

NRA-Wales 24

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Rhymney  
Catchment  
Management Plan  
Consultation  
Report Summary



**NRA**

*National Rivers Authority  
Wales Region*

*Guardians of  
the Water Environment*

January 1996

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*COVER PHOTOGRAPH: The River Rhydney above Hengoed*

**THE AREA MANAGER'S VISION FOR THE RHYMNEY CATCHMENT**

The River Rhymney is a typical South Wales valley river which is gradually recovering from its heritage of coal mining and heavy industry. The water quality is improving, the wildlife is returning to the catchment and the fisheries are being restored. Land reclamation schemes are gradually re-shaping the landscape into a greener and more attractive environment. The road schemes planned are working towards an increasing economic prosperity. People already put the river and its valley to numerous uses including angling, walking, bird watching and cycling and these developments will hopefully encourage wider use of the valley.

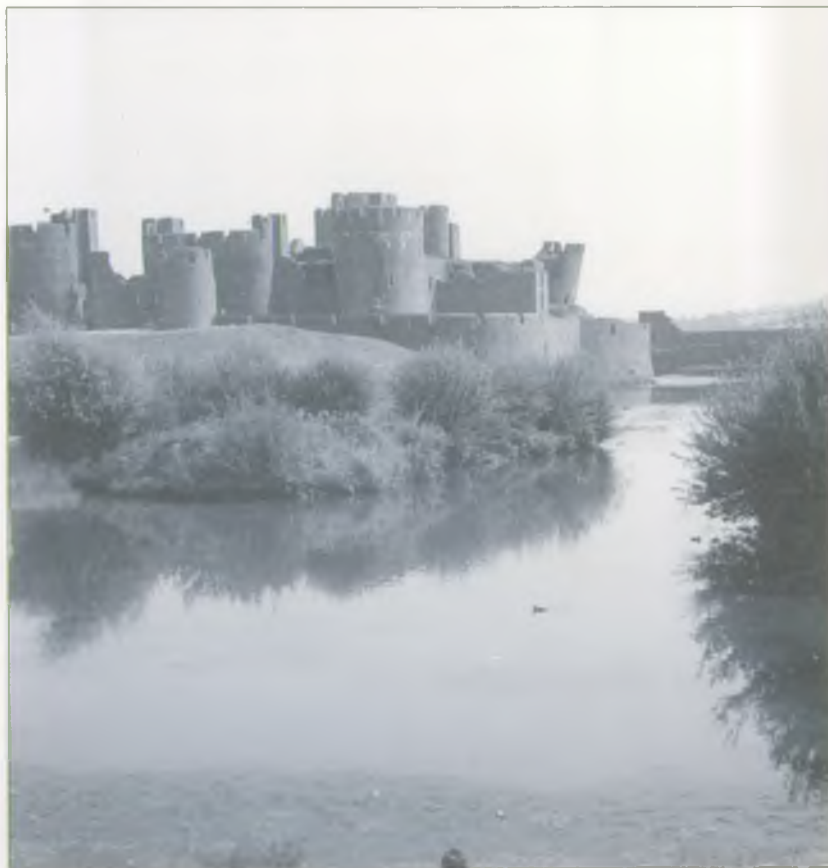
My vision is to further this environmental renovation of the Rhymney by managing the uses of the catchment in a sustainable way. Our key objectives are:

- to continue to improve water quality by effective regulation of industry and investment in sewerage infrastructure.
- to reduce the amount of litter and sewage-derived debris along the river banks.
- to warn of impending floods and maintain and construct flood defences in order to protect people and property.
- to manage the water resources so as to protect existing abstractions and to prevent environmental impact.
- to ensure that any development proposals have no detrimental effect on the water environment. Early discussions with developers and contractors are essential.
- to reinstate significant and self sustaining runs of salmon and sea trout.
- to sustain and, where possible, improve stocks of brown trout and coarse fish.
- to maintain and improve the conservation value of the catchment and protect the heritage resource.
- to ensure that all those who wish to use the catchment for recreational purposes can enjoy doing so with mutual respect and consideration.

These objectives are based on the requirements for sustainable management of the water environment. They will therefore complement other plans which may address the needs of sustainable development within the Rhymney catchment. The views of local people and their representatives will be respected. We will need the help of the local communities and hope to build upon existing relationships and develop new ones in pursuing these goals. Through close liaison, regular reporting on our progress and our determination to fulfil our role, we intend to maintain the impetus for action in the Rhymney catchment.

