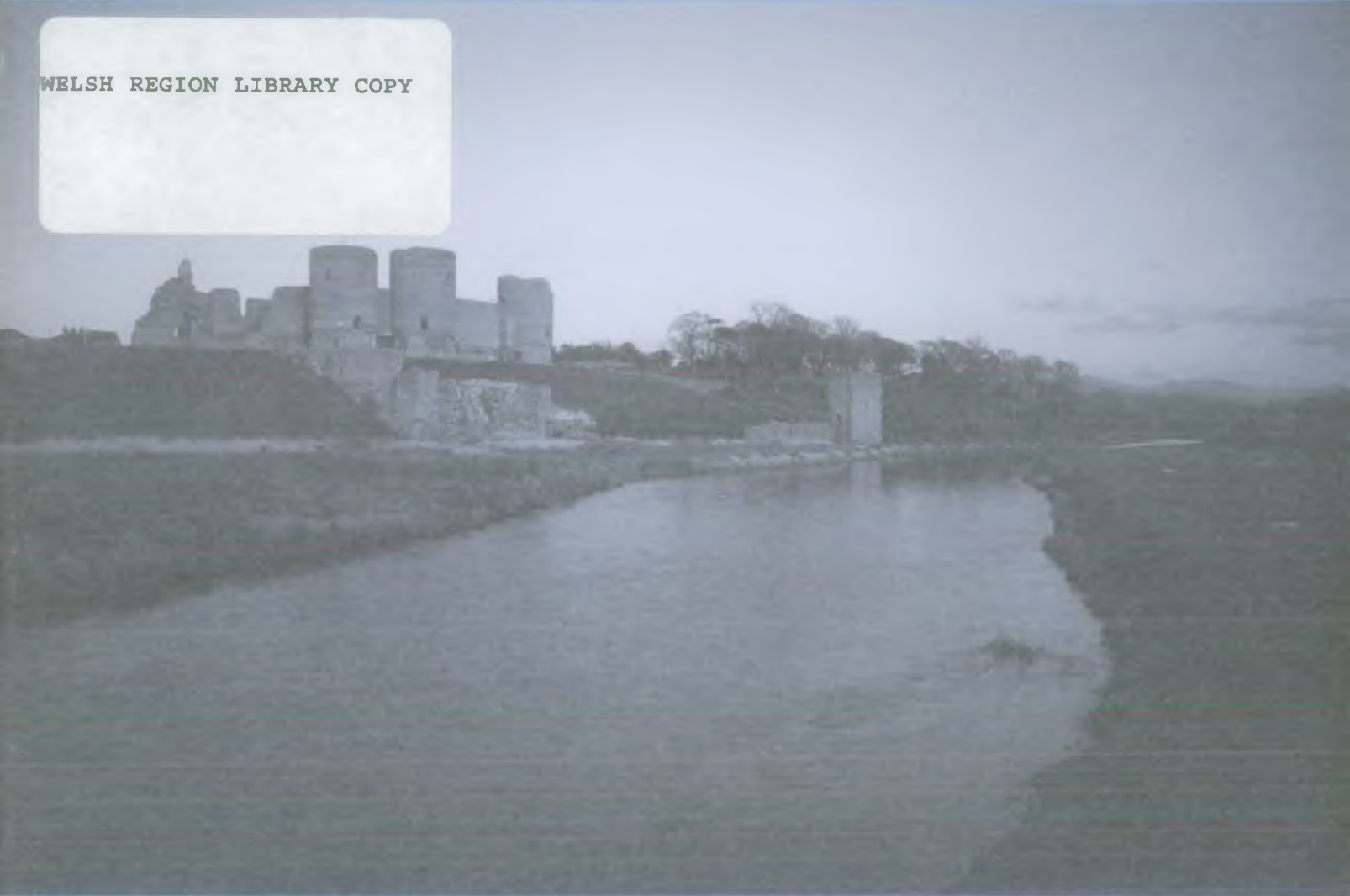


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THE RIVER CLWYD CATCHMENT MANAGEMENT PLAN ACTION PLAN: 1995

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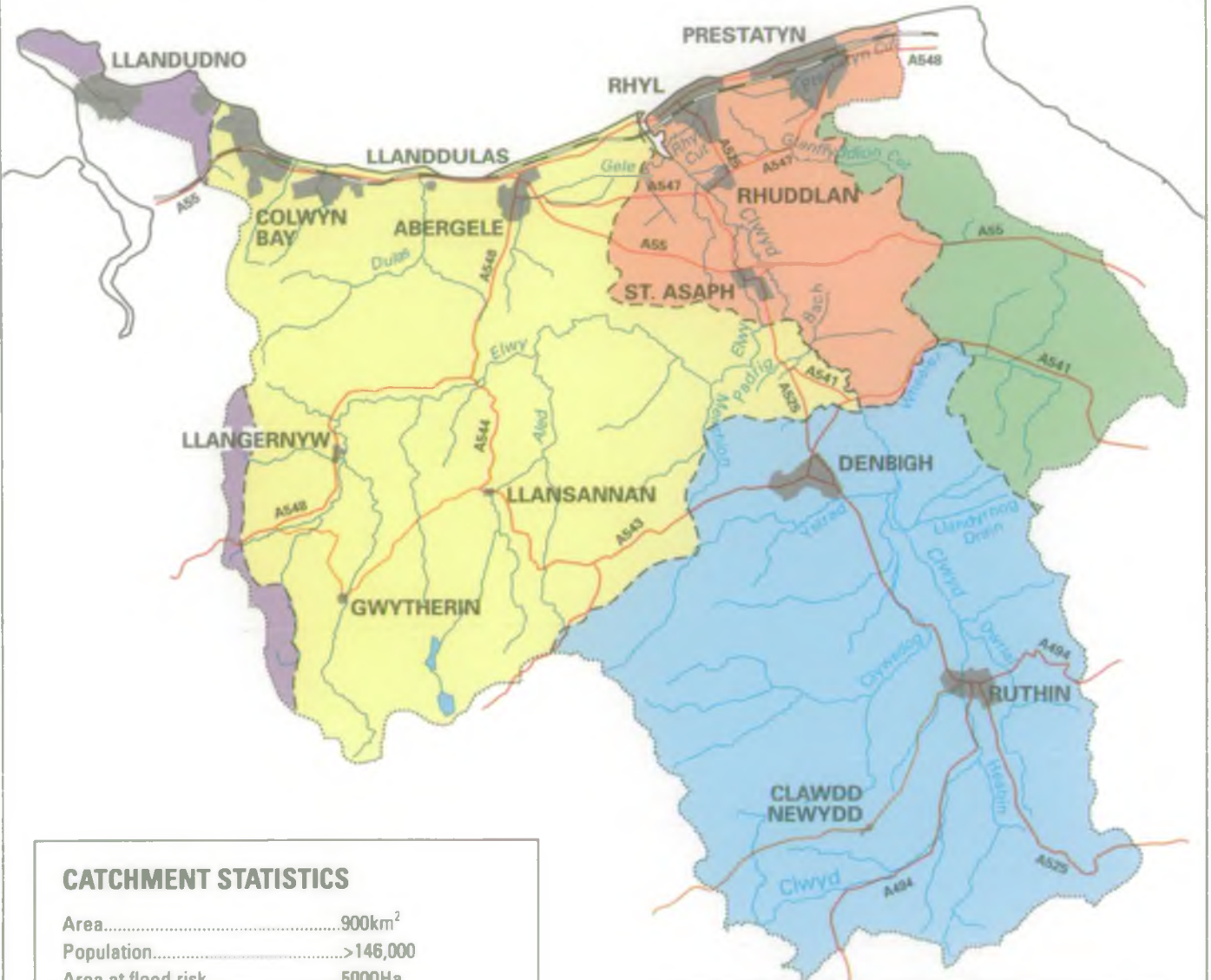


Awarded for excellence

CLWYD CATCHMENT AREA



0 10 km



CATCHMENT STATISTICS

Area.....	900km ²
Population.....	>146,000
Area at flood risk.....	5000Ha
Average rainfall.....	960mm
Average river flow.....	11.1m ³ /s
River quality.....	111.5km Very Good 31.5km Good 0.4km Fair
Estuary quality.....	7.2km Good
Designated fisheries.....	Salmonid: 99.5km (78/659/EEC) Cyprinid: None
Designated bathing waters.....	North Shore at (76/160/EEC) Llandudno Colwyn Bay Kinmel Bay Rhyll Prestatyn

KEY

- CATCHMENT BOUNDARY
- MAIN CENTRES OF POPULATION
- 'A' CLASS ROAD
- 'B' CLASS ROAD
- RAILWAY LINE
- COUNCIL BOUNDARY
- ABERCONWY BOROUGH COUNCIL
- COLWYN BOROUGH COUNCIL
- DELWYN BOROUGH COUNCIL
- GLYNDWR DISTRICT COUNCIL
- RHUDDLAN BOROUGH COUNCIL



THE NRA'S VISION FOR THE CLWYD CATCHMENT

The Clwyd Catchment Management Plan covers an area more immediately known for the coastal attractions of towns such as Llandudno, Colwyn Bay, Rhyl and Prestatyn, than for the river valley itself. But behind this important coastline lies a landscape of great beauty and high conservation interest and agricultural importance.

Away from the coastal belt the area is sparsely populated, with the only sizeable population centres being the towns of Ruthin and Denbigh. Water quality is generally very good, reflected by the use of surface and groundwater abstractions for drinking water supplies, and the important salmonid fisheries.

However, there are issues that must be addressed if the potential of the area contained within the plan is to be realised:

