

DOWN TO THE WYRE

A watercolor illustration of a rural landscape. A winding river flows through the center, surrounded by green hills and fields. There are several clusters of trees, some with green foliage and others bare. In the lower right, a purple tractor is parked near a fence, with a few sheep nearby. In the background, there are some buildings, possibly a farm. The overall style is soft and artistic, with a focus on natural elements.

Understanding the Benefits of Natural Flood Management

MORECAMBE BAY
SPECIAL AREA OF
CONSERVATION



The River

FLEETWOOD

KNOTT END-ON-
SEA

PILLING

PREESALL

STALMINE

HAMBLETON

NATEBY

WYRE ESTUARY
SITE OF SPECIAL SCIENTIFIC
INTEREST

OUT RAWCLIFFE

SKIPPOOL

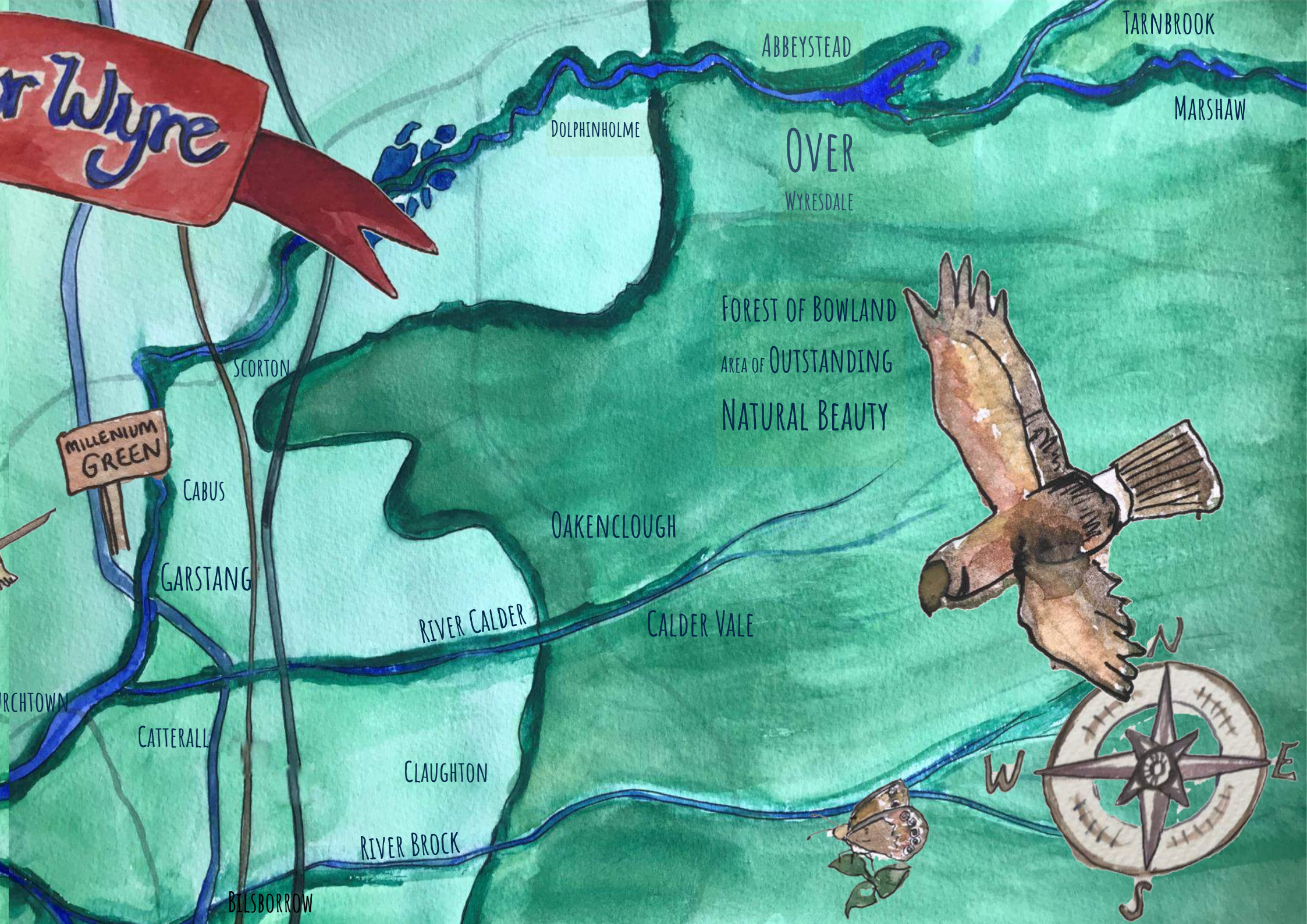
GREAT
ECCLESTON

ST MICHAEL'S
ON WYRE

THORNTON-
CLEVELEYS

POULTON-LE-FYLDE





r Wyne

ABBEYSTEAD

TARNBROOK

MARSHAW

DOLPHINHOLME

OVER
WYRESDALE

FOREST OF BOWLAND
AREA OF OUTSTANDING
NATURAL BEAUTY

SCORTON

MILLENIUM
GREEN

CABUS

GARSTANG

OAKENCLOUGH

RIVER CALDER

CALDER VALE

ARCHTOWN

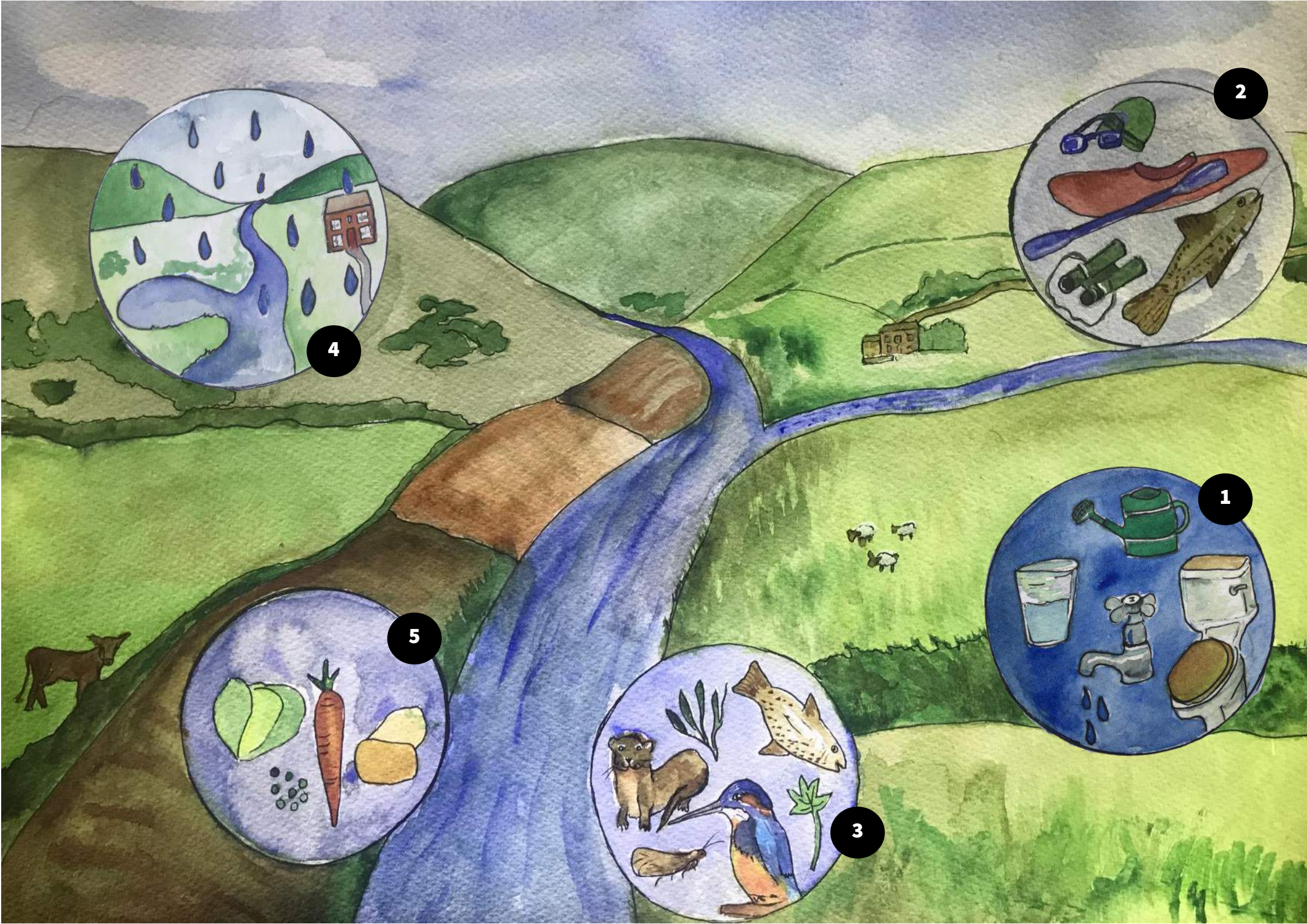
