Adaptation Report Summary

October 2021

Navigating this document

Contents page

The contents page links out to every section within this document. Clicking on a specific section will instantly take you to it.

1. Click on the contents button to return to the contents page.
2. The back button returns you to the last page you visited.
3. This button takes you to the previous page.
4. This button takes you to the next page.

There are also many other clickable links within this document which we've made easy to spot by underlining and **highlighting** them in blue. If you click on one of these links, but then wish to navigate back to the page you were viewing previously, simply click the 'Back' button at the top of the page.

Welcome

Welcome to Yorkshire Water's third Adaptation Report. We submit these reports every five years to the Secretary of State for the Environment to show how we are managing our climate change risks such as flooding and drought. As a provider of essential public health services, it's critical that we are able to continue providing these services whatever the weather, well into the future.

We need to make sure we are accounting for the impacts of hotter, drier summers, wetter winters and rising sea levels in our long term planning so that we never run out of drinking water, and you can always flush your toilet without harm to the environment.

In line with the guidance issued to us by Defra, we have reported against six priority risks from the national Climate Change Risk Assessment which particularly affect infrastructure, along with two others which are especially relevant to a water company. These largely correlate with the risks we reported against in our previous report in 2015 so you can compare what we said last time with what we have done since and what we plan to do next to manage these risks.

Our Adaptation Report describes how we assess our climate change risk, what climate change data we use, how we model the future, what investment we have made to manage our risks, and how we have responded to the extreme weather events of recent years like the Boxing Day floods in 2015 and the Drought in 2018. It's a technical report with lots of detail so we have produced this summary to highlight the main points.

Contents

We've created colour-coded sections to help you to navigate this report easily. Just click on the section you are interested in on the contents page, and it will navigate you to that section.

The report is structured as follows:

1. Risks to public water supply from droughts and low river flows

Risks to public water supply from droughts and low river flows

We are fortunate that we have a large region with a mixture of different water sources (reservoirs, rivers and groundwater) and a regional water grid that allows us to move water between different areas. This means we have a lot of flexibility in where we get our water and where we can send it, and we can store water in our reservoirs which gives us extra resilience.

However, we can't be complacent. Climate change is affecting where and when it rains and we are already seeing these changes in our region now. The drought we experienced in 2018 was made 30 times more likely because of the carbon emissions already in the atmosphere and we can expect a summer like that every other year by 2050. Our population is also growing, and we need to make sure there is always enough water for everyone, now and in the future. At the same time, we need to make sure there is enough water left for wildlife and for other water users like farmers and industry.

To do this, we use a range of data and computer models to plan for the climate, population and economy we can expect in the next five years, and in the next 25 years. We do this every five years on a rolling basis and if you want to dig into the technical detail you can find that here. Our latest plan (WRMP19) shows that, if we did nothing, demand for water would outstrip supply by the mid 2030s due to the impacts of climate change. To avoid this we are investing £40 million a year in reducing leakage rates by 15% by 2025. You can help by always using water wisely, turning your tap off when you brush your teeth, getting a water butt for your garden, and other small steps.

These might not seem like much but if every one of our five million customers did these small things, we could save millions of litres of precious, treated drinking water, and the associated energy and carbon cost of producing that water.

So how do we manage the risk of running out of water in a drought? At the moment, our plan shows that our customers enjoy one the highest levels of resilience to drought in the UK and the risk of Yorkshire Water customers experiencing supply restrictions is extremely low. But we have had a drought recently and we know that heatwaves and droughts will become more common and more severe as global temperatures rise. We can expect a dry, hot summer like 2018 every other year by 2050. In hot weather people use far more water than usual in showers, paddling pools and watering their gardens which means we have to take more out of reservoirs and rivers, leaving less for wildlife. If hot, dry weather persists, we would have to implement our Drought Plan which sets out the measures we take to keep water supplies flowing even when it hasn't rained for months.

These start with water saving campaigns for customers, increasing our own efforts to reduce leakage, and moving water around. If a drought persisted, we would then have to start restricting non-essential users such as car washes, reducing compensation flows and increasing abstractions from rivers and boreholes. Heatwaves and droughts can have serious impacts on human health and on wildlife so its important we prepare for these events to make sure we always have enough water.

Our planned investment over the next five years is £40 million per year on reducing leakage, £28 million on clean water network resilience and £230 million on clean water network infrastructure.

Our current WRMP19 and our Drought Plan can be found here.

You can check our leakage and water efficiency performance here.

And you can order a free water saving pack and discounted water butts here.

