the Cresswell, also enter at this point, adding to the diversity and appeal of the estuary.

Downstream of the Cleddau Bridge, the Daugleddau broadens into the Milford Haven waterway, one of the largest natural harbours in the world, offering deep water access and moorings. This has attracted oil industry developments in particular, but also ferry services, the Royal Navy, commercial port operations and the fishing industry. It has become the most important port in Wales and one of the largest in the UK. The three operational refineries provide the largest refining capacity of any single complex in Europe.

Pembrokeshire, of which the Cleddau catchment forms a major part, is renowned as a holiday area; the population increases two-fold during the peak season. This influx places a strain on the local infrastructure and gives rise to conflicts within the water environment. This is especially true of the Milford Haven waterway, where increasing recreational activity will co-exist with established and important commercial uses.

### FLOOD DEFENCE

The lowland nature of the catchment produces less flashy characteristics than many catchments in Wales. Few properties in the catchment are directly threatened by flooding, but large areas of the flood plain supporting agricultural activity are at risk. These areas rely upon an efficient and effective drainage network to



*Flooding in Haverfordwest in 1987*

support their productivity and much of this network has been improved in the past.

In the lower reaches of the Western Cleddau, where the river flows through the town of Haverfordwest, development has, over the years, encroached onto the flood plain, thereby restricting flow capacity and increasing flood risk. The main river channel now no longer provides adequate capacity to meet the NRA's target levels of service for urban areas.

Many of the capital improvement schemes undertaken in the past were aimed at providing improved drainage of upland fen areas in order to increase agricultural productivity. These improved drainage systems are the subject of regular maintenance in order to ensure their effectiveness.

The NRA currently operates a flood warning scheme which provides warnings to the public of the possible flooding of Haverfordwest and the flood plain immediately upstream.

### WATER QUALITY

Water quality in the main freshwater watercourses is generally high, 92% of classified reaches categorised as 'Good' in the 1992 General Quality Assessment.

Industry is confined mainly to developments associated with the oil industry. The three oil refineries are responsible for major discharges of trade effluent to the Haven, and Pembroke Power Station has a large cooling water discharge.

The sewage effluents from the major towns discharge to tidal waters. Currently only 52% by volume of sewage (excluding storm sewage) discharged to the Haven is fully (secondary) treated. Current schemes and planned investments will raise this to over 90%. Improvements to combined sewer overflows (CSOs) are currently being dealt with by a specific CSO strategy,



which feeds into Dŵr Cymru's second Asset Management Plan (AMP2) investment programme for 1995 - 2005 and beyond.

The rapid expansion of dairy farms in the 1970s and the creation of fish farms have caused ecological impact within the catchment. In particular, releases of slurry and silage liquors from dairy farms into watercourses have caused some acute problems and chronic long term effects on river life. This issue has been the subject of intense regulatory activity in order to achieve an improvement in construction standards and site management.



*Slurry Spreading*

## WATER RESOURCES

The presence of good water quality, in particular prior to the large scale expansion of dairy farming in the 1970s, established the Cleddau rivers as important sources of water for many uses, including public water supply, industry and agriculture.

Llysyfran Reservoir was constructed to meet increases in demand resulting from development of oil refining capacity around the Haven, and flows in the Syfynwy and the lower reaches of the Eastern Cleddau have been regulated since completion of the dam in 1971. The major intake for public water supply is situated at Canaston, just above the tidal limit on the Eastern Cleddau. Other important sources of public water supply are situated on the Eastern Cleddau at Pont Hywel, Rosebush Reservoir on the Syfynwy and at Crowhill on the Western Cleddau above Haverfordwest. Industrial supplies are met largely by untreated water from the same sources as those used for potable supplies, although a large volume of water is abstracted from the mouth of the Pembroke River by Pembroke Power Station for cooling purposes.

Groundwater supplies are found in the more permeable, highly weathered and fractured rocks,

which are mainly confined to the south of the catchment where rainfall is less than 1200mm per year. As groundwater is exempt from licensing control in Pembrokeshire, the use made of this source is not fully known. Protection of the quantity and quality of water resources continues to be a major consideration for the NRA.

## FISHERIES AND CONSERVATION

Both the Eastern and Western Cleddau support substantial salmon and sea trout fisheries. In the tidal Daugleddau, migratory salmonids are captured by licensed Compass nets, the last operating fishery of this type. There are only a few isolated stillwater coarse fisheries.

The Cleddau is a river system of exceptional importance to wildlife, providing a range of habitats that support diverse floral and faunal communities. Twenty five Sites of Special Scientific Interest (SSSIs) have been notified, of which twelve are water related, with a further two sites proposed. Corsydd Llangloffan constitute an important wetland SSSI in the upper reaches of the Western Cleddau, and this has been designated a National Nature Reserve (NNR) for its range of fen vegetation and associated animals. Otters are present throughout, and the catchment has been regarded as one of the most important areas for this species in southern Britain. Co-ordinated bird counts confirm the importance of the estuary as an internationally important site for wintering wildfowl.

The catchment area is covered by many ford, ferry and bridging points serving a complex communication pattern developed over the last millennium. The lower reaches of the Daugleddau contain early wharves and quays and other sites and features of industrial and maritime archaeological significance. There are also a number of prominent medieval fortified sites: notable



*Fish Farming on the Eastern Cleddau*

examples include the castles of Carew and Pembroke, and there are splendidly preserved examples of water mills such as Blackpool and Carew Tidal Mills.

## RECREATION

There is considerable water sports activity within the catchment, centred mainly in the lower reaches of the Haven, including scuba-diving, water-skiing, jet-skiing, rowing, canoeing and sailing. This area is heavily used by recreational craft, particularly at weekends and over holiday periods. Marinas have already been constructed at Neyland and Milford Haven, whilst small-boat activities and windsurfing thrive at Dale.

Limited numbers of bathers frequent small bays, although none of these has been identified by the Welsh Office as falling within the scope of the EC Bathing Waters Directive. Most of them - excepting Dale and West Angle Bay - have restricted access and limited facilities (e.g. no car park, telephone or toilets).

The Welsh Development Agency and Wales Tourist Board have been promoting the Haven for a number of years, including its development as a new "International Maritime Park", and the 1991 Tall Ships Race started at Milford Haven, part of a strategy to heighten awareness of the potential for recreational development.



*Windsurfing at Pembroke Dock*

Alan Shepherd Transparency Library

The catchment is almost surrounded by the Pembrokeshire Coast National Park, which also includes the Daugleddau. It is this coastline that attracts over 1 million holiday makers to Pembrokeshire each year, taking advantage of improved road links.

The salmon and sea trout fisheries are exploited by local anglers and the many visitors that are attracted to Pembrokeshire. Llysfran Reservoir, which is located towards the top of the catchment, is one of the most popular put-and-take trout fisheries in Wales. Coarse fishing in the catchment is almost non-existent, the only significant site being an unofficial coarse fishery at a flooded quarry in Treffgarne. Recreational boat fishing is popular in the Haven and its approaches, with mackerel, bass and pollack being the usual quarry.