CATTERALL

CLAUGHTON

RIVER BROCK

BILLSBORROW





2



1



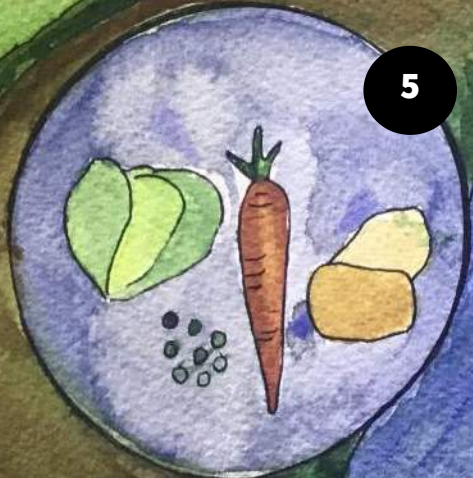
3



4



5



Our rivers are important features in our landscape. They provide lots of benefits for us and are home to a wide variety of animals and plants.

Look carefully at the pictures and try to answer the matching questions below.

1

What do we need water for?

2

How can we enjoy the river at our leisure?

3

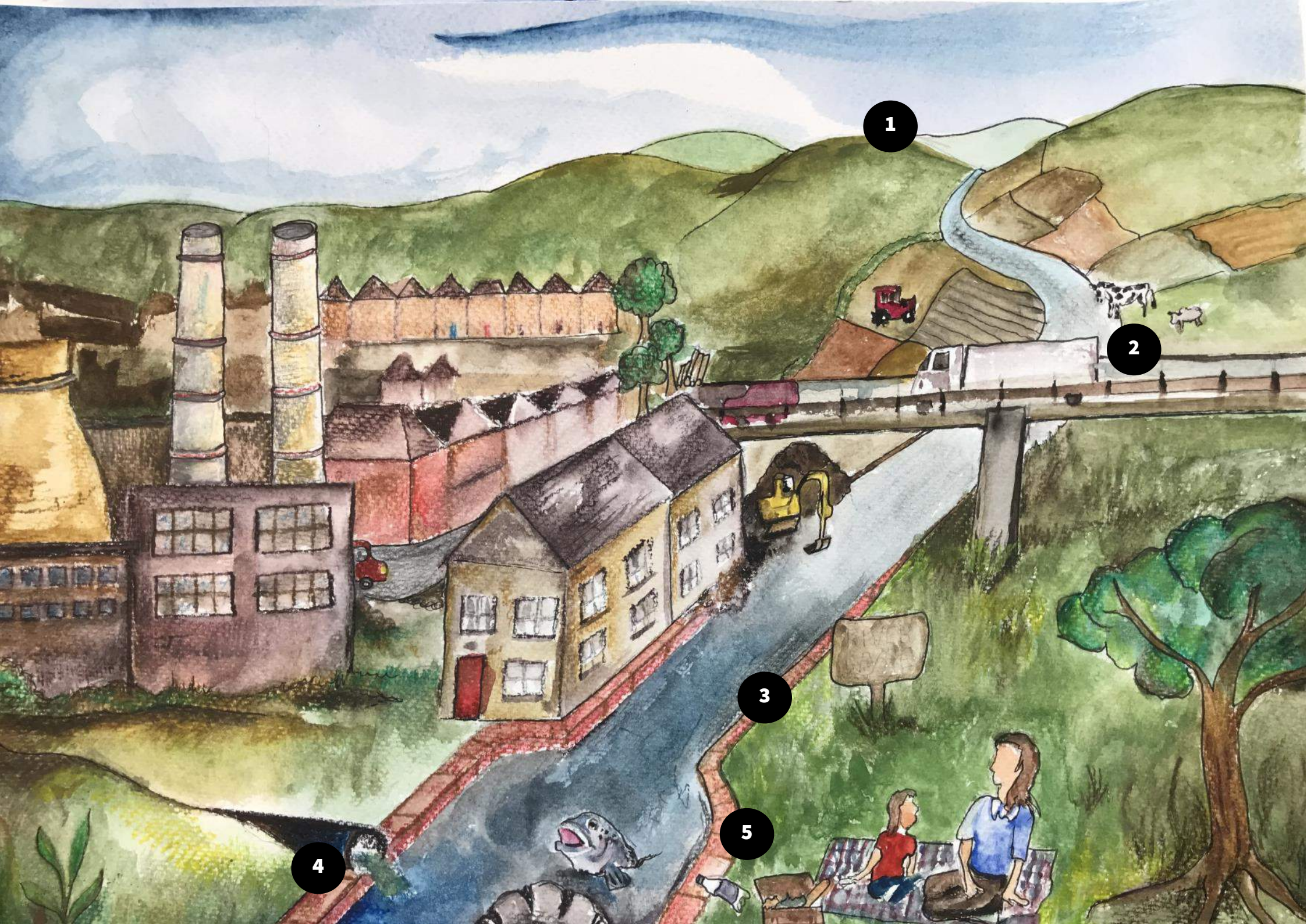
Can you identify any of the type of animals that live on or near the river?