- **Water Resources** - Surface and groundwater resources are finely balanced and only careful management will ensure that groundwaters are not depleted in the future.
- **Water Quality** - Bathing and coastal water quality, important to the tourist industry, requires improvement through construction of new sewage treatment and disposal schemes. Pollution prevention activity is essential to reduce the number of agricultural and other incidents affecting freshwaters. Some of the

acidification issues in upland waters will need to be addressed in conjunction with the forestry organisations.

- **Fisheries and Recreation** - The generally experienced decline in salmon and sewin fisheries could be partly ameliorated through overcoming barriers to migration within the river system. There is also a need to make the area more accessible for those interested in more passive pursuits such as walking.

Implementation of this Action Plan will ensure that the problems we have 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 actively with all users of the catchment and all those statutory bodies that can assist us in striving to achieve this vision.

S. J. BROWN
NORTHERN AREA MANAGER -
NRA WELSH REGION



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1.0 INTRODUCTION

THE CONCEPT OF CATCHMENT MANAGEMENT PLANNING

The rivers, lakes, estuaries and coastal waters of England and Wales are subject to large and rapidly increasing demands from the users of water. Many different uses interact or compete for water and will inevitably come into conflict with one another. The National Rivers Authority aims to protect and improve the water environment in England and Wales and to harmonise conflicts between competing water users. 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 those principles into action. The CMPs describe our vision for each catchment, identify problems and issues and propose actions that may be taken to resolve them.

