

EA - North West LEAP's Book IV

Ribble
Catchment
Management
Consultation
Report
Summary



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NRA

*National Rivers Authority
North West Region*

Guardians of
the Water Environment

March 1995

INTRODUCTION

As the 'Guardian of the Water Environment' in England and Wales, the National Rivers Authority (NRA) is committed to protecting and improving the water environment and protecting people and property from flooding.

Catchment Management Planning is a procedure designed to create a consistent framework within which the diverse responsibilities of the NRA can be applied to a river catchment, in a co-ordinated manner.

Catchment management involves the NRA using its powers and working with others to ensure that the rivers, lakes, coastal and underground waters of particular areas are protected and, where possible, improved, and that water is made available for all reasonable needs.

River catchments are subject to increasing use by a variety of activities. Many of these interact and some conflicts arise. The conflicting requirements and interests of users and beneficiaries must be balanced.

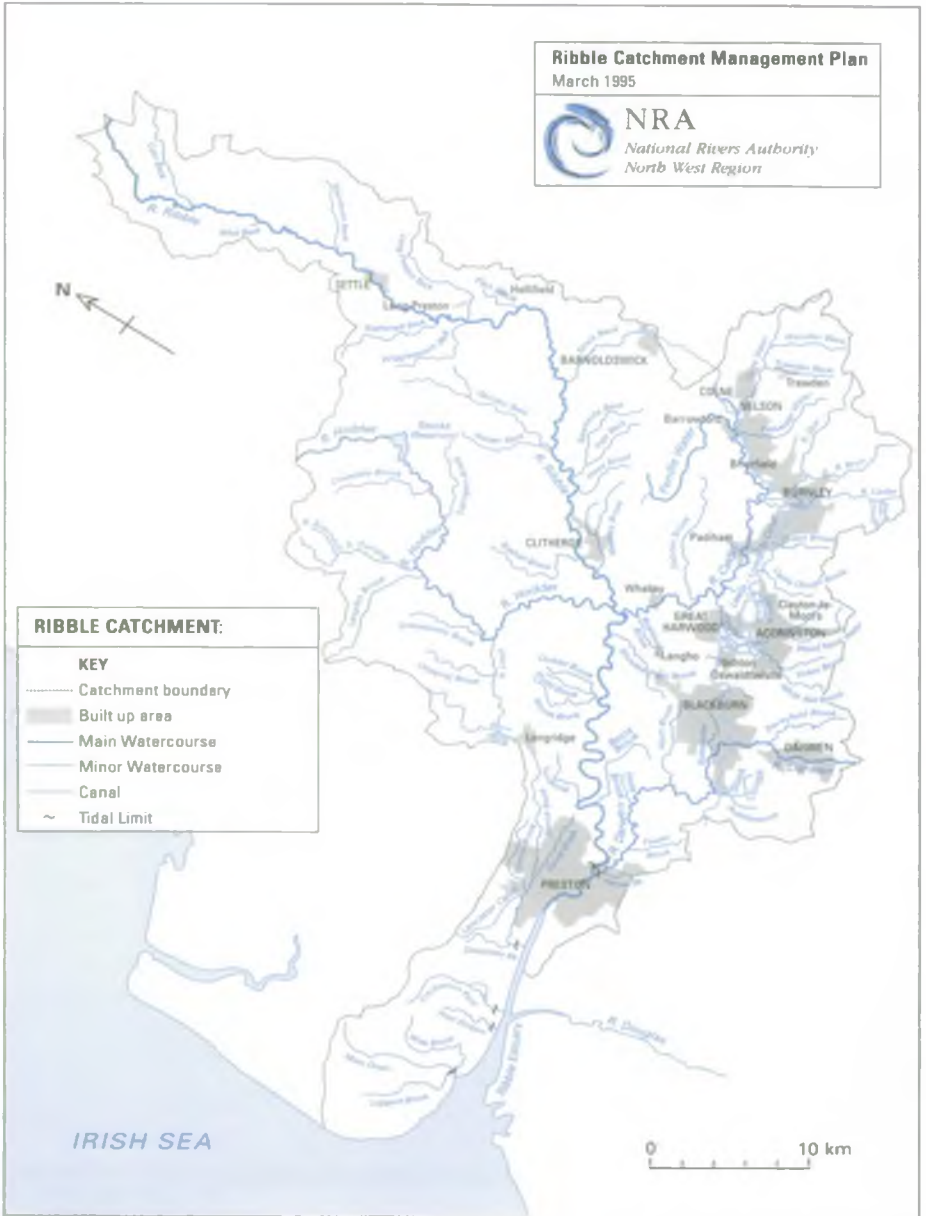
The NRA has responsibilities in the following areas:

- Maintenance of existing assets and investment in new assets to provide flood protection and the management of water resources.
- Control of pollution by working with dischargers to achieve improvements and response to emergencies.
- Determination, policing, enforcement and review of the conditions in water abstraction licences, discharge consents and land drainage consents to balance differing, and sometimes conflicting needs, whilst protecting the water environment.
- Development of fisheries, and promotion of recreation, navigation and conservation.
- Influencing planning authorities to control development through planning liaison.



Flooding in the Ribble Valley

RIBBLE CATCHMENT AREA MAP



RIBBLE CATCHMENT

The River Ribble is one of the largest rivers in the North West, draining a catchment area of 2128 km² and covering a distance of 110 km, from source to mouth.

The Ribble originates high in the Pennines at Newby Head Moss at an altitude of 422m. It flows through the Yorkshire Dales National Park and part of the catchment is located within the Forest of Bowland.

The main tributaries include the Rivers Hodder, Calder, Darwen and Douglas. In addition, the Lancaster and Leeds-Liverpool canals fall within the catchment boundary.

WATER QUALITY

Water quality in the upper part of the catchment is generally good and supports both salmonid fisheries and abstractions for potable supply, the latter being particularly important in the Hodder sub-catchment. Water quality problems in the upper reaches are generally associated with agricultural activities although nutrient inputs from wastewater treatment works contribute to excessive plant growths in the River Ribble below Settle.



Storm overflow, Eaves Brook

In contrast, water quality in the lower part of the catchment and especially in the Calder and Darwen sub-catchments is poorer particularly in urban areas largely due to inadequate wastewater treatment works and sewerage systems. The largest WwTWs are situated at Burnley, Hyndburn, Blackburn and Darwen. Additionally, in the Calder sub-catchment there are aesthetic problems caused by discharges from abandoned mineworkings.

The Ribble Estuary receives poorly treated sewage effluent from Preston WwTW; and also direct discharges from BNFL Springfields.

The designated bathing water at Lytham St Anne's generally fails to meet EC standards as a result of inadequately treated sewage effluent discharges.

Both short to medium term and long term water quality objectives have been proposed for 542km of the catchments classified waters. To comply with the short to medium term objectives, improvements in the water quality of 120km watercourse (22%) will be required, whilst to attain the long term objectives a total of 225km of classified waters (41%) will require improvement.

WATER RESOURCES

The Ribble and its tributaries are largely fed by surface run-off from the surrounding hills, which is dependent on rainfall intensity and quantity, producing a flashy character to the river throughout the year.

There is a need to control the use of water within the catchment and the NRA achieves this by licensing abstractions from, and discharges to the river system.

Public water supply forms the largest consumptive use within the catchment. This represents 77% of the total quantity of surface water licensed.

There are 13 North West Water Ltd (NWW) supply intakes. The main sources are:

- Stocks Reservoir - River Hodder
- Whitendale and Brennand Rivers - direct river intakes
- Langden and Hareden Brooks - direct river intakes
- Hurstwood Reservoir - impounding the head waters of the River Brun.
- Cant Clough Reservoir - impounding the head waters of the River Brun.



Stocks reservoir

At the present time, a maximum of 1,030 megalitres per day (Ml/d) are licensed to be abstracted from the catchment of which 740 Ml/d are derived from reservoir storage, the remainder being from direct river intakes. There are statutory provisions in force that require NWW to discharge approximately 39 Ml/d of compensation water from their reservoirs.