## THE INTERACTION BETWEEN LAND USE AND THE WATER ENVIRONMENT

### INTRODUCTION

Man's use of land, whether for residential, farming, industrial, amenity or infrastructure developments, is likely to impact on the water environment, either directly or indirectly. This Catchment Management Plan (CMP) aims to address existing problems, seek general environmental improvement and protect the catchment from future damage.

The Cleddau drains a rural catchment, the predominant land use being agriculture, although there are some small towns and localised areas of industrial development, especially around the Milford Haven waterway. The catchment has a very high conservation value, and forms part of the popular holiday area of Pembrokeshire which attracts over 1 million visitors each year. Issues of particular concern to the NRA are:

- the protection of a catchment with a high conservation and landscape value
- the deficiencies in infrastructure, especially sewerage
- the risks associated with developing in floodplains
- the need to upgrade and maintain agricultural effluent storage systems
- the need to protect potable water abstractions

The NRA's stance on all new development is that it is the responsibility of developers to assess the impact of their proposals on the water environment, and provide suitable mitigation works where necessary. In order to ensure that the right issues are addressed, and the relevant consents applied for, the developer must consult with the NRA at the earliest opportunity.



## INFRASTRUCTURE

**Sewerage:** It is clearly important that, wherever new development or redevelopment is proposed, the local authorities and Dŵr Cymru ensure that adequate and suitable drainage and treatment systems are available. For example, parts of the Withybush Industrial Estate on the outskirts of Haverfordwest are not connected to a main foul sewer and, in order to ensure further units can be accommodated, the provision of suitable infrastructure for this site must be provided prior to further developments. There are also deficiencies in treatment systems in the catchment. Whilst the NRA has welcomed the planned investment of £11m by Dŵr Cymru to install sewage treatment for the existing crude discharges at Milford Haven and Pembroke Dock, there are also a number of other sites where discharges cause an unacceptable impact on the water environment. In the Dale, Burton and parts of the Haverfordwest sewerage catchment areas, the NRA will oppose large scale developments until remedial measures are implemented. Various improvement works have been completed (September 1994) at Spittal, Letterston and Langdon. The NRA is to reassess the impact of these discharges in the summer period of 1995 before its long term stance can be determined. In the meantime, each proposal will be considered on its merits.

**Roads:** The Cleddau catchment is crossed by two major trunk routes: the A40, a Euroroute linking London with the car ferry terminal for the Irish Republic at Fishguard, and the A477 which crosses the Cleddau Bridge and provides links with Pembroke Dock. These roads are continually being uprated by the Welsh Office, and schemes are programmed over several years. It is important that these improvements are undertaken in an environmentally sympathetic manner so as to protect water quality, the landscape



*Western Cleddau at Haverfordwest*

and the flora and fauna within the river corridor, and to ensure flooding problems are not created or exacerbated.

## DEVELOPMENT IN FLOOD RISK AREAS

Development situated within a floodplain is generally at risk, and the NRA is obliged to advise the local planning authorities, in accordance with Welsh Office circular 68/92, where a proposed development may flood. Commencing in 1995, the NRA will be undertaking major surveys of all river catchments, on a phased basis and with the co-operation of the local authorities, to identify more accurately the areas at risk from flooding. This work will take several years to complete and will concentrate initially on those areas where flooding is seen as a major issue.

Development may affect rivers and flood defences directly, or affect the risk of flooding. It is Government policy that new development in areas of flood risk should make provision for flood defence. Where alleviation works are possible, the onus is on the developer to investigate the flood risk, and design and submit amendments to his planning application to show how any unacceptable flood risk arising from the development proposed will be mitigated or alleviated. In view of the complex and lengthy discussions that may ensue, developers should consult with the NRA prior to making an application.

Within the Cleddau catchment, flooding problems are localised although significant flooding has occurred in Haverfordwest. During 1994, the NRA secured the agreement of a developer to provide improved protection, to the 1 in 100 years return frequency standard, as part of a new development within the town, and this should be in place by Spring 1995. However, those parts of the town situated downstream of the Town weir, or in the catchment of the Cartlett Brook, will continue to have a lesser level of protection unless a cost effective scheme can be promoted.

## CONTAMINATED LAND

When promoting redevelopment plans, developers also need to be mindful of the past use of sites. Whilst the incidence of contaminated land is a localised problem in the catchment, sites in and around Pembroke, Trecwn and Milford Haven (Milford Docks area and the former Esso refinery) are likely to be affected to some degree. It is always the developer's responsibility to assess the problem and implement appropriate remedial works in close consultation with the NRA.

## GROUNDWATER

The preservation of groundwater quality and quantity is a major objective of the NRA, and the Authority has produced a document "Policy and Practice for the Protection of Groundwater", which provides advice on the management and protection of groundwater on a sustainable basis. This policy deals with the concept of vulnerability and risk to groundwater from a range of human activities. Aquifers within the Cleddau catchment are not regarded as a major source of supply, although numerous properties do rely on small groundwater sources for private domestic purposes. In particular, developers need to be aware of protected zones in the south of the catchment, at Cross Hands and Milton - the latter being in the vicinity of Carew airfield. The NRA will look to the planning authorities to have regard to the protection of groundwater where it exists, as a material consideration in the determination of planning applications.

## RIVER CORRIDORS

**Buffer Zones:** River corridors provide important interconnections between habitats and are used extensively by wildlife. The NRA would wish to see buffer zones created along all watercourses, in both rural and urban areas, to help protect the water environment from the impact of potentially damaging activities on adjacent land. These zones would have to be fenced where livestock are present, because farm animals can damage river banks severely, leading to channel instability, increased flood risk and a reduction in fisheries and conservation value. The designation of the Preseli Pembrokeshire District Council area as an Environmentally Sensitive Area (ESA) may facilitate the creation of buffer zones and wetlands in this part of the catchment.

**Culverts, River Diversions and Wetlands:** The use of culverts to direct and convey watercourses underground must have consent from the NRA. Whilst the installation of culverts of suitable dimensions for small river crossings is generally an acceptable practice, the NRA does not support the widespread use of culverts to enable a change in land use - this would be contrary to its conservation duties. In particular, the practice of culverting streams in order to use their valleys as landfill sites, and the infilling of wetlands, is generally unacceptable. Similarly, the NRA would generally oppose the diversion of

established watercourses in order to permit development, and would wish the original natural course to be retained as a feature wherever possible.

## AGRICULTURE

Most of the catchment is farmland, and dairy farming, in particular, has developed intensively across much of the catchment. This has led to widespread agricultural pollution, resulting in both acute incidents and diffuse pollution. A major factor has been the lack of adequate investment in effluent management facilities. The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991 have set minimum standards of construction for new or substantially altered systems. The NRA is using these Regulations, and its well established contacts with farming organisations, to secure more effective, long term solutions.

