

# catchment management plan

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**RIBBLE**  
annual review  
April 1997



**ENVIRONMENT  
AGENCY**



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*This annual review provides a progress update of all the actions stated in the River Ribble Catchment Management Action Plan (November 1995) produced under the auspices of the former National Rivers Authority (see section 5.0).*

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*Front Cover: River Ribble  
and viaduct*

ENVIRONMENT AGENCY



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# RIVER RIBBLE CATCHMENT MANAGEMENT PLAN FIRST ANNUAL REVIEW 1997

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**Ribble  
Local Environment Agency  
Plan  
Map 1**



**ENVIRONMENT  
AGENCY**



**INFRASTRUCTURE**

**KEY**

- ..... Area Boundary
- Built up area
- Watercourse
- Canal
- Motorway
- 'A' road
- 'B' road
- Railway

**IRISH SEA**

0 10 km

To realise the environmental potential of the River Ribble Catchment, the Environment Agency will work in partnership with Local Authorities, industry, North West Water Ltd., British Waterways, English Nature and other key participants. This plan will provide an important focus for this partnership within a timescale of five years, and working towards the totality of the vision over a longer timespan.

#### The Agency's aims are:

- To maintain, improve and develop all of the Ribble Fisheries by identifying and removing limiting factors and by implementing the Agency's programme of fisheries developments and improvements.
- To work towards the minimised risk of flooding to property, residential or otherwise, by efficiently using available resources in maintaining and improving flood and tidal defences.
- To influence Local Planning Authorities and developers to ensure future development within the catchment is carried out in such a way as to protect and enhance the water environment and associated land.
- To provide the conditions for the restoration of the natural habitat along the rural lengths of the Ribble Catchment where this is feasible. In the urban areas to promote the rivers and watercourses as features which benefit the area visually and provide a wildlife link where possible.
- To maintain good quality waters and to improve poor quality waters throughout the catchment, particularly those in the Rivers Calder and Darwen and their associated tributaries, to standards which will enhance the amenity of the surroundings, allow thriving fisheries and other water based uses.

## 2.1 THE ENVIRONMENT AGENCY

On April 1st 1996 the National Rivers Authority (NRA), Her Majesty's Inspectorate of Pollution (HMIP) and the Waste Regulation Authorities (WRA) combined to form the Environment Agency. The Agency has all the powers and responsibilities of each of these pre-existing bodies, including a commitment to produce action plans and annual reviews of existing Catchment Management Plans (CMPs).

## 2.2 THE MANAGEMENT PLANNING PROCESS

The former NRA adopted the concept of integrated catchment management as a means of balancing both the needs of all users of the water environment and the interests of the water environment itself. As part of this process, the NRA undertook a programme of CMPs. Through these plans the NRA aimed to realise the environmental potential of a catchment, in terms of water quality, water quantity and physical features.

The first stage of this management plan process was the production of a consultation report. This outlined the issues within a catchment area and options for their resolution. Following a period of consultation, involving both other organisations and individuals, an action plan was produced. This included an activity plan for improvements to the area in terms of the water environment. The action plan outlined areas of work and investment and incorporated a timescale against which actions should be completed.

An important part of the process is to monitor the action plan to ensure that actions are achieved and that the plan continues to address all relevant and significant issues in the catchment in an appropriate manner. This report summarises the progress made since the publication of the November 1995 Action Plan. Since the plan was largely undertaken under the auspices of the NRA it only considers water issues pertaining to previous NRA responsibilities.

The Environment Agency is continuing the commitment to produce integrated management plans encompassing issues arising within the areas over which it has responsibility or through partnership and liaison with other groups. Local Environment Agency Plans (LEAPs) will be produced for all areas by the year 2000. This includes those areas previously covered by a CMP. The CMP annual review will provide an update of progress until superseded by the publication of a LEAP.

## 3.0

## OVERVIEW OF THE CATCHMENT

### 3.1 GENERAL

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

The Ribble originates high in the Pennines at Newby Head Moss at an altitude of 422m. The river cascades down through some of the most breathtaking scenery in England, with the Yorkshire Dales National Park to the east and the Forest of Bowland to the west.

The mid-Ribble is joined just south of Clitheroe by two major tributaries. The River Hodder rising in the Forest of Bowland, provides a large proportion of the drinking water supplies for Blackburn and Hyndburn. In contrast to this, the River Calder crossing East Lancashire is a river in recovery from previous industrial practices, exhibiting many pollution relics e.g. minewater, contaminated land run-off and sewage discharges.