To ensure that we 'get it right', the process of developing CMPs is divided into two phases:

- (i) Consultation Report
- (ii) Action Plan

The emphasis is clearly on participation through consultation. This process has already occurred for the Clwyd catchment and has led to the development of this Action Plan. In this Plan, actions are clearly ascribed to responsible parties who/which have agreed to their implementation within a specified timescale. This involves a commitment to considerable expenditure in some cases.

CMPs also provide the means of promoting two key aspects of environmental management:-

- land use planning
- water quality objectives

For purely operational reasons those actions identified for the Dulas and Ganol East catchments, whilst covered here for continuity with the Consultation Report, will be incorporated into the Conwy Action Plan at its first annual review.

RELATIONSHIP BETWEEN LAND USE PLANNING AND CATCHMENT MANAGEMENT PLANNING

The broad objective of catchment management planning is to conserve and enhance the total river environment through effective land and resource management. However, whilst the NRA is well placed to influence some of the factors affecting the water environment, particularly in relation to the river corridor itself, we have very little control over the mechanisms which determine land use change on a catchment-wide basis. This is to some degree the responsibility of local planning authorities through the implementation of the Town and Country Planning Acts, whilst agriculture, as a major land use in the catchment, can introduce significant changes.

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 water quality and water resources, flood defence, fisheries, conservation, recreation and navigation in the river corridor, and mineral workings and waste disposal. These statements are summarised in our "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 Clwyd catchment which have been determined within the framework of these Guidance Notes. Section 4 outlines how the concerns of the water environment should influence the location and nature of development and land use change within the catchment.

WATER QUALITY OBJECTIVES

The Statutory Water Quality Objectives (SWQOs) scheme, introduced under the Water Resources Act 1991, is a new system for water quality planning which, when fully implemented, will place quality targets on a statutory footing. The scheme is based upon the recognised uses to which river stretches may be put, acknowledging that there is cost involved in meeting the quality targets necessary to support these uses. It is envisaged that the scheme will cover five uses including River Ecosystem, Special Ecosystem, Abstraction for Potable Supply, Agricultural/Industrial Abstraction and Water Sports. (See *River Quality: The Government's Proposals* (December 1992)).

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. This replaces the Fisheries Ecosystem Scheme used in the Consultation Report (see The Surface Waters (River Ecosystem) (Classification) Regulations 1994) and is the first of the five uses to be formally introduced. The new scheme contains water quality standards which are statistically more robust than those in the earlier proposal. Consequently, the data used for the CMP Consultation Report have been re-examined to reflect the new scheme and some of the actions proposed may have changed as a result. The benefit of this more rigorous examination is that the NRA can be even more confident that the money we spend, or ask others to spend, is targeted to resolve those issues that will lead to the most significant improvements in water quality. At present, these targets will only be applied informally although it is hoped that, in the near future, these may be established as Statutory WQOs by the Secretaries of State for the Environment and Welsh Office.



Aled Isaf Reservoir

2.0 REVIEW OF THE CONSULTATION PROCESS

The Clwyd Catchment Management Plan consultation report was distributed to 212 organisations and individuals, including statutory and non statutory bodies, to seek their views on the NRA's proposals. This was distributed a week in advance of the formal public launch of the Plan at the Oriel House Hotel, St Asaph on the 28th July, 1994. In addition to the comments received at the launch, all consultees were invited to submit their detailed views by 31st October, 1994.

There were 33 respondents, the support of which we found most encouraging. A small number were of the view that the NRA's proposals were not sufficiently exacting. Others questioned some of the factual information and provided corrections/amendments. All respondents were sent an acknowledgement for their valued contributions which were considered in the preparation of this Action Plan.

The consultation report identified 22 issues within the catchment. The public consultation identified a further 8 potential issues of which 4 were adopted as new discrete issues by the NRA, and which are now included in the Actions section (Issues 23,24,25,26 Section 5.0). Issues 10 and 16 have been withdrawn for

reasons given in the tables at Section 5.0, whilst Issue 13 has been integrated into Issue 14. This then gives the total number of discrete issues within the catchment as 23 albeit at first sight the tables indicate 26 issues. The four new issues are:

- (i) elevated levels of nitrate in groundwater in the Dyserth/Ffynnon Asaph area (Issue 23).
- (ii) the need to prepare and implement species management plans within the Clwyd catchment (Issue 24).
- (iii) the adverse effects of invasive plants within the catchment (Issue 25).
- (iv) the need to advance rod fishing byelaws to enhance migratory fish stocks in the catchment (Issue 26).

The consultation process is a very important and integral part of our development of a Catchment Management Plan and in particular the preparation of the Action Plan. The consultation on this particular Plan has revealed that many share the NRA's vision for the Clwyd and are supportive of the proposed actions to achieve the objectives set by the Authority.

3.0 OVERVIEW

The River Clwyd rises in the peaty uplands of the Clocaenog forest and meanders slowly through the picturesque Vale of Clwyd to discharge into Liverpool Bay at Rhyl.

The Vale of Clwyd is a fertile area. It is situated in a downfaulted rift valley of Triassic age, bounded to both the east and west by older and harder glaciated Silurian rocks. With high grade agricultural land it is noted for its dairy products, whilst in the upper reaches of the catchment to the west, farming is mainly mixed sheep and beef. There are a number of afforested areas, the largest of which is the Clocaenog forest at the headwaters of the Clwyd.

Metalliferous mining dating back to early Roman times is evident in the west from Llanddulas to Llansannan, and in the east in the area surrounding Meliden. Despite the numerous abandoned mines spread throughout these parts, environmental degradation frequently associated with this type of activity is not evident.

