

EA NORTH EAST BOX 5



## River factfiles

The Aire catchment

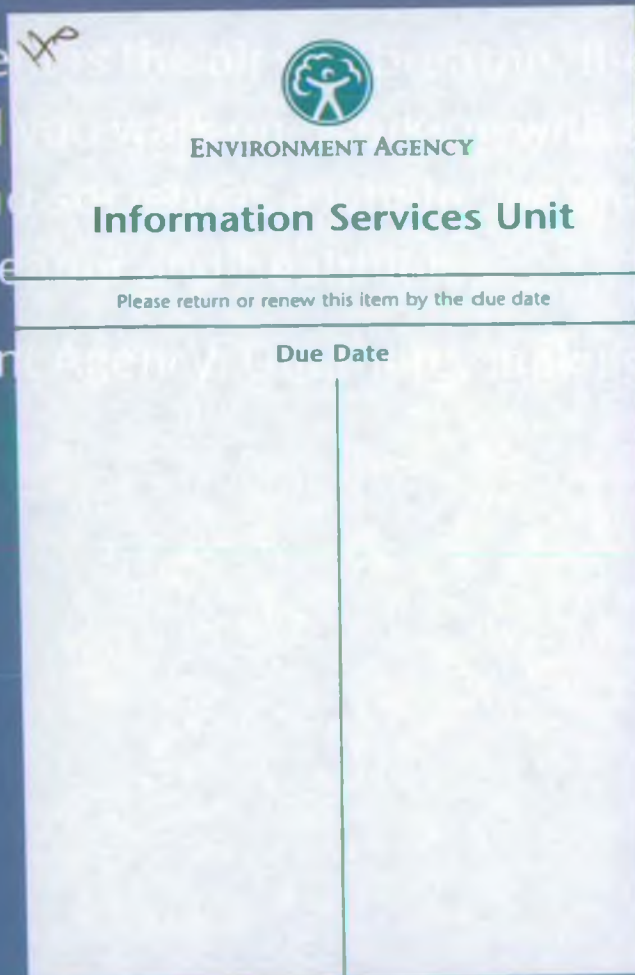
# get to know your rivers



We are the Environment Agency. It's our job to look after your environment and make it **a better place** – for you, and for future generations.

Your environment is the air you breathe, the water you drink and the ground you walk on. We work with business, Government and the public to make sure that the environment is clean and healthy.

The Environment Agency is making your environment a better place.



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The River Aire rises high in the Pennine Hills near Malham in the Yorkshire Dales National Park. It flows in a south east direction through limestone moorland areas passing Keighley, Bingley, Bradford and Leeds. At Castleford the river turns eastward to Goole where it meets the River Ouse.

From Keighley to Goole the river flows through heavily populated and industrialised areas. For the last 26 kilometres upstream of Goole the river is tidal.



# The Aire catchment

**Total catchment population:**  
Approximately 1.1 million

**Total catchment drainage area:**  
1,100 square kilometres

**Main river catchments:**  
Otterburn Beck, Eshton Beck, Broughton Beck, Eller Beck, Eastburn Beck, Silsden Beck, River Worth, Harden Beck, Bradford Beck, Oil Mill Beck, Meanwood Beck, Wyke Beck, Lindyke Beck/Sheffield Beck, The Fleet, Pudsey Beck/Low Beck, Fyston Beck, Washdyke Beck, Ings and Tetherings Drain, River Calder

**Length:**  
148 kilometres

**Altitude at source (above sea level or Ordnance Datum):**  
Approximately 450 metres

Until the seventeenth century, the river was used by the people of Leeds for drinking water but the onset of industrialisation and the dumping of sewage waste into the river made this a hazardous pursuit.

The Victorians had realised that open sewers and the disposal of 'night soil' – human waste – on land around the towns was causing outbreaks of typhoid and cholera and in a bid to deal with the problem they started a water-borne sewage system.

Waste from homes and streets went directly into rivers without any treatment. But it wasn't only sewage

waste that was being dumped into the river – industrial and factory waste found its way there too.

At the beginning of the nineteenth century the water quality was still good enough to support salmon downstream of Bradford but by 1825 the river was practically devoid of life. By 1840 the River Aire in Leeds was described as a 'reservoir of poison, carefully kept for the purpose of breeding pestilence in the town.'

The battle back from this low point was to be a long and arduous one but thankfully today the picture is much brighter for the River Aire.

ENVIRONMENT AGENCY



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# How clean are your rivers?

