

THE RIVER MERSEY



fact file



NRA

*National Rivers Authority
North West Region*

SALMON FISHING IN MANCHESTER!

The Mersey was once a clean and beautiful river. Fishing was an important industry. Even salmon could be caught in Manchester until the end of the 18th Century.

Then came the Industrial Revolution.



The rapid expansion of the textile industry led to an associated growth in the dyeing, bleaching and finishing trades. All these industries required copious amounts of clean water and many produced large quantities of untreated effluent.

The manufacture of dyes and chemicals developed, the paper industry flourished and a heavy chemical industry grew up in the Widnes and St. Helens area. Perhaps the final straw was the coal-gas-making industry which discharged gas liquor and tar directly into the Mersey.

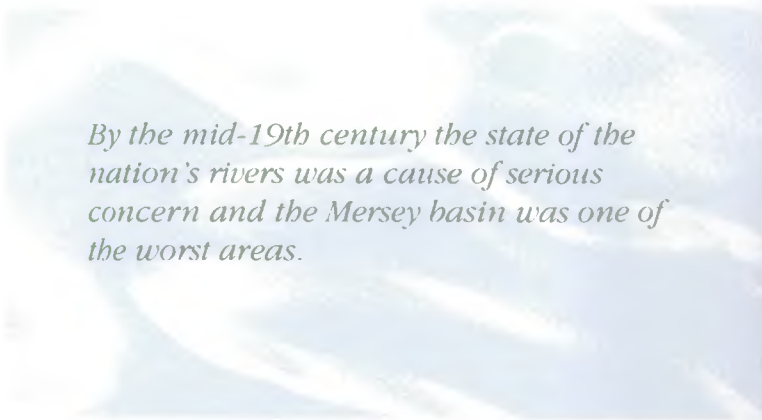
As factories sprang up, people thronged into the towns to find work. The huge concentrations of people and factories needed vast amounts of water. After use, it had to be discharged into short stretches of river already regarded as convenient outlets for every kind of waste.

Rivers of sewage

In the Mersey Basin the growth of demand for water led towns to seek supplies from the only pure water remaining on the Pennines. The resulting sewage was discharged directly into the nearest river, and the Irk and Medlock became virtual rivers of sewage.

Pollution kills. Pressure to clean up our environment is now overwhelming. Sadly, for many of Britain's rivers, including the Mersey, it came too late. They were already dead, their waters and the life in them poisoned by sewage and industrial outfall. Efforts are now being made to revive these waterways, and restore them to health.

This booklet gives you a glimpse of how things used to be, how they are at present, and how we hope - and believe - they will be in the future.



By the mid-19th century the state of the nation's rivers was a cause of serious concern and the Mersey basin was one of the worst areas.



Right: These "dark, Satanic mills" proved to be just that, in their effect on the region's waterways.

Below: Only 600 metres further on, the peaceful river Goyt becomes the industrial Mersey. Once the whole Mersey Basin was as untouched as this.



Parliament takes action

In 1857 Parliament appointed a Sewage Commission, followed by a series of Royal Commissions from 1898 to 1915. The standards they laid down for treated sewage are still widely in use.

In the North West, the Mersey and Irwell Joint Committee compelled local authorities to provide sewage treatment facilities.

Industrialists were obliged to install the 'best practicable means' of preventing pollution - yet in practice this meant little more than helping to keep some of the solid waste out of the river.

By 1902 no fewer than 445 manufacturers were discharging effluent to the Mersey and the Irwell within the Committee's jurisdiction. Today the figure for the same area is 30.

The Depression that followed the First World War meant industrialists had little money to spare for treatment plants. During the Second World War, the Mersey and its tributaries, particularly the Irwell, deteriorated further.



Turning point

A turning point in the post-war period was the passing of the Rivers (Prevention of Pollution) Act in 1951. From that moment new industries could be prevented from discharging harmful effluents into the river.

A second such Act in 1961 required all local authorities and manufacturers to apply to River Boards (the Mersey River Board had been formed in 1951) to continue to discharge sewage or trade effluent.

In giving consent, the River Board could impose limits on pollution, although the discharger could appeal. Right up to the present day the River Boards and their successors have had power to prosecute for failure to meet the conditions of the 'consent'.