2. Risk of sewer flooding in a storm

Risk of sewer flooding in a storm

Sewer flooding is one of the worst things that can happen to a customer and we try extremely hard to prevent it from happening. We deal with around 1,800 internal sewer flooding incidents per year and the vast majority of these (more than 95%) are caused by blockages or collapses.

Every year we clear 25,000 blockages (mainly wet wipes mixed with fat) from our network. It's vital that we work together to maintain the capacity of our sewer network so that it can cope with the increasingly intense rainfall we are experiencing now, and which will get worse in the future as the climate changes. We can expect a 13% increase in the average intensity of rainfall across the Humber catchment by the 2050s, and rainfall records are already being broken across the country[1].

The sewer network has historically been designed to carry day-to-day rainfall up to a 1 in 30 event[2]. During periods of heavy rainfall and in storms, storm overflows on the network allow excess rainfall to discharge to rivers to prevent it from backing up and flooding people's homes. This approach has served us well in the past, allowing us to balance the risks of flooding people's homes with the impacts of discharging storm flows to the environment. But climate change driven increases in rainfall volumes and intensity, population and housing growth and the increase in the amount of hardstanding (eg when front gardens are paved over) means that the risk of the sewer network being overwhelmed and causing flooding is increasing.

We are creating new long term Drainage and Wastewater Management Plans to help us tackle this growing problem. These plans are developed in collaboration with local authorities to make sure they align with local authority surface water flood plans. Our plan will include the impacts of climate change and the draft will be released for consultation in 2022. You can find out more **here**.

We have also been lobbying hard for several years to make sure that new development doesn't add to our existing risk by clarifying the legal responsibilities for new drainage systems and encouraging the use of Sustainable Drainage Systems (SuDS). SuDS are a different way of managing rainwater which use natural processes and above ground features like ponds and rain gardens to manage the flow of water, instead of concrete tanks and below ground pipes. SuDS are a more sustainable way of managing the risk of surface water and sewer flooding but not everywhere has suitable ground conditions, or the space for a SuDS so we will still need to invest significantly in our existing pipe network to make sure it can cope.

To tackle the particularly complex flooding risk in the Hull and East Riding area we have formed a long term strategic partnership with the Environment Agency and Hull and East Riding Councils. We will pool our funding and work together to manage the risk of flooding and increase community resilience. You can read more about our flagship Living with Water partnership **here**.

1. **metoffice.gov.uk/about-us/press-office/news/weather-and-climate/2020/2020-winter-february-stats**
2. A 1 in 30 event is one that happens, on average, every 30 years.

We will invest £238 million over the next five years to maintain and repair our sewer network, £76 million in directly tackling sewer flooding and a further £106 million to tackle flooding and pollution. We will also invest £8.9 million to upgrade or improve our sewer models covering our 600 drainage areas zones.

We have targets for internal and external sewer flooding, as well as targets to remove surface water from our network and targets to work in partnership with other organisations to manage shared risk. You can read more about how we are performing against these targets **here**.

You can order a free anti-blockage kit to play your part in keeping our drains running freely **here**.

3. Risks to public health from poor water quality

Risks to public health from poor water quality

The risks to public health from poor drinking water quality are very low thanks to very strict drinking water standards and a robust regulatory regime protecting this most essential public service. Compliance with drinking water safety standards is extremely high with 99.96% of all samples tested meeting the required standard across England and Wales[3] over the last five years.

The standards are set to protect public health and to ensure water quality is acceptable to consumers and include strict limits on micro-organisms, chemicals such as nitrate and pesticides, metals such as lead and copper, and the way water looks and how it tastes.

