

THE RIVER CONWY CATCHMENT MANAGEMENT PLAN ACTION PLAN; 1995



NRA

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Welsh Region*

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THE NRA'S VISION FOR THE CONWY CATCHMENT

The Afon Conwy catchment features immediate attractions for those whose interests lie outdoors, ranging from the simple enjoyment of the often breathtaking scenery through to active participation in sports such as fishing, canoeing and climbing.

The catchment is also home to a population of about 40,000 people, nearly 40% of whom live outside the main centres of Llandudno and Conwy. Much of this rural population depends, in different ways and to various degrees, upon the catchment for a living. And finally, the catchment supports an often finely balanced ecology which is of such exceptional interest in many areas that it has been protected through the creation of nature reserves.

The challenge of helping to manage and improve the Afon Conwy is one to which the NRA readily responds, recognising that there is much to be done if we are to move into the next century with a catchment of a quality which we would all desire.

The NRA's vision for the Conwy includes achieving improvements in water quality through reductions in the impact of afforestation, agriculture and sewage discharges. An imaginative scheme has been employed to arrest the decline in migratory fish stocks, namely the Conwy Falls fish pass which will make the upper catchment accessible to salmon and sewin for the first time since the Ice Age. At the same time, it will be important to ensure that the genetically distinct brown trout populations are protected. Byelaws will be introduced to safeguard migratory fish during vulnerable life cycle stages or in locations where illegal practices could recur. Those relating to netting in the estuary and fishing at vulnerable locations, from below the fish pass to the upper reaches, have already been implemented. River

flow will be safeguarded through the careful consideration of all abstraction licence applications which predominantly have related to hydro-electric power schemes in recent times, and property will be protected from flooding to a standard which is consistent with the land use and economically justifiable. On the recreational front, the conflict between fishing and canoeing will be resolved through the careful consideration of the requirements of the fisheries' ecosystem.


However, being realistic it is important to recognise that there are a number of adverse impacts which fall outside the NRA's direct influence. These particularly include acidification and the discharges from abandoned mines, both of which are problems within the catchment.

Nevertheless, the NRA intends to work with all other agencies and representative organisations in the catchment to promote and achieve an integrated approach to management. In particular, the NRA anticipates that the plan will influence the planning processes of local authorities.

Whereas the vision expresses the long term ambitions for the catchment, this Action Plan concentrates on the next five years.

The realisation of the NRA's vision will be achieved through a balanced management approach to all activities so that the qualities of a pristine catchment can, as far as practicable, be achieved and sustained in active collaboration with all users of the catchment.

D. R. THOMAS
NORTHERN AREA MANAGER -
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CONWY CATCHMENT



KEY

- Catchment boundary
- Built up area
- Watercourse
- 'A' class road
- 'B' class road
- Railway
- Gwynedd CC
- Aberconwy BC
- Clwyd CC
- Colwyn BC
- Snowdonia National Park Eastern limit

CATCHMENT STATISTICS

Area	590 km ²
Population	40,500
Area at flood risk	790 Ha
Average rainfall	1700 mm
Average river flow	24 cumecs
River quality	48.9 km Very good
Estuary quality	25.5 km Good
	5.0 km Fair
Designated fisheries	Salmonid: 34.5 km
(78/659/EEC)	Cyprinid: None
Designated bathing waters	West Shore
(76/160/EEC)	Llandudno

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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 is the major manager of the water environment in England and Wales and has the responsibility to reconcile conflicts between 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.



The busy estuary at Conwy contrasts with the wild character of the upland catchment.

We have chosen to use Catchment Management Plans (CMPs) to translate those 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.

To ensure the Authority 'gets it right', the process of developing catchment management plans 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 Conwy and has led to the development of this, the 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.

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

- land use planning
- water quality objectives

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, 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 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 the broad headings of 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 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 Conwy catchment which have been

agreed 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 Water Quality Objectives (WQOs) 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 uses to which waters may be put, recognising that there is cost involved in meeting the quality targets necessary to support these uses. Five river uses are referred to by the Government in their consultation document *River Quality: The Government's Proposals* (December 1992).