The power to prosecute illegal dischargers was conferred on the Mersey and Weaver River Authority by the 1963 Water Resources Act. The Authority also issued consents to local authorities and industrialists which again set limits on the quality and quantity of effluent discharges.

Signs of improvement

The result of all this legislation was a gradual improvement in the quality of rivers in the Mersey Basin during the 1960s and 1970s.

A key policy of the Authority was to encourage industrialists to divert their discharges to sewage works for treatment, instead of directly into the river.



After the 1963 Water Resources Act, industry was encouraged to divert polluting discharges to sewage works.

Flooding problems were tackled too. A major initiative in the 1950s and 60s was the River Irwell Improvement Scheme, which followed a major flooding incident in Salford in 1946. In 1973 the Water Act gave the North West Water Authority control of all aspects of the water cycle in the Mersey Basin, including water supply and sewage treatment as well as pollution prevention.

The following year Parliament passed the Control of Pollution Act, which virtually replaced previous anti-pollution legislation.

Greater expectations

The 1970s and 1980s saw steady improvement in the rivers of the Mersey Basin.

A fifteen-year programme of works costing £170 million and aimed at cleaning up the Mersey estuary was initiated in 1980.

Then in 1985, the Mersey Basin Campaign was launched - a £4 billion drive by central government to clean up the Mersey and all its tributaries.

Until the Campaign embarked on its massive task many people had accepted polluted rivers and industrial decay as the inevitable legacy of the Industrial Revolution. But attitudes were already changing as the public began to raise its expectations. And in the river there were new signs of hope.

By 1989 the organic pollution load on the estuary had dropped by 30% compared with 1972. As oxygen levels improved, fish began to return. Over 50 different species have been observed since 1976, though only four species occur in significant numbers.

The Water Act of September 1 1989 brought the National Rivers Authority (NRA) into being.

The Authority took over the regulatory power from the Water Authorities in England and Wales, who had previously found themselves in the untenable position of both 'poacher and gamekeeper'.

In the same year the Water Authorities were privatised. Today the NRA has the power to impose pollution limits on the Water Companies, as well as on industrialists who discharge effluents into the river.

THE TIDE OF HISTORY



Right and above:
The changing
skyline. Symbols
of the heavy
chemical industry
which developed
around the
Mersey in the
1930's and 40's.



1720 Sturgeon, mullet, lobsters and oysters caught in the River Mersey near Warrington.

1780s Salmon still caught in Manchester.

1830-1890 Nine million emigrants sail from Liverpool to America.

1870 Decline in Warrington fishery due to pollution from non-tidal river.

1884 Manchester Ship Canal opened by Queen Victoria.

1910 About 40 fishing boats still working in Liverpool Bay and the Mersey Estuary.

1930 Population of Merseyside reaches peak of £1.4 million plus.

1930/40s Major industrial expansion led by chemicals, petrochemicals, paper industry, food processing and engineering on the banks of the Mersey.

1946 Major flooding from the River Irwell affects Salford.

1948 Reported absence of fish in estuary.

1950/60s River Irwell Improvement Scheme implemented to alleviate flooding in Salford.

1971 Steering Committee of Local Authorities and industry set up to investigate pollution and consider treatment options.

1974 Control of Pollution Act passed.

1970-1980 Major improvements in non-tidal River Mersey.

1981 Fifteen-year programme costing £170 million launched to clean up the Mersey.

1985 Mersey Basin Campaign launched.

1989 National Rivers Authority formed under Water Act.

1991 Sandon Dock Sewage Treatment works opened.

2010 All rivers in Mersey Basin reach Class 2 or above?



THE CURRENTS OF THE

LIVERPOOL BAY

The size of the Mersey catchment means pollution may take a month to reach the open sea

CROSBY

New sewage works at Sandon Dock treats 950 million litres of waste water every day