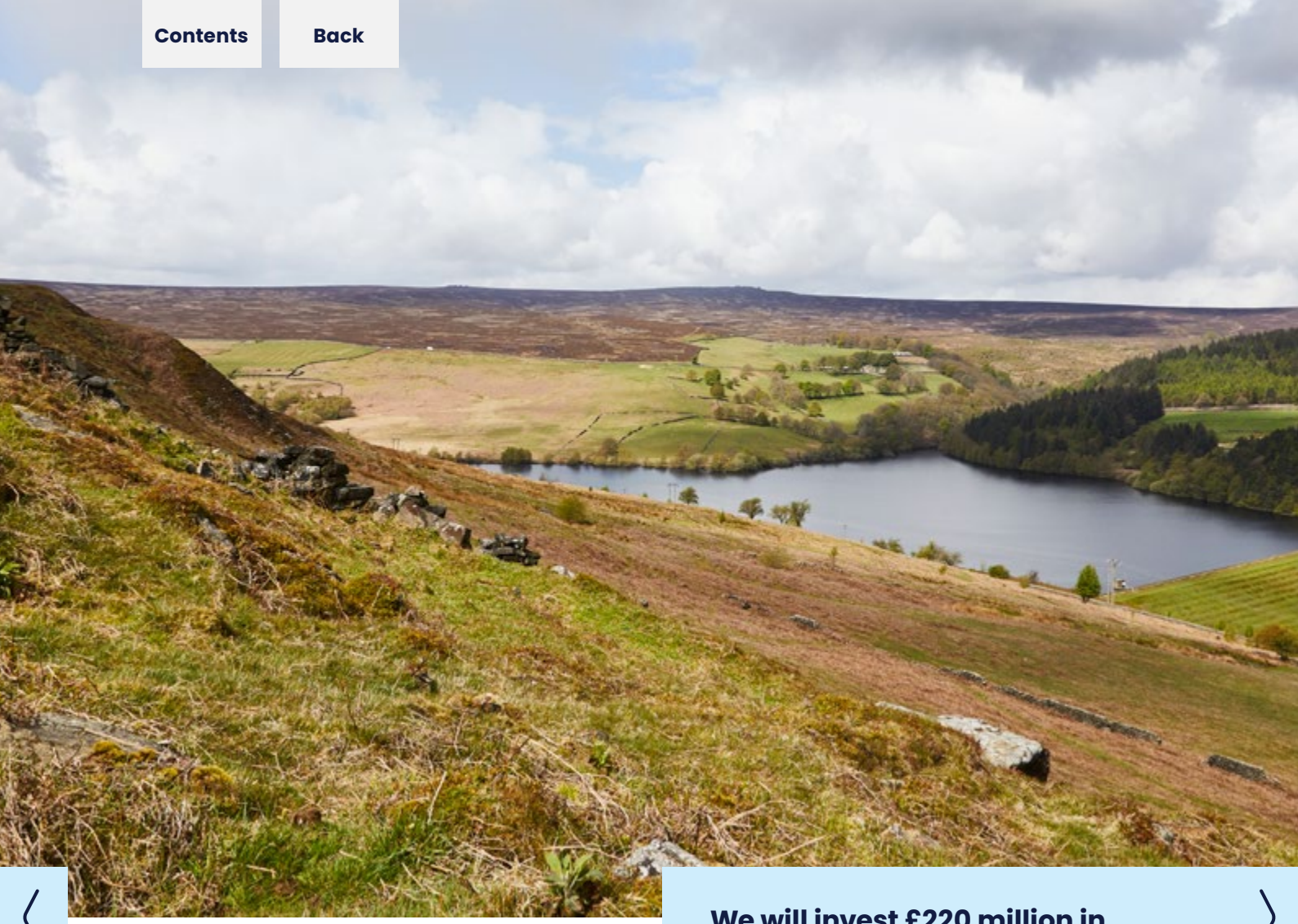
How much, and what type, of treatment water requires before it meets drinking water safety standards depends on the environment from which it is drawn and how that environment is managed. For example, in Yorkshire, groundwater tends to be of good quality and requires little treatment, whereas river water naturally contains high levels of bacteria and can contain pollutants from farms and wastewater discharges. As a result, river water requires multi stage treatment processes to remove contaminants. Reservoir water is generally soft and of good quality. However, in our region, reservoir water can be impacted by high levels of dissolved organic carbon (DOC, also known as 'colour') from the peat and blanket bog habitats from which water drains into our reservoirs.

Climate change will affect these different water sources differently. Hotter temperatures and less rain means that there is a growing risk of wildfires which can damage the peatbog habitats from which we draw about 40% of our raw water. We have seen an increase in the number and extent of fires in recent years which are incredibly damaging to our precious peatbogs and which can undo years of careful restoration work. Soot, ash and firefighting chemicals can be washed into reservoirs and could result in that water being too contaminated to use. Heavier rain and storms will wash more soil and pesticides from farmland into rivers, and rising sea levels could cause salt water to intrude into coastal groundwater aquifers, both of which pose a risk to drinking water quality.

To ensure excellent water quality, we take regular samples at all stages in the water cycle including at reservoirs and at the inlet to treatment works. These samples are sent to independent laboratories for analysis and the results are shared with the Drinking Water Inspectorate. This analytical data is used to inform our Drinking Water Safety Plans which we put in place to mitigate the risks to water quality as supplied to customers.

