

EA-NORTH EAST Box 5

River Calder

FACT FILE



KEY FACTS

ALTITUDE AT SOURCE

Approximately 230m above sea level
(Above Ordnance Datum)

TOTAL CATCHMENT DRAINAGE AREA

957 square kilometres

TOTAL CATCHMENT POPULATION

790,000

MAIN TRIBUTARIES OF THE RIVER CALDER

River Colne (tributaries include River
Holme, Fenay Beck); River Ryburn;
River Spen; River Ribbles; Hebden Water

WATER QUALITY OF THE CALDER CATCHMENT

Good: 130.5km, Fair 117km,
Bad/Poor: 87.9km

LENGTH FROM SOURCE TO SEA

87km

AVERAGE ANNUAL RAINFALL

Hebden Bridge over 1500mm a year
Wakefield 630mm a year



River Calder

FACT FILE

The River Calder rises on the Pennine Moors west of Todmorden.

It is predominantly an urban river flowing through the West Yorkshire conurbation towns of Halifax, Brighouse, Huddersfield, Dewsbury and Wakefield, before joining the River Aire at Castleford, some 87km from its source. The name 'Calder' comes either from the early British meaning 'hard' or violent waters or stream, or possibly from the Celtic, meaning 'river of stones'.

A LEGACY OF POLLUTION

Until the early 19th century, the Calder's waters were home to plentiful stocks of salmon. However, with the onset of industrialisation, the river gradually became increasingly polluted. The last salmon on record was caught at Wakefield in 1850.

The Calder and its tributaries, particularly the River Colne, were particularly useful for the woollen industry in the 18th and 19th centuries and the area has long been used for the production of dyes for the textile industry. The fast flowing upland streams provided a convenient power source and

proved useful for the washing of fleeces and general disposal of effluents.

The growing population associated with 19th century industrialisation of the area contributed to the pollution as sewage treatment facilities became inadequate for the increasing number of people moving into the Calder Valley.

The polluted stretches of the Colne and Calder did not even begin to recover until the 1950s when tighter controls on pollution started to bring about a marked improvement.

WATER QUALITY TODAY

Today the Calder's catchment area is home to almost 800,000 people and the river remains an important source of water for Yorkshire's industry.

Effluent from many sources causes pollution with the largest single source being treated sewage effluent. In fact, during dry summers, more than two thirds of the river's flow is treated effluent from major sewage works. Just upstream of Todmorden, the upper reaches of the Calder are polluted by discharges from long abandoned coal mines.



The River Calder at Brighouse

**RIVER CALDER AND ITS
TRIBUTARIES WATER QUALITY
CLASSIFICATION TABLE 1995**

Quality Class	Length of Calder km
A – GOOD	36.4
B – GOOD	94.1
C – FAIR	66.5
D – FAIR	50.5
E – POOR	71.6
F – BAD	16.3

There are natural water quality problems in the catchment too. Many of the moorland streams at the head of the Calder valley are uncontaminated by effluents but they are frequently – and quite naturally – stained a tea colour by deposits of peat.

Also, upland streams, draining the high moorland gritstone area, are so acidic few fish can live either in them or the upland reservoirs. This is because there is no lime in the gritstone to neutralise rain falling on the peat. However, some of the water is treated and then used for drinking supplies.

The Agency has a system for classifying the water quality of rivers. Class A and B rivers are of a high quality. They are clean enough for salmon and trout to live in and can be used for

drinking water. They will also support a variety of invertebrates, including mayflies, stoneflies and most pollution sensitive insects.

Class C and D rivers are of fair quality. Coarse fish such as roach, chub and bream can live in them and possibly trout in some C waters. These rivers can be used for drinking water if it is treated. A good variety of invertebrate species can be found apart from the most pollution sensitive animals.

Class E rivers are of poor quality. They can still support coarse fish but cannot be used for drinking water.

Class F rivers are badly polluted. Some small animals like worms or midges can live in them, but no fish.

The target for the Calder is that most stretches will be classed as 'good' or 'fair' by 1998 below Huddersfield.

The Agency's aim is to improve the polluted stretches of river by encouraging farmers, industrialists and Yorkshire Water Services Ltd to improve effluents and avoid unnecessary pollution spillages.