Rainfall in the catchment shows a progressive fall from an annual average of 1300 mm on the Denbigh Moors to 700mm and less in the Vale and along the coast. However, rainfall over the area can be extremely variable, as shown in June 1993 when 137mm fell in the low-lying Llandudno area in 3 hours, causing widespread flooding and destruction.

The response of the rivers and streams to rainfall is markedly influenced by the geology and topography of their catchments. The Elwy, which rises in the west above Gwytherin and which is augmented by the flow from the Aled, passes over the relatively impermeable rocks of Silurian age. As a result it exhibits a rapid response and range of flow, which is in marked contrast to the Wheeler which is supported by groundwater in part, and to the Clwyd itself. Thus flood problems are possible at St Asaph and Llanddulas from the rivers that rise to the west of the catchment. This is especially so where these rivers flow onto the flat northern coastal strip. The vulnerability of the coastal area to fluvial and tidal flooding was clearly demonstrated during the Towyn flood disaster in 1990.

Flood defence activity within the catchment is concentrated upon the maintenance of tidal and fluvial defences, the operation of pumping stations at a number of urban and rural locations and, shoal removal and river management schemes when and where necessary.

A flood warning scheme operates for the protection of property at St Asaph from extreme events on the River Elwy. Tidal surge warnings are disseminated to local authorities along the coastal frontage.

The catchment forms a valuable fisheries, conservation and recreation resource. The fisheries of the catchment are predominantly salmonid, with good quality salmon and sea trout fishing available on the rivers Clwyd and Elwy. Put and take trout fisheries are operated at a number of lakes in the catchment. Coarse fisheries are present but are confined to the coastal plain and reservoirs at the head of the Elwy system.

The conservation value of the catchment is reflected in the number of designated sites (32 SSSIs, 215 SNCIs). Of the SSSIs, 7 are/or include river valleys, 7 are wetlands and 4 include coastal features. The river valleys, particularly those which are steeper sided, contain tracts of ancient woodland. Otters are present in the catchment, notably in the Dulas system. The relatively few significant wetland areas include upland acidic bogs and former lake basins. There are also many sites of historical and archaeological interest with over 150 Scheduled Ancient Monuments (SAMs) within the catchment.

Water based recreation is centred in the Clwyd estuary and on the coast adjacent to the resort towns. In the



Canoeist

holiday season the marine lake at Rhyl is popular for boating, whilst sailing takes place at Aled Reservoir all the year round.

Water quality is generally good throughout the catchment. It is an important factor given the catchment attracts a large number of visitors in the summer months, particularly to the coastal resorts of Llandudno, Colwyn Bay, Prestatyn and Rhyl. Unfortunately, bathing water quality has been problematic with occasional failures of the identified waters to meet the mandatory standards of the EC Bathing Waters Directive.

The catchment is predominantly rural, with the population centred in 8 towns of population 3,500-25,000. The total population within the catchment is approximately 146,000 which, with the exception of the towns of Ruthin and Denbigh, is mostly located in the coastal resorts and along the main A55 Expressway.

There is some industrial development consisting primarily of quarrying activities and a few fish farms. Other than agriculture, light engineering and forestry, the catchment depends upon tourism centred around the coastal resorts of Rhyl, Colwyn Bay Prestatyn and Llandudno.

Transport infrastructure consists of a network of trunk and main A roads which serve the main employment/population centres, with B roads linking smaller



Salmon Leap on the Afon Ystrad

settlements, and the main London-Holyhead rail link which follows the coast of the catchment area.

CATCHMENT USES

The range of uses and activities within the Clwyd catchment is extensive. All legitimate uses of the catchment which can impact, or interact, within the water environment have been described under 21 categories in the Consultation Report.

These are:-

- Urban Development (including road, rail and airport)
- Abstraction for Drinking Water (Potable) Supply
- Abstraction for Industrial Supply
- Abstraction for Agricultural Supply
- Sewage Effluent Disposal
- Industrial Effluent Disposal
- Solid Waste Disposal (Landfill)
- Mineral Extraction
- Agricultural Activity
- Forestry
- Fisheries Ecosystem (now River Ecosystem)
- Special Ecosystems
- Conservation - General Ecology and Landscape
- Archaeology and Heritage
- Commercial Harvesting of Sea Fish and Shellfish for Human Consumption
- Basic Amenity
- Angling
- Water Sports Activity
- Boating
- Navigation
- Flood Water Storage and Flood Defence

There will inevitably be some interaction and sometimes conflict between different Uses. Among those identified



Oysters are present in the catchment

in the Clwyd catchment are potential conflicts between the anglers/riparian owners and those wishing more access to the riverside. Also canoeing and angling are potentially in conflict, as is the use of powerboats and jet skis within the tidal sections of the Clwyd where there are bird interests.

All the Uses will have water quality and quantity as well as physical features requirements, which are already available at the appropriate standards for the great majority of Uses. There are some exceptions to this, for example:-

- The River Clwyd downstream of Ruthin STW shows a deterioration in River Ecosystem class from that upstream. The effect of the discharge persists for some 8km downstream.
- The bathing waters identified under the EC Bathing Waters Directive have not always complied with the mandatory standards.
- The NRA is concerned at the level of usage of groundwater resources in the Vale of Clwyd and along the coast. In order to assess the long term impact of abstraction it is intended to model groundwater resources in these areas.
- The suitability of water for agricultural use in the lowland tributaries of the Clwyd estuary is affected by the presence of saline water.

However, these have been identified as issues requiring resolution along with 21 other within this Action Plan (Section 5.0).

There is no reason, given a collaborative co-ordinated approach and mutual respect and understanding, why all the uses of the Clwyd catchment cannot continue in harmony without suffering any detriment and without adversely affecting the water environment. Certainly the NRA will be seeking, as a minimum, to maintain the water quality and quantity and physical features currently available to all legitimate uses. Where appropriate, we will seek to improve on the existing situation, albeit within prevailing financial constraints.