**Dr Alun Gee**

*(South East Wales Area Manager)*



*Caerpbilly Castle (Photograph courtesy of Wales Tourist Board)*

## INTRODUCTION

Never before has there been such a pressing need to conserve our rivers, lakes and coastal waters to support the rapidly increasing recreational, domestic, agricultural and industrial demands placed upon them. On the other hand, the need to protect life and property from flooding has never been greater. The NRA has a wide range of responsibilities for the control of the water environment, and seeks to reconcile the conflicts raised by the competing needs for water. In particular, the NRA is responsible for:

- conservation of water resources
- pollution control
- flood defence and flood warning
- maintenance and improvement of fisheries
- conservation of water related habitats and species
- promotion of water based recreation
- control of navigation in some areas.

The NRA believes that it can only carry out its work by adopting the concept of integrated catchment management. This means that a river catchment is considered as a whole and the actions in each of the NRA areas of responsibility must take account of the possible impact on other areas.

The NRA has decided to formally present its catchment management policies to the public via Catchment Management Plans which will be produced for all the rivers in Wales by 1998. The Plans are intended to provide a link between the NRA and the users of water in each catchment so that the Authority can better reflect their interests whilst carrying out its duties. For this reason each Plan includes a Consultation Phase during which the general public are invited to comment on the NRA's proposals for the future management of the catchment.

## YOUR VIEWS

The Rhymney Catchment Management Consultation Report is our assessment of the state of the catchment and identifies the key issues which need to be resolved. The most important are outlined in the tables at the end of this summary report. We need your views:

- what do you think about the Plan in general?
- have we identified all the uses?
- have we identified all the issues?
- what do you think about the options proposed?
- do you have any other information about the catchment or any comments about its future management?

If you would like to comment on the Consultation Report or receive a copy of the full document, please write to:

THE AREA CATCHMENT PLANNER  
NATIONAL RIVERS AUTHORITY  
SOUTH EAST AREA - WELSH REGION  
PLAS - YR - AFON  
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## THE RHYMNEY CATCHMENT

This plan covers the catchment area of the River Rhymney and major tributaries from its source in the Brecon Beacons to its outlet into the Severn Estuary.

The River Rhymney rises at a height of 617 m above Ordnance Datum (AOD) at Cefn yr Ystrad and flows a distance of some 58 km in a North to South direction between the Taff and Sirhowy valleys. Below the village of Machen the river briefly assumes a more lowland character before flowing out to the Severn Estuary at Cardiff. The size of the catchment is relatively small, (233 km<sup>2</sup>) and has, in the past, been extensively developed for the coal, iron and steel trades. With the recent decline in these industries, a general overall improvement to the water environment has been noted within the catchment.



*Darran Park*

## CATCHMENT STATISTICS

Catchment Area: 233km<sup>2</sup>

Highest Point: 617m

(Cefn yr Ystrad on the edge of the Brecon Beacons)

Populations: (solely in the Rhymney Catchment)

County Councils	Borough/ City Councils	1991	2001 (Predicted)	2011 (Predicted)	2021 (Predicted)
Gwent	Islwyn	7387	7672	7544	7507
	Newport	396	390	394	392
Mid. Glam	Rhymney Valley	95848	98161	100526	102059
South Glam	Cardiff	102059	114099	119852	125900
<b>Total</b>		<b>205690</b>	<b>230322</b>	<b>228316</b>	<b>235858</b>

## FLOOD DEFENCE

Length of Statutory Main River managed by NRA flood defence department 80.7 km

Length of Flood Defences: 20 km

## WATER QUALITY

% of Classified River Length in GQA Class  
(based on 3 years data 1992-1994)

Class A (V.Good) 58

Class B (Good) 42

Class C, D, E 0

(Moderate, Poor, Bad)

## WATER RESOURCES

Average Daily Flow from Rhymney: 530 megalitres per day

Gross licence abstraction: 67 megalitres per day

Estimated volume of water abstracted and not returned: up to 6 megalitres per day

(1 megalitre is 1 million litres or 1000 cubic metres)