A legacy of pollution stretching back over hundreds of years meant it was going to be a hard task to improve the River Aire's water quality in the lower sections, as parts of it were completely devoid of life.

Stricter controls on what could be discharged, or released, into rivers came into force in the middle of the last century. But it is only in recent decades there have been improvements in water quality in the lower sections of the River Aire and its tributaries. This is due to a combination of tougher regulation and major investment by water companies and industry.

Industries today are continuing their work to minimise pollution in the catchment. By careful housekeeping, companies throughout the area are successfully reducing the volume and strength of their wastes – and finding that they save money too.

A programme of improvements for sewage systems and sewage treatment facilities has been agreed with water companies until 2010. This will further benefit the Aire's water quality and the appearance of some sections of river, which can sometimes be polluted by unsightly sewage litter.

The upper sections of the Aire have good water quality due to the rural, sparsely populated nature of the area. However, farm wastes and fertilisers can cause problems for rivers and the life they contain, so we work with the agricultural community to minimise the risks of pollution.

While there is cause for celebration about the state of the Aire today, there is still a great deal of work to be done. Our officers, industry and water companies will continue working together to solve problems and keep a strict control on what can be released into the rivers.

## Water quality classification 2004

The River Aire and its tributaries, 550.7km



- Class A – very good 6.1%
- Class B – good 48.3%
- Class C – fairly good 24.3%
- Class D – fair 10.9%
- Class E – poor 9.3%
- Class F – bad 1.1%

**Class A and B rivers** are of a high quality – clean enough for salmon and trout to live in and to be used for drinking water. They also support a variety of invertebrates (worms, insects etc) including mayflies and stoneflies.

**Class C and D rivers** are often home to coarse fish such as roach and chub and sometimes trout in C waters. These rivers can be used for drinking water if it is treated and a good variety of invertebrate life can be found.

**Class E rivers** can still support coarse fish but cannot be used for drinking water.

**Class F rivers** are badly polluted. Worms and midges can live in them but fish cannot.

Did you know you can check out the state of your local river by using our website?

By accessing the “What’s in your backyard” section you can choose any one of the 7,000 sites where our officers sample and test the water quality. All you need is a place name or postcode. Check out your river at [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk).

“Major improvements to the quality of effluent from sewage treatment works and re-stocking of the river by the Environment Agency has seen the re-establishment of coarse fish populations in what were once fish-less zones.”

Pat O'Brien, Environment Agency fisheries officer

## Fisheries



From the headwaters of the Aire down to Gargrave, the river is a wild brown trout fishery with increasing numbers of grayling. Below Gargrave the fishery continues to be predominantly a trout fishery with increasing numbers of chub, dace, pike and roach.

The distribution of trout and grayling now extends further downstream into the sections around Leeds and Bradford, a positive indication of much cleaner water. The river also supports increasing populations of mixed coarse fish.

Major improvements to the quality of effluent, or waste, released from Marley, Esholt and Knostrop

sewage treatment works and major re-stocking of the river by us has led to coarse fish populations being re-established in areas that were once unable to support them.

The lower River Aire is now a thriving coarse fishery very popular for angling for species such as roach, bream, perch, chub, dace and gudgeon.

Historically the Aire was a salmon river with catches recorded into the early part of the nineteenth century until the effects of pollution brought a halt to their presence. In recent years salmon have returned to the lower reaches of the river and the first recorded rod caught salmon was at Eggborough in 2001.

Significant water quality improvements have been made to the river but more improvement is required before it can support a sustainable salmon fishery.

Salmon are migratory and the main obstacle to their re-colonisation is the large number of weirs. Fish passes need to be installed on them to help salmon in their journey upstream to spawning grounds. Several of the larger weirs have already been surveyed with a view to installing fish passes as funding becomes available.

# Wildlife and conservation



Rare and protected species, including otters, water voles and our native white-clawed crayfish, are to be found in this river catchment and work is taking place to protect them and their habitats. Otters in particular appear to be expanding their range in the catchment, which is very encouraging. In the last century, around 17 species of plants and animals became extinct in the UK, emphasising the need to care for our native species and the areas in which they live.

The Aire catchment is home to sites of national and international importance for wildlife. The diverse countryside offers a range of habitats from reedbed and grasslands to the rare limestone pavements found in the Yorkshire Dales National Park. Ferns are the most characteristic plants of this habitat, with the very rare Buckler Fern and Baneberry found only on limestone pavements.

Much of the catchment above Malham, namely Craven Limestone Complex, is a Special Area for Conservation (SAC) because of its geological features, plants and animals.