LIVERPOOL

ALBERT DOCK

Salt marshes at Oglet and Hale attract teal, pintail and mallard

WIDNES

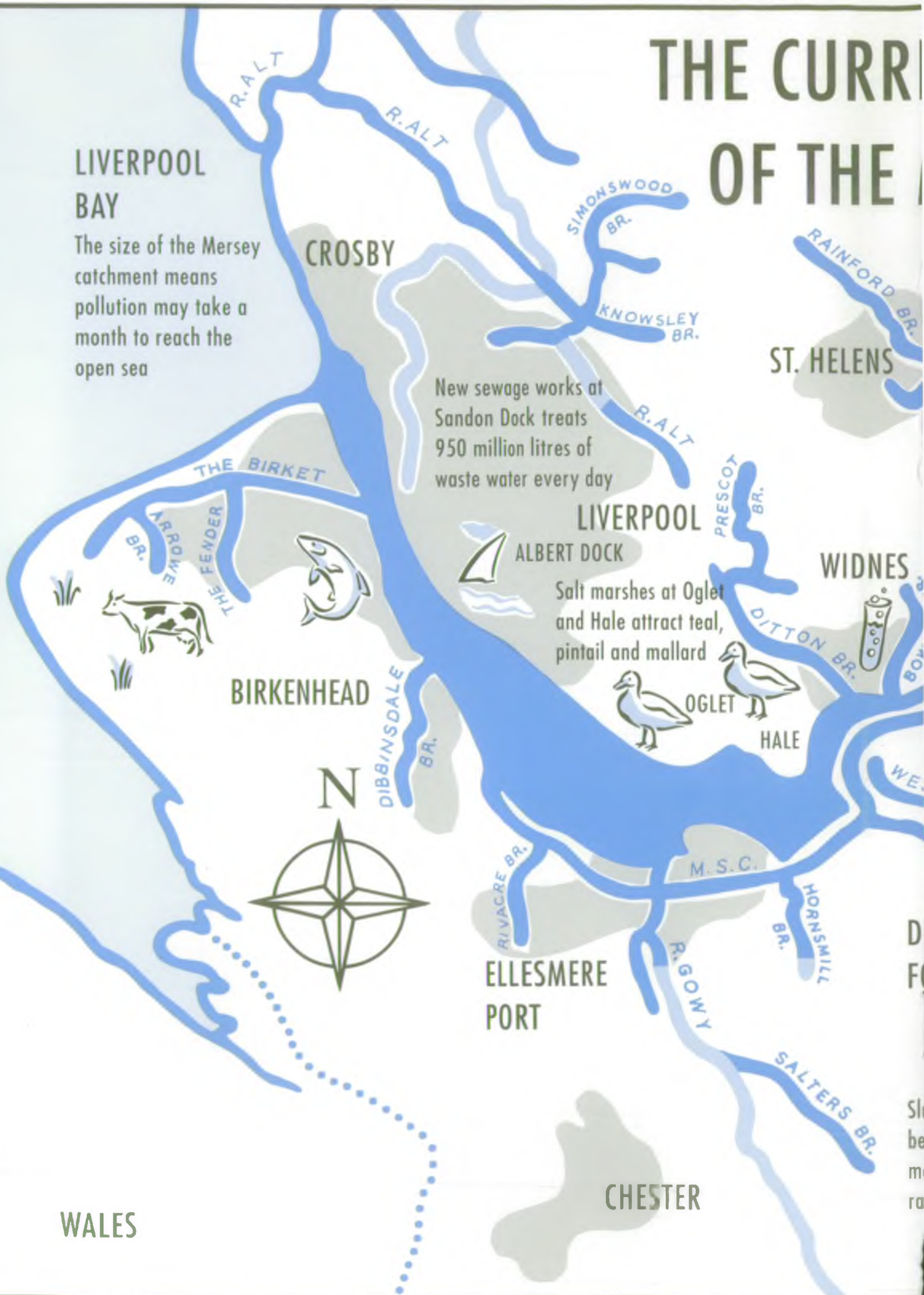
BIRKENHEAD

M.S.C.

ELLESMERE PORT

CHESTER

WALES



KEY:



~ Class 1 and 2 rivers

~ Class 3 and 4 rivers



~ Areas of dense population



~ This symbol on the map indicates areas of high pollution resulting in depleted fish populations.

Coarse fish are less sensitive to pollution and most rivers in the Mersey Basin support at least some species. Game fish can currently be found in only a few areas.