The Government has subsequently produced Regulations for the River Ecosystem Use, which is the backbone of the WQO scheme, in *The Surface Waters (River Ecosystem) (Classification) Regulations 1994*. One of the WQO River Ecosystem Classes will be appropriate to most stretches of river and canal, though a minority of grossly polluted river stretches may fall below class 5 (lowest of the 5 classes). River Ecosystem WQOs have not yet been implemented on a statutory



Clean water is essential.

basis. However, the water quality proposals for the Conwy and the evaluation of the water quality of the catchment have been made in terms of the standards (with the exception of copper and zinc standards) set within the new WQO River Ecosystem classification. There is a need for the Authority to look again at the water quality standards of those stretches of the Conwy where zinc failures were identified (issue 5, section 5).

2.0 REVIEW OF THE CONSULTATION PROCESS

The Conwy Catchment Management Plan consultation report was distributed to 142 organisations including statutory and non statutory bodies to seek their views on the NRA's proposals. This was distributed two weeks in advance of the formal public launch of the Plan at Plas Maenan, Llanrwst, on the 18th May 1993. In addition to the comments received at the launch, all consultees were invited to submit their detailed views by 31st July 1993.

There were 34 respondents, the support of which the NRA 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 21 issues within the catchment, and the public consultation identified a

The toxicity of zinc (and copper) is related to the hardness of the water, which is better recognised in the standards of the final version of the WQO scheme compared with the draft version which the NRA worked to in preparing the Conwy CMP. The re evaluation could show fewer stretches failing against zinc standards.

further potential 12 issues of which 2 were considered as new discrete issues by the NRA, and which are now included in the Actions section (Issues 22, 23, Section 5.0). The remainder were either different aspects of issues already in the Plan, or were considered to be adequately addressed by the NRA's current ongoing operational activities. The two new issues were:-

- (i) conflict between canoeists and fishermen and a perceived need for more controlled access,
- (ii) excessive upland drainage reducing bird habitats and brown trout populations.

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

3.0 OVERVIEW

CATCHMENT DESCRIPTION

The Afon Conwy rises from Llyn Conwy (450m AOD) in the Migneint Moor in Snowdonia, drains a predominantly upland catchment (590 sq.km.) and discharges to Liverpool Bay at Conwy after flowing a distance of 56 km.

It is a remarkable river because it lies on the border of the Ordovician and Silurian rocks of North Wales. On the left bank are hard resistant rocks of Ordovician age creating an alpine landscape with many lakes and spectacular waterfalls. There are a number of old slate quarries here and, where igneous intrusions have been exploited by mining there is the legacy of dereliction and some water pollution. Many of the slopes on this western side of the river have been planted with coniferous forest and any field boundaries are of dry stone wall. This attractive and

varied landscape lies within the boundary of the Snowdonia National Park.

On the right bank of the river are the less resistant Silurian rocks which have produced the rounder, softer landscape of the Denbigh Moors. Hedgerows are more typical of the field boundaries here and the farms are more productive. A small amount of arable farming occurs on the east side of the river downstream of Betws-y-Coed, but most of the catchment provides grazing of variable quality.

The configuration of low land and confining uplands is conducive to flooding and much of the low lying land (790 Ha) is protected by tidal and fluvial embankments. Certain areas have been designated as Internal Drainage Districts (IDDs).

There is a large variation in average annual rainfall from the source in Snowdonia to the coast (4000 and

800mm respectively), with a catchment average annual rainfall of 1700 mm. The river is subject to a wide ranging flow regime (0.3 cumecs - 486.6 cumecs during the period 1982-1992), with an average flow of 24 cumecs (cubic metres per second).

Groundwater does not play an important role in the general hydrology of the catchment, but is responsible for maintaining river flows in dry periods. The concentration of groundwater discharges through old mineworkings is locally important. During droughts swift and prolonged river flow recessions can cause concern for water resources, water quality and fisheries interests.

The catchment forms a valuable fisheries, conservation and recreation resource. Fisheries interests range from important commercially exploited mussel beds in the estuary, through salmonids generally in the main river and tributaries, to coarse fish, largely at specifically developed still water sites. Angling is a major tourist attraction which will further develop as a consequence of the installation of the Conwy Falls fish pass.