4

Rivers store water when there is lots of rain. Why do you think this is important?

5

How do rivers help us produce food?



1

2

3

4

5

People don't always treat our rivers with respect, which affects the river's ability to store water. What are some of the issues you can see in this picture?

1 These hills are "bald". What has been removed?

2 The cattle can get close to the river. Why is this good for the farmer? Why is it bad for the river?

3 The river has been "straightened" as it passes the factory. How will this affect the speed of the river?

4 The water coming from the factory has been through a treatment works before emptying into the river. Why is this important?

5 When you have a picnic by the river, what should you do with your litter? Why?



Say no to bald hills!

Cutting down trees means that there are no roots to take up water from the soil.

When leaves and branches break down, they act like a sponge to absorb water. Without leaves and branches breaking down, the soil can hold less water.

Where do you think the water goes instead?

DID YOU KNOW?

Organic matter is made up of animals, plants and their waste products such as fallen branches and leaves. They break down in the soil and provide **nutrients** for new plants to grow.

Organic matter also stores lots of water.



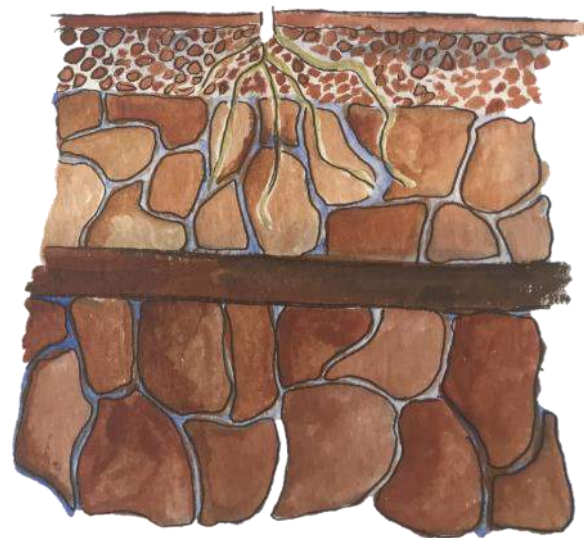
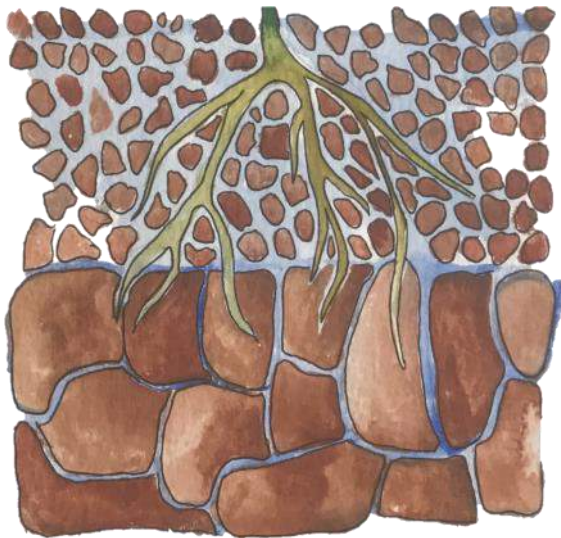
Farming practices can also affect what happens to water.

Heavy machinery and farm animals can compact soil, making it harder for water to drain into the ground.