We carry out an enormous range of activity to manage our raw and treated water quality risks, as often the action required is very specific to the particular risk and its location. We refurbish or upgrade our reservoirs, water treatment works, and distribution assets as required, and we also work to protect raw water quality by working with farmers and other land owners, which is known as catchment management.

3. **discoverwater.co.uk/quality**



On the land we own, we have initiated a new type of tenancy agreement called Beyond Nature, our flagship programme for encouraging a more holistic and sustainable approach to farming. Beyond Nature farms are leading the way in demonstrating that a well managed holding can deliver multiple benefits including high quality raw water, a profitable business, space for wildlife, recreation, social benefits such as employment, flood risk reduction, and adaptation to climate change. We now have nine farms under these types of tenancies with more being signed up all the time.

We also work in partnership to influence how land we don't own is managed, and collaborate with our neighbouring water companies, National Park Authorities, catchment partnerships, the Forestry Commission, the National Trust, Local Authorities and many more to achieve landscape scale habitat enhancement and protection.

We will invest £220 million in our clean water asset base over the next five years, as well as £78 million on managing our raw water quality risks, and £12 million on catchment restoration. We will continue to build on the successes of our Beyond Nature and Sustainable Futures initiatives.

You can read more about our work with farmers and other landowners **here**.

You can check on the water quality in your area **here**.

You can find out more about how we are performing against our water quality targets **here**.

4. Risks to infrastructure from river, surface, and ground water flooding

Risks to infrastructure from river, surface, and ground water flooding

The Yorkshire region has and will continue to experience flooding from all sources including rivers, rainfall, and groundwater, and our risk from flooding will increase as the climate changes. Warmer air holds more moisture so downpours are getting more intense, and changing weather patterns mean winter storms are likely to become more frequent and more severe.

Our region has a lot of flood risk. We have steep sided, flashy catchments such as Calderdale in the west of the region, and wider, flatter, lowland catchments in the centre of the region around the Vale of York. Parts of Yorkshire, particularly around the Humber and the city of Hull, depend on man-made drainage systems and pumping is required to manage surface water. Our region is not especially vulnerable to groundwater flooding apart from a few small areas to the east.

We have experienced several flooding events in recent years, with significant events on Boxing Day 2015 across the west of the region, and more recently around Doncaster in 2019 and again in Calderdale in 2020. These events have tested our operational response and resulted in damages to our assets but fortunately no customers have experienced a loss of drinking water supply due to flooding. You can read more about how we managed these events in the main Adaptation report.

Many of our assets are located in the flood plain due to the need to either abstract water or discharge final treated effluent to rivers. It can be impossible to fully flood proof some of these assets (eg a river intake) so the best we can do is to make sure we have protected what we can, and ensure that we can recover quickly afterwards. Most of our flood risk is to our waste water assets as our clean water assets such as reservoirs and water treatment works tend to be higher up, or are protected by flood defences. We also have a fair amount of flexibility in our water supply system so if one area is flooded, we can usually supply from a different area by re-zoning. Flooding of waste water assets tends not to affect customers directly but can have aesthetic and environmental impacts caused by sewage contaminated flood waters.

We also own and operate 134 reservoirs, 104 of which are classed as Category A or B reservoirs under the Reservoir Safety Act 1975, which are reservoirs which would pose a risk to life if they failed, by causing downstream flooding. All our reservoirs are inspected three times a week by qualified reservoir engineers and we carry our regular exercises and training to prepare for worst case scenarios. As well as managing our reservoirs to make sure they dont pose a risk to downstream communities, we are also exploring how holding lower levels of water in them can provide additional flood storage. You can read more about this **here**.

To assess our flood risk, we have used the Environment Agency flood maps to see which of our assets are in, or near the flood plain. Our most at risk sites have had detailed flood risk assessments carried out, and where possible, we have protected our most important equipment against a 1 in 200 year flood with an uplift for climate change. For example, at our treatment works near Sheffield we have elevated the kiosks containing the electrical control panels.

We play a key role in managing flooding incidents when they occur. We are a Category Two responder under the Civil Contingencies Act and have a legal duty to cooperate with the emergency services, the Environment Agency and others during emergencies. To maintain our emergency response capacity we regularly train and exercise with our Local Resilience Forums, practicing for all sorts of situations including reservoir failures and flooding. In the last five years we have invested £3.6 million on upgrading and improving our operational response, including purchase of new customer welfare vehicles, a new incident management vehicle, a new strategic store of flood equipment such as high capacity pumps and 1,120m of demountable flood defences.

Raised electrical control panels at Blackburn Meadows Wastewater Treatment Works after the 2019 floods.