An initiative called the Aire and Calder Project was recently set up to show the environmental benefits of reducing industrial energy consumption and using cleaner technology. The 11 companies involved reduced waste water and saved up to £3 million by using these methods.

INTEGRATED POLLUTION CONTROL

Pollution may harm people and all other parts of the living world. Industrial materials or the by-products of industrial processes constitute many of the worst pollutants – those that can do the most harm if mishandled and which are the hardest to dispose of safely. The role of the Environment Agency is to regulate these processes so that, where possible, pollution is prevented, or minimised and made harmless.



Analysing samples in a laboratory

The Agency's authority to regulate industrial discharges stems principally from the Environmental Protection Act of 1990, a key feature of which is the concept of Integrated Pollution Control (IPC). This is being established internationally as the way forward for controlling pollution from industrial sources. As a system, it considers pollution to land, air and water and the way in which it interacts and impacts on the environment as a whole. It also takes a long term view on whether processes are sustainable or make demands on the environment that will rapidly exhaust available resources.

Businesses which want to operate certain industrial processes, those with the greatest pollution potential or those that are particularly complex, must apply to the Environment Agency for permission to operate. Their application must contain all the information required to assess the impact on the environment, including the effects that polluting releases will have in both the short term and long term. Agency inspectors use this and other independent information to assess whether the activity should be permitted. If the decision is to allow the process, an authorisation is then issued which includes limits on the amount of emissions to land, air or water.

In West Yorkshire, there are a large number of chemical manufacturers,



Alongside the River Calder at Wakefield

ENVIRONMENT AGENCY



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textile processes, a large coal burning power station and some incineration operations, all of which must have an authorisation to operate. The Agency monitors all authorised processes to ensure that conditions are respected and, if necessary, will use vigorous legal enforcement to protect the environment. The Agency can also order processes to be shut down if there is a serious risk of pollution.

The Agency regulates the storage and use of radioactive materials and the accumulation and disposal of radioactive waste. Hospitals, universities and industry are all users of radioactive material and are regulated by the Agency.

IMPROVING FISHERIES

Despite the acidity, some of the upland streams in the Calder catchment are nevertheless able to support populations of trout.



A young trout

Hebden Water and Cragg Brook are rich trout streams which help to maintain fish stocks in the main river.

Downstream of Breatly Weir, near Mytholmroyd, a variety of coarse fish, including roach, perch, chub, dace, minnows, gudgeon, pike and bream thrive alongside trout.

The stretch downstream of Elland is a well established and popular coarse fishery. Unfortunately, at Mirfield the river is virtually devoid of fish due to the polluting input from Huddersfield.

The main river downstream of Horbury contains some fish but the variable water quality still has considerable influence on the populations.

Coarse fishing remains popular between Brighouse and Cooper Bridge, where the Colne meets the Calder.

GEOLOGICAL FEATURES

The Calder catchment lies entirely on the Carboniferous rocks of Millstone Grit

and coal measures. These rocks, which are nearly 360 million years old, comprise a sequence of shales and grits, with the grits forming the prominent high moorland areas to the west of Huddersfield and Halifax.

In the coal measures, the grits are less prominent. There are coal seams that have been extensively mined in the past although deep coal mining has now moved eastwards and is no longer carried out in the Calder's catchment area.

A VITAL SOURCE OF WATER

Few rivers have been more heavily exploited over the last 200 years than the Calder, for both industry and drinking water supply. Today, there are 39 reservoirs in the Calder system licensed to provide water for public supply to the area. These supplies are supplemented by 'imports' from the Winscar reservoir at the head of the Don catchment, and from the rivers of North