Where there are no plants, soil is easily blown or washed away. Draining and ploughing on a slope can increase the rate of soil **erosion**. When soil is lost from the land in this way, water and nutrients contained within the soil are also washed into the river.

Can you draw what you think a plant growing in each of the two types of soil below would look like?

This soil has a good structure. Air and water can **infiltrate** the particles of soil.



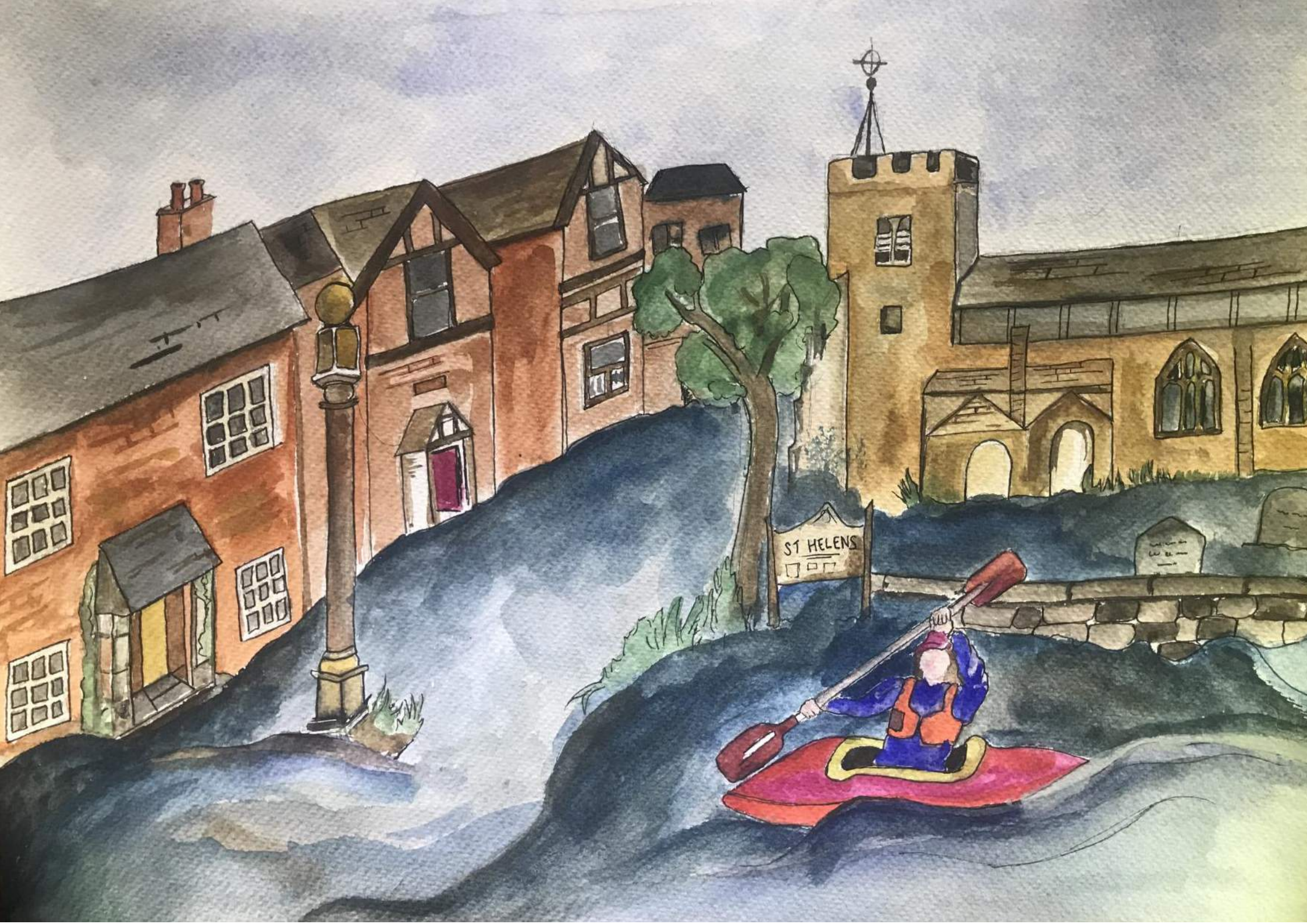
This soil has been compacted. Soil particles are packed so tightly that air and water can't get through.



Man-made changes to the river can reduce its ability to hold water.