We have partnered with the National Trust to plant more than 100,000 trees and install leaky dams and willow fascines on ours and the National Trust's land in the Calder Valley to help slow the flow of flood water off these steep, flashy catchments. We will continue with our landscape scale catchment restoration activity and natural flood risk management (NFM) opportunity identification and implementation, in partnership where appropriate.

Over on the east coast, we have formed the Living with Water partnership with the Environment Agency, East Riding and Hull City Councils where we will pool our resources and work with communities to improve flood resilience. We have already completed a £16 million upgrade to our surface water pumping station in Bransholme, Hull. This has quadrupled the pumping capacity of the station, enabling surface water to be rapidly pumped into storage lagoons which are slowly emptied into the River Hull once the risk of flooding has passed. East Riding Council have recently completed construction of a complementary £7.4 million flood storage lagoon in nearby Orchard Park. Over the next five years Yorkshire Water will contribute a further £23 million to the Living with Water partnership. Find out more **here**.

We have got two Performance Commitments related to flood risk which are to deliver at least 45 partnership projects over the next five years, and to remove at least 4 hectares of surface water from our network using sustainable, blue green solutions. You can read about our performance against these targets **here**.

We also submit a return to the Environment Agency every year about how we are complying with the national Flood and Coastal Erosion Risk Management Strategy which are collated with other water company returns into an annual report which you can read **here**.

We have invested £3.6 million in our emergency planning equipment including 1120m of demountable flood defences. Over the next five years we will continue our tree planting and natural flood risk management activity. We will also invest £23 million in our Living with Water partnership to improve long term flood resilience in Hull and Haltemprice.

5. Risks to infrastructure services from coastal flooding and erosion

Risks to infrastructure services from coastal flooding and erosion

The Yorkshire region has 90 miles of coastline, some of which is very soft and prone to erosion. Our region has lost more than 35 villages to the sea since Roman times. Sea levels will continue to rise and we will experience more frequent and more severe storms due to climate change which means the standard of protection offered by coastal sea walls and flood defences will decline.

We have assessed our risk using coastal erosion maps available from the Environment Agency, combined with data from coastal local authorities who monitor erosion rates. This risk assessment showed that we have several assets at risk which we have had to relocate further inland. This includes a waste water pumping station at Flamborough Head, and our waste water treatment works which serves the town of Withernsea.

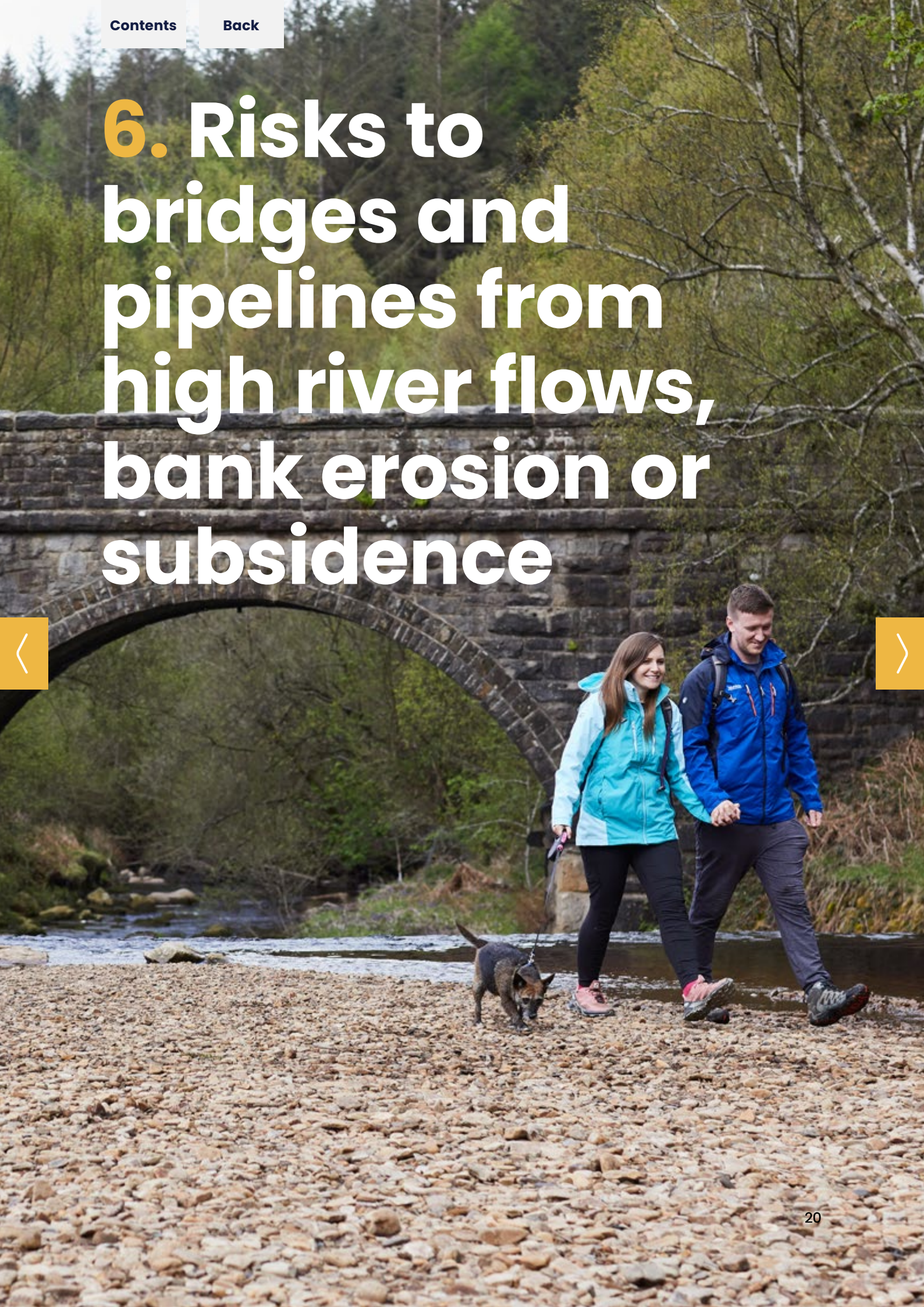
We have also experienced two storm surges in recent years, one in 2013 and another in 2017 both of which had the potential to overwhelm sea walls and flood our pumping stations. We got plenty of warning for both surges from the Flood Forecasting Centre and were able to send staff out to protect our assets with demountable defences in good time. In the end, neither surge was as bad as predicted in our region and we avoided any serious impacts to our assets or to customer service.