Having gained its two major tributaries the broad middle reaches of the Ribble meander through the natural flood plains around Ribchester supporting good coarse and game fisheries, and bounded by mature grazing land.

Flowing on below the fly-over of the M6 Motorway and above the principal sandstone aquifer, the river enters the District of Preston. Downstream of its tidal limit it is joined by the River Darwen, draining the conurbation of Darwen and Blackburn.

In its estuarial reach, the Ribble is joined by the Douglas (the Douglas CMP First Annual Review was published October 1996). The only bathing beach within the catchment is at St. Annes. At this point the river mouth widens and the River Ribble flows into the Irish Sea.

The Leeds to Liverpool Canal passes through Colne, Nelson, Blackburn and Burnley. Once a major link between the Liverpool Docks and the industrial mills of East Lancashire and Yorkshire, it is now an important recreational asset, as is the Lancaster Canal which is the other major inland waterway network in the catchment. A proposal for a link between the Ribble Estuary and the Lancaster Canal has received a conditional planning approval from Preston Borough Council. The Agency has many concerns about the environmental impacts of the proposal and has yet to be convinced that these impacts can satisfactorily be overcome. Part of the catchment also falls under the remit of the Mersey Basin Campaign.

### Effluent Disposal

The major consented discharger to the Ribble Catchment is North West Water Ltd (NWW) who have 42 wastewater treatment works (WwTWs) in the catchment. The range in the size of WwTWs in the catchment is considerable with the smallest works treating a population equivalent of about 20 and the largest a population equivalent of greater than 300,000. The larger works in the catchment are Hyndburn, Burnley, Darwen, Blackburn, Preston and Walton-le-Dale.

There are also a small number of private sewage treatment works in the catchment and septic tanks are widespread in areas of the catchment that are unsewered.

As a result of former policies of encouraging discharge of trade effluent to sewer, there are only a small number of direct industrial discharges within the Ribble Catchment. The most significant discharge is that from the British Nuclear Fuel Ltd Springfield site to the Ribble Estuary.

The other major industry of significance is quarrying, and there are several trade effluent discharges from quarries within the catchment. Coal mining was formerly a major industry within the catchment and discharges from abandoned mines still have an adverse impact on water quality.



There are also several NWW water treatment plants within the catchment and these are also subject to consent conditions.

Combined sewer and pumping station overflows are located on most sewerage systems in the catchment and are subject to consents. These aim to limit the frequency of the discharge to occasions when intense rainfall occurs and adequate dilution is available in the receiving watercourse. There are more than 325 combined sewer overflows in the catchment. About 100 of these are considered to be in an unsatisfactory condition. Over the next 10 years more than 50 of these will be improved or abandoned by NWW.

Agricultural activity predominates over much of the catchment. Spillages of silage, slurry and other

farm waste including sheep dip can cause serious pollution incidents. Diffuse pollution due to run-off from fertiliser, pesticide spraying and general agricultural land use can cause pollution for longer periods due to the time taken for pollutants to reach the watercourse.

STORM OVERFLOW,  
EAVES BROOK



### Fisheries

There are also a number of fish farms within the catchment. Discharges from these are subject to consent conditions and these discharges generally have only localised impacts.

The gradual improvement in water quality in the River Calder has resulted in a greater number of salmon interrupting their spawning migration and lying in the River Ribble downstream of the confluence of the River Calder. The proportion of the total catch of salmon caught in this section of the Ribble, known locally as the "Big Ribble", has also increased.

The coarse fishery is mainly sited in the "Big Ribble", the Rivers Darwen and Calder, and throughout the Leeds-Liverpool and Lancaster Canal Networks. The main species angled for are chub, dace, roach and barbel; pike, perch, eels, carp, bream, gudgeon and minnows are also present.

Very little is known about the biology of the coarse fish populations in the River Ribble, though this is currently being studied.

### Recreation

Many leisure activities are pursued around the Ribble Estuary. These include water sports such as sailing, wind surfing, canoeing and fishing along with land-based activities such as bird-watching,

shooting and landyachting. There are also extensive countryside walks including the Ribble Way as well as cycling along the Lancashire Cycle Way.

PRESTON  
MARINA  
DEVELOPMENT



### Flood Defence

The River Ribble generally reacts slowly to rainfall and flood events are not frequent; but they do occur, with the most notable recent events (1995) in Clitheroe, Ribchester, Wycoller and Walton-le-Dale. There are exceptions to this slow response from tributaries with little flood plain storage which become quickly overwhelmed with flood water

and sever damage has occurred in the past, for example at Barrowford and Lomeshaye in Pendle Water.