We continue to work with many other organisations to protect and improve habitats and the wildlife they attract. This includes a project with Durham University to identify the numbers of native crayfish in the upper Aire. We are also involved in a partnership project with English Nature to identify existing habitats and the potential for creating nationally important habitats within the floodplain.

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**Otters** exist in a small but increasing population on the River Aire.

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**Water voles** are found at a number of locations.

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Large populations of **native white-clawed crayfish** exist in the upper sections of the Aire, particularly in the Eller Beck upstream of Skipton. Meanwood Beck in Leeds also supports a healthy population as does the Leeds and Liverpool Canal.

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**Dippers** are found on the watercourses of the upland areas of the catchment.

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**Twite, pipistrelle bat, lapwing** and **blue butterflies** are all found throughout the catchment.

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# Pollution watchdog

Pollution prevention and control is a vital part of our work. We are responsible for regulating many industrial processes to make sure they are not damaging the environment.

Major investment by industry over the past couple of decades, as well as much tougher limits on discharges to air, land and water, have all had benefits for the environment.

This work and investment is continuing throughout the Aire catchment and will hopefully bring about further improvements in water quality and a reduction in pollution incidents.

But the work doesn't stop at big industrial processes – other businesses and the farming

community also need to be pollution aware. We work with all these sectors to highlight the simple ways they can help protect the environment and even save money at the same time.

Slurry and fertilisers can have a devastating effect on water quality, wildlife and fish stocks. Every year we have to deal with damaging incidents caused by inadequate storage facilities or poor working practices.

Some of these are caused by the collapse of lagoon walls, leading to

the release of slurry, which runs across land into watercourses and can wipe out fish stocks for miles downstream. Overfull slurry stores can also cause problems if heavy rainfall gets into them and they overflow.

Thankfully the picture is not all doom and gloom as very simple steps can prevent problems and we are working with farming organisations in a bid to wipe out bad practise and reduce damaging incidents.

## Setting new standards in effluent treatment case study

A Castleford chemical company has invested millions of pounds in an effluent treatment plant to ensure its liquid waste is cleaned up to a high standard before being released into the River Aire.

BOC Gases designed and built the plant, which is operated by C6 Solutions Ltd, formerly Hickson & Welch, on a 15-year licence.

It treats the effluent from the whole site to a level where it is

clean enough to be discharged directly into the river.

Before the plant was built, 90 per cent of the site's effluent was sent to the Castleford sewage treatment works, the rest had to be disposed of offsite by biological treatment or incineration.

The new effluent treatment plant is the first of its kind to be built in the world and is expected to set new standards in the treatment of chemical waste. It processes the

site's aqueous waste to such a high standard, it can be discharged straight to the river.

The investment has not only been good for the environment, but will ultimately save the chemical company money. Its waste no longer needs to be sent to the sewage treatment works or to waste disposal contractors.

You can find out more about our regulatory role and powers, as well as details of industry discharges, on our website at [www.environment-agency.gov.uk](http://www.environment-agency.gov.uk). Find out what's being emitted from industrial sites in your area, including into controlled waters. Go to 'What's in Your Backyard' click 'search for other topics' and click on 'pollution inventory'.

# Water source

Water is essential to life and the Environment Agency has a duty to make sure our water resources are used properly. To do this, officers closely monitor water in the environment. Abstraction licences are issued to regulate who can take water from the environment and the amount that can be taken over a period of time.

The River Aire catchment is home to around 1.1 million people. There are too many people for the available water in the catchment.

Therefore, water needs to be piped in from other areas for supply to homes and industry. The Wharfe, Nidd, Ure, Ouse and Derwent

catchments all provide water supplies to homes and industries in the Aire catchment.

The cleaner upper sections of the Aire and its tributaries feed reservoirs used for drinking water. Winterburn reservoir near Gargrave supplies water to the Leeds and

Liverpool Canal. Lower down, the Aire is also the source of cooling water for the power stations at Ferrybridge and Eggborough. Water is also taken from aquifers – underground rocks that absorb and hold water – using wells or boreholes.

# Watching the waste

Every year more than 400 million tonnes of waste is produced in England and Wales, with about 25 million tonnes of this from households. All this waste has to be safely handled and disposed of.

The great bulk of waste at the moment is disposed of in landfills. When it breaks down it produces a liquid called leachate, as well as methane gas.

Landfill site operators have to make

sure this liquid doesn't escape into groundwater or rivers by lining their sites with impermeable barriers.