ALL RIVERS ARE CLASSED AS FOLLOWS:



~ Class 1 rivers are of good quality. The water can be used for drinking and they are clean enough for fish like salmon and trout to live in. (Highly oxygenated)



~ Class 2 rivers are of fair quality. The water can be used for drinking but needs treatment. Coarse fish like perch, roach, bream and chub can live in them. (Sufficient oxygen present at all times)

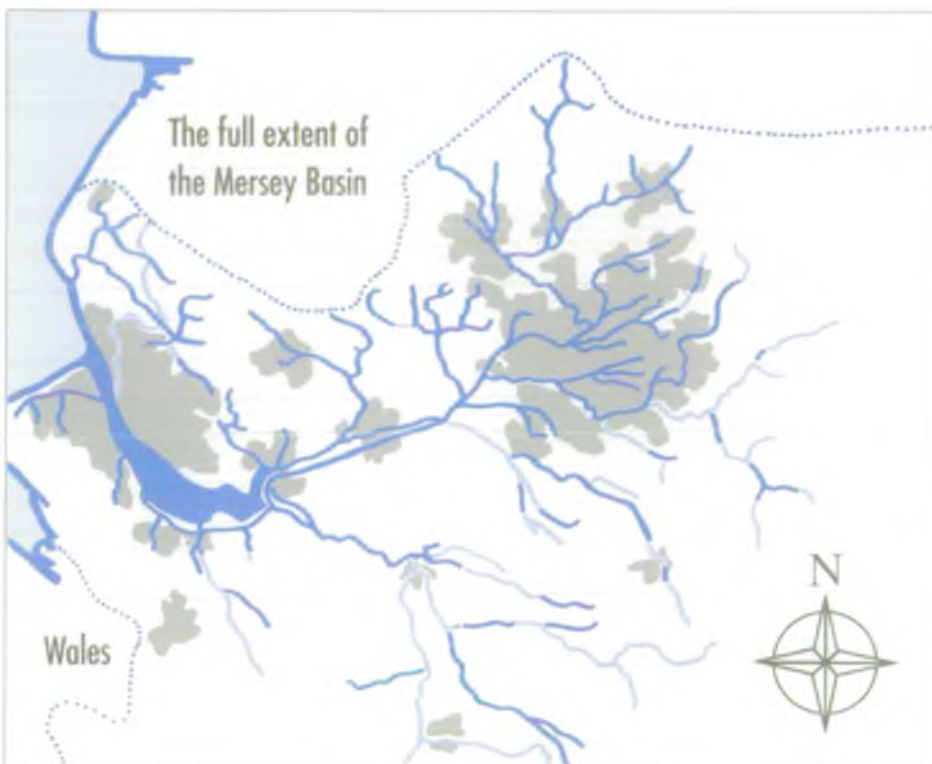


~ Class 3 rivers are of poor quality. They are too polluted to have any large fish populations but plenty of small animals can live in them. The water can be used for industry but not for drinking. (Intermittent oxygen depletion)



~ Class 4 rivers are badly polluted. Some small animals like bloodworm can live in them, but no fish. (Little or no oxygen present)

Taking the Mersey Basin as a whole, currently 33% is classed as 3 (poor) and 11% is classed as 4 (badly polluted).



A SORRY LEGACY

Because of the legacy left by industrialisation and urbanisation, the Mersey ranks as the most polluted river in Britain.

The estuary receives the drainage from a large part of Cheshire and South Lancashire and smaller areas of Derbyshire, as well as the highly urbanised industrial areas of Merseyside and Greater Manchester.

The total area drained is 1,765 square miles. The area's population numbers more than five million people, a quarter of whom live along the banks of the estuary.

Right: The victims. Fish from the river Croal, a tributary of the Mersey, killed by detergent pollution.



Below: A pollution control officer takes a sample from an industrial outfall.



WHERE POLLUTION COMES FROM

Major sources of pollution include:

- ~ Continuous discharges of effluent from sewage works and industrial plants.
- ~ Run-off from farms.
- ~ Seepage from mines and waste disposal sites.
- ~ Intermittent discharges from storm sewage overflows.

Storm sewage overflows present a particular problem. These pipelines tend to be Victorian and were built to cater for a much smaller and less environmentally concerned population. As a result they often discharge crude sewage directly into the rivers of the Mersey Basin following even light rainfall.

Fish need oxygen

Pollution is not simply a question of the water not being clean. Nature has its own remedies and the bacteria which feed on waste can cope with small quantities of polluting matter.