## FISHERIES

Average annual declared salmon rod catch 1988-1994 1

Average annual declared sea trout rod catches 1988-1994 14

Average annual salmon run size  
(minimum estimate) 1992-1994 20

Average annual sea trout run size  
(minimum estimate) 1992-1994 100

Regular coarse fishing bag weight 15 lb

No. salmon/sea trout anglers (approx.) 50

No. trout anglers (approx.) 1500

No. coarse anglers (approx.) 1000





## DEVELOPMENTS AND LAND USE

The main communication links, such as railways and main roads, all occupy the narrow valley floors, with main sewer lines running down many of the river channels. The towns of Rhymney, New Tredegar, Bargoed, Ystrad Mynach and Caerphilly all lie on the banks of the Rhymney or its tributaries. The Rhymney is also one of the three rivers of Wales' capital city, Cardiff. It flows through the eastern part of the city but not into Cardiff Bay.

This catchment was dominated by the heavy industries of coal, iron and steel. The decline of these industries in the late 20th Century however, has led to an overall improvement in the environment of the whole catchment. The water quality has improved and the ecology is becoming richer. Caerphilly and Cardiff are the main industrial bases remaining, but many sizeable industrial estates are situated throughout the catchment. Hill farming and forestry are practised in some areas.

The pattern of development in the Rhymney catchment has also changed with the demise of the mining industry, the development of new light industrial and business parks, the expansion of existing industrial sites and a number of road improvements and by-pass schemes either being proposed or under construction. Present and future developments together with existing users of the River Rhymney must therefore be carefully managed to protect and enhance the environment of the Rhymney catchment for future use.

*Bargoed Land Reclamation Scheme*



## WATER QUALITY

The quality of the river water of the whole Rhymney catchment is generally good in chemical terms but there are substantial lengths of river where the invertebrates are affected by intermittent pollution. This is mainly caused by sewage inputs from combined sewer overflows (CSOs) and leaking sewer pipes. Many of the CSOs are unscreened so discharges also result in the introduction of a significant amount of non-biodegradable litter which can accumulate on the river banks, causing considerable aesthetic impact. Sporadic inputs of contaminated run-off or spillages from the many industrial areas can occur and minewater discharges from abandoned mines are also evident.



*Litter on banks of the Rhymney at Bedwas*

Despite these problems, the main river and most of the tributaries are of sufficiently high quality to support a salmonid fishery.

## WATER RESOURCES

The Rhymney receives very high rainfall, with an average annual of 1383 mm. This rainfall is lower than the neighbouring Taff catchment which is higher and more exposed. Consequently the water resource available for exploitation is fairly modest. Such rainfall, combined with the mountainous catchment and steep river channels, contribute to high and rapid flows down the rivers. The average daily flow of the River Rhymney as it flows into its estuary is 530 million litres per day. Although rain falls throughout the year, the thin sandy soils, the rock types of the coal measures and sandstones do not retain large quantities of water in storage. Thus river flows diminish quite rapidly during dry spells despite periodic flooding during the winter months. The typical dry summer flow of the Rhymney as it flows into its estuary is 70 million litres per day.

The Rhymney flows over the South Wales synclinal basin and, because of this folding of the rocks, the relatively young coal measures are exposed. Consequently, the area has in the past been

renowned for coal mining, and a complex pattern of groundwater flow has evolved along the shafts and adits of the old mineworkings. The coal measures constitute a locally important groundwater resource of variable yield and quality.

The main use of water in the catchment is for public water supply. Half of the water for this use (54%) is abstracted from the Rhymney Bridge Reservoir at the head of the catchment and the rest is taken from reservoirs in the neighbouring valleys. All this water is discharged to sea via the trunk sewer. The total water losses from this use is very small.

Industrial abstractions are responsible for nearly a third of the water use. The water lost from these abstractions varies according to the use they are put to and whether they are discharged to sewer or back to the river.

Agriculture in the valley is not demanding of large quantities of water. Much of the water is returned through septic tanks, and the water is typically abstracted from boreholes, resulting in minimal water loss. The only exception to this is the spray irrigation to crops in the lower valley and to golf courses.

## FLOOD DEFENCE

This wet, mountainous catchment is susceptible to very rapid "flashy" rises in river levels during heavy rainstorms. The flood peaks cascade quickly down to the coastal lowlands, downstream of Caerphilly at Machen. Here their progress slows and they often spread widely over the floodplain.