There is presently little forestry in the catchment; where future proposals fall within areas where afforestation may pose a risk to water quality, they will be considered by the NRA in detail, on a case by case basis.

The southern parts of the catchment have low rainfall and, for arable farming to provide reliable yields consistently, spray irrigation is used in the drier periods. Many of the streams are too small to support direct abstractions; water for irrigation is therefore retained in small reservoirs during the winter, for subsequent use. Any expansion or intensification of arable farming will be dependent on the ability to increase winter storage of water.

## BARRAGES, MARINAS AND TIDAL WEIRS

This type of development, which is usually proposed to improve amenity and recreational value, can cause a variety of problems. These may include flooding, a deterioration in water quality - sometimes leading to toxic algal blooms odours - and obstruction to the movement of migrating fish. A number of small developments of this type have been built in the Haven (Pembroke River and Westfield Pill) and a barrage / lock structure was proposed in the 1980s on the tidal Western Cleddau downstream of Haverfordwest. Since future problems are often difficult to predict, the NRA will look to the planning authorities to adopt a robust precautionary approach when considering any new proposals.



## ISSUES AND ACTIONS

The following section outlines the actions that have been agreed in order to tackle the problems identified within the Cleddau Catchment Management Plan (CMP) Consultation Report. The organisation(s) responsible for implementing the actions, the costs involved, and the agreed timescales within which the actions are to be undertaken are shown. Actions are only included where they have been agreed by the body responsible for undertaking the work/investment. Where an action is subject to constraint or is awaiting approval, this is made clear within the action table.

The Action Plans look largely to the five year period from publication of the Consultation Report (ie. to the end of 1998). Where Issues are unlikely to be resolved within this timescale, this is indicated clearly within the tables. CMPs should be seen to be continually evolving, and therefore if priorities change or new opportunities for improvements present themselves, they will be reflected in future reviews of the plan.

In the Consultation Report, 40 issues were identified where targets were not being achieved and therefore requiring some action in order to resolve them. These issues were presented, together with various management options, for discussion as part of the consultation process. All of the responses received from external interests were considered, and where necessary further discussions were held to resolve issues and to agree appropriate, realistic and affordable actions.

All of the 40 issues identified within the Consultation



*Carew Castle*

Report have been retained within this Action Plan although some have been amended in the light of comments made during the consultation period. The numbering system for Issues from the Consultation Report has been retained in this Action Plan for ease of reference but it has proved sensible to combine Issues 1, 4 and 9 in addressing the necessary actions. Five others, Issues 41 to 45, have been added as a result of the public consultation.

Within the costs column of the Action tables, care has been taken to clarify to whom the predicted costs apply. Where there is a lone responsibility, the costs will be borne by that organisation/interest. Where responsibility is shared (lead or other), but the costs are only available for the NRA input to that Action, this is clarified by "NRA costs". Where responsibility is shared but the costs will only be incurred by one organisation/interest, this is shown by e.g. "NRA costs only".

## ISSUES AND ACTIONS

| ISSUES 1, 4 & 9  |                |       | Some river stretches in the catchment fail to achieve RE Class 1 or RE Class 2 targets. There is also a risk to potable water abstractions from pollution incidents arising primarily from agricultural activities. |      |      |      |      |      |         |
|--|----------------|-------|---|------|------|------|------|------|---------|
| ACTIONS  | RESPONSIBILITY |       | COST<br>£   | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE  |
|  | LEAD           | OTHER |   |      |      |      |      |      |         |
| a) Confirm and implement targeted catchment control programme for selected parts of the catchment not included in Issues 2, 3, 5, 6 & 8.   | NRA            |       | 20k   |      |      |      |      |      | Ongoing |
| b) Complete time of travel investigations in the Western Cleddau and produce a report to provide information gathered in Eastern and Western Cleddau.  | NRA            |       | 5k  |      |      |      |      |      |         |
| c) Undertake remedial measures and monitor progress arising from catchment control visits to assess compliance with RE targets.  | Site Owners    | NRA   | 3k<br>(NRA costs)   |      |      |      |      |      | Ongoing |
| d) Implement the WO's Farm Waste Management Programme in the Eastern Cleddau catchment upstream of the confluence with the Syfynwy, as part of its programme to help tackle the problem of water pollution from farm wastes. | ADAS           | WO    | Free visits   |      |      |      |      |      |         |




| ISSUE 2   |             |     | Elevated BOD and ammonia levels in Cartlett Brook resulting from agricultural and commercial activities in the catchment, and sewage discharges from Crundale Pumping Station (PS). These cause unclassified tributaries to fail RE Class 2 targets and threaten compliance in the Brook itself. |  |  |  |  |  |         |
|---|-------------|-----|--|--|--|--|--|--|---------|
| a) Install rising main at Crundale PS   | DCWW        |     | 216k   |  |  |  |  |  |         |
| b) <u>Consider</u> redirecting sewage from Withybush Industrial Estate area away from Crundale PS directly into the Haverfordwest sewerage system.                  | DCWW        |     | 5k   |  |  |  |  |  |         |
| c) Reassess impact on: <ul style="list-style-type: none"><li>• Crundale PS/Cartlett Brook</li><li>• Haverfordwest town sewerage system.</li></ul>                   | NRA<br>DCWW | NRA | 2k<br>Part of<br>b) above  |  |  |  |  |  |         |
| d) Undertake catchment control visits to approximately 50 farms and 20 other premises.  | NRA         |     | 6k   |  |  |  |  |  |         |
| e) Undertake remedial measures and monitor progress arising from catchment control visits, to facilitate achievement of RE Class 2 target by 1998 (4.6km of river). | Site Owners | NRA | 1k<br>(NRA costs)  |  |  |  |  |  | Ongoing |



## ISSUES AND ACTIONS


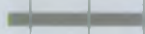
### ISSUE 3

Elevated BOD and ammonia levels, from agricultural activities and possibly a discharge from the Narberth sewerage system, result in a failure to achieve RE Class 2 targets.

| ACTIONS  | RESPONSIBILITY |       | COST<br>£        | 1994  | 1995 | 1996 | 1997 | 1998 | FUTURE  |
|--|----------------|-------|------------------|---|------|------|------|------|---------|
|  | LEAD           | OTHER |                  |   |      |      |      |      |         |
| a) Improve maintenance of the Narberth sewerage system in the vicinity of the A478 Narberth Bridge.  | DCWW           | NRA   | No capital costs |  |      |      |      |      | Ongoing |
| b) Undertake catchment control visits to approximately 40 farms and 10 other premises.   | NRA            |       | 5k               |  |      |      |      |      |         |
| c) Undertake remedial measures and monitor progress from the catchment control visits to facilitate achievement of RE Class 2 target by 1998 (4.4km of river). | Site Owners    |       | 1k (NRA costs)   |  |      |      |      |      |         |

### ISSUE 5

Elevated BOD and ammonia levels, and reduced DO concentrations, arising primarily from localised sewerage problems and the St Ivel treatment works, cause Merlins Brook to fail its RE Class 2 target.