The NRA, as a statutory consultee on matters of Town and Country Planning, will vigorously object to any proposals which would adversely impact on the water environment. When the proposals would be subject to NRA licensing or consenting remit, such licences or consents will not be forthcoming.

The baseline from which we will assess any environmental progress will be the 'State of the Catchment' as described in the Consultation Report.

4.0 RELATIONSHIP BETWEEN LAND USE AND THE WATER ENVIRONMENT

The policies in local authority statutory development plans are very important, given that they provide the framework for land use change and provide the key reference in determining development applications (Planning and Compensation Act 1991). The NRA therefore welcomes the inclusion of policies which reflect the our concerns and responsibilities in development plans, including the statutory requirement to conserve and enhance the water environment and associated lands. To facilitate this, the Authority has provided 'Guidance Notes for Local Planning Authorities on the Methods of Protecting the Water Environment through Development Plans' to all local planning authorities.

The Clwyd catchment has a varied and generally high quality environment. Nevertheless, the impacts of different land uses on the water environment are evident. The historical extensive residential development of the coastal resort towns was not accompanied by development of environmentally adequate sewage disposal facilities. This resulted in crude sewage being discharged into the sea, causing aesthetic problems and bathing waters at places such as Rhyl, Prestatyn, Colwyn Bay and Kinmel Bay failing to comply with mandatory the standards of the EC Bathing Waters Directive. However these problems should be eliminated within the lifetime of the Plan.

The NRA will object to development in areas where existing inadequate sewage disposal facilities cause degradation of the aquatic environment, and where there is no commitment to an adequate improvement scheme within an acceptable timescale.

Development of low lying land adjacent to the river, or in the flood or coastal plain, may put itself and other existing development at greater risk of flooding.



Flood defence work in the catchment

Development in the higher reaches of the catchment may also increase this risk by reducing the time for flows to peak and by increasing the peak flow at critical locations downstream. The NRA is obliged to advise the local planning authorities where any proposed development is at risk from flooding, in accordance with Welsh Office Circular 68/92.

The NRA will also be required during the lifetime of the Action Plan to produce Water Level Management Plans for all sites agreed between the NRA and the Countryside Council for Wales. The plans will be produced over a three year prioritised programme. Once finalised, the details of the programme will be built into the Action Plan at the time of its annual review.

Agriculture and afforestation are important in this predominantly rural catchment and their associated activities can, if not properly managed, result in deterioration of river water quality and adversely affect river flows. The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991 have introduced standards of construction within the agricultural industry which will serve to reduce the incidence of agricultural pollution.

The Forestry Authority, with an input from the NRA has produced the Forest and Water Guidelines which set standards to minimise problems from forestry operations. These guidelines are regularly reviewed. A new protocol for dealing with forestry plans in acid sensitive areas in Wales has been agreed between the NRA and Forestry Authority. Whilst coniferous afforestation is not the primary cause of acidification it can exacerbate its impact. Acidification is evident in the west of the catchment and Indicative Forestry Strategies and associated future planting should have proper regard to this fact. The NRA welcomes the increasing dialogue on planting proposals with the forestry organisations and local planning authorities. Coniferous planting in acid sensitive areas (where buffering capacity provided by the underlying geology is inadequate) must be kept to a minimum and in some cases avoided. Replanting of sensitive areas continues to be a cause for concern.

Despite the considerable amount of mining activity that has occurred within the Plan area since Roman times, there are only minor localised problems resulting from this activity. The most notable are elevated lead levels in river silts near Dyserth. There has been no mining activity since the end of the last century.

Any land use which could result in contamination of

land, or which could mobilise pollutants in land already contaminated, will be subject to the requirements of the NRA's Groundwater Protection Policy. Groundwater is available in limited quantities for abstraction and river augmentation in the catchment. Its importance as a source of drinking water and, in supporting springs and river flows during dry periods, reinforces the need to protect its quality. Therefore, in addition to pollution prevention work, the NRA will look to the

planning authorities to regard the protection of groundwater as a material consideration in the determination of planning applications.

Land use and the water environment are thus closely inter-related and the NRA will actively promote with the local planning authorities the need for the protection of the water environment to be clearly evident in policies within their statutory development plans.

5.0 ACTIONS

INTRODUCTION

The Clwyd catchment is generally of high quality, but issues have been identified that must be resolved to progress the vision for the catchment.

This Action Plan is the means by which the vision is progressively turned into reality. It is a clear statement of intent to carry out, or facilitate, operational work in the field that will translate aims and objectives into tangible improvements. The implementation of this is necessary if the vision for the catchment is to be realised.

This Action Plan has a 5 year programme initially and, whereas many of the actions required will be in place by the end of this period, there will be some actions outstanding which will remain to be addressed for the vision to be fully realised. Moreover, catchment management planning is dynamic in nature and, more actions may be identified over the ensuing years, which will be required to ensure the river environment of the Clwyd catchment is adequately protected.

First of all, however, there are 23 issues to be resolved which are presented in tabular form in this section. All the actions identified have been discussed with those parties involved. Only where these parties have agreed to the actions, the timescale of implementation and the costs involved has the NRA featured these elements in this Action Plan. In the absence of these agreements or sufficient information, the issues are included but without the details of costs, timescale, and responsibility.

PROGRESS WITH ACTION PLAN/VISION

The baseline from which the Action Plan operates is the 'state of the catchment' reported in the consultation document distributed during 1994.