The most severe events of flooding were in December 1960. The highest tide levels this century occurred in February 1990, reaching a level of 7.95 metres above ordnance datum (AOD)

Those major centres of population which have had problems in the past, now have flood defences. These are designed to protect the properties



*Flood defence works at Cwmilas*

against floods of up to 100 years return period, ie they could expect to be flooded only once in 100 years on average. The areas liable to flooding, which are still undefended at the present time, are fairly small and are areas where the cost of protection measures exceed the value of the benefits of the works.

## FISHERIES

The improvement in water quality over the last 20 years has led to a steady increase in all fish stocks in the Rhymney, though occasional pollution incidents still cause setbacks to the recovery. Coarse fish are present in the lower river, grayling in the middle reaches and trout are found throughout the catchment. Salmon and sea trout indicative of high water quality and habitat are steadily increasing in numbers. They provide fishing in the lower and middle reaches of the river as they migrate to spawning grounds higher up the catchment. There is scope for the continued improvement of the river and lake fisheries especially where the demand for fishing is high.

## CONSERVATION/ECOLOGY

The catchment's history of industrial and urban development has resulted in extensive riverbank protection works and a loss of wetland habitats. Despite this, many of the rivers remain tree lined and the improved water quality has allowed the return of otters to the catchment. In the upper catchment the principal habitat outside urban areas are rough pasture or small oak woodlands, with improved grasslands becoming dominant in the wider valley of the middle reaches. Improved pasture or arable farming predominate in the lower reaches and willows become more abundant at the waters edge. Elsewhere alder is the dominant riparian tree species, though often restricted to a single row and of a limited size range. In some areas



*Kingfisher*

they form part of adjacent relict woodlands. The invasive alien plant, Japanese Knotweed, is found throughout the catchment.

Typical riverine birds, such as dippers, kingfishers, grey wagtails and herons can now be observed. There is potential for improvements in the nature conservation interest by the collaboration and agreement of landowners, developers and Local Authorities.

There are ten Sites of Special Scientific Interest (SSSI) in the catchment, though only three have an aquatic component; Lisvane Reservoir, which is of interest to bird enthusiasts and Plas Machen woodland which has a number of streams and waterlogged areas and Nelson Bog which lies on the watershed between the Rhymney and Taff catchments. The majority of SSSI's are of geological interest but some are exposed by river erosion. The catchment discharges into the Severn Estuary SSSI, Special Protection Area and Ramsar site. There is only one Local Nature Reserve, Managed by Cardiff City Council.

There are several Scheduled Ancient Monuments in the catchment but very few are associated with the aquatic environment. However, there are many unscheduled features of historic interest associated with watercourses.

## RECREATION

Being a narrow valley, most residents live close to the river which inevitably leads to a big recreational demand. Walkers, cyclists, naturalists and anglers all use the river environment. A potential demand for canoeing exists, though due to the small size and shallowness of the river, is limited to periods when river flow is above average.

High profile recreational sites such as Roath Park, Caerphilly Castle and Park Cwm Darran are focused around lakes and their associated streams. At Roath Park lake Cardiff City Council provide row boats for recreational use throughout the summer seasons.

A network of strategic footpaths is emerging linking the Rhymney Ridgeway footpath to a section of long distance footpath and proposed footpaths south of Bargoed and crossing the mountain shoulder of Cefn-y-Brithdir. Cycle routes are proposed to link

Bargoed and the Darren Valley. The Darran Valley offers camping and caravanning, angling and walking facilities in an attractive country setting.

More recently a number of golf courses have been created throughout the catchment with



*Routh Park*

the demand for golf increasing. A high demand for angling is also evident. Angling takes place, for a range of fish species, throughout much of the catchment in a number of lakes and in the main river and larger tributaries. Fishing rights on tributaries and the main river below Caerphilly are mostly in private ownership where in the main river above Caerphilly is mostly in local authority ownership.

## ISSUES AND OPTIONS

The following tables list the 21 issues which the NRA has identified within the Rhymney catchment.

We would like to hear from you if:

- you think there are other issues which we have missed
- you think that we have not considered all the options
- you have any views on the options suggested
- you have any other information about the catchment or comment about its future management.