- The major Sherwood sandstone aquifer of the Fylde is exploited extensively by boreholes for public water supply, a system forming part of the Lancashire Conjunctive Use Scheme. The designated total groundwater catchment zone for these boreholes supplies extends southwards across the Ribble surface water catchment boundary and encompasses the northern and north eastern parts of Preston. In the Preston area there are also a number of industrial supplies from this aquifer.
- The aquifer generally contains high quality groundwater except in the vicinity of the Ribble Estuary where some saline intrusion may occur. However, it will have been prone to contamination from past and present land usage.

The minor (carboniferous limestone) aquifers have been exploited to provide private domestic and agricultural water supplies, particularly in rural areas remote from the mains system, as well as for industrial and commercial purposes in the urban areas.

The NRA monitors the river, underground water (aquifer) and rainfall levels at key points within the catchment to help with the management of water resources. Rainfall and river levels are also continuously monitored at key sites to operate the flood warning service for the areas at risk from flooding within the catchment.

LAND USE AND INFRASTRUCTURE

Agricultural activity predominates over much of the catchment. In the upper Ribble catchment this mainly takes the form of scattered sheep farming. In contrast, larger dairy farms are found lower down in the middle reaches of the catchment and around the tributaries of the Ribble Estuary.

The major population centres are found in the south and east of the catchment, surrounding the centres of Burnley, Blackburn and Preston.

County Strategic Planning/Local Authority Development Plans

The Structure Plans for Lancashire and Yorkshire Dales National Park form the strategic planning framework for the catchment. These include policies for future use of land and management of traffic. (In Lancashire, for example, this plan extends to the year 2006).

From this framework the various borough and district councils are preparing their own local development plans (which are currently at various stages of production).

The aims of the structure plans are:

- To maintain the environmental quality of the County especially in Areas of Outstanding Natural Beauty which are designated in the majority of the northern part of the catchment.
- To promote the regeneration of the south eastern part of the catchment.
- To promote urban regeneration in all the catchment's urban areas.
- To revitalise the rural economy without compromising environmental quality.
- To encourage new major development in the existing urban areas, especially in close proximity to existing or proposed strategic transport corridors including the M65, A59 and A56.

FLOOD DEFENCE

Flood alleviation schemes have been carried out at various locations in response to flood events. Nevertheless, some urban areas are still at risk from severe fluvial (river) flood events. Surface water and “non-main” river flooding is likely to be more frequent than that experienced from a “main river”, and solutions to these local problems rest with the district and county authorities.

The sea and tides have always had a considerable influence on the large areas of low lying land surrounding the estuary and its major tributaries. These flat coastal plains are also affected by the run-off from heavy rainfall in the adjacent urban areas.

Upstream of Preston, the populated areas of East Lancashire have defences to protect against flooding from the River Darwen and River Calder and their tributaries.

The natural flood plains of the upper Ribble and Hodder are essential to the efficiency of the defences in the lower reaches. River control structures are operated for various reasons such as amenity levels, reductions in flood level, separating out flow into various channels to suit local conditions and to aid abstraction for public water supplies. Regulation of these is controlled through legislation and the Authority’s Flood Defence Byelaws.



*Tidal embankment, Liggard Brook.
Note vulnerability of adjacent development.*

FISHERIES

The River Ribble catchment has contained important fisheries for migratory salmonids since medieval times. However, major pollutions during the industrial revolution resulted in very significant declines in the stocks of both salmon and sea trout.



Stainforth Force

Until the early 1980s most rod fishing for salmon took place above Calder Foot in the River Ribble and throughout the River Hodder. However, a gradual improvement of the water quality in the River Calder has resulted in more salmon holding and being caught below Calder Foot in the 'Big Ribble'. It is estimated that in 1993, 69% of all salmon caught by rod and line

were taken in 'Big Ribble'. Prior to 1989, few salmon and sea trout migrated or were caught above Stainforth Force (a natural falls upstream of Settle). A fish pass was constructed at the falls and now an extra 30km of main river and numerous spawning and nursery areas have been made accessible.