|  |     |  |      |  |   |   |  |  |  |
|--|-----|--|------|--|---|---|--|--|--|
| a) Monitor the recently completed improvement works to the sewerage system and diversion of the St Ivel treatment process, and confirm an action plan to facilitate achievement of RE Class 3 standards by 1998 and subsequent RE Class 2 compliance (4km of river). | NRA |  | 2.5k |  |  |   |  |  |  |
| b) Implement action plan (likely to include inspections of approximately 30 farms and 10 other sites).   | NRA |  | 6k   |  |   |  |  |  |  |

## ISSUES AND ACTIONS


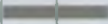
| ISSUE 6  |                |       |                   |      |      |      |      |      |         |
|--|----------------|-------|-------------------|------|------|------|------|------|---------|
| Poor water quality of the Syfynwy below Rosebush Water Treatment Works (WTW), results in a failure to achieve the RE Class 2 target.   |                |       |                   |      |      |      |      |      |         |
| ACTIONS  | RESPONSIBILITY |       | COST<br>£         | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE  |
|  | LEAD           | OTHER |                   |      |      |      |      |      |         |
| a) Complete improvements to the WTW, encompassing compliance of the effluent with the discharge consent issued by the NRA.   | DCWW           |       | 700k              |      |      |      |      |      |         |
| b) Assess the results of the improvements to confirm the Syfynwy will comply with its RE Class 2 target by 1998.   | NRA            |       | 2k                |      |      |      |      |      |         |
| ISSUE 7  |                |       |                   |      |      |      |      |      |         |
| Aesthetic and bacteriological quality of high amenity areas in parts of the Milford Haven waterway needs to be improved. An alleged unsatisfactory impact of Hook STW has also arisen from the public consultation exercise.                 |                |       |                   |      |      |      |      |      |         |
| a) Complete sewage treatment works (STW) to provide biological treatment at Pembroke/Pembroke Dock and Milford Haven.  | DCWW           |       | 11m               |      |      |      |      |      |         |
| b) Dale and Burton sewage treatment: agree with DCWW acceptable solutions and timescale for works (completion of works unlikely to be achieved within the period of this plan). In the interim the NRA will oppose large scale developments. | NRA            | DCWW  | 2k<br>(NRA costs) |      |      |      |      |      |         |
| c) Investigate alleged unsuitable outfall location and impact of Hook STW.   | NRA            |       | 1k                |      |      |      |      |      |         |
| ISSUE 8  |                |       |                   |      |      |      |      |      |         |
| Occasional blue - green algae blooms occur at Llysyfran Reservoir, leading to a possibility of eutrophication.   |                |       |                   |      |      |      |      |      |         |
| a) Produce an action plan for the catchment draining into Llysyfran Reservoir.   | NRA            |       | 5k                |      |      |      |      |      |         |
| b) Undertake catchment control visits to approximately 25 farms and other premises.  | NRA            |       | 3k                |      |      |      |      |      |         |
| c) Undertake remedial measures and monitor progress arising from catchment control visits.   | Site Owners    | NRA   | 2k<br>(NRA costs) |      |      |      |      |      | By 2000 |



## ISSUES AND ACTIONS



### ISSUE 10

Positive pesticide results have been recorded at potable water intakes on the Eastern and Western Cleddau (the term "pesticide" here includes pesticides, herbicides and fungicides).

| ACTIONS  | RESPONSIBILITY |  | COST<br>£      | 1994 | 1995  | 1996 | 1997 | 1998 | FUTURE |
|--|----------------|--|----------------|------|---|------|------|------|--------|
|  | LEAD           | OTHER  |                |      |   |      |      |      |        |
| a) Develop a comprehensive, cost effective monitoring programme, to include:<br>• improved liaison with other organisations (which have a monitoring or enforcement role) and DCWW (as the major water user)<br>• improved knowledge and understanding of the occurrence of pesticides in the water environment. | NRA            | DCC, SPDC, PPDC, DCWW  | 3k (NRA costs) |      |  |      |      |      |        |
| b) Determine the most common and potentially most toxic pesticides used in the catchment and promote improved methods of handling, storage and application.  | NRA            | DCC, SPDC, PPDC, Agric'l M'chants, Farmers, HSE, ADAS, Foresters | 3k (NRA costs) |      |  |      |      |      |        |

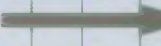
### ISSUE 11

The potable water intake at Canaston on the Eastern Cleddau is at risk from A40 road drainage.

|  |     |         |                |  |   |  |  |  |  |
|--|-----|---------|----------------|--|---|--|--|--|--|
| a) If Robeston Wathen Bypass is to be constructed prior to 1998, liaise with Welsh Office (WO) to agree appropriate mitigation measures. | NRA | WO, DCC | 2k (NRA costs) |  |  |  |  |  |  |
| b) If the Bypass will not be constructed within this timescale, agree with WO/DCC appropriate interim pollution mitigation measures.     | NRA | WO, DCC | 2k (NRA costs) |  |  |  |  |  |  |

### ISSUE 12

Combined sewer overflows (CSOs) in Haverfordwest are known to operate prematurely, resulting in aesthetic pollution of the Western Cleddau.

|  |     |  |                |  |   |  |  |  |         |
|--|-----|--|----------------|--|---|--|--|--|---------|
| Continue negotiation with DCWW, as part of the NRA's CSO strategy and AMP2 negotiations, to promote the implementation of remedial measures, including uprating of some sewers and installation of appropriate screening. DCWW to implement agreed remedial measures (likely to be beyond the period of the plan). | NRA |  | 2k (NRA costs) |  |  |  |  |  | Ongoing |
|--|-----|--|----------------|--|---|--|--|--|---------|

## ISSUES AND ACTIONS








| ISSUE 13 Biological quality and fisheries status is poorer than expected in the Syfynwy downstream of Llysyfran dam.  |                |       |                   |      |      |      |      |      |        |
|---|----------------|-------|-------------------|------|------|------|------|------|--------|
| ACTIONS   | RESPONSIBILITY |       | COST<br>£         | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE |
|   | LEAD           | OTHER |                   |      |      |      |      |      |        |
| Investigate cause of problem and assess cost and desirability of taking remedial action.  | NRA            |       | 3k                |      |      |      |      |      |        |
| ISSUE 14 Water and biological quality is unacceptably impacted upon downstream of some DCWW operated STWs.  |                |       |                   |      |      |      |      |      |        |
| a) Spittal STW: Following completion of improvements to the treatment processes completed in September 1994, the NRA plans to monitor the impact of the effluent in low flow conditions. The need or otherwise for DCWW to undertake the planned relocation of the effluent discharge point will then be reassessed.                              | NRA            | DCWW  | 2k<br>(NRA costs) |      |      |      |      |      |        |
| b) Letterston East STW: Following improvements to the treatment processes completed in September 1994, the NRA plans to monitor the impact of the effluent in low flow conditions. The need or otherwise for DCWW to undertake further remedial measures will then be reassessed.   | NRA            | DCWW  | 2k<br>(NRA costs) |      |      |      |      |      |        |
| c) Langdon STW: DCWW no longer propose to divert sewage to Saundersfoot/Tenby. Following minor improvement works, to be completed by the end of 1994, the NRA is to monitor the impact of fully treated effluent and storm discharge at the works. The need or otherwise for DCWW to undertake further remedial measures will then be reassessed. | NRA            | DCWW  | 3k<br>(NRA costs) |      |      |      |      |      |        |
| ISSUE 15 Prescribed flows below DCWW licences of right (Syfynwy, Eastern Cleddau and Western Cleddau) are less than 95 percentile flows.  |                |       |                   |      |      |      |      |      |        |
| Initial assessment of the three identified locations has indicated that there is only a potential environmental problem in the Syfynwy below Rosebush Reservoir and this is probably relatively minor. Re-assess using regional licensing policy when available (see Issue 19).   | NRA            |       | See<br>Issue 19   |      |      |      |      |      |        |