The conservation value of the catchment is reflected in the number of designated sites (36 SSSIs, 2 NNRs), whilst otters are to be found in parts albeit still in low numbers for such a catchment. The diverse ecology and natural beauty of the landscape are also recognised through the inclusion of much of the catchment (62%) within the Snowdonia National Park. There are also many sites of historical and archaeological interest. Water quality is generally very good throughout the catchment. It is an important factor given the catchment is a magnet for recreational activities such as angling, bathing, canoeing etc and a provider of water for drinking. Nevertheless, parts of the upland catchment including Llyn Conwy are acidified to an extent that significantly affects river ecology, whilst a 5km length of the estuary fails to achieve the highest quality designation.

The catchment is predominantly rural with a population of approximately 40,000, 60% of which is located around the Conwy/Llandudno area.

The majority of land within the catchment is Grade 4 or Grade 5 under the MAFF classification scheme, although there are some grade 3 areas around the flood plain and the estuarial regions of Afon Conwy.



Actions identified within this Plan will encourage the return of Otter.

Dairy/arable farming is limited with sheep farming being the most widespread agricultural practice. There are extensive areas of forest in the upper reaches of the catchment, whilst industrial development is limited to the Llandudno/Llandudno Junction area and Dolgarrog.

Transport infrastructure consists of a network of trunk and main A roads which serve the main population centres, with B roads linking smaller settlements, and a railway system consisting of the main Holyhead-London line and the Conwy Valley (Llandudno - Blaenau Ffestiniog) line.

CATCHMENT USES

The range of uses and activities is extensive within the Conwy catchment and all legitimate uses of the catchment which can impact, or interact, within the water environment have been described under 18 categories of Use in phase I of the Catchment Management Plan or Consultation Report.

These are:-

- Development - housing, industry & commerce.
- Abstraction for potable supply.
- Industrial/agricultural abstraction.
- Sewage effluent disposal.
- Industrial effluent disposal.
- Solid waste disposal.
- Mineral working.
- Agricultural activity (including forestry).
- River ecosystem.

Special ecosystem.

Conservation - ecology & landscape.

Commercial harvesting of fish and shellfish for human consumption.

Basic amenity.

Angling.

Water sport activity.

Boating.

Navigation.

Flood water storage and flood defences.

There will inevitably be some interaction and sometimes conflict between different Uses, though the latter has only been identified as existing between canoeing/angling and use of motor craft/bird interests in the Conwy catchment.

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

- The identified bathing water under the EC Bathing Waters Directive at West Shore Llandudno does not comply with the mandatory bacteriological standards.
- Acidification of some of the upper reaches of the catchment means water quality may be limiting the fisheries.
- The excessive licensed abstraction of water from the Afon Porth-Llwyd impacts on the fisheries and general ecology of this tributary.

However, these have been identified as issues



The Conwy valley lakes are an important recreational resource

requiring resolution along with 20 others 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 Conwy 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, it 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 (if implemented) 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 authorities' statutory development plans are very important, given 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 Authority's 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 Conwy catchment is of a varied and generally high quality environment. Nevertheless the impacts of different land uses on the water environment are evident. The extensive residential development which has taken place around the estuary without any accompanying development of environmentally protective sewage disposal facilities has resulted in crude sewage being discharged into the estuarine waters, causing aesthetic pollution and the failure of the identified bathing water at West Shore, Llandudno, to comply with mandatory bacteriological standards. Until a confirmed completion date for the improvements proposed by Dŵr Cymru Welsh Water is available, the Authority, a statutory consultee for Town and Country Planning matters, will advise Aberconwy B.C. against any further developments in Glan Conwy. Conwy has been withdrawn from the NRA's objection list as the result of agreed commitments by Dŵr Cymru Welsh Water.

The NRA will always 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.

Development of low lying land adjacent to the river or in the flood or coastal plain may put itself and existing development at greater risk of flooding. 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 the Welsh Office circular 68/92. After the severe flooding in Conwy/Llandudno Junction/Llandudno areas on 10th June 1993, the NRA was compelled to object to proposed developments involving a connection to the Afon Wydden for surface water disposal until the scheme to enhance the storage capacity was in place.

Agriculture and afforestation are evident 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 and water industries have produced the Forests and Water Guidelines which set standards to minimise problems from forestry operations. Whilst coniferous afforestation is not the cause of acidification it can enhance its impact. Acidification is evident in the catchment and Indicative Forestry Strategies and associated future planting should have proper regard to this fact. The NRA would welcome more 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.