Whilst most adult sea trout migrate into the system during the period June to August, salmon on both the Ribble and Hodder are predominantly late running (August onwards). The River Hodder appears to have a higher proportion of multi-sea winter salmon and is generally regarded as having a better sea trout fishery than the Ribble.

Resident brown trout are found throughout much of the Ribble catchment, although the major rod fisheries are concentrated in the middle and upper Ribble and Hodder.

The coarse fishery is mainly sited in the 'Big Ribble' and the Rivers Darwen and Calder. Although chub are found in the Hodder, a number of coarse fish species are found as far upstream as Long Preston Deeps in the Ribble. The main species angled for are chub, dace, roach and barbel, but pike, perch, eels, carp, bream, gudgeon and minnows are also present.

The salmon and sea trout drift net fishery in the Ribble Estuary is subject to a Net Limitation Order which allows a total of six drift net licences to be issued. These licences are reissued each year, normally to existing licence holders who have to prove that they were dependent on fishing for their livelihood during the previous year.

There is also a legal sea fishery in the Ribble Estuary using drift nets. These are used to catch mullet and bass but may incidentally catch salmon and sea trout. This fishery is primarily regulated by the North Western and North Wales Sea Fisheries Committee, but certain NRA Bailiffs are cross warranted and can act to prevent illegal exploitation or interference with runs of migratory salmonids.

RECREATION

The Ribble is used for a wide range of human activities including recreation. These include water sports (such as sailing and windsurfing), fishing and shooting (particularly wildfowling), birdwatching and land yachting.

The Forest of Bowland and Pendle Hill were designated as Areas of Outstanding Natural Beauty in February 1964. The Pendle Hill section is geographically detached from the Forest of Bowland section, but the two together share the title Forest of Bowland Area of Outstanding Natural Beauty.

A variety of recreational pursuits are allowed within the Forest of Bowland. The North Lancashire Cycleway passes through Bowland, plus there are several circular long distance walks in addition to fell running, climbing, caving, pot-holing, hang-gliding, horse riding, angling and canoeing activities. In 1990, five YHA camping barns were opened, there are also eight picnic sites and 3,260 acres of open country where walkers are free to roam under access agreements negotiated between Lancashire County Council and the owners.

Annual programmes of guided walks are undertaken by the Forest of Bowland Countryside Management Service and the local borough councils. They cater for people of all ages, walking abilities and levels of interest.

Canoeing is very popular along the Ribble. The major issue concerning canoeing at present is the difficulty in obtaining access to suitable water. There is no easy solution to this problem given the current legal framework. In spite of this, the River Ribble is canoed by clubs, schools and colleges. Particularly well used stretches exist from Clitheroe to Ribchester and from Ribchester to the sea.



Preston Marina Development

The Ribble Link has been proposed by a voluntary group derived from the Lancashire Canal Trust and called the Ribble Link Trust. This proposal is to extend the Lancaster Canal at Cottam, outside Preston, and to follow the valley of Savick Brook to the Estuary. The extension would allow craft to then pass down the River Douglas to join the Leeds-Liverpool Canal.

CONSERVATION

The Ribble rises in the limestone areas of the Yorkshire Dales. The predominant land use and character here and downstream to Clitheroe is rural, with only small built up areas. The river corridor of the Ribble and many of its tributaries is dominated by improved pasture with some semi-improved neutral grassland as well as patches of unimproved grassland. This area is of high scenic value, and there are a number of wet areas of conservation value. Woodlands along the river account for about an eighth of the total length of the bank.



SSSI, Ribble Estuary, Lytham, St Anne's

The lower Ribble, by contrast, contains a higher percentage of urban and woodland river bank, and far less semi-improved and unimproved grassland. It also contains a large area of marsh. The general land use tends to be more intensive outside the woodland areas. The marsh areas of the Ribble Estuary form the Ribble Estuary SSSI, an area of international significance for overwintering and migrating wildfowl, which is recognised by the designations of RAMSAR site and Special protection Areas.