Our investment plan for the next five years does not include any specific investment to manage coastal flooding or erosion as we have already relocated our most at risk assets, however we will proactively monitor our coastal assets and take steps to protect any that may become exposed. We will also maintain our emergency planning capabilities and continue to take part in training and exercises to prepare for coastal emergencies.

We don't have any metrics or targets specifically related to coastal flooding or erosion but we do submit a return to the Environment Agency every year about how we are complying with the national Flood and Coastal Erosion Risk Management Strategy. These are collated with other water company returns into an annual report which you can read here.

Demountable defences at our pumping station in Whitby prior to the 2017 storm surge

6. Risks to bridges and pipelines from high river flows, bank erosion or subsidence



Risks to bridges and pipelines from high river flows, bank erosion or subsidence

We have 32,000 km of clean water network and 53,000 km of sewer network of varying age, condition and material including plastic, cast iron, cement, and brick.

Our network needs constant investment in repair and maintenance as pipes age and deteriorate, and also because they are damaged by the weight of traffic on roads, third parties accidentally cutting through pipes, tree roots, blockages, and ground movement such as freeze/thaw in cold periods and shrink/swell in dry periods. On average we spend around £20 million/year maintaining our clean water network, and £30-40 million/year maintaining our sewer network. Climate change will impact on our network by altering the pattern of ground movement with fewer cold spells but more dry, hot spells, and also by increasing the risk of scour and erosion for our pipes which cross over, under or alongside rivers as river flows increase.

We assess the risk to our network using two asset deterioration models – one for clean and one for waste. These models include variables such as pipe material, age, diameter, how many customers are connected and in the case of the clean water asset deterioration model, also include soil workability, average minimum temperature and distance east. These models provide us with an indication of how many pipes will need replacing in each of our five year business planning cycles. We are currently reviewing both the clean and waste asset deterioration models to explore how climate change could be considered.

A new risk which we have only recently begun to assess is that of extremely dry ground conditions causing soils to shrink and affect our pipe network. In 2018 we experienced a very cold winter (The Beast from the East) followed by a dry, hot spring and summer which was officially classed as a drought. The combination of cold followed by drought had a noticeable impact on our network, increasing its failure rate and fragility, and we came very close to failing our leakage targets for the year. This event led us to undertake some analysis to examine the relationship between soil type, soil moisture deficit[4], and burst rates on our clean water network. We have created risk maps for our different Distribution Management Areas (DMAs) which plot soil moisture deficit (SMD), soil type, pipe material and pipe condition. These maps give us an indication of which areas are more at risk from bursts in dry weather. We use these maps to understand our current risk and to allocate resources as appropriate eg if we are in very dry conditions and it's a sunny weekend is coming up we will make sure we have teams on standby in key DMAs.