## ISSUES AND ACTIONS


| ISSUE 16  |                |                  |              |      |      |      |      |      |        |
|---|----------------|------------------|--------------|------|------|------|------|------|--------|
| Abstractions at fish farms continue during low flows causing flows between inflow and outflow to fall below 95 percentile flows.  |                |                  |              |      |      |      |      |      |        |
| ACTIONS   | RESPONSIBILITY |                  | COST<br>£    | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE |
|   | LEAD           | OTHER            |              |      |      |      |      |      |        |
| An initial assessment has indicated that the effect of the fish farm abstractions is worthy of further investigation. Study of the issue will require information on abstraction and/or discharge rates.  | NRA            | Fish Farm Owners | Unknown      |      |      |      |      |      |        |
| a) NRA to confirm and implement the national guidance in respect of the review and enforcement of fish farm consents. This is likely to require improved flow measuring and control measures to be provided at some fish farms.   |                |                  |              |      |      |      |      |      |        |
| b) Undertake detailed study of impact of abstraction and feasibility of a cost-effective solution.  | NRA            |                  | 9k           |      |      |      |      |      |        |
| ISSUE 17  |                |                  |              |      |      |      |      |      |        |
| Flow downstream of the Canaston abstraction as the Eastern Cleddau falls below the 95 percentile flow.  |                |                  |              |      |      |      |      |      |        |
| a) An initial assessment of the effects of this major abstraction at the tidal limit has indicated that there is not an environmental problem. Re-assess using regional abstraction licensing policy when available (see Issue 19).   | NRA            |                  | See Issue 19 |      |      |      |      |      |        |
| b) Develop policy for use of reserves of water in Llysyfran for both river management and recreational purposes.  | NRA            |                  | 1k           |      |      |      |      |      |        |
| ISSUE 18  |                |                  |              |      |      |      |      |      |        |
| Abstraction licences for spray irrigation do not protect 95 percentile flows.   |                |                  |              |      |      |      |      |      |        |
| a) An initial assessment of those sub-catchments where there are licences for spray irrigation which do not contain conditions protecting 95 percentile flows indicated there is not an environmental problem. Re-assess using regional licensing policy when available (see Issue 19). |                |                  |              |      |      |      |      |      |        |
| b) Promote more efficient use of water resources. Produce hand-out to inform farmers of procedures and costs involved in sharing use of existing winter storage.  |                |                  |              |      |      |      |      |      |        |


## ISSUES AND ACTIONS



| ISSUE 19  |                |       |                      |      |   |   |      |   |         |
|---|----------------|-------|----------------------|------|---|---|------|---|---------|
| The state of the catchment in water quantity terms cannot be adequately assessed until a regional licensing policy is available.  |                |       |                      |      |   |   |      |   |         |
| ACTIONS   | RESPONSIBILITY |       | COST<br>£            | 1994 | 1995  | 1996  | 1997 | 1998  | FUTURE  |
|   | LEAD           | OTHER |                      |      |   |   |      |   |         |
| a) Assess each sub-catchment to determine if maximum permissible volume of abstraction has been allocated under licence. Programme of assessment to be predominantly determined by sequence of applications received and issues already identified (Issues 15, 17, 18).   | NRA            |       | 2.6k                 |      |    |   |      |   | Ongoing |
| b) Apply the policy in respect of all new applications which will result in either the specifying of a prescribed flow or refusal of an application if all available resources allocated.   | NRA            |       | Included in a)       |      |    |   |      |   | Ongoing |
| c) In respect of any sub-catchments where volume of abstractions exceeds maximum permissible, and/or existing residual flows are significantly less than those considered necessary by the policy, initiate studies to find cost-effective ways to rectify the water resources balance within the catchment.<br>All the above actions await completion of the R&D project to produce a suitable methodology to provide the basis of the abstraction licence policy. | NRA            |       | 5k per sub-catchment |      |   |   |      |  | By 2001 |
| ISSUE 20  |                |       |                      |      |   |   |      |   |         |
| There are no flow measurement facilities on smaller watercourses.   |                |       |                      |      |   |   |      |   |         |
| a) Apply national classification to existing gauging stations to assess status.   | NRA            |       | 0.5k                 |      |  |   |      |   |         |
| b) Identify user requirements for hydrometric data.   | NRA            |       | 0.5k                 |      |  |   |      |   |         |
| c) Review catchment and produce strategy to meet requirements for hydrometric data.   | NRA            |       | 9k                   |      |   |  |      |   |         |
| d) Implement strategy.  | NRA            |       | To be determined     |      |   |   |      |   | Ongoing |
| ISSUE 21  |                |       |                      |      |   |   |      |   |         |
| Flow regimes appear to have changed in the Western Cleddau in recent years, possibly as a result of land use changes:   |                |       |                      |      |   |   |      |   |         |
| Study of available data in the catchment to determine if there has been a change in hydrological regimes, the possible causes of any identified change and a strategy for future management of the catchment.   | NRA            |       | 8k                   |      |  |   |      |   |         |