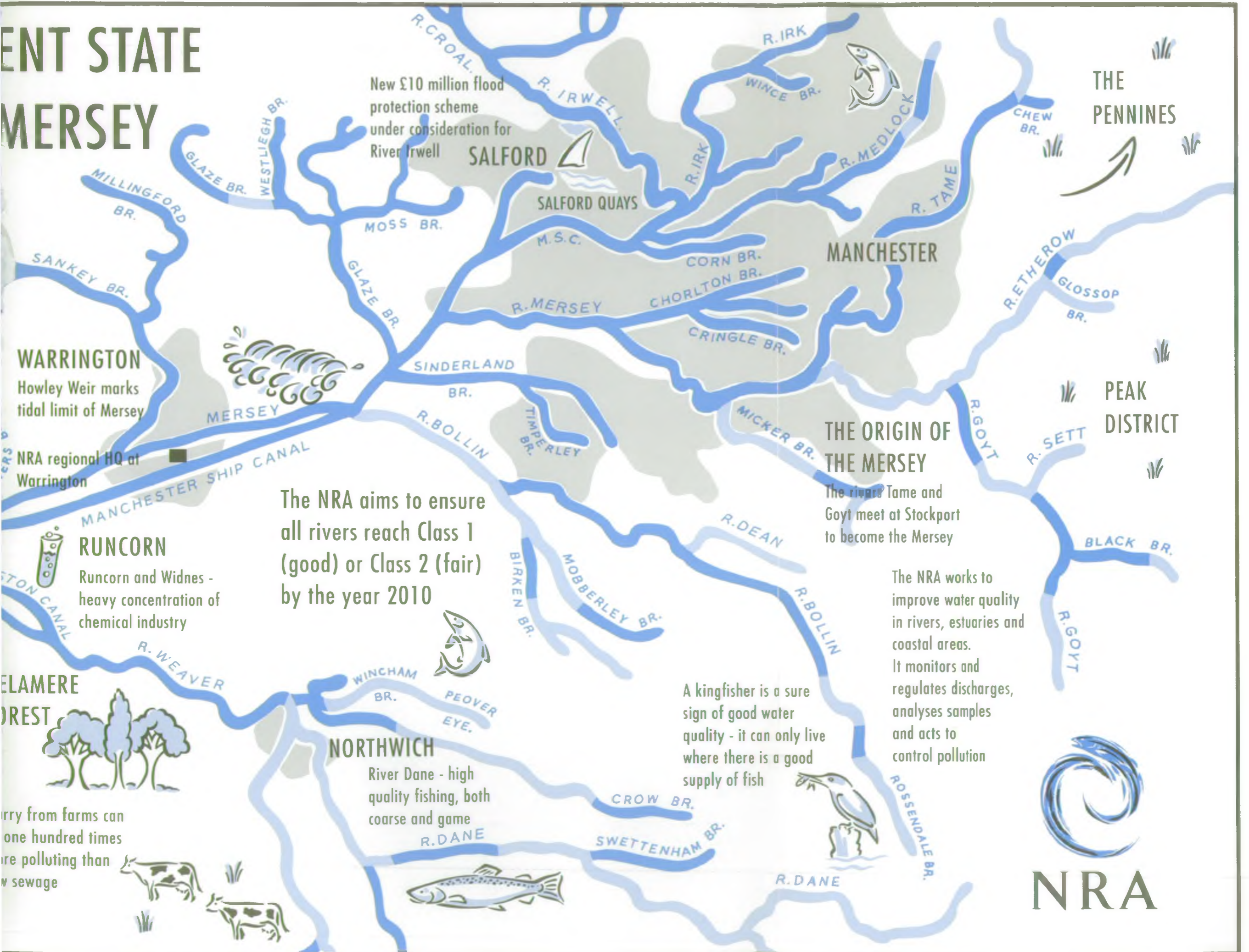
But the bacteria need oxygen. Once they use it up in dealing with large amounts of pollution there is none left to sustain the animals and fish that live in a river.

MEASURING POLLUTION

Three major indicators are used to measure the degree of pollution in a river:

- ~ Dissolved oxygen levels reveal the health of a river - the higher the better.
- ~ Biochemical Oxygen Demand (BOD) measures how much oxygen the bacteria use up - the lower the better.
- ~ Ammonia - found in sewage - provides more vital clues.