4. Soil Moisture Deficit (SMD) is a measure of how dry the soil is.

In addition to the activity above which informs our risk, we undertake a wide range of different activities to maintain and improve the resilience of our clean water network. This includes investment, maintenance and training activity such as:

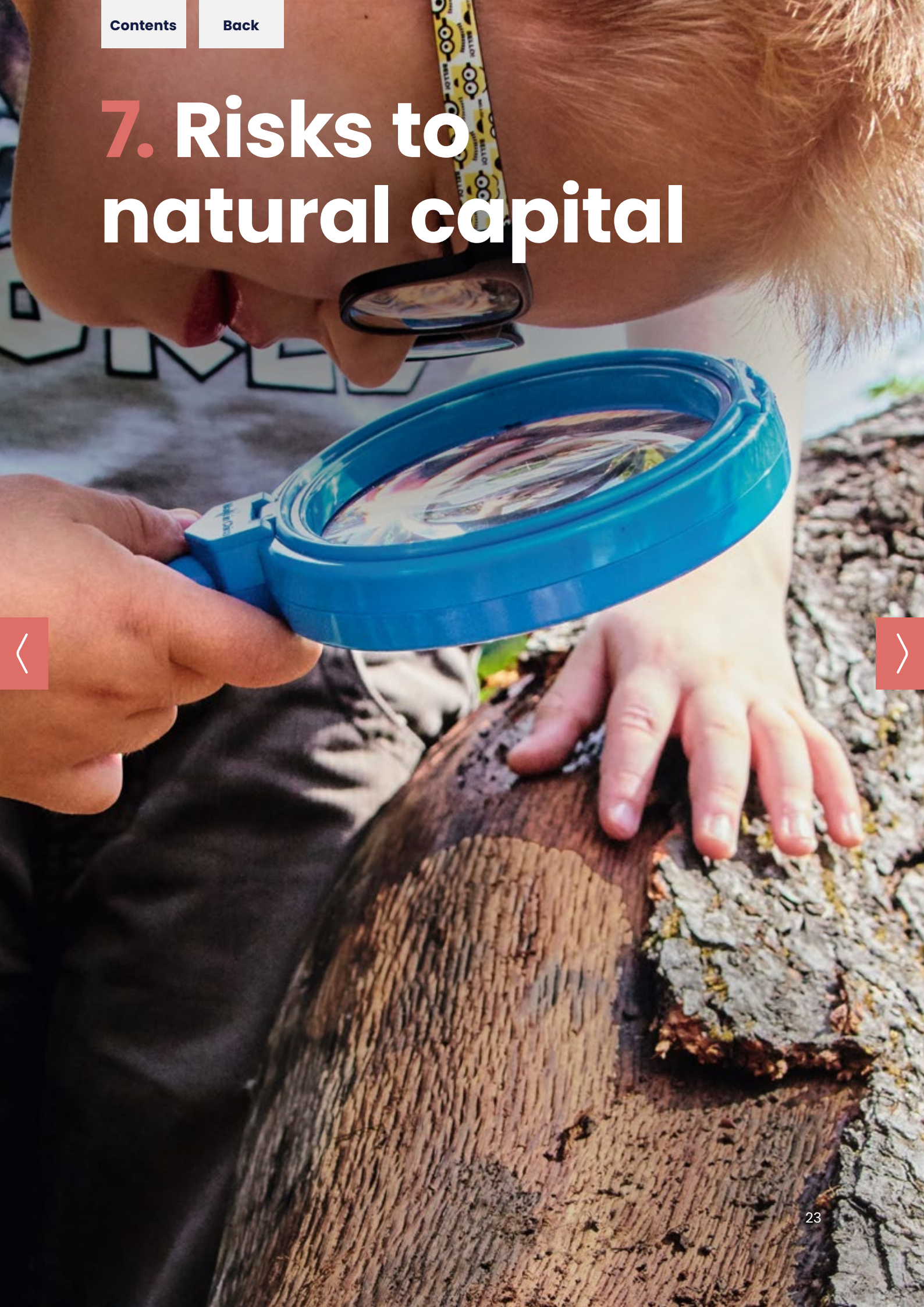
- Smart telemetry and monitoring of our clean water network flow volumes and pressures
- Training our staff in calm network operation techniques
- Finding and fixing leaks
- Renewals and relining of pipes to avoid future leaks
- Operational response plans to prepare for harsh winters and other contingencies.