The Calder sub-catchment, in contrast to the Ribble, is much more heavily urbanised, with about one-third of the river banks being in an urban situation. The proportion of woodland is roughly equivalent to that on the Ribble. One interesting contrast is that the proportion of semi-improved to improved pasture is higher in the Calder. There are many places on the Calder system where improvements could be made to the physical structure of the rivers and their banks to improve the habitat and hence wildlife potential. Of particular note is the amount of river in urban areas, most of which could be improved for aesthetic and wildlife purposes.

The Darwen system has the greatest amount of urban river of all the systems, but also contains the greatest proportion of woodland. This is mainly a result of the Roddlesworth system, with large stretches of ancient semi-natural woodlands worthy of protection. As with the Calder system, the Darwen would benefit from improvements in urban areas.

The Catchment suffers from invasive non-native plants such as Himalayan balsam (*Impatiens glandulifera*), giant hogweed (*Heracleum mantegazzianum*) and Japanese knotweed (*Reynoutria japonica*). All three of these species need controlling as they can cause problems with bank stability as well as reducing significantly the wildlife value of the river banks.

The whole Ribble catchment contains areas of extreme beauty, some of which are internationally significant for wildlife but also areas of extreme dereliction.

ISSUES AND SOLUTIONS

The following table lists the issues identified by the NRA's initial analysis of the Ribble catchment.

ISSUE: 4.1.1

Impact of North West Water Ltd
Wastewater Treatment Works

Settle and Barnoldswick Wastewater Treatment Works on the River Ribble				
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Install phosphate removal plant, at Settle WwTW and Barnoldswick WwTW.	NWW	Improved water quality. Achievement of present water quality objective for the River Ribble.	1998	AMP2/Costs
Extension to Barnoldswick WwTW.	NWW	Improved water quality. Achievement of long term water quality objective for Stock Beck.	2000+	

Burnley and Hyndburn Wastewater Treatment Works on the River Calder				
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Assess impact of WwTW discharge, particularly ammonia and detergents. Continue addition of antifoaming additives. Ensure Hyndburn WwTW complies with its consent.	NRA	Provide data for future decision making.	1996-99	Costs/ Resources
	NWW	Reduced foaming downstream.	Ongoing	
	NWW	Compliance with EC Fisheries Directive.	Ongoing	

Blackburn Wastewater Treatment Works on the River Darwen				
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Extension to Blackburn WwTW required.	NWW	Improved water quality. Achievement of long term water quality objective.	2000+	Costs/AMP2.

Fairhaven Outfall and Preston WwTW to the Ribble Estuary				
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Upgrade Preston WwTW to full treatment from primary settlement. Transfer and fully treat effluent flows presently discharged at Fairhaven.	NWW	Improved water quality in the Ribble Estuary and compliance with the requirements of the EC Bathing Water and Urban Waste Water Directives.	1996	Costs/AMP 2
	NWW		1996	

Waddington Wastewater Treatment Works on Bashall Brook.				
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Investigate reasons for failure.	NRA.	Provided data for future decision making.	Ongoing.	Costs/AMP2

ISSUE: 4.1.2		Impact of Overflows from Combined Sewerage Systems			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Ensure completion and implementation of DAPs.	NWW	Reduction in the number of CSOs due to rationalisation as a result of DAPs. Improved water quality. Achievement of water quality objectives.	1995 - 2005 The majority of the work will be carried out between	Costs/AMP2. (DAPs Drainage Area Plans CSOs Combined Sewer Overflows)	
Apply development control restrictions (e.g. Blackburn Area).	NRA/Local planning authority.	Prevention of water quality deterioration.	1995 - 2000.		