We regulate the movement and disposal of waste through a system of licences. We also work with

landfill site operators and other businesses to make sure that deposited waste does not pose a risk to the environment.





# What's under your feet?



From its source near Malham to Skipton the River Aire flows over Carboniferous Rocks, which are between 280 and 360 million years old.

It crosses younger Carboniferous Rocks, first Millstone Grit and then Coal Measures, between Skipton and Castleford.

At Castleford the river crosses a narrow outcrop of the Magnesian Limestone before crossing the flat, mineral rich Selby Plain. In this area there are also outcrops of the Sherwood Sandstone.

# Dealing with flood risk

Recent years have shown how communities across the UK are at risk of flooding. Climate change will probably increase this risk and so it is as important as ever that people are aware of the steps they need to take to help protect themselves and their property if they live in a flood risk area.

We have invested heavily in both flood defence and flood warning systems throughout the Aire catchment.

The main tributary of the Aire is Oulton Beck. Flood storage washlands in the wide upper Aire valley, between Gargrave and Keighley, reduce the risk of major flooding in the heavily built-up middle sections further downstream. Washlands below Leeds protect riverside towns such as Castleford.

These washlands act as safety valves during times of heavy

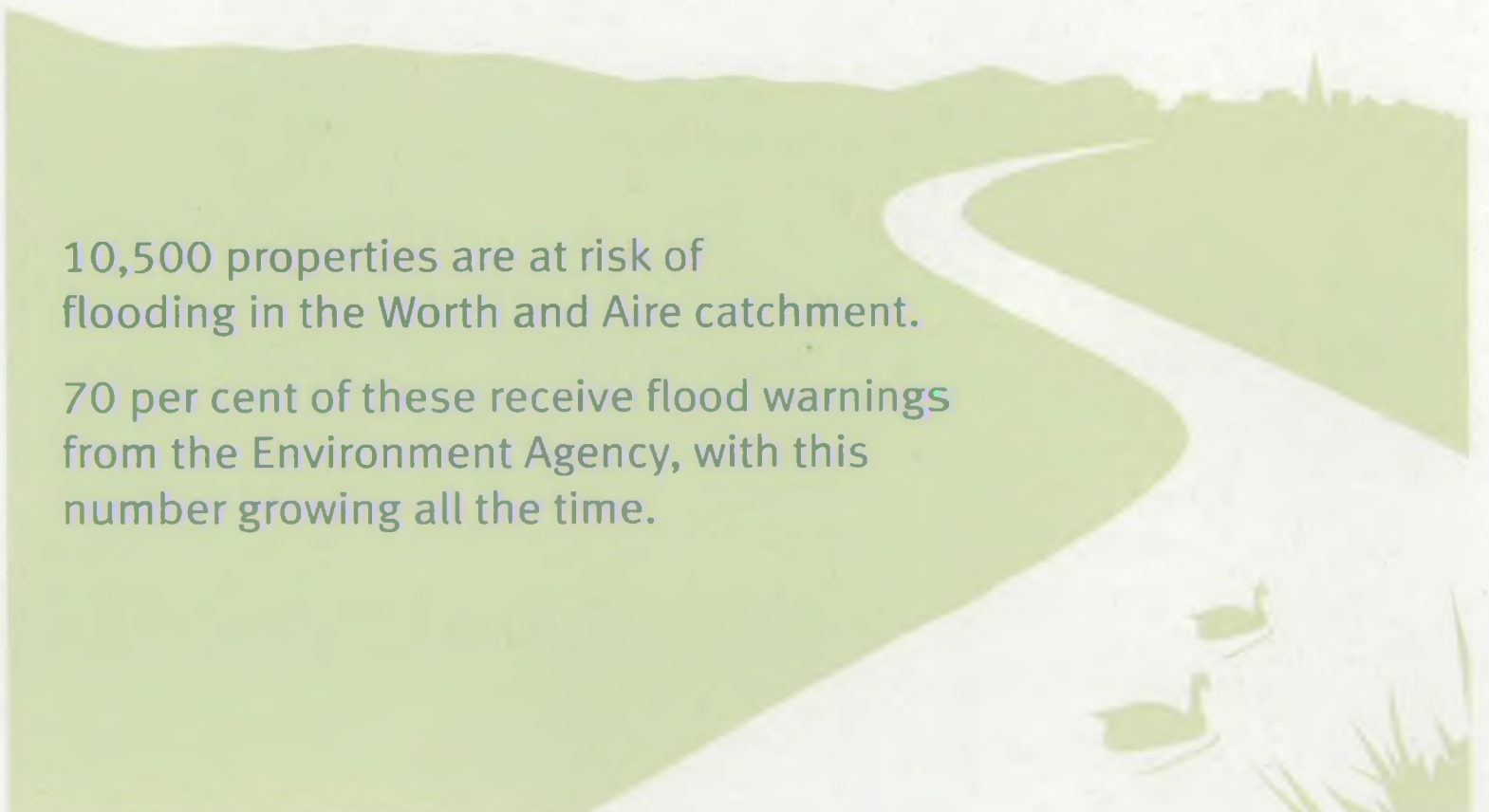
rainfall, storing excess water. When the main flood peak has passed the water can be slowly released. This reduces the maximum water levels downstream and so reduces the risk of flooding.