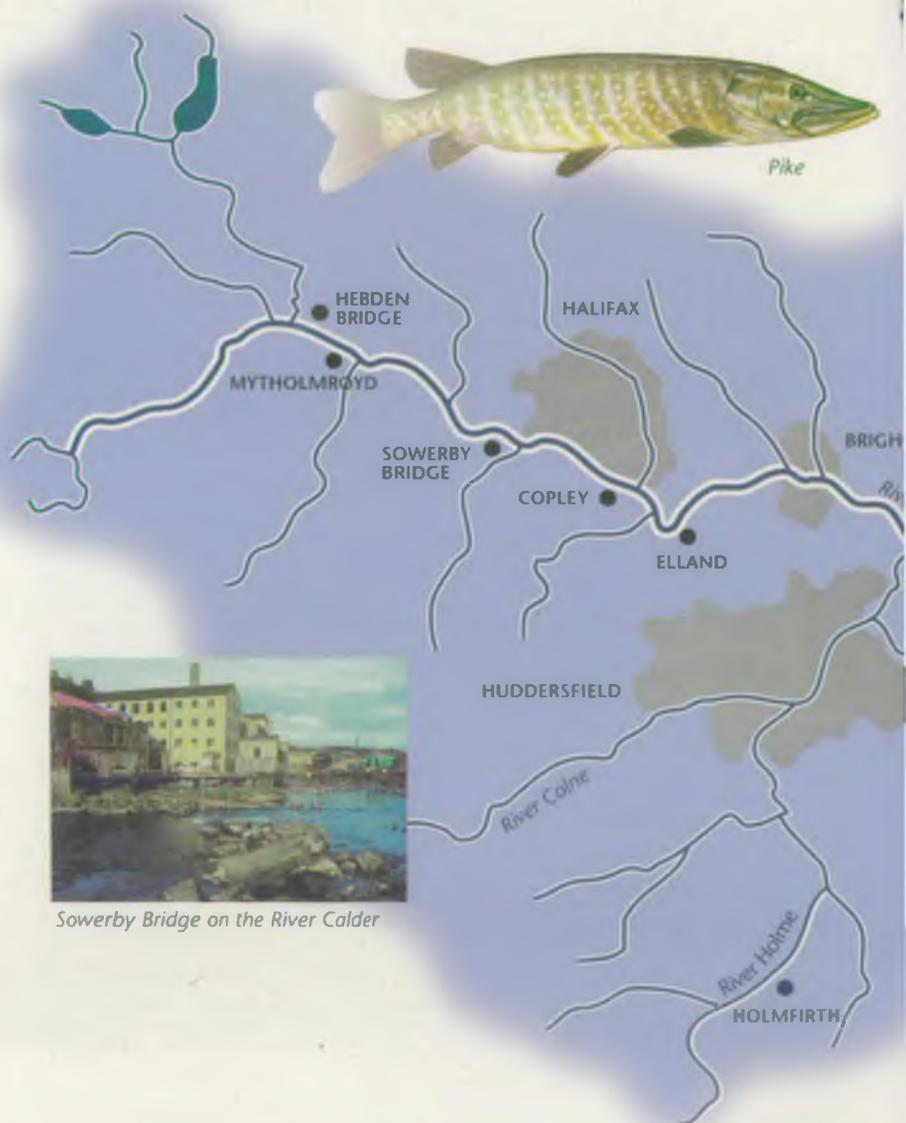
Yorkshire for the more heavily populated areas of West Yorkshire. The river remains an important source of water for the chemical and textile industries in the upper Calder valley.

The reservoirs of the Pennine uplands at the head of the valley also play a vital role in maintaining a healthy river flow. These reservoirs release water into the catchment as a compensation for that taken for public supply. Otherwise, problems could be caused when river levels fall too low during times of drought. Fish and other wildlife would suffer and there would be insufficient dilution of effluents.

BEATING THE FLOODS

The river and its tributaries flow through steep and relatively narrow valleys and so react very quickly to rainfall which causes rapid rises in water levels and danger of flooding. Over the years, flooding problems in the Calder valley

The River Calder and its tributaries



Sowerby Bridge on the River Calder

have caused serious distress to local communities. During the Industrial Revolution, cities grew up close to watercourses allowing little space for rivers to expand. Houses were also built in floodplains. As industry continued to grow, there became less land available to soak up rainwater. This caused an increase in the amount of surface water draining into a watercourse.

To remedy the serious flooding problems, a considerable number of flood defence schemes have been carried out in the area and more are planned. These include channel improvements and flood defences on the River Calder at Todmorden, Mytholmroyd, Sowerby Bridge, Copley, Elland, Brighouse, Dewsbury, Horbury, Wakefield and Methley.

The lake at Pugneys Country Park near Wakefield is used as a 'safety valve', filling with water to protect the town when the Calder is in flood.