The Conwy catchment has its share of metalliferous contamination from old mine workings. Reclamation schemes undertaken include the Hafna, Nant Uchaf, Parc and Cyffty Mines which will, it is envisaged, reduce the metals loading in the Nant Gwydyr. The NRA will look to the Mineral Authority to ensure that proper maintenance and reclamation are integral parts of any planning permission granted for mining activities in the future.



Trefriw, November 1994; a 1 in 30 year flood.

Hydro-electric power generation on the Afon Porth-Llwyd illustrates the impact these schemes can have on fisheries and the general ecology. This form of water use must be subject to stringent planning permission and abstraction licence conditions in future, so as to ensure it is environmentally acceptable. The planning authorities and the NRA have clear roles to play in the control of this particular use of the environment.

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

purposes in the catchment. However, its importance in supporting springs and river flows during dry periods underlies the need to protect its quality. Therefore, 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 therefore 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 Conwy catchment is generally of high quality, but issues have been identified that must be resolved to progress the vision for the catchment.

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

This 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 Conwy catchment is adequately protected.

First of all, however, there are 20 issues to be resolved, which are presented in tabular form in this section. All the actions identified herein 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 1993. The success criteria for the Actions identified are given in the tables 'Conwy CMP Actions - Success Criteria' (Section 6).



Inside the new Conwy falls fish pass.

5.0 CONWY CMP ACTIONS

ISSUE 1									
Poor aesthetic quality of Jacksons stream and Afon Ganol (West) Llandudno Junction.									
ACTIONS	RESPONSIBILITY		COST £	1994	1995	1996	1997	1998	FUTURE
	LEAD	OTHER							
Agreed maintenance improvements completed December 1993	NRA	Industrial Dischargers	10k						
ISSUE 2									
Inaccessibility of upper reaches of the Afon Conwy and tributaries to migratory salmonids.									
Installation of Conwy Falls Fish Pass completed spring 1994.	NRA	Conwy Falls Trust	410k						
Monitoring of effectiveness and maintenance of Fish Pass.	NRA		<10k Annual						
ISSUE 3									
The loss of adult salmon and sea trout due to foul hooking.									
Create 'no fishing' areas where appropriate by the introduction of byelaws. Implemented during 1994.	NRA		None						
ISSUE 4									
The effect of commercial sea fishing activity on exploitation of sea trout and salmon in the estuary.									
Byelaws to control beach and drift netting in the outer estuary. Implemented during 1993.	NRA		None						
ISSUE 5									
Zinc levels in the Conwy, Llugwy, Lledr and Merddwr prevent the target WQO of River Ecosystem Class 1 being achieved. (The zinc values are not considered harmful to fish in these waters).									
Recently issued Surface Water (River Ecosystem Classification) Regulations redefine zinc limits, these will be used to reassess the situation. If failures are still identified and, given there is no point source contamination, there will be a need to derogate for zinc.	NRA		1k						

5.0 CONWY CMP ACTIONS

ISSUE 6		Elevated copper in the estuary. (Only apparent during 1991 and 1992).							
ACTIONS	RESPONSIBILITY		COST £	1994	1995	1996	1997	1998	FUTURE
	LEAD	OTHER							
Permissive monitoring programme to determine source and remedial action.	NRA		2.5k	■	■				
ISSUE 7		Proposed Llanrwst by-pass impact on flood defence.							
When scheme confirmed by Welsh Office, existing level of flood protection needs to be maintained in accordance with NRA requirements.	Welsh Office	NRA	9m (total scheme cost)		■				
ISSUE 8		Drying out of the Afon Porth-llwyd							
Negotiations are ongoing with a view to augmenting the flows in the river.	National Power CCW Dŵr Cymru	NRA	Several k (If Implemented)						
ISSUE 9		Low number of otters in the catchment.							
Otter habitat survey to identify requirements. (Phase II of Otter Conservation Strategy).	NRA	Land-owners	5k	■	■				
ISSUE 10		Human disturbance to birds in the estuary, by use of small craft.							
Collaborative project on the control of motor craft traffic including controlled access to the shores.	NRA	CCW Aber- Conwy BC RSPB	3k	■	■				
Annual monitoring/ maintenance.			1k	■	■				
ISSUE 11		Acidification of upper reaches of Afon Conwy, Afon Lledr, Afon Machno, and Afon Nant y Gwryd.							
Better identification of acidification in the catchment, investigate links with land use, and make recommendations for feasible remedial actions. Draft final report due by May 1995.	NRA		15.5k (8k to date)	■	■				