ISSUE: 4.1.3		Impact of Contaminated Surface Water Discharges (CSWs) from Separate Sewerage Systems			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
NWW to complete present programme of CSW improvements.	NWW/ Agents/ Householders/ Industry	Improved water quality, resolution of listed CSW problems.	By 1996	AMP2/ Resources	
Ensure newly identified CSW problems are resolved.	NWW/ Agents/ Householders/ Industry/ Environmental Health	Improved water quality, resolution of new CSW problems.	Ongoing		

ISSUE: 4.1.4		Impact of Industry/Industrial Estates			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Assess impact of the discharge.	NRA/NWW/ Owners/ Occupiers	Identify actual and potential pollution.	Ongoing	Costs/ Co-operation/ Resources	
Survey industrial premises.	NRA/NWW/ Owners/ Occupiers	Increase awareness of pollution prevention.	Ongoing		
Carry out necessary remedial work.	Owner/ Occupiers	Improved water quality. Achievement of present water quality objective and compliance with the EC Dangerous Substances Directive.	Ongoing		

ISSUE: 4.1.5		Impact of Mineral Workings			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Assess impacts of discharges.	NRA	Provide data for future decision making.	Ongoing	Resources/ Costs	
Review or issue consent as appropriate.	NRA	Improved water quality.	Ongoing		
Pursue enforcement action where facilities are unable to produce an effluent that complies with consent.	NRA/Quarry Co.	Achievement of long term water quality objective.			

ISSUE: 4.1.6		Impact of Minewater Discharged from Abandoned Mines			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Provide on-site treatment for minewater leachate.	Owner e.g. British Coal.	Improve water quality.	2000+	Costs/Legal exemptions	
Provision of public foul sewer connection.	Owner/NWW or agents.	Improve water quality/treatment of effluent.	2000+		
Pursue a review of the legislation to remove exemption.	NRA/DoE.	Prevent problem arising in future. Define responsibility.	Ongoing		

ISSUE: 4.1.7		Impact of Farming			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Continue present pollution control initiatives.	NRA	Maintain and improve present water quality.	Ongoing	Costs (farmers). Political will required. Resources.	
Provide information/advise to agricultural community.	NRA/MAFF	Better understanding by agricultural community of pollution problems.	Ongoing		
Provision of 'on farm' pollution prevention facilities.	Farmers	Improve water quality. Achievement of water quality objectives.	Ongoing		
Programme of nutrient reduction from agricultural sources.	NRA/MAFF	Improvement in water quality. Reduction in diffuse source pollution. Achievement of water quality objectives.	Ongoing		

ISSUE: 4.1.8		Algal Blooms in Preston Docks			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Investigate reasons for eutrophication and algae in docks.	NRA	Improved understanding of problem and likely solutions.	1996-99	Resources/ Costs	
Pursue altered management of dock water.	Preston Borough Council	Beneficial mixing of dock and river water. Control of algal blooms.	By 1996		
Pursue actively sewage/sewerage remedies to reduce nutrient levels.	NRA/NWW	Nutrient reduction. Control of algal blooms.	1996-99		

ISSUE: 4.1.9		Impact of Contaminated Land			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Undertake detailed investigation to determine extent of groundwater contamination.	Local authority/ Developer/ Site owner	Determine degree of decontamination required and most suitable remedial technique.	Ongoing	Costs, no set standards relating to specific land uses.	
Determine 'land use' criteria and set quality standards accordingly.	Local authority/ Developer/ Site owner	Determine extent of remedial measures.	Ongoing		
Remedy situation by removing pollutants.	Local authority/ Developer/ Site owner	Protect ground and surface water.	Ongoing		

ISSUE: 4.2.1		Data Review			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Undertake hydrometric network review.	NRA	Ensure data is relevant for future needs.	1995	Costs/ Resources	
Arrange more regular station maintenance programme.	NRA	The regular removal of algal growth from weirs and clearance of excessive vegetation in the gauging reach would give more accurate flow data.	1995		

ISSUE: 4.2.2		Fylde Aquifer		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Carry out detailed review of hydrology and hydrogeology of catchments (where they cross the aquifer) including development of numerical model to assess effectiveness of different strategies.	NRA	<p>Optimise water resource use on the Fylde aquifer (groundwater and surface water).</p> <p>Assess options for alleviation of low flows.</p> <p>Development strategy for future groundwater management policy (determining new licence applications).*</p> <p>* At present an embargo has been imposed on any new groundwater licences, pending the outcome of the study.</p>	Complete contract (modelling) by September 1995.	Staff resources, costs, existing licences (any change associated with low flow alleviation may cost NWW and be unacceptable/ subject to compensation).