Flooded fields beside the river

FLOOD WARNING

The Environment Agency operates a sophisticated flood warning service which uses the latest technology to monitor rainfall, river levels, tides and sea conditions 24 hours a day, throughout the year. When there is a flood risk, warnings are issued to the general public, the police, local authorities and the media, so that those most at risk can take action to protect themselves and their property.

There are a number of ways people who live in affected areas can find out about flood warnings.

In some areas those who have agreed to receive flood alerts, will be telephoned by the Environment Agency's Automatic Voice Messaging (AVM) system. This will give details of the flood warning and a contact for further information. Sirens and public address systems are most appropriate in some situations.

Local flood alert procedures may also be in place. These could include a local warden scheme where a nominated resident passes flood warning information to local households.

The Environment Agency also provides a 'dial and listen' national telephone service for information on flooding. **Floodcall - 0645 88 11 88** - is a 24 hour recorded information service providing up to date details on warnings in force across England and Wales. It gives details of those places most at risk and information about what to do in a flood.



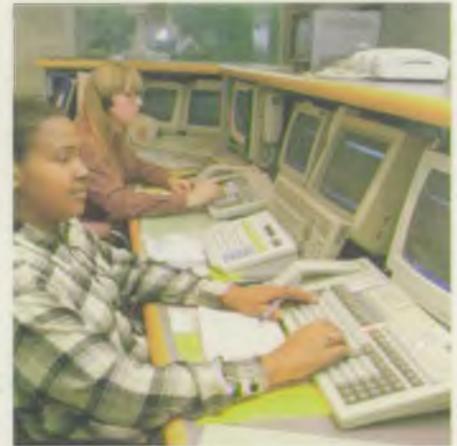
Crossing the Calder at Dewsbury



Bluebell



Industry along the Calder in Wakefield



The Agency uses the latest technology to predict possible flooding

The Environment Agency provides local radio stations with up to date information so they can broadcast regular updates. Flood warning information will also be broadcast by AA Roadwatch on many local commercial and BBC stations during their travel bulletins. Weather pages on Teletext (ITV) and weather forecasts on local television and radio may also include flood warning information.

CONSERVATION

The upper areas of the catchment are of interest for conservationists and the Peak District National Park extends into the upper reaches of the River Colne and its tributaries. In these upland areas, woodlands, reservoirs and moorland are



Weir on the Calder at Wakefield

closely linked to the rivers providing excellent wildlife habitats. In fact, there are four Sites of Special Scientific Interest (SSSIs) in this area.

However, the nature conservation interest of the Calder and its lower tributaries, downstream of Huddersfield, is very limited due to poor river water quality. Consequently, most sites of conservation interest in the area unfortunately do not include the rivers. Examples are the Southern Washlands near Wakefield and Gawthorpe Green Pond near Huddersfield. However there are a few sites which remained unspoilt and are therefore of particular interest and value from a conservation point of view because of their rarity.

These are invariably steep sided wooded valleys which have remained unspoilt due to their inaccessibility. The value of these sites will increase further once water quality has improved. The same can be said for many other areas of the catchment including heavily urbanised areas where inner city regeneration is providing opportunities to reconstruct rivers with more conservation interest.

WASTE MANAGEMENT

Waste needs to be carefully managed. Hazardous waste may pose a serious threat to the environment and in the worst cases can be dangerous to life. Other wastes may cause a problem by their sheer volume or nuisance value such as litter, flies and smell. This means the disposal and recovery of waste must be carefully controlled to ensure that there is no damage to the environment or harm to human health.

It is estimated that the average household produces approximately one tonne of refuse each year. With nearly 800,000 people living in the catchment area this adds up to a vast amount of waste which has to be safely disposed of each year.

Landfill remains the prime method for the disposal of household and other forms of solid waste from industry and commerce. Sites suitable for landfill are becoming more difficult to find and, as a consequence, are being located remotely from the urban centres of population.

All facilities where waste is handled, treated or disposed of must be licensed by the Environment Agency. The licence specifies the types and quantities of waste which can be accepted at the site and the precautions which must be taken by the site operator to protect the environment. West Yorkshire has a long industrial heritage, especially in textiles and engineering and there are approximately 486 licensed sites in the area. These include transfer stations, waste storage facilities, chemical treatment plants, incinerators, scrapyards, household waste sites, gas flaring facilities and landfill sites.