## ISSUES AND ACTIONS

| ISSUE 22   |                |       |           |      |   |      |      |      |        |
|--|----------------|-------|-----------|------|---|------|------|------|--------|
| Flood protection standards on Cartlett Brook are below indicative standards for urban areas. |                |       |           |      |   |      |      |      |        |
| ACTIONS  | RESPONSIBILITY |       | COST<br>£ | 1994 | 1995  | 1996 | 1997 | 1998 | FUTURE |
|  | LEAD           | OTHER |           |      |   |      |      |      |        |
| Investigate problem and determine whether feasible to improve                                | NRA            |       | 10k       |      |  |      |      |      |        |

| ISSUE 23   |     |  |     |  |   |  |  |  |  |
|--|-----|--|-----|--|---|--|--|--|--|
| Flood protection standards on the Western Cleddau in Haverfordwest are below indicative standards for urban areas. |     |  |     |  |   |  |  |  |  |
| Investigate problem and determine whether feasible to improve.   | NRA |  | 10k |  |  |  |  |  |  |






| ISSUE 24   |     |      |                    |   |   |  |  |  |         |
|--|-----|------|--------------------|---|---|--|--|--|---------|
| The need to undertake S105 surveys to identify the extent of lands liable to flood, for input to Development Plan preparation. |     |      |                    |   |   |  |  |  |         |
| a) Liaise with all LPAs in Wales to determine order for carrying out S105 catchment surveys.                                   | NRA | LPAs | 50k<br>(NRA costs) |  |   |  |  |  |         |
| b) Carry out S105 survey for Cleddau catchment.  | NRA |      | Costed during a)   |   |  |  |  |  | By 1999 |

| ISSUE 25   |     |  |         |   |   |  |  |  |         |
|--|-----|--|---------|---|---|--|--|--|---------|
| Availability of spawning gravels is severely restricted in the upper Western Cleddau catchment.                            |     |  |         |   |   |  |  |  |         |
| Optimise salmonid spawning success/Fry production in the Western Cleddau catchment by:                                     |     |  |         |   |   |  |  |  |         |
| a) Identifying existing and potential spawning areas and evaluating extent, quality and accessibility (part achieved)      | NRA |  | 5k      |  |   |  |  |  |         |
| b) Identifying causes of deterioration/loss and taking action to prevent future damage where feasible                      | NRA |  | 2k      |  |   |  |  |  |         |
| c) Developing and implementing a programme of improvement/ creation of spawning areas and access thereto where appropriate | NRA |  | 25k     |   |  |  |  |  |         |
| d) Monitoring productivity of spawning areas by a programme of Redd counts and electrofishing.                             | NRA |  | 2k p.a. |  |   |  |  |  | Ongoing |

## ISSUES AND ACTIONS




### ISSUE 26

Land drainage schemes undertaken in the upper Western Cleddau catchment in the 1960s and 1970s to enable improvements in agricultural productivity, damaged the ecosystem.

| ACTIONS  | RESPONSIBILITY |                                   | COST<br>£        | 1994  | 1995  | 1996 | 1997  | 1998 | FUTURE  |
|--|----------------|-----------------------------------|------------------|---|---|------|---|------|---------|
|  | LEAD           | OTHER                             |                  |   |   |      |   |      |         |
| a) Identify areas of environmental deficiency/damage by review of River Corridor Surveys, site inspection and discussion with environmental bodies and determine targets and programme of works/modifications to land drainage programmes. | NRA            | DWT, CCW, PAA, RSPB               | 1k (NRA costs)   |  |   |      |   |      |         |
| b) Discuss proposed targets and programme/modifications with farming interests/WOAD to determine feasibility and procedures.   | NRA            | ADAS, FUW, NFU, Land-owners, WOAD | 1k (NRA costs)   |  |   |      |   |      |         |
| c) Review legislation/grants e.g. water fringe buffer zones under EC 2078/92 to identify potential changes, opportunities and progress.  | NRA            | FUW, NFU, WOAD, CCW, ADAS         | 0.5k (NRA costs) |  |   |      |   |      |         |
| d) Dependent on Actions a) - c) above, and subject to funding, determine and progress modifications/improvements.  | NRA            |                                   | Not known        |   |  |      |   |      | Ongoing |
| e) Monitor impact  | NRA            |                                   | 5k p.a.          |   |   |      |  |      | Ongoing |


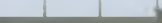
### ISSUE 27

Some obstructions to the passage of fish exist within the catchment.

|  |     |  |     |   |   |   |  |  |  |
|--|-----|--|-----|---|---|---|--|--|--|
| a) Identify sites where fish access is prevented or impeded, determine feasibility and methodology for improvement and determine programme of improvement works. | NRA |  | 5k  |  |   |   |  |  |  |
| b) Implement programme of improvement works.   | NRA |  | 10k |   |  |   |  |  |  |
| c) Monitor effectiveness of improvements and take appropriate action if further improvements necessary.  | NRA |  | 5k  |   |   |  |  |  |  |

### ISSUE 28

Effective fish exclusion screens have not been installed at the intake to Vicars Mill Fish Farm.

|   |     |     |             |   |   |  |  |  |         |
|---|-----|-----|-------------|---|---|--|--|--|---------|
| This issue is in the process of being resolved. A screen has been purchased by the NRA but has yet to be installed by Pembrokeshire Fish Farms (PFF). |     |     |             |   |   |  |  |  |         |
| a) Install screen prior to the 1995 smolt run.  | PFF |     | None to NRA |  |   |  |  |  |         |
| b) Monitor effectiveness of the screen and make adjustments if required.  | NRA | PFF | 0.5k p.a.   |   |  |  |  |  | Ongoing |



## ISSUES AND ACTIONS

### ISSUE 29

Effective fish exclusion screens are not in use at the potable water intake at Canaston, on the Eastern Cleddau.

NB. Actions and costs against this Issue are still under discussion.







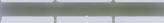
| ACTIONS   | RESPONSIBILITY |       | COST<br>£                | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE |
|---|----------------|-------|--------------------------|------|------|------|------|------|--------|
|   | LEAD           | OTHER |                          |      |      |      |      |      |        |
| a) Assess status of existing provision.   | DCWW           | NRA   | 1k<br>(DCWW costs only)  |      |      |      |      |      |        |
| b) Obtain recommendation of external consultants regarding type and design of effective system. | DCWW           | NRA   | 5k<br>(DCWW costs only)  |      |      |      |      |      |        |
| c) Implement recommendations (purchase/installation).   | DCWW           | NRA   | 50k<br>(DCWW costs only) |      |      |      |      |      |        |
| d) Implement programme of monitoring to determine efficacy of new provisions.                   | DCWW           | NRA   | 3k<br>(DCWW costs only)  |      |      |      |      |      |        |

### ISSUE 30

The fisheries protection scheme, instigated to offset the impact of Llysyfran Reservoir, has not been fully implemented over the years.

|  |     |      |                               |  |  |  |  |  |  |
|--|-----|------|-------------------------------|--|--|--|--|--|--|
| a) Determine reasons for failure to meet scheme targets, and identify options. | NRA | DCWW | 0.5k<br>(NRA costs)           |  |  |  |  |  |  |
| b) Review options and determine actions required.                              | NRA | DCWW | 0.5k<br>(NRA costs)           |  |  |  |  |  |  |
| c) Implement actions and monitor future results.                               | NRA | DCWW | 2k + 2k<br>p.a.<br>NRA costs) |  |  |  |  |  |  |
| d) Construct smolt release pond.   | NRA | DCWW | 2k<br>(DCWW costs only)       |  |  |  |  |  |  |