## Abstraction

Public water supply forms the largest percentage of total water licensed from surface and groundwater within the catchment. This supply of potable water is mainly the responsibility of North West Water Ltd.

There are 13 NWW Ltd supply intakes. The main five are:

- Stocks Reservoir - River Hodder
- River Whiterndale and Brennand - direct intakes
- Langden and Hareden Brooks
- Hurstwood Reservoir                      Impounding the head water
- Cant Clough Reservoir                      of the River Brun

Abstractions within the catchment are also utilised for agriculture, fish farms, hydro-power and industrial uses.

## Conservation

The River Ribble and many of its tributaries are important throughout their lengths for wildlife. Much of the area is of high scenic value (some are Areas of Outstanding Natural Beauty) and there

SSSI, RIBBLE ESTUARY,  
LYTHAM, ST ANNE'S



are a number of wetland areas of particular conservation value. There are various wetland Sites of Special Scientific Interest (SSSIs) throughout the catchment including the marsh areas of the Ribble Estuary which form the Ribble Estuary SSSI, an area of international significance for over wintering and migrating wildfowl, which is recognised by the designations of RAMSAR Site (a wetland site of international conservation significance), Special Protection Area (SPA) and a National Nature Reserve.

## 4.0

## SUMMARY OF PROGRESS

This first annual review for the Ribble indicates areas of positive improvements and agreements made as part of the Ribble catchment management planning process, for example;

- Agreements on work programmes have been arrived at with North West Water Ltd relating to pumping stations and overflows. For other, larger programmes, consultations are taking place with North West Water.
- A significant improvement is the completion of upgrading Preston WwTW to full treatment from primary settlement. North West Water Ltd completed this scheme before the 1996 bathing season.
- The Giant Hogweed spraying programme has led to an appreciable reduction in the number of plants and, consequently, the operational costs have been reduced.
- The Ribble Archaeological Survey has been completed.

Many issues are still progressing and the resulting benefits will be highlighted in future reviews.

## SECTION 5.0

### PROGRESS REPORT

KEY	The Agency	=	Environment Agency
	NWW	=	North West Water Ltd
	LA	=	Local Authority
	MAFF	=	Ministry of Agriculture, Fisheries and Food
	WwTW	=	Wastewater Treatment Works
	LA	=	Local Authority
	—	=	completion of action
	...	=	ongoing action
	*		Denotes action is now complete and will be removed from future reviews
	**	Bold:	Denotes a new/changed issue or action



No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
1	Failure to meet objectives below Settle and Barnoldswick WwTWs.	Install phosphorus removal plant at Settle WwTW and Barnoldswick WwTW.	NWW		Not made available.	—	—	—	—			DoE to review designation of Ribble as a sensitive area by end of 1997. Phosphate removal at Settle and Barnoldswick WwTW due by end of 1998.
		Extension to Barnoldswick WwTW.	NWW		Solution dependant.							None
2	Failure to meet objectives below Burnley and Hyndburn WwTWs.	Assess impact of WwTW discharges, particularly ammonia and detergents.	The Agency		£15,000	—	—	—	—	—		Collection of samples to measure the level of detergents both in the river and in the effluents. Sampling began midway through 1996.
		Continue addition of anti-foaming additives.	NWW		£50,000	-----	-----	-----	-----	-----		On-going.
		Ensure Hyndburn WwTW complies with its consent.	NWW			-----	-----	-----	-----	-----		On-going. Discharge is now complying with its consent.
3	Failure to meet objectives below Blackburn WwTW.	Extension to Blackburn WwTW required.	NWW		Unknown.							Ammonia standard added to Blackburn WwTW consent in 1996 to prevent increase in ammonia levels following installation of sludge treatment plant. Extension to the WwTW will be proposed as an AMP3 priority.