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

ADAS	Agricultural Development and Advisory Service
BC	Borough Council
CC	County Council
CCW	Countryside Council for Wales
CLA	Country Landowners Association
CMP	Catchment Management Plan
CSO	Combined Sewer Overflow
DC	District Council
DCWW	Dŵr Cymru Welsh Water
EC	European Community
FUW	Farmers Union of Wales
MAFF	Ministry of Agriculture Fisheries and Food
NERC	Natural Environment Research Council
NFU	National Farmers Union
NRA	National Rivers Authority
NWWT	North Wales Wildlife Trust
RSPB	Royal Society for the Protection of Birds
SAM	Scheduled Ancient Monument
SNCI	Site of Nature Conservation Interest
SSSI	Site of Special Scientific Interest
STW	Sewage Treatment Works
WCA	Welsh Canoe Association
WRA	Waste Regulatory Authority
WQ	Water Quality

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 1 Water quality degradation of the Clywd caused by the discharge from Ruthin STW											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Determine and impose environmentally protective discharge consent conditions.	River Ecosystem target class (RE2) achieved.	NRA monitoring and sampling.	NRA		1k	█					
Improve sewage treatment to ensure compliance with revised consent.	River Ecosystem target class (RE2) achieved.	NRA monitoring and sampling.	DCWW	NRA	not known	█					
ISSUE 2 Occasional failure of identified bathing waters at Rhyl, Kinmel Bay/Sandy Cove, Prestatyn and Colwyn Bay to meet EC Directive (76/160/EEC)											
Connection of crude sewage outfalls at Pensarn, Kinmel Bay and Rhyl to new treatment/disposal facilities. <u>COMPLETED MARCH 1994.</u>	Compliance with EC Bathing Water Directive mandatory standards.	NRA monitoring and sampling.	DCWW	NRA	17m						
Improve sewage disposal facilities at Colwyn Bay	Adequate sewage disposal in place, and compliance with EC Bathing Water Directive mandatory standards.	NRA monitoring and sampling.	DCWW	NRA	40m	█					
ISSUE 3 The River Wheeler fails its target of River Ecosystem Class 1 due to elevated ammonia levels											
Review of discharge consents to determine environmentally protective conditions.	River Ecosystem Target Class achieved.	Consents and NRA sampling.	NRA		1k						█
Programme of farm inspections within the catchment. <u>COMPLETED MARCH 1995.</u>			NRA		3k	█					
Sites for improvement identified.	River Ecosystem Target Class achieved.	Monitoring and sampling by NRA.	Farmers	NRA	60k	█					
Improve sewage treatment facilities at Lixwm, Caerwys and Nannerch.	River Ecosystem Target Class achieved.	NRA monitoring and sampling.	Farmers DCWW	NRA NRA	40k not known		█				█

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 4 Water Quality of the lower Clywedog, Ystrad and Dulas is affected by agricultural activities											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Programme of farm inspections/ liaison with agricultural community, NFU/FUW. As follows:											
Dulas to be completed by December 1995	Sites identified for improvements	NRA monitoring and sampling	NRA	NFU, FUW	3k	■					
Ystrad and lower Clywedog scheduled for 1996.	Sites identified for improvements	NRA monitoring and sampling	NRA	NFU, FUW	3k		■				
Improve farm effluent management and handling/ storage facilities.	River Ecosystem Target Class achieved.	Monitoring and sampling by NRA.	Farmers	NRA	not known	■	■	■	■	■	■
ISSUE 5 Premature operation of combined sewer overflows (CSOs) causes aesthetic problems											
Investigate CSOs in plan area to identify degree of environmental impact and remedial measures required. COMPLETED 1993.			NRA								
Improve screening and re-set weirs. Improve storm flow treatment at treatment works. *Confirmation of commitment to specific schemes awaited.	Discharges from CSOs comply with declared NRA standards.	Monitoring by NRA.	DCWW	NRA	*						

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 6 Leachate containment facilities required at Lon Parcwr landfill, Ruthin											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Improve the regulation of the site in terms of restoration, leachate collection and disposal.	Regulation of restoration, leachate collection and disposal carried out to the satisfaction of the WRA and NRA.	Monitoring by WRA and NRA. * Timescale to be determined by new unitary Authority.	Waste Regulatory Authority (Glyndwr DC)	NRA	not known		*				
Installation of appropriate measures.	Reduction of risk to ground and surface waters in the vicinity.	Monitoring by WRA and NRA.	Waste Disposal Authority (Glyndwr DC)	NRA	not known						
ISSUE 7 Migrating leachgate at Ddol Uchaf Landfill Site Afonwen perceived as a pollution threat to the Afon Wheeler											
Site investigation by Waste Regulatory Authority in consultation with NRA to determine extent of leachate migration and any mitigating measures that are required. <u>INITIAL SITE INVESTIGATION COMPLETED 1994.</u>			WRA (Delyn BC)	NRA							
Extra boreholes to be introduced and monitored to determine full extent of migration.	Extent of migration established to determine any future action.	Installation of boreholes and sampling by WRA, audited by NRA.	WRA (Delyn BC)	NRA	6k 2.5-3k (annual cost)						