ENT STATE MERSEY



New £10 million flood protection scheme under consideration for River Irwell

SALFORD

SALFORD QUAYS

MANCHESTER

THE PENNINES

PEAK DISTRICT

WARRINGTON

Howley Weir marks tidal limit of Mersey

NRA regional HQ at Warrington

RUNCORN

Runcorn and Widnes - heavy concentration of chemical industry

The NRA aims to ensure all rivers reach Class 1 (good) or Class 2 (fair) by the year 2010

THE ORIGIN OF THE MERSEY

The rivers Tame and Goyt meet at Stockport to become the Mersey

The NRA works to improve water quality in rivers, estuaries and coastal areas. It monitors and regulates discharges, analyses samples and acts to control pollution

A kingfisher is a sure sign of good water quality - it can only live where there is a good supply of fish

NORTHWICH

River Dane - high quality fishing, both coarse and game

ELAMERE FOREST

urry from farms can one hundred times are polluting than w sewage



TURNING THE TIDE

After more than 200 years of neglect, the tide of pollution in the Mersey is showing signs of turning at last.

Initiatives of the last few decades combined with modern-day awareness of the environment and a commitment to green issues means that the outlook for the next century is an exciting one.

The target

The Mersey Basin Campaign has set a target that all rivers in the Mersey Basin will be of Class 1 (good) or Class 2 (fair) quality by the year 2010. It is the task of the National Rivers Authority to take the necessary action to see that this target is met.

The campaign's ultimate ambition is to repair the damage done by the Industrial Revolution and make the whole area a more attractive area in which to live, work and play.

The Mersey Basin Campaign has set itself two other major targets by the year 2010 :

- ~ To encourage attractive waterside developments as a stimulus to economic regeneration - Salford Quays and the Albert Dock are typical examples.
- ~ To persuade the people of the area to value and cherish water resources.

Around £2.5 billion of the Mersey Basin Campaign budget is to be spent improving sewage treatment works.



THE ROLE OF THE NRA

The rivers of the Mersey Basin have long been used for the disposal of domestic, industrial and agricultural effluents.

The key to cleaning up the Mersey is strict control of all these discharges.

One major role of the NRA is issuing 'consents' - permission to discharge effluent within certain limits which the NRA imposes. Such limits are imposed on industrial discharges and sewage works alike.

To ensure that river water quality targets are met, the NRA constantly monitors discharges. It also reviews the conditions of each consent every three years.

In its efforts to reduce pollution in the Mersey Basin, the NRA plans to tighten consent limits over the coming years. If a factory exceeds the consent limits, the NRA has power to bring a prosecution under the Water Act. It can also prosecute for one-off spillages or any discharges without consent.



Above: Bright and attractive, yet keeping the traditional character of the waterways - new development at Salford Quays.

Left: Blueprint for the future? Watersports at Sale Water Park.

Round-the-clock watch

The NRA also has plans to introduce a system of automatic round-the-clock sampling.



This will enable the Authority to keep a closer eye on both consented and illegal discharges at all times. It should help to identify any factories tempted to time their discharges of effluent to foil the present sampling techniques.

The NRA, however, regards prosecution of polluters as a last resort. It believes in the more progressive policy of helping dischargers to prevent pollution by giving expert advice, very often on-site.

The NRA has found that most companies are keen to cultivate a green image, and prove willing to co-operate.

In cases of deliberate abuse, neglect or repeated failure to comply with consent conditions however, the NRA has no hesitation in prosecuting.

Beating the floods

The NRA also has important responsibilities in reducing flooding risks, monitoring rainfall with weather radar, and measuring river flows twenty-four hours a day to provide an effective flood warning service.

It issues Land Drainage Consents and operates a comprehensive set of bye-laws, which extend the need for a consent to cover certain works on river banks, sea and tidal defences.

The North West Region of the NRA has a policy against the development of homes, factories and businesses on land which is at risk from flooding, or where the development could affect other areas.

Victorian industrial development has left a legacy of long-crumbling culverts, decaying riverside retaining walls and access problems for maintenance.

It could cost over £90 million to restore the standard of flood defence on the miles of long-neglected urban watercourses in the Basin.

New scheme

Typical of the NRA's work is a major new scheme under investigation to improve the standard of flood protection on the River Irwell at Salford. Costing £10 million, the scheme would involve constructing two flood storage reservoirs at Castle Irwell and Littleton Road, along with walling and embankment works.

At times of flood risk, excess flows would be diverted into the reservoirs and only released later when river levels had dropped.