No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
4	Failure to meet EU Bathing Water Directive in the Ribble Estuary.	*Upgrade Preston WwTW to full treatment from primary settlement.	NWW		Not made available.	—	—					NWW completed scheme before 1996 bathing season. Preston WwTW now producing very good effluent.
		*Transfer and fully treat effluent flows presently discharged at Fairhaven.	NWW		Not made available.	—	—					NWW completed scheme on time before 1996 bathing season. However, beaches at Lytham still failed the Directive in 1996. As yet the cause of 1996 failures still unknown and studies (extra sampling) still on-going.
		** Monitoring of bathing waters and intensive investigation to assess reasons for failure and identify further work required.	NWW The Agency					—				
5	Impact of overflows from combined sewerage systems and associated failures to meet objectives.	Ensure completion and implementation of drainage area plans/schemes.	NWW									
		Morris Brow Pumping Station (PS) (Stock Clough).			Not made available.	—	—	—				Provision of new rising main and refurbishing at PS due to be completed this year (1997).
		Ballam Road PS/Fairhaven (Liggard Brook).			Not made available.			—	—	—	Scheme completion date depends on solution - no later than 2001.	Details of NWW proposals awaited.
		Preston (Savick Brook/Eaves Brook).			Not made available.	—	—	—	—	—		A joint (NWW/Agency) detailed study using procedures laid out in the Urban Pollution Management (UPM) manual is due to be completed this year. Scheme due to begin 1998 and be completed by June 1999.

No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
5 Cont'd	Impact of overflows from combined sewerage systems and associated failures to meet objectives.	Ensure completion and implementation of drainage area plans/schemes	NWW									
		Walton-le-Dale (Hennel Brook)			Not made available.							A scheme has been agreed in outline between Agency/NWW.
		Blackburn (Blakewater Catchment)			Not made available.						Full completion no later than 2005.	Joint UPM study nearing completion. Construction of part of scheme due to begin in 1998 and be completed by July 1999.
		*Huncoat (Clough Brook).			Not made available.							Unsatisfactory overflows were abandoned late 1995/early 1996. Scheme completed to schedule.
		Nelson (Walverden Water).			Not made available.						Scheme completion no later than 2001.	A joint UPM study is nearing completion. Construction due to begin in 1998 and be completed by May 1999.
		Barnoldswick (Stock Beck).			Not made available.							No progress.
		**Engine B PS (Stock Clough).			Not made available.							Agency has requested improvements to be carried out at the pumping station - to be financed by "efficiency savings" made by NWW. A scheme has been agreed in outline.
		Kirkham (Dove Brook).			Not made available.							Improvements made in association with retail development work in 1996
		Apply development control restrictions (e.g. Blackburn area)	The Agency	LA	Agency costs only.	.....	.....	.....	.....	.....	Until completion of drainage area plan.	On-going.







No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
8	Impact of mineral working and associated failures to meet objectives.	Assess impacts of discharges.	The Agency		£5,000	.....	.....	.....	.....	.....		Ford Quarry consent - standards were formulated and a consent issued around November 1996.  Tarmac Quarry - Whit Beck - no progress.
		Issue or review consents as appropriate.  e.g:- Ford Quarry, Burnley (Easden Clough). Tarmac Quarry (Whit Beck).	The Agency		£5,000	.....	.....	.....	.....	.....		
9	Impact of minewater discharged from abandoned mines.	Consider provision of on-site treatment for minewater leachate.	Owner Coal Authority.		Unknown at this time.							The Agency has provided a national ranking list of minewater problems. The Deerplay Colliery discharge is in the top ten and the Coal Authority have carried out a feasibility study looking at options for treatment. More studies due to take place shortly.
		Consider provision of public foul sewer connection.  e.g:- Deerplay Colliery discharge to Black Clough and River Calder. Hapton Colliery discharge to Green Brook.	Owner Coal Authority, NWW	Agents	Unknown at this time.							
10	Failure to meet objectives in Bashall Brook.	Investigate reasons for failure.	The Agency		£5,000	—	—	—	—	—		Investigations on going.
11	Impact of farming	Continue present pollution control initiatives. eg Main Drain and Liggard Brook catchments.	The Agency		Solution dependant	—	—	—	—	—		Pro-active pollution control work has been on-going in these catchments.
		Provide information/advice to agricultural community. eg Pool Stream and Dow Brook catchments.	The Agency	MAFF	£10,000	—	—	—	—	—		Part of the Dow Brook catchment was resurveyed in 1996
		Provision of "on farm" pollution prevention facilities. eg River Loud catchment.	Farmers		Solution dependant	—	—	—	—	—		River Loud rehabilitation project began. Following pollution incident River Loud was restocked with fish.