## ISSUES AND ACTIONS

| ISSUE 31   |  |                  |   |                        |      |   |   |      |      | 'Standards of Service' for SSSIs have not been formally agreed with CCW.                                  |  |  |  |  |  |  |  |  |  |
|--|--|------------------|---|------------------------|------|---|---|------|------|---|--|--|--|--|--|--|--|--|--|
| ACTIONS  |  | RESPONSIBILITY   |   | COST<br>£              | 1994 | 1995  | 1996  | 1997 | 1998 | FUTURE  |  |  |  |  |  |  |  |  |  |
|  |  | LEAD             | OTHER   |                        |      |   |   |      |      |   |  |  |  |  |  |  |  |  |  |
| a) Identify SSSIs which include NRA interests and agree Standards of Service with CCW.   |  | NRA              | CCW   | 2k<br>(NRA costs)      |      |    |   |      |      |   |  |  |  |  |  |  |  |  |  |
| b) Monitor adherence to agreed Standards of Service.   |  | CCW              | NRA   | 1k p.a.<br>(NRA costs) |      |    |   |      |      |   |  |  |  |  |  |  |  |  |  |
| ISSUE 32   |  |                  |   |                        |      |   |   |      |      | The invasive plant, Japanese Knotweed, is present in many parts of the catchment.                         |  |  |  |  |  |  |  |  |  |
| Discuss with relevant bodies a programme of control measures with regard to Japanese Knotweed and other designated invasive weeds, and implement agreed programme. |  | NRA              | CCW,<br>NT,<br>DCC,<br>PCNP,<br>PPDC,<br>SPDC,<br>WDA   | 0.5k                   |      |    |   |      |      |   |  |  |  |  |  |  |  |  |  |
| ISSUE 33   |  |                  |   |                        |      |   |   |      |      | A long distance trail around the upper estuary (Slebech and Picton Park) has yet to be completed          |  |  |  |  |  |  |  |  |  |
| Assess the feasibility and desirability of further progress on the project.  |  | PCNP             | Land Owners,<br>CCW,<br>DWT,<br>NRA,<br>PPDC,<br>SPARC  |                        |      |  |   |      |      |   |  |  |  |  |  |  |  |  |  |
| ISSUE 34   |  |                  |   |                        |      |   |   |      |      | Limited public access to freshwater reaches of the Eastern and Western Cleddau for recreational purposes. |  |  |  |  |  |  |  |  |  |
| a) Review adequacy of current access for different user groups, examine scope for increasing access and consider resulting conflicts and benefits.                 |  | NRA              | PCNP,<br>PPDC,<br>SPDC,<br>RA,<br>SCW,<br>FUW,<br>CLA,<br>WCA,<br>PAA,<br>SPARC,<br>DSC,<br>SCW | 2k<br>(NRA costs)      |      |  |   |      |      |   |  |  |  |  |  |  |  |  |  |
| b) Produce a summary of the above findings and agree an action plan.   |  | To be determined | As above  | 2k<br>(NRA costs)      |      |  |   |      |      |   |  |  |  |  |  |  |  |  |  |
| c) Implement plan.   |  | To be determined | As above  | To be determined       |      |   |  |      |      |   |  |  |  |  |  |  |  |  |  |



## ISSUES AND ACTIONS

### ISSUE 35

Certain developments, such as those within the flood plain or adjacent to the river corridor, may impact on the NRA's environmental and food defence interests.

| ACTIONS   | RESPONSIBILITY |       | COST<br>£        | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE |
|---|----------------|-------|------------------|------|------|------|------|------|--------|
|   | LEAD           | OTHER |                  |      |      |      |      |      |        |
| a) Ensure suitable policies are included in Local District Plans. | NRA            | LPAs  | 3.5k (NRA costs) |      |      |      |      |      |        |
| b) Set up meeting/seminar to enhance liaison with LPAs            | NRA            | LPAs  | 1k (NRA costs)   |      |      |      |      |      |        |

### ISSUE 36

The A40 London to Fishguard road has been designated a Euroroute and will require upgrading at various locations, in close proximity to watercourses.






|  |     |    |    |  |  |  |  |  |  |
|--|-----|----|----|--|--|--|--|--|--|
| Ensure full consultation on all schemes, including meeting Welsh Office, to agree requirements for site specific protection works and timescales, in order that the NRA can safeguard its interests. | NRA | WO | 3k |  |  |  |  |  |  |
|--|-----|----|----|--|--|--|--|--|--|

### ISSUE 37

Migratory salmonid stocks cannot sustain current levels of exploitation by licensed and unlicensed fishermen.

|   |     |                                      |                  |  |  |  |  |  |         |
|---|-----|--------------------------------------|------------------|--|--|--|--|--|---------|
| a) Review enforcement procedures and effectiveness of legislation throughout the catchment.                             | NRA | SWSFC, Angling Clubs, Fishery Owners | 0.5k (NRA costs) |  |  |  |  |  |         |
| b) Implement improvements where identified and where resources allow.   | NRA | SWSFC, Angling Clubs, Fishery Owners | To be determined |  |  |  |  |  |         |
| c) Review the net limitation order (NLO) regarding compass nets and promote revised NLO.                                | NRA | WO, Compass Netsmen                  | 1k (NRA costs)   |  |  |  |  |  |         |
| d) Implement recommendation of net limitation order and byelaw review following consultation and Welsh Office approval. | NRA | Compass Netsmen                      | Nil              |  |  |  |  |  | Ongoing |
| e) Consider appropriate means of reducing exploitation by anglers and to implement following consultation.              | NRA | Angling Clubs                        | 1k (NRA costs)   |  |  |  |  |  |         |

## ISSUES AND ACTIONS

| ISSUE 38  |  |                |  |                     |   |      |      |      |      | Conflicts exist between water based sports within the Milford Haven and Daugleddau and other users and wildlife.   |  |  |  |  |  |  |  |  |  |
|---|--|----------------|--|---------------------|---|------|------|------|------|--|--|--|--|--|--|--|--|--|--|
| ACTIONS   |  | RESPONSIBILITY |  | COST<br>£           | 1994  | 1995 | 1996 | 1997 | 1998 | FUTURE   |  |  |  |  |  |  |  |  |  |
|   |  | LEAD           | OTHER  |                     |   |      |      |      |      |  |  |  |  |  |  |  |  |  |  |
| a) Undertake regular reviews of the Milford Haven waterway recreation plan and the role of the water warden.  |  | MHPA           | PCNP, CCW, SCW, NRA, Users, MHSG, PPDC, SPDC | 1k p.a. (NRA costs) |    |      |      |      |      | Ongoing  |  |  |  |  |  |  |  |  |  |
| b) Implement recommendations arising from these reviews following appropriate consultation.   |  | MHPA           | PCNP, CCW, SCW, NRA, Users, MHSG, PPDC, SPDC | Costed during a)    |    |      |      |      |      | Ongoing  |  |  |  |  |  |  |  |  |  |
| ISSUE 39  |  |                |  |                     |   |      |      |      |      | A range of water quality related problems are thought to impact on fish farms and shell fisheries in the Haven, including spillages of oils and chemicals, sewage discharges and use of TBT. |  |  |  |  |  |  |  |  |  |
| a) Devise and implement an appropriate monitoring programme to assess impact.   |  | NRA            | MAFF, MHSG, MPHA,                            | 6k (NRA costs)      |  |      |      |      |      |  |  |  |  |  |  |  |  |  |  |
| b) Establish major known activities giving rise to concerns, liaise as appropriate with MAFF/HMIP and others to reduce impacts.   |  | NRA            | MAFF, HMIP, MHPA, MPHA, PPDC, SPDC           | 4k (NRA costs)      |  |      |      |      |      |  |  |  |  |  |  |  |  |  |  |
| ISSUE 40  |  |                |  |                     |   |      |      |      |      | Dredging and spoil dumping operations, within and adjacent to the Milford Haven waterway, may impact upon the sub- littoral fauna.   |  |  |  |  |  |  |  |  |  |
| Develop a monitoring strategy to establish the impact of dredged material on sub-littoral fauna, both within the Haven itself and adjacent controlled waters, and particularly on the Skomer MNR. Firm costs unable to be attributed until programme finalised. |  | CCW<br>MAFF    | NRA  | 2k (NRA costs)      |  |      |      |      |      |  |  |  |  |  |  |  |  |  |  |