ISSUE: 4.2.3		Low Flows, particularly in the Hodder		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
<p>Prevent any further abstraction.</p> <p>Reduce existing abstraction.</p> <p>Cease maintaining or modify existing land drainage practices.</p> <p>Better use of water bank.</p>	NRA	Increase production/survival of juvenile salmonids and other wildlife.	1995 onwards	<p>Very little abstraction in upper Ribble.</p> <p>Low flows due to natural causes.</p> <p>River Hodder existing rights would need to be bought out.</p> <p>Not all necessary information available.</p>

ISSUE: 4.3.1		Lack of Otter Population		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Ensure that, where suitable, all NRA owned land has management plans for promotion of otters.	NRA/Local authority/ Wildlife trusts	Recolonisation of otters	3 years	Resources/ Information
Promote, where suitable and where resources allow, projects in partnership with others which encourage recolonisation by otters.	NRA/Local authority/ Wildlife trusts		Ongoing	

ISSUE: 4.3.2		Habitat Enhancement		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
NRA increase habitat enhancement works. a) alone b) in partnership	NRA/ Fisheries clubs/Riparian owners	To maintain, improve and develop fisheries. Efficient, self sustaining and cost-effective means of increasing fish production.	1995 onwards	Resources/ Lack of information/ Conservation needs

ISSUE: 4.3.3		Stocking of Brown Trout		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Reduce overall numbers of fish stocked. Change pattern of stocking (time/stage). Prohibit stocking by angling clubs altogether.	NRA/ Fisheries clubs/Riparian owners	More effective stocking. Reduced competition/predation with/by wild fish.	1995 onwards	Consensus of agreement. Genetic fitness/integrity.

ISSUE: 4.3.4		Increase Distribution and Population Densities of Migratory Salmonid Juveniles in the upper Ribble Catchment		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Remove any limiting factors. Restore/enhance fish stocks.	NRA	Utilise full carrying capacity of environment. Fulfil NRA's statutory duties.	1995 onwards	Being able to identify successfully limiting factors. Being able to do something about these. Success of stocking/Gaining support of riparian owners to stock.

ISSUE: 4.4.1	Species Protection			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Modify NRA management to protect species and habitats.	NRA	Improve habitats	1998	Staff time. Needs of other functions. Lack of knowledge of existing situation.
Use NRA controls to protect riparian habitats.	NRA	Improve habitats	Ongoing	
Continue to prevent loss of habitats through planning consultation returns.	NRA/Local authority/Wildlife Trusts/English Nature	Improve habitats	Ongoing	

ISSUE: 4.4.2	Introduction of Crayfish			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Investigate possibility of a ban on Crayfish farming in Ribble catchment.	NRA/MAFF and English Nature	Eradicate risk to native Crayfish.	1996	Lack of legal powers. Resources to police. Serious risk to native Crayfish population if plague enters the system.
Advise local authorities on risks associated with Crayfish farming in respect of planning applications.	NRA/Local authorities	Prevent risk to native Crayfish.	1996	

ISSUE: 4.4.3	Possible impact of Cormorants, Goosanders and Mergansers on Fish Populations			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Do nothing.	MAFF	Promote conservation. Maintain, improve and develop fisheries.	Ongoing	Lack of information. Political pressures. Lack of clear policy. MAFF responsibility but NRA and others involved.
Shoot to scare.				
Cull.				

ISSUE: 4.4.4		Lack of High Quality Catch Data		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Continue log book schemes. Continue creel census. Operative reminder system for statutory catch returns of migratory salmonids. Co-operate with clubs to collect information.	NRA and anglers	Increased ability to manage fisheries effectively.	Ongoing	Angler co-operation and resources.