### ABBREVIATIONS USED IN TABLES

CCW	Countryside Council for Wales	DCWW	Dwr Cymru Welsh Water
LA	Local Authority	NRA	National Rivers Authority
CSOs	Combined Sewer Overflows	K	One Thousand
LPA	Local Planning Authority		

ISSUE No: 1		THE IMPACT OF COMBINED SEWER OVERFLOWS AND INADEQUATE SEWERAGE NETWORK ON WATER QUALITY	
OPTIONS	Responsibility	Benefits	Constraints
1. Continue to identify intermittent or diffuse sources of sewage related pollution.	NRA	Could lead to further improvements to biological and chemical quality.	Costs to NRA and DCWW
2. Renewal of substandard sewerage system where appropriate.	DCWW	Improved chemical and biological quality. Reduced sewage derived litter.	Costs to DCWW.

ISSUE No:2		UNKNOWN SOURCES OF IMPACTS ON THE WATER QUALITY OF THE NANT BARGOED RHYMNI, NANT YR ABER AND PORSET BROOK	
OPTIONS	Responsibility	Benefits	Constraints
1. Undertake full biological surveys.	NRA	Identify possible sources causing poor biological quality to enable targetting for remedial work.	Cost to NRA.

ISSUE No: 3		THE IMPACT OF MINEWATER FROM ABANDONED COAL MINES	
OPTIONS	Responsibility	Benefits	Constraints
1. Treat or otherwise remedy minewater discharges.	Collaboration between interested parties as opportunities arise.	Aesthetic, biological and economic benefits.	No legal power at present. Projected capital costs of remedy approx. £730k. Operating costs approx. £75k.



ISSUE No: 4 EFFECTS OF LITTER, FLY TIPPING AND ABANDONED VEHICLES			
OPTION	Responsibility	Benefits	Constraints
1. Increase public awareness of litter problem and how to solve it.	NRA/Keep Wales Tidy Campaign/ IAs / Public/Rhymney & Islwyn Groundwork Trust	Improvements to the water environment. Reduced litter input.	Cost (will be part of £137k Valley Rivers Project).
2. Improvements to CSOs.	DCWW	Improvements to chemical, aesthetic and biological quality of receiving watercourse.	Costs to DCWW.
3. Promote voluntary adoption scheme.	Keep Wales Tidy Campaign	Improvements to water environment. Reduce litter input.	Relies on continued voluntary support.
4. Target litter fly-tipping blackspots.	Keep Wales Tidy Campaign	Reduce litter input.	Costs to group members.
5. Seek co-operation with major retailers to reduce the number of trolleys in water-courses.	NRA/Major retailers	Prevention of flooding.	Cost to NRA.
6. Continue to remove of potential flood risks caused by litter etc..	NRA/Landowner/ IAs	Prevention of flooding. Aesthetic benefit.	Cost. Identification of responsible offenders and owners difficult.

ISSUE No: 5 THE IMPACT OF ILLEGAL CONNECTIONS FROM DOMESTIC PROPERTIES ON THE WATER ENVIRONMENT			
OPTIONS	Responsibility	Benefits	Constraints
1. Confirm the location of pollutions and liaise with local authorities to resolve problems.	NRA/ IAs	Sullage problems found and resolved. Water quality improved.	Cost to NRA/ IAs and householders. Very time-consuming because problems are intermittent.
2. Assess the effectiveness of publicity campaigns and extend their use if considered appropriate.	NRA	Reduced numbers of misconnections.	Cost to NRA.

ISSUE No: 6: DIFFUSE /INTERMITTENT POLLUTION FROM INDUSTRY AFFECTING THE WATER ENVIRONMENT			
OPTIONS	Responsibility	Benefits	Constraints
1. Target inspection of industrial premises.	NRA	Prevention of pollution at source leading to improved water quality	No legislation currently available to enforce eg. bunding of storage tanks at industrial premises. Costs to NRA.
2. Implement pollution prevention measures.	Identified industries	Prevention of pollution at source leading to improved water quality.	Costs to industry.
3. Define Groundwater Protection Zones.	NRA	Determine and prioritise the risks of aquifer contamination.	Cost to NRA.

ISSUE No: 7 THE IMPACT OF PENRHOS TIP ON THE WATER ENVIRONMENT			
OPTIONS	Responsibility	Benefits	Constraints
1. Monitor effectiveness of scheme to intercept and convey leachate to foul sewer.	NRA/ Dyffryn Ffrwd (Newtown) Estates Ltd.	Improved water quality.	Cost to developer and NRA.