- Many channels have been straightened to save space.
- Embankments have been built to stop flooding.
- Gravels have been cleared from the river (known as dredging).
- River banks have had vegetation (plants and trees) removed from them.

Straightening and clearing the riverbanks and riverbeds increases the speed of water as it flows through the landscape. These changes also mean that water can no longer overflow into **floodplains** when there is lots of rain. The river doesn't have enough space to store all the extra water.

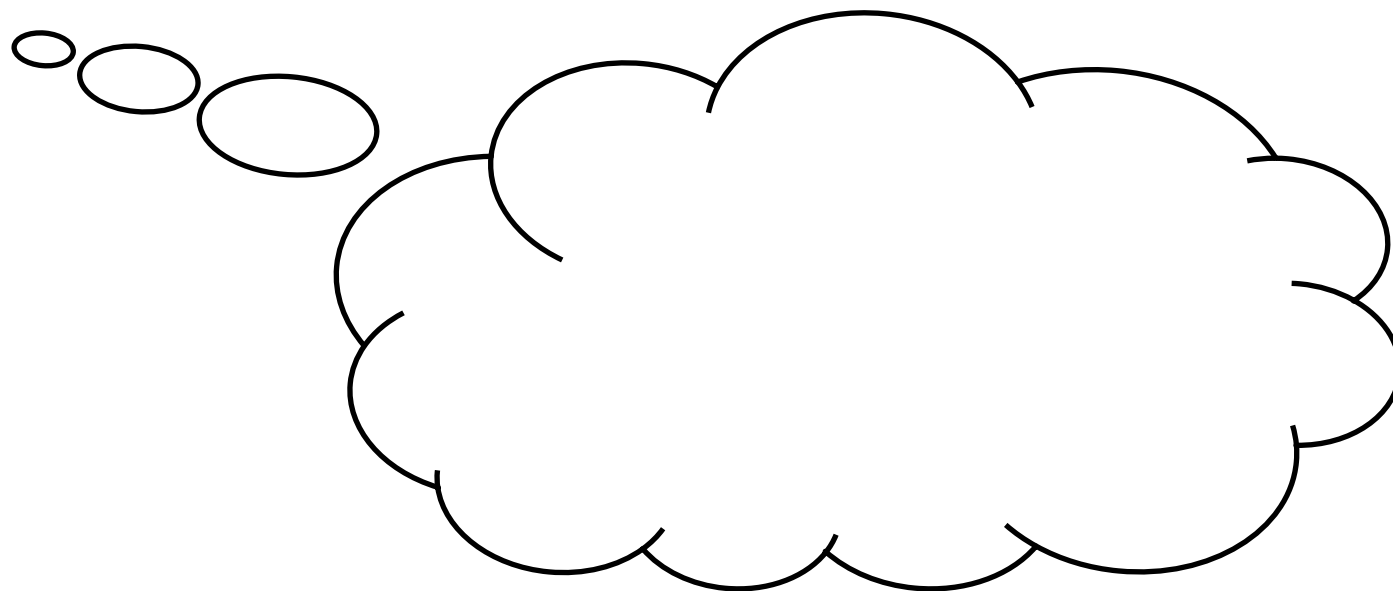


The issues you have read about may contribute to flooding in our towns and villages. Flooding can cause damage to homes and businesses.

Climate change affects our weather, causing intense periods of rainfall to become more frequent.

Do you know any places that have been flooded?

Can you describe your memories of flooding? What did you see? Smell? Hear? How did you feel? Why?



It's not too late to do something! The Wyre Rivers Trust are working with landowners and volunteers to try and reduce the risk of flooding. We are doing this by working with natural processes to reduce the amount of water flowing through our landscape and to slow the flow. This is called **Natural Flood Management**.



You can find out more about the work we are doing on the following pages.



1 Tree planting

Trees can store lots of water, but that is not all that they do! Trees provide **habitats** for wildlife and offer shelter for farm animals. Leaves and branches get in the way of the rain as it falls, slowing it's journey from the clouds to the ground. Fallen branches in the river slow the flow of water so that it takes longer to reach areas **downstream** that are at risk from flooding; these branches also provide **habitats** for invertebrates and fish and make good perches for mammals and birds. Tree roots help to hold the banks of the river together, which stops the soil from being broken off and washed away.

Our volunteers love planting trees!



2 Farming practices

The Wyre Rivers Trust work with farmers to encourage them to use methods of farming that limit **soil compaction** and **erosion**.