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 8 The Ganol East fails its target of River Ecosystem Class 4 due to diffuse agricultural and industrial pollution											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Undertake catchment inspection programme to identify sources of pollution.	All relevant sites identified.	NRA monitoring.	NRA		2.5k						
Improve farm effluent management and handling/storage facilities where required.	Improvements in place and no agricultural contamination of the Ganol East.	Monitoring and sampling by NRA.	Farmers	NRA	not known						
Improve pollution prevention measures at industrial sites where required.	Improvements in place and no industrial contamination of the Ganol East.	Monitoring and sampling by NRA.	Site owners, dischargers	NRA	not known						
ISSUE 9 Solids contamination of water during forest planting and harvesting											
Implementation of Forests and Water Guidelines, including riparian buffer zones.	Solids contamination minimised.	Reduced pollution incidents.	Landowners	NRA	not known						
Establishment of Forest Design Plans.	Adherence to approved Forest Design Plans.	Forestry Authority audit.	Forestry Enterprise	Forestry Authority NRA	not known						
Establishment of Indicative Forestry Strategy.	Adherence to approved Indicative Forestry Strategy.	Clwyd C.C. audit.	Clwyd County Council	Forestry Authority NRA	not known						
Research and development to identify improved methods of forestry management.	Identification of improvements in forest management.	Uptake of improvements by the forestry industry.	NRA, NERC, Forestry Authority, Forest Enterprise		135k nationally						
ISSUE 10 Elevated zinc levels due to acidification of the upper reaches of the Clywedog and Aled											
A review of the data using the new River Ecosystem hardness bands indicates that zinc is not present at unacceptable levels for salmonid waters. WITHDRAWN AS AN ISSUE.											

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 11 Saline intrusion in lowland tributaries may take the resource unsuitable for crop irrigation											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Alert existing and potential abstractors to problem of saline intrusion and its potential impact on availability of resource for crop irrigation.	All users alerted by NRA.	No abstractor complaints about lack of information.	NRA		minimal						
Determine suitability for irrigation purposes.	No use of unsuitable water.	Monitoring by abstractors.	Abstractors		not known						
Use of bankside storage (if necessary) for uncontaminated water.	Abstraction management to ensure only non saline water is stored for use.	Monitoring by abstractors. Monitoring of compliance with abstraction licence by NRA enforcement staff.	Abstractors, NRA		not known						
ISSUE 12 Limited hydrometric data with which to ensure effective management of water resources in the Vale of Clwyd											
Assess water resource	Information to clarify situation.	Evaluation by NRA water resources specialists.	NRA		160k 50k						
Construct groundwater model.	Robust computer software to analyse the data.	Validation by NRA water resources specialists.	NRA		25k 25k						
ISSUE 13 Lack of riparian habitat diversity within the Clwyd catchment											
This has now been incorporated into Issue 14.											

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 14 Lack of riparian and wetland habitat diversity within the Clwyd catchment											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
<p>In consultation with riparian owners produce a plan to manage and enhance habitats, in appropriate locations, when and if the opportunity arises. Create or enhance the following habitats which have been identified as being below acceptable levels for a catchment of the Clwyd's nature.</p> <p>1. Wetland habitats (reedbeds, damp grassland, open waters).</p> <p>2. Other habitats identified from the River Corridor Survey.</p>	<p>Target habitats improved and/or created at sites within the catchment, and a programme of further work agreed for implementation when the opportunity arises.*</p>	<p>Post project appraisal, drawing on NRA, CCW, ADAS, RSPB survey results to evaluate success of improvement works undertaken.</p>	<p>NRA, CCW, ADAS, Riparian Owners</p>	<p>NWWT, RSPB, Otters in Wales</p>	<p>3k</p>		█				
					<p>Average cost 4k per site</p>		█				
					<p>Average cost 4k per site</p>		█				
	<p>* Actual number of sites can only be determined once the plan is drawn up.</p>										
ISSUE 15 Bird disturbance from power boats and jet skiers in the tidal sections of the Clwyd											
<p>Define extent of the problem.</p>	<p>Scale, nature and specific location(s) of problem identified to enable determination of future action.</p>	<p>Agreement of all parties to reports recommendations on future action required.</p>	<p>NRA</p>	<p>RSPB, CCW, Rhyl Ski Club, Sports Council for Wales</p>	<p>2k</p>		█				
<p>Implement appropriate management agreement if required.</p>	<p>Activities managed such that bird disturbance is minimised.</p>	<p>Field inspection and audit of any implemented management agreement. No confirmed reports of disturbance to birds.</p> <p>* Timescale to be determined by new unitary Authority.</p>	<p>NRA, Harbour Authority (Rhuddlan BC)</p>								

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 16 Lack of birdwatching facilities within the Clwyd estuary											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Lack of public demand for further hides. WITHDRAWN AS AN ISSUE.											
ISSUE 17 Potential for improved riverside access identified by statutory bodies											
Review the existing network of footpaths and produce a strategy.	Production of strategy acceptable to all relevant interested parties.	Agreement of all parties on strategy.	Clwyd CC, NRA, CCW, CLA		NRA costs <1k						
Implement a work programme for enhancing the network and associated facilities where appropriate in agreement with landowners.	Riverside access and associated facilities that meets public demand.	Final network to meet target levels identified within strategy	Clwyd CC, NRA, CCW, land-owners	CLA, Angling Clubs, FUW, NFU	50k						
ISSUE 18 Lack of canoe access agreements within the tidal section of the Clwyd											
In conjunction with riparian owners, angling interests and Welsh Canoe Association promote at least one access agreement in the tidal section by 1998.	At least one new negotiated access point for canoeists within the tidal section of the Clwyd.	Satisfactory use of access point confirmed by Welsh Canoe Association and Riparian Owners.	WCA, Riparian Owners	NRA	not known						