ISSUE No: 8 LACK OF WETLAND HABITATS IN CATCHMENT			
OPTIONS	Responsibility	Benefits	Constraints
1. Promote the improvement and creation of wetland habitats via consenting procedures and planning responses.	NRA/IAs	Can include future management needs.	Responding to applications made so not necessarily always meeting conservation priorities.
2. Establish the current distribution of wetland habitats in the catchment.	NRA/CCW/ Conservation Organisations/IAs	Assist in determining priorities and identifying opportunities.	Does not positively promote habitat improvements. Cost.
3. Collaborate with others in habitat improvement and creation projects.	NRA/Others	Achieves positive conservation benefits.	Costs.

ISSUE No: 9		POOR RIPARIAN HABITAT	
OPTIONS	Responsibility	Benefits	Constraints
1. Undertake habitat improvements during flood defence maintenance work.	NRA	Incorporated into routine work. Improves habitat.	Not always in priority areas. Will require agreement of landowner.
2. Promote enhancement measures via consenting procedures and planning responses.	NRA/Landowners	Improves habitat.	Not always in priority areas.
3. Collaborate with others in habitat enhancement projects.	NRA/Landowners	Improves habitat.	Costs.

ISSUE No: 10		INVASIVE ALIEN PLANTS	
OPTIONS	Responsibility	Benefits	Constraints
1. Prepare a Regional policy to determine circumstances in which alien plants should be controlled by NRA.	NRA	Standardised approach to problem.	Costs.

OPTIONS	Responsibility	Benefits	Constraints
1. Stock 10,000 fed fry of each salmon and sea trout per year until 1999.	NRA	Restoration of populations will be accelerated.	Cost of broodstock collection, rearing and stocking estimated at £4k.
2. Stock 30 000 fed fry of each salmon and sea trout per year until 1999.	NRA	Restoration of populations will be accelerated	Cost of broodstock collection, rearing and stocking estimated at £8k.
3. Improve fisheries habitat.	Angling Clubs/ Developers/ LAs/ NRA	Increased holding potential of catchment. Opportunities for and quality of fishing increased (also for brown trout). Restoration of populations will be accelerated.	Cost of construction and time in access agreements.
4. Increased fisheries enforcement patrols.	NRA Government	Improving fish stocks protected from illegal and over- exploitation.	Additional resources required or reduced patrols on other high quality and improving rivers.
5. Allow fish populations to recover naturally without assistance from stocking.	NRA	Reduced costs.	Slower recovery.

OPTIONS	Responsibility	Benefits	Constraints
1. Supplementary stocking with coarse fish and grayling between Machen and Ystrad Mynach.	NRA/Angling Clubs	Fish stocks increased.	Costs. Possibility of overstocking if populations not monitored and habitat not improved.
2. Undertake survey of coarse fish and grayling populations and implement regular monitoring programmes.	NRA/Angling Clubs	Status of populations known with greater accuracy.	Costs of electro-fishing programme. Commitment of Angling Clubs to maintain catch records.
3. Ensure developments and river engineering works do not degrade and, where possible, seek to enhance fisheries and habitat via the Planning Consultation Process. Support Section 106 Agreements.	NRA/Developers/ IAs	Fish stocks and habitat protected and enhanced.	Costs. Commitment of developers to undertake enhancements.
4. Encourage catch and release and bag limits for brown trout.	NRA/Angling Clubs	Increased spawning and stocks.	Difficulty in communication links and changing established practices and attitudes.
5. Encourage monitoring of brown trout populations by maintaining catch records.	NRA/Angling Clubs	Status of, and trends in, trout populations known with greater accuracy.	Costs in implementing programme. Commitment of anglers to maintain catch records.
6. Improve instream and bankside habitat for trout populations.	NRA/Angling Clubs	Holding capacity for trout increased.	Costs.
7. Provide sheltered spawning areas for coarse fish (eg. progression of fish mitigation project).	NRA/Angling Clubs	Survival of coarse fish fry increased.	Costs. Lack of suitable sites.