No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
12	Algal blooms in Preston Docks.	Investigate reasons for eutrophication and algae in docks.	The Agency		£2,500.		—	—	—	—		Improvements to quality of Preston WwTW effluent thought to have led to change in species of algae occurring in the docks. Situation now improved.
		Investigate benefits of increased interchange of water within and between Preston Dock and the River Ribble.	LA		£2,500.		—	—	—	—		Increased interchange was tried but was not beneficial.
13	Contaminated land.	Undertake detailed investigation to determine the extent of groundwater contamination.	LA Developer Site owner		Unknown at this time.	.....	.....	.....	.....	.....		Investigation into groundwater contamination has taken place. Site remediation has also now taken place at the Darwen Gas Works. Post-scheme monitoring of boreholes is due to follow.
		Determine land use criteria and set quality standards accordingly.	LA Developer Site owner		Unknown at this time.	.....	.....	.....	.....	.....		
		Remedy situation by removing pollutants. e.g:- Former Fina site, Chain Caul Way, Preston. Darwen Gas Works.	LA Developer Site owner		Solution dependant	.....	.....	.....	.....	.....		
14	Identify strategy for maintaining groundwater resources from Fylde Aquifer.	Carry out a detailed review of hydrology and hydrogeology of catchments (where they cross the aquifer), including development of numerical model to assess effectiveness of different strategies.	The Agency		£95,000	—	—	—	—	—		Modelling work completed. Draft report produced. Final report including recommendation by June 1997.
15	Low flows, particularly in the Hodder.	Prevent any further significant abstraction.	The Agency		Solution dependant	.....	.....	.....	.....	.....		Environment Agency has initiated discussions with NWW with regard to reviewing options to alleviate the problems caused by abstractions, within the Hodder system.
		Review existing abstractions and improve situation where possible.	The Agency		Solution dependant	.....	.....	.....	.....	.....		
		Better use of Stocks Water Bank	The Agency		Solution dependant	.....	.....	.....	.....	.....		

No.	ISSUE	ACTIONS	RESPONSIBILITY	
			LEAD	OTHER
16	Lack of otter population	Ensure that, where suitable, all NRA owned land has management plans for promotion of otters.	The Agency	LA Wildlife Trust
		Promote where suitable and where resources allow, projects in partnership with others which encourage recolonisation by otters.	The Agency	LA Wildlife Trust
17	Enhancement of the river and riparian habitat.	Identify areas in need of habitat enhancement.	The Agency	Angling Clubs Riparian owners
		Work in partnership with clubs on schemes for in-river works.	The Agency	Angling Clubs
		Work in partnership with clubs and owners to improve the bankside habitat.	The Agency	Angling Clubs Riparian Owners
		Modify Agency river management to protect species and habitat.	The Agency	
18	Impact of stocking farmed brown trout on wild fish.	Use data from Milton Stocking experiment to: Reduce overall numbers of brown trout stocked by using best practice. Change pattern of stocking brown trout and life stage of stocking by using best practice. Discourage overstocking of brown trout by angling clubs.	The Agency	Angling Clubs Riparian Owners

ESTIMATED COST	DURATION OF ACTION						PROGRESS
	'95	'96	'97	'98	'99	FUTURE	
£15,000	.....	.....	.....	.....	.....		Langeliffe reservoir plan done - no other sites owned.
Unknown at this time	.....	.....	.....	.....	.....		Survey to establish status of other populations to be carried out 1997.
£3,000		—	—	—	—		Identification of areas to be completed. Helping with advice is on-going when the opportunity presents itself.
£2,000		—	—	—	—		Work is underway on the River Loud Rehabilitation Project
£3,000		—	—	—	—		
£5,000		—	—	—			
£6,000 in total (3 x £2,000)		—	—	—			Mitton stocking report was produced in August 1996 and circulated to Angling Associations. Now in process of sending report to clubs intending to stock Ribble with brown trout and holding meeting to discuss future stocking strategies.



No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
19	Increase distribution and population densities of migratory salmonid juveniles in upper Ribble catchment.	Identify factors limiting access of adults and recruitment of juveniles on Swanside and Skirden Beck and the Ribble above Stainforth Force.	The Agency	Riparian owners	£5,000	—	—					Visual surveys of Swanside Beck carried out in 1996 and gravel cleaning operations undertaken in collaboration with Angling Clubs.
		Where possible remove limiting factors and restore fish stocks.	The Agency	Riparian owners	£6,000		—	—	—			Low flows identified on Skirden Beck and potential water quality problems on Swanside . Fish pass created on Stainforth Beck in August 1996. Fish easement created on Newby Weir on Swanside Beck in 1995. 3,000 salmon parr stocked into Swanside Beck in 1996 and the Ribble above Stainforth Force is stocked as part of the migratory salmonid stocking strategy.
20	Impact of the introduction of non-native Crayfish.	Investigate the possibility of co-ordinated policy for non-native Crayfish farming in the Ribble catchment.	The Agency	MAFF English Nature	£1,500		—	—				This is currently being conducted at national level.
		Produce reports and seminar for LA on the risks associated with non-native Crayfish farming.	The Agency	LA	£5,000		—	—				Reports will be produced on completion of investigations.
21	Possible impact of cormorants, goosanders and mergansers on coarse fish populations.	Agency funded PhD study by John Moores University, Liverpool on cormorants.	The Agency	John Moores University	£7,800	—						To be completed during 1998.
		MAFF funded study of impact of cormorants.	MAFF	Various contracts to be let.	£900,000		—	—	—			The study is still in progress.
		Gather information on local fish stocks from creel census data and hydroacoustic survey.	The Agency	Anglers	£3,000	—	—	—				Information is being gathered on local fish stocks.