## ISSUES AND ACTIONS

| ISSUE 41 Groundwater within the catchment is exempt from licensing control.   |                |                         |                        |      |      |      |      |      |         |
|---|----------------|-------------------------|------------------------|------|------|------|------|------|---------|
| ACTIONS   | RESPONSIBILITY |                         | COST<br>£              | 1994 | 1995 | 1996 | 1997 | 1998 | FUTURE  |
|   | LEAD           | OTHER                   |                        |      |      |      |      |      |         |
| a) Review catchment to identify the strategic requirements for monitoring groundwater levels (linked to Issue 20).  | NRA            |                         | 1k                     |      |      |      |      |      |         |
| b) Install groundwater monitoring.  | NRA            |                         | 10k                    |      |      |      |      |      |         |
| c) Assess results of monitoring and identify if evidence of significant use of groundwater.   | NRA            |                         | 9k                     |      |      |      |      |      |         |
| d) If significant use of groundwater is found, consider procedure for removal of exemption order for groundwater abstraction.   | NRA            |                         | 2k                     |      |      |      |      |      | By 2000 |
| ISSUE 42 Algal blooms in the Pembroke Mill Pond system give rise to poor aesthetic quality and probably reduced dissolved oxygen concentrations.  |                |                         |                        |      |      |      |      |      |         |
| South Pembrokeshire District Council are proposing a Management Action Plan to minimise algal blooms. Implementation and timescale subject to SPDC securing the necessary funding.            | SPDC           | NRA<br>CCW              | 2k<br>(NRA costs)      |      |      |      |      |      |         |
| ISSUE 43 Proposals to convert Pembroke Power Station to burn Orimulsion fuel have a potential impact on the water environment.  |                |                         |                        |      |      |      |      |      |         |
| As a statutory consultee, NRA to respond to the authorisation application so as to provide the necessary protection to controlled waters.   | HMIP           | NRA<br>CCW              | 5k<br>NRA costs)       |      |      |      |      |      |         |
| ISSUE 44 Increased reported (minor) oil spills associated with the enhanced use of port facilities at Milford Docks.  |                |                         |                        |      |      |      |      |      |         |
| Liaise with the MHPA and dock operators to improve practices and implement acceptable pollution prevention measures, and liaise with MHPA over possible impact on the Milford Haven waterway. | NRA            | MHPA,<br>Dock Operator: | 1k<br>(NRA costs)      |      |      |      |      |      |         |
| ISSUE 45 Limited sewerage provision at Withybush Industrial Estate, constraining future development uses.   |                |                         |                        |      |      |      |      |      |         |
| Re-assess the required improvements to the existing sewerage system (Issue 2) to remove constraint on development uses.   | DCWW<br>PPDC   | NRA                     | Costed under Issue 2b) |      |      |      |      |      |         |

## GLOSSARY TO ACTION PLANS

The following abbreviations have been used in the main text and tables:

|      |  |       |   |
|------|--|-------|---|
| ADAS | Agricultural Development Advisory Service                      | NT    | The National Trust  |
| AMP  | Asset Management Plan  | OFWAT | Office of Water Services  |
| BOD  | Biochemical Oxygen Demand                                      | PAA   | Pembrokeshire Anglers' Association                                    |
| CCW  | Countryside Council for Wales                                  | PFF   | Pembrokeshire Fish Farms  |
| CDC  | Carmarthen District Council                                    | PPDC  | Preseli Pembrokeshire District Council                                |
| CLA  | Country Landowners Association                                 | PS    | Pumping Station   |
| CSO  | Combined Sewer Overflow  | RA    | The Ramblers Association  |
| DCC  | Dyfed County Council   | R&D   | Research and Development  |
| DCWW | Dŵr Cymru Welsh Water  | RE    | River Ecosystem   |
| DSC  | District Sports Council  | RSPB  | The Royal Society for the Protection of Birds                         |
| DWT  | Dyfed Wildlife Trust   | SPARC | South Pembrokeshire Partnership for Action with Rural Communities Ltd |
| EC   | European Community   | SPDC  | South Pembrokeshire District Council                                  |
| FUW  | Farmers' Union of Wales  | SSSI  | Site of Special Scientific Interest                                   |
| GQA  | General Quality Assessment                                     | STW   | Sewage Treatment Works  |
| HMIP | Her Majesty's Inspectorate of Pollution                        | SWSFC | South Wales Sea Fisheries Committee                                   |
| HSE  | Health and Safety Executive                                    | TBT   | Tributyl Tin  |
| LPAs | Local Planning Authorities                                     | WCA   | Welsh Canoeing Association  |
| MHPA | Milford Haven Port Authority                                   | WDA   | Welsh Development Agency  |
| MHSG | Milford Haven Waterway Environmental Monitoring Steering Group | WO    | Welsh Office  |
| MNR  | Marine Nature Reserve  | WOAD  | Welsh Office Agriculture Department                                   |
| MPHA | Milford Port Health Authority                                  | WQO   | Water Quality Objective   |
| NFU  | National Farmers' Union  | WTW   | Water Treatment Works   |
| NLO  | Net Limitation Order   |       |   |
| NNR  | National Nature Reserve  |       |   |

## FUTURE REVIEW AND MONITORING

The NRA will be jointly responsible, with other identified organisations and individuals, for implementing this Action Plan. Progress will be monitored and normally reported annually. These reviews will examine the need to update the CMP in the light of changes in the catchment. The period between major revisions will normally be five years.

The annual review, which will be widely available, will take the form of a short progress report, to include work achieved compared with that planned, and to highlight any changes to the plan.



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**Acknowledgement:-**

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|----|---|----|----|---|------|
| WE | 3 | 95 | 2k | E | AMOL |
|----|---|----|----|---|------|