Downstream of Ferrybridge large areas of riverside farmland are protected by embankments to prevent regular flooding. However, larger floods will overtop these defences and the water will spill onto the floodplain. This prevents flooding further downstream in the lower sections, where river levels are increased by high tides.

New flood defence schemes for Gowdall and Stockbridge, Keighley, were constructed after the autumn 2000 floods, which saw many properties in the towns hit by flooding.

In a bid to tackle flood risk we are starting to look at the catchment as a whole, rather than communities in isolation.

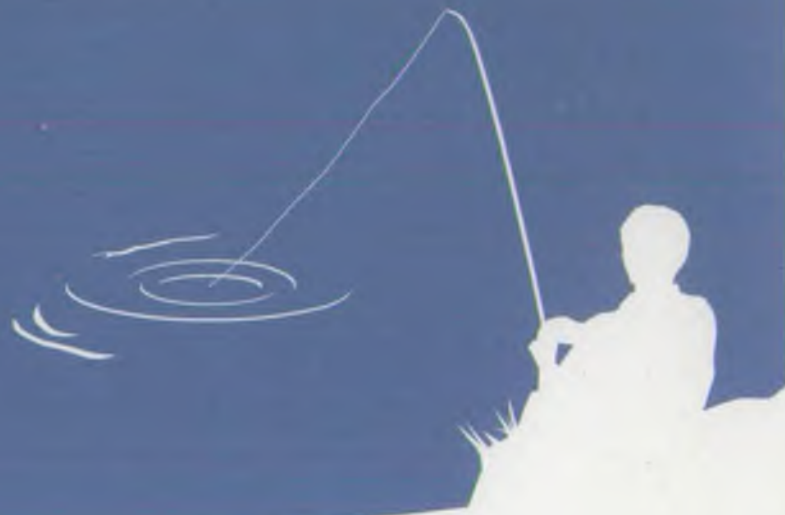
The way land is managed in the uplands of a catchment has impacts much further downstream, and every development in the floodplain can have an effect on flood risk.



10,500 properties are at risk of flooding in the Worth and Aire catchment.

70 per cent of these receive flood warnings from the Environment Agency, with this number growing all the time.

# Get the most from your rivers



**Walking** – Ramblers walking the Pennine Way follow the beginnings of the Aire from Malham Tarn to Gargrave. The Leeds spur of the Trans-Pennine Trail provides a link between the Armouries Museum and the main line of the trail downstream.

**Angling** – There are growing angling opportunities throughout the river catchment. For more information get a copy of our **North of England Angling Guide** by contacting us on **08708 506 506**.

**Navigation** – A unique double-decker aqueduct carries the Leeds and Liverpool Canal over the Aire near Gargrave and whilst there is no navigation on the river itself, narrow boats, cruisers and canoes make use of the canal here. The river and canal merge and part a number of times downstream of Leeds and the navigation is used by commercial vessels coming upstream as far as Hunslet.

## Useful contacts

Bradford Tourist Information Centre 01274 753 678 [bradford@ybtbic.co.uk](mailto:bradford@ybtbic.co.uk)

Leeds Tourist Information Centre 0113 242 5242 [tourinfo@ls.gw.yorks.cc](mailto:tourinfo@ls.gw.yorks.cc)

Malham Tourist Information Centre 01729 830 363

Selby Tourist Information Centre 01757 703 263

**Would you like to find out more about us,  
or about your environment?**

**Then call us on**

**08708 506 506** (Mon-Fri 8-6)

**email**

**enquiries@environment-agency.gov.uk**

**or visit our website**

**www.environment-agency.gov.uk**

**incident hotline 0800 80 70 60** (24hrs)

**floodline 0845 988 1188**



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