No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
22	Current flood protection standards.	Undertake survey (Section 105) at Warton-Le-Dale	The Agency		£400,000	.....	.....	.....	.....	.....	.....	On Target.
		Study for hydrodynamic model.	The Agency		£29,000			—				
23	Low lying property and sports fields have history of flooding at Penwortham.	Improve existing flood defences.	The Agency		£70,000							No work was identified to be carried out within this review period.
24	Historical flooding of property at Ribchester.	Regrade Duddie Brook and Boyces Brook and construct flood walls.	The Agency	LA	£500,000							No work was identified to be carried out within this review period.
25	Low lying agricultural land behind defences at Pool Stream, Freckleton could be flooded during high river flows and high tides.	Raise and strengthen the existing tidal earth embankment and possibly replace the outfall structure.	The Agency		£40,000							No work was identified to be carried out within this review period.
26	Historical flooding of property located in the flood plain at Low Moor near Clitheroe.	Alleviate flooding of properties within the natural flood plain. Solution to be decided.	The Agency		£150,000							Water level monitor installed and flood warning system arranged with Local Authority who are considering an interim scheme.
27	Low lying agricultural land behind tidal defences at Warton could be flooded during high tides.	Raise and strengthen the existing tidal embankment and construct a new outfall structure.	The Agency		£240,000	—	—	—				Work programmed for Spring 1997.
28	Low lying property and agricultural land at risk of flooding at Liggard Brook in Lytham due to adverse combination of heavy rainfall and high tides.	Construct a new pumping station and overflow channel	The Agency		£1,400,000			—	—			Work programmed to start Spring 1997. Scheduled completion within 1997/8 financial year.

No.	ISSUE	ACTIONS	RESPONSIBILITY		ESTIMATED COST	DURATION OF ACTION						PROGRESS
			LEAD	OTHER		'95	'96	'97	'98	'99	FUTURE	
29	Properties in Barrowford and Lomeshaye are at possible risk of flooding from relatively low frequency rainfall.	To raise the existing flood defences to increase the level of protection offered.	The Agency		£4,000,000							Project planned for 1999-00 start.
30	Nelson town centre, a hospital and residential properties at risk of flooding from Walverden Water.	To replace existing culverts to alleviate flood risk.	The Agency		£525,000							Project moved back in programme outside plan period.
31	Low lying agricultural land behind tidal defences at Wrea Brook. Warton at risk of flooding caused by high tides and heavy rainfall	To improve the channel capacity by re-sectioning.	The Agency		£110,000							No work was identified. within the review period
32	Giant Hogweed.	Regular spraying in an effort to eradicate the species from the corridors of Rivers Ribble, Darwen, Calder and their minor tributaries. Joint venture with Lancashire County Council, Ribble Valley Borough Council, South Ribble Borough Council and Preston Borough Council	The Agency	LA	£17,000 reducing to approximately £10,000-£12,000 for current spraying regime.	.....	.....	.....	.....	.....		The hogweed spraying programme has begun to show the benefits. The number of plants are reducing and consequently the operational costs have reduced. The cost during 1996 was approximately £12,000. The spraying will be continued.
33	Protection of Archaeological/ Industrial Archaeological sites against development.	Develop policy for protection of archaeological sites and remains.	The Agency	LA	£10,000							Ribble Archaeological survey to be completed by 30/03/97.
34	Degradation of river corridors for wildlife in rural areas.	Promote set-aside schemes along rivers. Produce report on Swanside Beck Scheme.	MAFF		£3,000							Internal Report provided April 1994.
		Promote Countryside Stewardship - Agency staff can advise land owners in conjunction with Countryside Commission.	Countryside Commission		Unknown	.....	.....	.....	.....	.....		Countryside Stewardship is being promoted on River Loud and Bashall Brook.