5.0 CONWY CMP ACTIONS

ISSUE 12		Aesthetic pollution from Dolwyddelan STW discharging primary treated sewage to Afon Lledr.							
ACTIONS	RESPONSIBILITY		COST £	1994	1995	1996	1997	1998	FUTURE
	LEAD	OTHER							
Biological treatment with secondary settlement at STW.	Dŵr Cymru	NRA	350k	█	█	█	█		
ISSUE 13		Aesthetic pollution of Afon Machno by discharge of primary treated sewage from Llanpenmachno STW.							
Biological treatment with secondary settlement at STW.	Dŵr Cymru	NRA	250k	█	█	█	█		
ISSUE 14		Agricultural contamination of some tributaries (Gyffin, Roe, Hiraethlyn, upper Conwy, Eidda).							
Farm inspections and identification of specific problems.	NRA		4k	█	█				
Farm effluent storage improvements to comply with the requirements of the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991.	Farmers		>200k	█	█				
ISSUE 15		Discharges of tip leachate to Afon Conwy and its tributaries.							
Phase I - restoration and leachate collection at Mochdre Tip - completed Dec. 1993.	Colwyn BC	NRA	15k						
Phase II - disposal - no confirmed proposal.	Colwyn BC	NRA	Not Known						
Action as above at Valley Tip Dolgarrog awaiting funding.	Aber- conwy BC	NRA NRA	Not Known						
ISSUE 16		Crude Sewage discharges to the estuary from Conwy and Glan Conwy.							
Connection to the West Shore outfall, Llandudno. - Conwy scheduled for connection by end 1995. - Glan Conwy sewage disposal option currently being reviewed.	Dŵr Cymru	NRA	11m (total estuary scheme)	█	█				

5.0 CONWY CMP ACTIONS

ISSUE 17 Metal contamination of surface water from Aberllyn mine, Gwydyr Forest									
ACTIONS	RESPONSIBILITY		COST £	1994	1995	1996	1997	1998	FUTURE
	LEAD	OTHER							
Stabilisation of spoil heaps and introduction of vegetation at Aberllyn lead and zinc mines.	WDA	Snowdonia National Park Forest Enterprise CCW NRA	200k		■				
ISSUE 18 Water abstracted from Llyn Elsi contains elevated manganese levels..									
Installation of new water treatment plant (installed 1993). Lime dosing option not taken up.	Dŵr Cymru		80k						
ISSUE 19 Lack of riparian habitat diversity.									
Extent of fencing, alien plant control and landowner co- operation to be identified within otter habitat survey (Issue 9). Agree implementation programme with landowners.	NRA	Land-owners	Included in Issue 9	■					
ISSUE 20 Combined storm overflows impact on water quality.									
Investigation completed, no significant CSO impact in the catchment, improvements low priority in Region.	Dŵr Cymru	NRA	Not known						■
ISSUE 21 Potential impact of any barrage in the estuary on land drainage/flood protection/passage of fish/water quality/mussel fishery/salmon and sea trout/commercial and rod fisheries. THERE IS NO FIRM PROPOSAL TO DATE									
Specification of requirements to safeguard existing interests of all concerned at the proposal stage.	NWNW SFC/ Fishermen etc./ NRA								
Construction and maintenance of barrage and auxiliary installations in accordance with NRA/NWNWSFC/ and fishermen requirements.	Developer	NRA NWNW SFC Fishermen							

5.0 CONWY CMP ACTIONS

ISSUE 22		Conflict between canoeists and fishermen.							
ACTIONS	RESPONSIBILITY		COST £	1994	1995	1996	1997	1998	FUTURE
	LEAD	OTHER							
Explore potential for improved control of existing access and promote further access with Canoeing Association and landowners where appropriate.	WCA Land-owners	NRA	2k						
ISSUE 23		Reduction in breeding bird habitat and in brown trout populations due to drainage of wetlands.							
Liaison with RSPB, CCW and NRA to determine who should be undertaking the investigation work to establish extent of problem and what action is necessary.	NRA	RSPB CCW	None						