Buffer strips are areas where plants are encouraged to grow. Next to a river, these strips prevent water from rushing directly into the watercourse and can also filter out **pollution**.

Fencing keeps farm animals from grazing these areas and protects the banks from being **poached**.

DID YOU KNOW?

A pollutant is a substance that is bad for the river when it gets into the water. They starve the water of oxygen which can damage the animals and plants living there.

Common pollutants in the River Wyre include :

- ♦ soil
- ♦ pesticides
- ♦ cow poo



3 Land management

The Wyre Rivers Trust are building 200 leaky dams in the Upper Wyre. Leaky dams help to slow the flow of the water so that it takes longer to reach areas at risk of flooding. These dams are leaky so that water and **sediment** can still pass through them, as well as fish and invertebrates!

On the Tarnbrook and Marshaw Fells, gully blocks made of natural materials such as straw are placed across watercourses to collect water and **sediment**, helping to re-wet areas that were once boggy.

The Wyre Rivers Trust also create ponds and other wetlands to help store water. Read the boxes to find out more about wetlands. ►

DID YOU KNOW?

87% of the world's wetlands have been lost in the last 300 years. As well as reducing flood risk, they have a number of other benefits...

BIODIVERSITY

Wetlands provide homes for 1000's of different types of wildlife. Can you think of an animal that might live in a wetland on the River Wyre?

WATER QUALITY

Wetland plants trap **pollutants** and **sediment**, improving water quality. Can you think of where some of these **pollutants** might come from?

CLIMATE

Wetlands trap huge amounts of carbon in their soils, reducing the amount of carbon dioxide in the atmosphere which contributes to climate change



4 Monitoring

The Wyre Rivers Trust monitors all the things it does to make sure it is working as planned.

Water depth sensors monitor the depth of water in a river, they can be used to show how effective our leaky dams are.

Wildlife cameras allow us to see how well our leaky dams are working 24 hours a day, so we don't have to go out and check them in the rain or at night.

DID YOU KNOW?



Kick sampling is a way of monitoring invertebrates in a river or stream. Someone stands in the river with a net, kicking up stones and **sediment** so that any creatures attached to them float into the net. These river-living insect **larvae** are particularly sensitive to changes in flows and pollution, so they are a good indicator of what is happening in the wider environment. They include mayflies (left), stoneflies and caddis flies.



Glossary and useful links

Downstream- further away in the direction the river is flowing

Erosion- where soil is gradually damaged and removed by the river, rain, or wind

Floodplain- an area of flat land near a river that is often flooded when the river becomes too full

Habitat- the place or environment where a plant or animal normally lives and grows, providing food and shelter

Infiltrate- to pass through something

Larvae- the young form of an insect

Natural flood management- use of natural landscape features and processes to reduce flood risk

Nutrients- a substance used by an organism to survive, grow, and reproduce

Permeable- allows water to pass through it

Poaching- when livestock have access to the banks of a watercourse and cause problems by eating and trampling bankside vegetation. This means silt gets into the river which can kill plants, invertebrates and fish eggs

Pollutant- A substance that is bad for the environment it is in

Riverbed- the bottom of a river channel

Sediment- The material that settles to the bottom of a river including sand and gravel

Soil compaction- where bits of soil are pressed tightly together so water and air can't get between.

To Find out more:



The Rivers Trust–
Reducing Flood Risk
at Home



Wyre Rivers Trust



The Flood Hub

WHAT CAN YOU DO TO HELP?



PLANT TREES AND HEDGEROWS.

They take up water from the soil and slow its flow across the landscape

USE PERMEABLE PAVING.

This allows water to drain away naturally



LAY A REAL GRASS LAWN rather than a plastic one to improve drainage



USE PLANTERS to help slow the flow of water. They also look great and attract wildlife



USE WATER BUTTS

to capture rain water from roofs. You can use this to water your garden



PLANT A GREEN ROOF on your shed to reduce the speed water hits the ground as well as attracting wildlife.



Our towns and cities are increasingly under threat from flooding. 'Down to the Wyre' takes a look at the reasons for this and the ways in which we can work with natural processes to help protect homes and businesses.

The Wyre Rivers Trust has been working since 1988 to improve water quality, habitat quality, connectivity, and flood risk. This is done through research and monitoring, river restoration and engagement projects and is supported by more than ten partners from all sectors.