No.	ISSUE	ACTIONS	RESPONSIBILITY	
			LEAD	OTHER
35	Access Difficulties.	Repairs to existing and construction of new access ramps to urban channels.	The Agency	
		Repairs (1995/96) River Blakewater, Blackburn ■) off Whalley Old Road ■) off King Street ■) off George Street West River Calder, Burnley ■) off Lutner Street		
		New Constructions (1995/96) River Calder, Burnley ■) off Holme Road		
		Other sites to be examined for suitability particularly in areas where redevelopment is planned.		
		Provision of easement for gaining access to rivers.	The Agency	
		Development changes (particularly demolition and re-development scheme) to be monitored and land drainage consents procedure rigorously enforced to secure riparian access.	The Agency	
		*Construction of gravel traps to limit gravel movement.	The Agency	
		Major repairs to existing gravel traps in Townley Park, Burnley and the River Calder in 1995/96	The Agency	
		Other sites to be examined for suitability and construction of new traps in subsequent years.	The Agency	



ESTIMATED COST	DURATION OF ACTION						PROGRESS
	'95	'96	'97	'98	'99	FUTURE	
£20,000 annually.	.....	.....	.....	.....	.....		<p>Repair to the access ramps has been carried out with the exception of the ramp at Whalley Old Road. This ramp will be replaced with a new ramp as part of the proposed development of this site.</p> <p>The ramp at Holme Road will not be constructed because of problems with a sewer pipe at the proposed ramp location.</p>
Regulatory action.	.....	.....	.....	.....	.....		On-going enforcement of flood defence legislation.
Regulatory action.	.....	.....	.....	.....	.....		On-going enforcement of flood defence legislation.
£15,000 annually.	—	—	—				No work was identified to be carried out within this review period.
£13,000	.....	.....	—	—	.....		This work will be undertaken during this financial year (1997/98).
£10,000	.....	.....	.....	.....	.....		No work was identified to be carried out within this review period.

## APPENDICES

## APPENDIX 1 - Catchment Details

### CATCHMENT DETAILS

<b>Area</b>	2128 sq.kms
<b>Topography</b>	Minimum level 1.00 m A.O.D. Maximum level (High Hill) 1275 m A.O.D.
	River Gradient: - upper reach 1:45 - lower reach 1:500
<b>Rainfall</b>	Long Term Average - Warton 888mm - Stainforth 1193mm
<b>Geology</b>	

Ribble Estuary (West of Warton)	Mercia Mudstones overlain by glacial clay, sands and gravels.
Warton to Samlesbury	Sherwood Sandstone overlain by glacial clays, sands and gravels (alluvium within Ribble flood plain).
East of Samlesbury	Carboniferous limestone.
Blackburn - Burnley	Coal measures (Wesphalian); drift free on high ground and glacial clay cover elsewhere.
Uplands and Lower Ribble Valley	Millstone Grit Series (Namurian); drift free on high ground and glacial clay cover elsewhere (alluvium in Ribble flood plain).
Upper Ribble Valley	Limestone Series (Dinantian); drift free on high ground. glacial clay cover elsewhere.

### ADMINISTRATIVE DETAILS

#### Local Authorities and Their Respective Populations:

LOCAL AUTHORITY	POPULATION
Craven	50,068 (total)*
Pendle	82,992
Burnley	89,478
Ribble Valley	51,250
Hyndburn	76,555
Wyre	101,818 (total)*
Blackburn	133,728
Preston	126,996
South Ribble	100,239
Fylde	70,629 (total)*

\* "total" refers to the total population for the district or borough council, part of which may not actually be in the catchment area.

## ADMINISTRATIVE DETAILS (CONTINUED)

**Environment Agency** North West Region, Central Area

**Water Companies** North West Water Ltd.  
Yorkshire Water Ltd.

### Groundwater Availability

Sherwood Sandstone (Fylde Aquifer)	Fully committed to public supply and industrial/commercial use.
Carboniferous	Potential for industrial, agricultural and domestic use (site specific, high iron content).
Millstone Grit aquifers	Potential for industrial, agricultural and domestic use (site specific).
Limestone aquifers	Potential for agricultural and domestic use (site specific - subject to no adverse environmental impact).