6.0 CONWY CMP ACTIONS - SUCCESS CRITERIA

ISSUE 1		Poor aesthetic quality of Jacksons stream and Afon Ganol (West) Llandudno Junction.	
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED	
Agreed maintenance improvements completed December 1993	Jacksons stream and Afon Ganol West of acceptable aesthetic quality	No adverse reports from public, or from NRA routine inspection of aesthetic quality.	
ISSUE 2		Inaccessibility of upper reaches of the Afon Conwy and tributaries to migratory salmonids.	
Installation of Conwy Falls Fish Pass completed spring 1994. Monitoring of effectiveness and maintenance of Fish Pass.	Migratory fish spawning upstream of the Conwy Falls and returning to sea.	Automatic fish counter installed in Fish Pass.	
ISSUE 3		The loss of adult salmon and sea trout due to foul hooking.	
Create 'no fishing' areas where appropriate by the introduction of byelaws. Implemented during 1994.	No fishing activity in designated areas.	No enforcement action by NRA bailiffs or verified activity in the designated areas reported by the public.	

6.0 CONWY CMP ACTIONS - SUCCESS CRITERIA

ISSUE 4 The effect of commercial sea fishing activity on exploitation of sea trout and salmon in the estuary.		
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED
Byelaws to control beach and drift netting in the outer estuary. Implemented during 1993.	Adherence to byelaws.	No enforcement action by NRA bailiffs or verified activity reports from public.
ISSUE 5 Zinc levels in the Conwy, Llugwy, Lledr and Merddwr prevent the target WQO of River Ecosystem Class 1 being achieved. (The zinc values are not considered harmful to fish in these waters).		
Recently issued Surface Water (River Ecosystem Classification) Regulations redefine zinc limits, these will be used to reassess the situation. If failures are still identified and, given there is no point source contamination, there will be a need to derogate for zinc.	Full reassessment and determination of future action during the 1994-95 NRA business year.	By NRA WQ specialists reviewing data.
ISSUE 6 Elevated copper in the estuary. (Only apparent during 1991 and 1992).		
Permissive monitoring programme to determine source and remedial action.	Establish cause and effect, and remedial action.	Evaluation of analytical results by NRA WQ specialists.
ISSUE 7 Proposed Llanrwst by-pass impact on flood defence.		
When scheme confirmed by Welsh Office, existing level of flood protection needs to be maintained in accordance with NRA requirements.	Incorporation of NRA flood defence requirements in by-pass development.	Assessment by the NRA's Flood Defence specialists.
ISSUE 8 Drying out of the Afon Porth-Llwyd.		
Negotiations are ongoing with a view to augmenting the flows in the river.	Augmentation of flows in the Afon Porthllwyd.	Flow measurement by NRA Water Resources specialists.
ISSUE 9 Low number of otters in the catchment.		
Otter habitat survey to identify requirements. (Phase II of Otter Conservation Strategy).	Determination of habitat requirements, and implementation. Increased number of otters in the catchment.	Field inspection by NRA/Otter Project Wales. Regional surveys in 1996 and 2001.

6.0 CONWY CMP ACTIONS - SUCCESS CRITERIA

ISSUE 10 Human disturbance to birds in the estuary by small craft.		
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED
Collaborative project on the control of motor craft traffic including controlled access to the shores. Annual monitoring/maintenance.	No violation of voluntary agreement on speed of, and access to the shores for crafts. Reduced bird disturbance.	No reports by participating organisations and their members of violations. No reports of disturbance to birds as the result of violations to the agreement.
ISSUE 11 Acidification of upper reaches of Afon Conwy, Afon Lledr, Afon Machno, and Afon Nant y Gwryd.		
Better identification of acidification in the catchment and investigate links with land use, and make recommendations for feasible remedial actions. Draft final report due by May 1995.	Clear identification of acidified areas and firm recommendations for minimising the impact.	Evaluation of water quality and biological information, and viability of recommendations.
ISSUE 12 Aesthetic pollution from Dolwyddelan STW discharging primary treated sewage to Afon Lledr.		
Biological treatment with secondary settlement at STW.	Afon Lledr clear of sewage debris.	No evidence of sewage debris reported by NRA staff or public.
ISSUE 13 Aesthetic pollution of Afon Machno by discharge of primary treated sewage from Llanpenmachno STW.		
Biological treatment with secondary settlement at STW.	Afon Machno clear of sewage debris.	No evidence of sewage debris reported by the public or NRA staff from routine inspections.
ISSUE 14 Agricultural contamination of some tributaries (Gyffin, Roe, Hiraethlyn, Upper Conwy, Eidda).		
Farm inspections and identification of specific problems. Farm effluent storage improvements to comply with the requirements of the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations 1991.	No agricultural contamination of tributaries.	Monitoring and sampling by NRA WQ specialists must confirm the absence of agricultural contamination.