ISSUE No: 13		IMPROVEMENT OF STILLWATER COARSE FISHERIES	
OPTIONS	Responsibility	Benefits	Constraints
1. Progress Fisheries Mitigation Project incorporating fishing lake.	NRA/Angling Clubs	New coarse fishing lake in accessible part of catchment.	Possible cost limitations. Lack of suitable sites.
2. Support initiatives for provision of additional fishing lakes.	NRA/Angling Clubs/ Developers/Owners/LAs	New fishing facilities provided.	Costs. Lack of suitable sites.
3. Supplement fish stocks in upland lakes by stocking.	NRA/Angling Clubs	Fish stocks maintained where spawning is poor.	Costs to NRA and Angling Clubs. Lack of locally available surplus fish stocks.
4. Provide advice to clubs and owners on fisheries management and improvement of stillwaters.	NRA	Advice provided as required on best practice at sites.	Cost.

ISSUE No: 14		FLOODING OF PROPERTIES AT NEW TREDEGAR	
OPTIONS	Responsibility	Benefits	Constraints
1. Consider a Flood Alleviation Scheme to protect people and property from flooding.	NRA	Reduced flood risk.	Justification on cost/benefit grounds unlikely.

ISSUE No: 15		FLOODING AT WATERLOO GARDENS, ROATH, CARDIFF	
OPTIONS	Responsibility	Benefits	Constraints
1. Investigate source of flooding.	NRA	Quantifies flood risk in area.	Cost.
2. Investigate feasibility of providing Flood Alleviation Works to protect property from flooding.	NRA/ Landowners	Possibility of alleviating flooding.	Cost.

ISSUE No: 16 FLOODPLAIN AREAS UNDER THREAT FROM DEVELOPMENT			
OPTIONS	Responsibility	Benefits	Constraints
1. Restrict development on floodplain.	NRA/ LAs	Reduced floodrisk to adjacent areas. Protect conservation interest. Less need to restrict run-off from upstream development.	Reduction in development areas.
2. Land used for sporting activities only eg football pitches.	LA/Developer	Land used effectively.	

ISSUE No: 17 DEVELOPMENT BEHIND FLOOD EMBANKMENTS			
OPTIONS	Responsibility	Benefits	Constraints
1. Prevent any development.	NRA/ LAs	Avoids serious flooding.	Restricts development.
2. Raise level of land.	LAs/ NRA/ Developer	Allows development.	Cost to developer.

ISSUE No: 18 MAINTENANCE OF FLOOD PROTECTION SCHEMES AND PROVISION OF ACCESS			
OPTIONS	Responsibility	Benefits	Constraints
1. Ensure access is provided in future developments.	NRA/ Developer/ LAs	Access provided for essential routine work.	Cost. Loss of land.

ISSUE No: 19 RESTRICTIONS OF SURFACE WATER RUN-OFF FROM NEW DEVELOPMENTS			
OPTIONS	Responsibility	Benefits	Constraints
1. Provide surface water attenuation or soakaways.	NRA/LAs/ Developer	Protects against flooding.	Cost.
2. Watercourse improvements.	NRA/ LAs/ Developer	Protects against flooding.	Cost.

ISSUE No: 20		CONFLICT BETWEEN DIFFERENT RECREATIONAL USER GROUPS AND THEIR IMPACT ON WILDLIFE CONSERVATION	
OPTIONS	Responsibility	Benefits	Constraints
1. Liaise with angling and canoeing representatives to resolve conflicts and progress access agreements.	NRA/Angling Clubs/Fishery Owners/Riparian Owners/Canoeing organisations	Relationship between canoeists and anglers improved and conflicts reduced.	Costs. Gaining co-operation of different parties.
2. Act as broker and provide advice to site owner and different user groups to resolve conflicts.	NRA/Site Owner/ User Groups	Resources used with minimum conflict and greater mutual understanding.	Cost.

ISSUE No: 21		THE IMPACT OF MAJOR DEVELOPMENTS ON THE WATER ENVIRONMENT	
OPTIONS	Responsibility	Benefits	Constraints
1. Minimise effects of pollution from developments at the planning consultation phase.	Las/ Developers/ NRA	Protects water environment.	Costs to developer.
2. Monitor and regulate major developments.	NRA	Protect water environment.	Costs to NRA.
3. Promote the restoration of degraded rivers during construction.	Developer/NRA	Enhanced river corridor.	Costs to developer.
4. Encourage the inclusion of enhancement of wildlife, conservation, fisheries and recreation in the reclamation schemes via the planning process on a regular basis.	NRA/Developer/LAs	Enhances the river corridor benefiting wildlife, public and national heritage. May also enhance land values in the locality.	Costs to developer.