### Catchment Facts and Figures

Length of designated main rivers:	373 km
Length of embanked watercourse:	44 km
Area at risk of flooding:	70 km <sup>2</sup>
Land drainage pumping stations:	1
Area drained to land drainage pumping stations:	0.8km <sup>2</sup>

## WATER QUALITY CLASSIFICATION

### General Quality Assessment (GQA) Rivers and Canals Classification (1995)

GQA Class	km	%
A - Good	40.2	7.4
B - Good	204.5	37.7
C - Fair	164.2	30.3
D - Fair	64.5	11.9
E - Poor	61.2	11.3
F - Bad	7.6	1.4
<b>TOTAL</b>	<b>542.2</b>	<b>100.0</b>



**ADMINISTRATIVE DETAILS (CONTINUED)****National Water Council (NWC) Ribble Estuary and Tidal Water Classification (1990)**

<b>Class</b>	<b>km</b>	<b>%</b>
A - Good	4.8	12.2
B - Good	31.9	81.2
C - Poor	2.6	6.6
D - Bad	0.0	0.0
<b>TOTAL</b>	<b>39.3</b>	<b>100.0</b>

## APPENDIX 2 - Glossary

### Abstraction Licence

Licence to abstract water from a surface or underground source. The maximum annual, daily and hourly abstraction rates are set by the licence.

### AMP2 - Asset Management Plan

The second set of Asset Management Plans produced by water companies. The Plans cover the water companies' known investment on existing and other obligations (such as the operation and maintenance of existing water and wastewater systems) for the 10 year period 1995 to 2005. The Agency is involved in setting priorities for work necessary for environmental improvements within allowed expenditure limits. Prices are controlled by an independent regulator, the Director General of Water Services (OFWAT).

### AMP3- Asset Management Plan

This will be the third set of Asset Management Plans to be produced by Water Companies.

### AONB

Area of Outstanding Natural Beauty, notified by the Countryside Commission.

### Coarse Fish

See FRESHWATER FISH, CYPRINIDS, SALMONIDS

### Consumptive Use

Water which is abstracted but not returned to the catchment, either because it evaporates (as in spray irrigation) or is exported for use in another catchment.

### Cyprinids

Fish of the carp family.

### District Local Plans

Statutory documents produced by District or Borough Councils to implement the development strategy set out in County Structure Plans. Specific land use allocations are identified.

### Freshwater Fish

For the purposes of the Salmon and Freshwater Fisheries Act 1975, fish other than salmon, brown trout, sea-trout, rainbow trout and char.

### Hectare

Unit of area 100 m x 100m, equal to 2.471 acres.

### Local Nature Reserve

A nature reserve designated by a Local Authority, frequently owned or managed by a voluntary conservation organisation.

### **Mersey Basin Campaign**

A partnership formed between The Environment Agency, North West Water Ltd and Mersey Campaign Unit with the aim to improve water quality to at least fair quality by 2010.

### **National Nature Reserve**

A nature reserve of national importance, designated and managed by English Nature.

### **Potable Water Supply**

Water supplied for domestic use, including human consumption.

### **Ramsar Site**

A wetland site of international significance for conservation, notified under international treaty.

### **Salmonids**

Fish classified by the Salmon and Freshwater Fisheries Act 1975 as belonging to the salmon family - salmon, brown trout and char. (Summer-spawning salmonid species such as grayling are classified by the Act as Freshwater Fish).

### **SPA**

Special Protection Area. A European legislation classification.

### **Spp**

Abbreviation for species.

### **SSSI**

Site of Special Scientific Interest. A site designated by English Nature as being in need of protection to conserve its outstanding ecological or geological features. Land use and management operations within SSSI's are subject to control.

### **SNCI**

Site of Nature Conservation Interest. A site of local importance for wildlife or geology, identified by the County Wildlife Trust or the County Council.

### **WwTW**

Wastewater Treatment Works.

## MANAGEMENT AND CONTACTS:

The Environment Agency delivers a service to its customers, with the emphasis on authority and accountability at the most local level possible. It aims to be cost-effective and efficient and to offer the best service and value for money.

Head Office is responsible for overall policy and relationships with national bodies including Government.

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### CENTRAL AREA OFFICE

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### SOUTHERN AREA OFFICE

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Fax: 0161 973 4601



For general enquiries please call your local Environment Agency office. If you are unsure who to contact, or which is your local office, please call our general enquiry line.

The 24-hour emergency hotline number for reporting all environmental incidents relating to air, land and water.

**ENVIRONMENT AGENCY  
GENERAL ENQUIRY LINE**

**0645 333 111**

**ENVIRONMENT AGENCY  
EMERGENCY HOTLINE**

**0800 80 70 60**



**ENVIRONMENT  
AGENCY**