ISSUE: 4.5.1		Lack of Information - Standard of Flood Protection		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Undertake survey.	NRA	Increased knowledge NRA/ Local authority.	1995-99	Costs
Feasibility study for hydrodynamic model.	NRA	Prove usefulness.	1995-96	
Apply development control restrictions.	NRA	Prevent increase.	Ongoing	

ISSUE: 4.5.2		Flood Alleviation Improvement		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Improve defences to indicative standard.	NRA (if main), Local authority (if non main).	Raise level of protection to 1:100 years.	1995 onwards.	Costs
Object/restrict planning proposals that will further increase flood risk.	NRA statutory consultee/ Local planning authority.	Prevent increase in flood risk.	Ongoing	

ISSUE: 4.5.3		Giant Hogweed		
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints
Regular spraying	NRA/Local authority	Eradicates plant. Avoid risk to health of manual workers.	Ongoing	Costs/ Resources

ISSUE: 4.5.4		Archaeology/Industrial Archaeology			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Develop policy for protection of archaeological sites and remains.	NRA	Increases staff knowledge of catchment.	1997	Resources £10k.	
Ensure information is obtained on archaeological significance of sites where the NRA is working.	NRA/ Contractors	Preserve and enhance archaeological features.	1997		

ISSUE: 4.5.5		Protection and Promotion of Rivers in the Urban Environment			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Improve through NRA activities.	NRA	Use of expert skills and experience to improve rivers.	Ongoing	Improvements will be ad-hoc. Staff resources.	
Improve through NRA control.	NRA	Improvements can be achieved by developers as part of the consenting procedure.	Ongoing		
Improve through partnerships with local authorities and others.	Local authorities/ NRA/Others	Improvements to watercourses can become a normal part of planning procedure.	Ongoing		
Education - produce an action plan.	NRA/Others	Increase awareness of urban riverine environment.	1995		

ISSUE: 4.5.6		Degradation of River Corridors for Wildlife in Rural Areas			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Promote set aside schemes along rivers.	MAFF	Riparian strips will be managed to benefit wildlife and landscape.	1997	NRA resources. MAFF resources/ co-operation. Agreement of riparian owner. NRA staff resources. No funds will be available to pay for management agreements.	
Promote good practice through NRA advice.	NRA	Reduction in silt input to rivers.	Ongoing		
Countryside stewardship, NRA staff can advise.	Countryside Commission	Possible nutrient reduction in rivers due to buffering. Return of set aside strips.	Ongoing		

ISSUE: 4.5.7		Man-made and In River Structures			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Use NRA powers and education to ensure all structures are acceptable in conservation and landscape terms.	NRA	Ensure minimum ecological damage.	Ongoing	Staff time/ limitation of existing bylaws.	
Use NRA influence with Local authorities to improve standard of in-river structures.	NRA/Local authorities	Improve and promote landscape value of rivers.	Ongoing		

ISSUE: 4.5.8		Working in rivers			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Use NRA regulatory powers to ensure best practice.	NRA	Minimum disruption to the aquatic environment.	Ongoing	Staff time and compliance with consent procedures.	
Educate undertakers in best practice. Produce manual of best practice.	NRA		1996		

ISSUE: 4.5.9		Gravel Deposition on Non Main River			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Local authority to undertake regular maintenance.	Local authority	Alleviate flooding.	Ongoing	Costs	
Local authority to investigate with a view to culvert improvements.		Reduces ongoing maintenance costs.			

ISSUE: 4.5.10		Access Difficulties			
Solutions	Responsibilities	Benefits	Preferred Timescale	Constraints	
Provision of permanent access ramp into river.	NRA	Access	1997	Costs	
Provision of easement for gaining access to ramp.					
Construct gravel traps at a suitable location upstream.					

Catchments 163 National 60 completed so far.



NRA

*National Rivers Authority
North West Region*