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 19 Barriers to fish migration on the Clywedog, Ystrad and Nant Melin Dwr											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Investigate cost/benefits of removal of barrier, or bypassing with fish pass: (1) Clywedog. <u>Fisheries Benefits Report Completed February 1995.</u>	Management information to determine the most cost effective option.	Cost/benefit analysis by NRA environmental appraisal unit.	NRA								
Implementation of the preferred option for the Clywedog. Implementation will be subject to capital funding being available, or a suitable collaborative/sponsorship scheme.	Preferred option implemented and fish successfully pass the barrier.	Monitoring of declared catch returns by NRA fishery staff.	NRA	Fishery Owners	60k		█				
(2) Ystrad. Complete fish pass design.	Design of preferred option acceptable to all relevant interested parties.	Agreement of all parties to suitability of design.	NRA		not known		█				
(3) Nant Melin Dwr. Complete fish pass design.	Design of preferred option acceptable to all relevant interested parties.	Agreement of all parties to suitability of design.	NRA		not known		█				
			NRA		not known			█			
ISSUE 20 Repairs to Cefn Weir Fish Pass to allow effective upstream migration of salmonids											
Carry out repairs to weir. <u>Repairs completed August 1995.</u>	Weir repaired to allow successful salmonid migration upstream.	Weir fish pass repaired to the satisfaction of NRA fisheries staff and riparian owners. Migration of salmonids upstream confirmed by monitoring undertaken by NRA fisheries staff.	Riparian owner	NRA	costs confidential		█				

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 21											
Review of licensed netting within the catchment to address declining migratory fish stocks (Net Limitation Order 1995 Review)											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
The Net Limitation Order(s) have been advertised and objections received. A decision on the plan to phase out the nets awaited from Welsh Office.	Approval by Welsh Office for the nets to be phased out. No netting activity within the designated area(s).	Monitoring by NRA Bailiffs.	Welsh Office	NRA	2k						
ISSUE 22											
Marina potential at Rhyl and Llanddulas, THERE HAVE BEEN NO FIRM PROPOSALS TO DATE											
Build environmental controls into any planning permission to the satisfaction of the NRA and other statutory and non-statutory organisations.	Inclusion and adherence to environmental conditions in planning permission such that no adverse environmental impacts arise from the development(s).	Monitoring and reporting by all interested bodies.	Local Authorities	NRA, other statutory consultees in the planning process							
ISSUE 23											
Elevated levels of nitrate in groundwater in the Dyserth / Ffynnon Asaph Area											
Monitor the spring discharge at Ffynnon Asaph.	Management information to confirm extent of the problem.	Monitoring by NRA.	NRA		1k per annum						
Establishment of a Nitrate Sensitive Zone under EC Nitrate Directive.	Compliance with requirements of EC Nitrates Directive.	Audit by MAFF.	MAFF	NRA	not known						
ISSUE 24											
To prepare and implement species management plans within the Clwyd catchment											
To implement the Welsh Otter Conservation Strategy's "Watching Brief Management Plan" for the Clwyd catchment	Watching Brief Management Plan implemented.	Monitoring by CCW/NRA/Otters in Wales conservation specialists.	NRA, CCW, Otters in Wales		NRA costs <1k per annum						
To prepare and implement, in agreement with landowners, species action plans for the Black Poplar (and any other key species) associated with river/wetlands under threat in the Clwyd catchment.	Species action plans prepared and implemented, resulting in stabilization/increase in species status in the Clwyd catchment.	Monitoring by CCW/NRA conservation specialists to confirm increased recruitment.	NRA, CCW, land-owners		<5k						

5.0 CLWYD CMP ISSUES AND ACTIONS

ISSUE 25 Adverse effects of invasive plants within the catchment											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Phased programme to identify sites where invasive plant species have an adverse effect.	Management Plan to eradicate species at identified sites.	Management Plan delivered to deadline.	NRA		<1k						
Eradicate species at the identified sites with landowners agreement.	Problems of bank stability and species diversity removed.	No adverse reports by NRA Flood Defence or Conservation staff of associated problems. No adverse reports by members of the public.	NRA		not known						

ISSUE 26 To advance rod fishing byelaws to enhance migratory fish stocks in the catchment											
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	RESPONSIBILITY		COST £	1995	1996	1997	1998	1999	FUTURE
			LEAD	OTHER							
Through consultation advance rod fishing byelaws to increase spawning escapement of salmonids.	Approval of byelaws by Welsh Office. Byelaws introduced in parallel with new Net Limitation Order Issue 21. Increased salmonid escapement following implementation.	Monitoring by NRA Fisheries staff.	NRA, Welsh Office	Angling Associations, Riparian Owners	2k						

6.0 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. The reviews will examine the need to update the CMP in the light of changes in the catchment and the setting up of the Environment Agency referred to below. The period between major revisions will normally be five years.

At this time it is envisaged that the annual review will take the form of a short progress report, including comparisons of work achieved against that planned, and any changes to the Plan.

The annual review will be sent to all those involved in the actions identified for the catchment and to those who demonstrated an interest in the Catchment Management Plan at the consultation stage. The reviews will also be available on request to members of the public.

From the 1st April 1996, the new Environment Agency for England and Wales will take over the roles of the

NRA, Her Majesty's Inspectorate of Pollution and the Waste Regulatory Authorities. It will be the largest environmental protection agency in Europe and will be primarily concerned with integrated pollution prevention and control, of air, land and water. It will seek to balance the interests of business with those of the environment, the philosophy of sustainable development underpinning its approach to environmental protection and enhancement.

The government recognises the value of integrated river basin management, as practised by the NRA through the implementation of its CMPs. It is therefore envisaged that CMPs will continue as the focus for river basin management in the Agency, although they will need to become more extensive management plans to cater for the protection and enhancement of water, land and air.

The implementation of this Action Plan must now be actively pursued and any changes introduced by the new Agency must be smoothly integrated as a positive evolutionary development of the plan.