6.0 CONWY CMP ACTIONS - SUCCESS CRITERIA

ISSUE 15 Discharges of tip leachate to Afon Conwy and its tributaries.		
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED
<p>Restoration, leachate collection and disposal at Mochdre Tip - completed Dec. 1993.</p> <p>Action as above at Valley Tip Dolgarrog awaiting funding.</p>	<p>Valley tip restored with leachate collection and disposal facilities.</p>	<p>Evaluation by NRA WQ specialists, absence of leachate discharging to the river confirmed by NRA monitoring/sampling.</p>
ISSUE 16 Crude sewage discharges to the estuary from Conwy and Glan Conwy.		
<p>Connection to the West Shore outfall, Llandudno.</p> <p>- Conwy scheduled for connection by end 1995.</p> <p>- Glan Conwy sewage disposal option currently being reviewed.</p>	<p>No crude sewage discharges in the estuary.</p>	<p>Scheme completion, monitoring by NRA staff and public.</p>
ISSUE 17 Metal contamination of surface water from Aberllyn mine, Gwydyr Forest.		
<p>Stabilisation of spoil heaps and introduction of vegetation at Aberllyn lead and zinc mines.</p>	<p>Significant reductions in metal levels in surface waters from mine.</p>	<p>Monitoring/sampling and data evaluation by NRA WQ specialists.</p>
ISSUE 18 Water abstracted from Llyn Elsi contains elevated manganese levels.		
<p>Installation of new water treatment plant (installed 1993).</p>	<p>Acceptable manganese level in water supply.</p>	<p>Monitoring and sampling by Dŵr Cymru.</p>
ISSUE 19 Lack of riparian habitat diversity.		
<p>Extent of fencing and alien plant control requirements to be identified by otter habitat survey (Issue 9). Agree implementation programme with landowners.</p>	<p>Implementation of agreed fencing and alien plant control with landowners leading to habitat diversity.</p>	<p>Evaluation by NRA conservation specialists.</p>

6.0 CONWY CMP ACTIONS - SUCCESS CRITERIA

ISSUE 20 Combined storm overflows impact on water quality.		
ACTIONS	SUCCESSFUL OUTCOME	HOW WILL IT BE MEASURED
Investigation completed, no significant CSO impact in the catchment, improvements low priority in Region.	Discharges from CSO complying with declared NRA standards.	Monitoring by NRA WQ specialists and no adverse public reports at an unacceptable frequency.
ISSUE 21 Potential impact of any barrage in the estuary on land drainage/flood protection/passage of fish/water quality/mussel fishery/salmon and sea trout/commercial and rod fisheries. THERE IS NO FIRM PROPOSAL TO DATE.		
Specification of requirements to safeguard existing interests of all concerned at the proposal stage. Construction and maintenance of barrage and auxiliary installations in accordance with NRA/NWNWSFC/and fishermen requirements.	Incorporation of adequate environmental safeguards in construction and maintenance of any barrage and ancillary installations, with no resulting adverse impact on the water environment.	Approval of interested authorities and organisations. Resultant impact of barrage on environment.
ISSUE 22 Conflict between canoeists and fishermen.		
Explore potential for improved control of existing access and promote further access with Canoeing Association and landowners where appropriate.	Adherence to voluntary controlled access agreement (s).	Reports to NRA from landowners and participating organisations.
ISSUE 23 Reduction in bird habitat breeding and in brown trout populations due to drainage of wetlands.		
Liaison with RSPB, CCW and NRA to identify opportunities for habitat restoration and protection.	Restoration of wetland habitats. Reported increase in breeding bird numbers and brown trout populations.	Surveys by NRA, CCW and RSPB.

7.0 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. The period between major revisions will normally be five years.

The annual review 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.

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. These will also be available on request.