When waste is deposited in a landfill site it breaks down to produce a polluting liquid (leachate) and landfill gas (mainly methane). The site operator must line the landfill site with an impermeable barrier to stop leachate polluting groundwater and landfill gas from migrating into property where it might explode. In some cases, landfill

gas is extracted from sites and burned to produce heat or generate electricity. Other waste disposal methods include incineration facilities and chemical treatment plants.

However, not all waste is disposed of. Thousands of tonnes of metal and other valuable materials are recycled through a network of scrapyards. Household Waste Sites and other recycling centres take a range of recyclable wastes such as oil, paper, cans, plastic, textiles and even paint. These too are licensed and regulated by the Agency to ensure that they do not harm the environment.



Recycling cans saves important raw materials

Industry and commerce have a Duty of Care to make sure their wastes are only collected by an authorised person and taken to an authorised waste disposal site. Waste carriers also have to be registered with the Agency before they can collect any waste. Illegal



Compacting waste at a landfill site



Stepping stones at Hardcastle Crag

dumping (fly tipping) of waste at unauthorised sites is always a problem, particularly in urban areas. Those who are caught flytipping are prosecuted.

Wastes which are the most dangerous to people or to the environment are called Special Waste. They include hazardous or toxic waste such as acids, pesticides and asbestos. Movement of Special Waste from its place of production to the disposal site must be authorised by the Agency. This provides an opportunity to check that the disposal site is suitable for the waste and that it is deposited safely.

There is a growing acknowledgement, however, that we cannot continue using up natural resources and producing waste the way we do. The government has recently produced a National Waste Strategy in order to try and address these problems. The first priority is to reduce the amount of waste we produce and if we must produce waste then we should try to reuse or recycle it. Only as a last resort should it be disposed of. Everyone has a part to play in this strategy whether at home, at school or in the work place. The Agency issues advice on the safe, efficient disposal of waste and will play a key role in delivering the new national strategy.

● The Agency has a 24 hour emergency hotline – **0800 807060** – for reporting environmental incidents. Pollution, poaching, fish in distress, risks to wildlife, flytipping, flooding – don't ignore it, report it!

ENJOYING THE CALDER

Although the Calder is predominantly an urban catchment, there is some spectacular scenery and noteworthy walks including the Calderdale Way and the Pennine Way footpaths.

The countryside around the Colden and Hebden Water tributaries of the Calder attracts birdwatchers and picnicking motorists. Self guided walks, promoted by Calderdale metropolitan Borough Council with aid from the Environment Agency, encourages visitors to enjoy the beauty of these lesser known river valleys.

The Pennine Way footpath crosses both the Colne Valley Circular walk and

the Calderdale Way, which skirts the catchment, passing moorland bogs, reservoirs, waterfalls, before crossing the river itself.

Hebden Water flows through an attractive wooded valley and Hardcastle Crag, owned by the National Trust, is a well-known beauty spot.

Downstream of the pretty town of Hebden Bridge, popular with day tripping motorists, there is a working clog factory, Walkleys, where traditional footwear is still made by hand.

At Sowerby Bridge, canoeists use a slalom course constructed along the main river.

Next to the river at Cromwell Bottom, by the Calderdale Way, former gravel pits are now used for water skiing and fishing.

Where the river passes Pugneys Country Park, windsurfers, canoeists and anglers take advantage of the enclosed waters created by former open cast mine workings next to the river. Sandal Castle, perched high above the Calder on a bluff just upstream of Wakefield, has important historical connections. It was here in December 1460, that Richard, Duke of York was slain in the Battle of Wakefield during the Wars of the Roses. Two centuries later, the castle was a Royalist stronghold attacked by Oliver Cromwell during the English Civil War.

The river has literary associations too. Poet Laureate, Ted Hughes, once lived at Lumb Bank on Colden Water and the building is now used as a school for creative writing.



Enjoying water sports at Pugneys Country Park with Sandal Castle in the background

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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

**ENVIRONMENT AGENCY
 GENERAL ENQUIRY LINE
 0645 333 111**

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

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 0800 80 70 60**



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