Right: Automatic round-the-clock sampling and analysis will help to foil those industries who try to dodge the present system.



Left: Aiming for prevention rather than cure. An NRA official gives expert advice on-site.

A LANDSCAPE OF CONTRASTS

The geography and geology of the Mersey Basin have shaped the history of the river and the lives of local people.

The first settlers arrived in the North West 10,000 years ago. They found a landscape that had been moulded by the ice sheets that had covered the land for hundreds of thousands of years.

Glaciers had left a dramatic mixture of upland fringes and wide lowlands.

The contrasts ranged from the bleak moorlands of the High Peak to the flat expanses of Chat Moss.

Linking the two was a pattern of streams and rivers that rose in the carboniferous rocks of the Pennines and drained into the flat Lancashire and Cheshire plains.

The potential was apparent to settlers from the start. The sandstone and gritstone of the moorlands provided a ready source of water both for power and domestic supplies. Later the fast-flowing rivers were to power the first mills as the textile industry developed alongside farming and domestic manufacturing.

The carboniferous rocks also provided building materials - from dressed stone, sands and gravel to clays that could be made into bricks, tiles and pipes.

Geological resources played other important roles too. 'King' Coal was central to industrialisation and is still mined in the area. Salt provided the basis of another industry.

Trade focus

The region's geography shaped the way transport developed. Liverpool became the focus of trade links, a major port to handle the imports and exports of a thriving region and a gateway to the New World for millions of emigrants.

A chemical industry sprang up at the head of the estuary where both coal and salt were available along with other raw materials imported by sea. Both the sea and the rivers afforded instant transport links that could be supplemented by vast canal networks.

As industrialisation gradually polluted the Mersey, the physical shape of the estuary was to play its role too.

The wide inner estuary combined with a narrow mouth resulted in pollution being constantly washed back and forwards - it could take one month to travel from the tidal limit at Warrington to the open sea.

Two hundred years of industrialisation have taken their toll on the Mersey Basin.

But the next twenty could see a dramatic change for the better.

HAVEN FOR BIRDS

The Mersey estuary is an important nature conservation area because it provides roosting and feeding grounds through the winter for large numbers of ducks and waders.

Its designation as a Site of Special Scientific Interest by the Nature Conservancy Council affords it protection under the Wildlife and Countryside Act 1981.

The numbers of Pintail, Teal, Wigeon, Shelduck, Redshank and Dunlin mean the area also qualifies for designation as an Internationally Important Wetland Site.

Over the past thirty years the number of overwintering birds has risen dramatically, thanks to the improved water quality and the development of saltmarshes on stretches of the river where plants have begun to colonise high-level mudflats.



Improved water often means more invertebrates for wildfowl and waders to feed on while seeds from the saltmarshes attract various species of duck.

Saltmarshes are not very stable and can easily develop into grassland. Fortunately however, the Mersey saltmarshes benefit from the constantly shifting channel which keeps them regularly immersed.

Downstream of Widnes the channel meanders freely. Its shift to the South side since the late 1960s has even deposited mud banks at Oglet and Hale which have also developed into salt marshes.

The Goyt, one of the Mersey tributaries that helped to provide power for the early textile mills.



HOW YOU CAN HELP IMPROVE THE MERSEY



ENVIRONMENT AGENCY

NATIONAL LIBRARY &
INFORMATION SERVICE

HEAD OFFICE

Rio House, Waterside Drive,
Aztec West, Almondsbury,
Bristol BS32 4UD



NRA

- ~ **Don't** put oil, petrol or garden chemicals down drains or into gutters.
- ~ **Don't** throw rubbish into rivers or streams.
- ~ **Don't** allow any potentially polluting matter to escape into rivers or streams or the drainage system.
- ~ **Don't** put rubbish in brooks or on the banks. Remember that rubbish blocks river channels and culverts causing flooding.

- ~ **Do** ask for advice if you are not sure how to dispose of a potential pollutant.
- ~ **Do** report any suspected pollution to the NRA.
- ~ **Do** tell the NRA if you have a spillage of a potential pollutant.
- ~ **Do** ask for advice if you are considering new development.
- ~ **Do** consult the NRA before undertaking any work on, under or over a watercourse or on the banks of a river or stream.

ENVIRONMENT AGENCY



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