The resilience of our sewer network and how we manage the risks of sewer flooding are described more in Section 2 along with the investment we have made and plan to make in renewing and repairing our waste water network and the modelling work we carry out to understand our risk and inform our response.

We will invest £40 million per year in reducing leakage and £28 million over the next five years on clean water network enhancement. We plan to replace or rehabilitate 150-200 km of clean water network and install sensors to cover 95% of our Distribution Management Areas by 2025. We will invest £238 million on our sewer network including installing 40,000 new monitors by 2025.

Our performance against our sewer flooding and clean water network resilience metrics is **here**.

7. Risks to natural capital



Risks to natural capital

Yorkshire is home to a beautiful and diverse range of habitats and species with two national parks, 22 Special Conservation Areas, 8 Special Protected Areas, two coastal marine conservation zones, 19 bathing beaches, 358 Sites of Special Scientific Interest, and 11 National Nature Reserves.

The habitats and species found in our region are nationally and internationally important, for example we have 24% of England's peat bog habitat and the Humber Estuary is an internationally important feeding ground for migratory birds.

In Section 3 we described how we manage our land to ensure it provides the best quality raw water, as well as biodiversity, carbon storage, flood flow attenuation, a livelihood for those who live and work there and a range of other benefits. As well as managing our land for these benefits, we also have a responsibility to ensure our other operational activities such as our wastewater treatment works discharges don't negatively impact on the natural environment. We have duties under the Wildlife and Countryside Act, Water Framework Directive, Urban Waste Water Treatment Directive and various other pieces of legislation to ensure the natural environment is not just protected from harm, but actively enhanced.

To meet the requirements of all this legislation and manage the impact of our activity on the natural environment, the Environment Agency issue permits for all our clean and waste water treatment sites which set out the conditions under which we must operate. This includes strict limits on where, when and how much water can be abstracted from rivers (or groundwaters) and what can be returned as treated effluent, in order to protect the environment.

When new regulations are enacted, or as the population grows, or assets reach the end of their life, upgrades to existing works, or new treatment works or processes, are required which may necessitate new or altered permits.

To determine the effect of these changes we use a range of different models to understand our impact on the environment, which can then inform the type of treatment process or intervention required. These models are used across the industry and have been developed in collaboration with the Environment Agency. Some of these models include the impact of climate change and others don't. Urban Pollution Models are built to investigate the cause of urban pollution from storm overflows. Environmental investigation models are used to assess the impact of discharges from our waste water treatment works, and marine impact models are used to understand the causes of poor bathing water quality along the coast.

The outputs from our models and the findings from our investigations are shared with the Environment Agency and together a programme of investment is agreed called the Water Industry Natural Environment Programme (WINEP). This programme of investment is created every five years and covers upgrades or changes to our existing treatment and/or network assets to meet new, tighter regulations or to accommodate population growth and new development. It also includes investment to manage the impact of invasive species, remove barriers to fish passage, and enhance biodiversity.

Whilst this investment is not directly focused on reducing climate change impacts, it all helps protect and enhance the natural environment so it is better able to cope with a changing climate.

Accounting for wider social and environmental benefits in our decision making

Our five yearly business plan has to include lots of requirements set for us by either the Environment Agency or the Drinking Water Inspectorate, and the prices we can charge for our services are capped by Ofwat, which means we have less discretion and flexibility than might be imagined in how we operate. So to make sure we have the best value and most beneficial overall plan, we use a suite of software tools called our Decision Making Framework to optimise our business plan. In the past, this was based on straightforward economic cost benefit and customer willingness to pay for specific service improvements.

However, this approach is poor at fully valuing some types of risks, impacts or benefits. For example, traditional accounting practices find it difficult to properly quantify the benefits from planting trees in reducing flood risk, capturing carbon, increasing biodiversity, or providing green space for exercise and play.

In light of the above, in 2017 we began exploring how we could incorporate a wider range of benefits into our decision making using a Six Capitals Valuation Framework. This framework seeks to capture and place a monetary value on a much broader range of costs, impacts and benefits across six different areas, known as "Capitals" as illustrated below:

Figure 12. Yorkshire Water's Six Capitals Accounting Framework

Six capitals

Financial capital
Our financial health and efficiency

Salaries
Debt
Tax contribution

Manufactured capital
Our pipes, treatment works, offices and IT

The reliability of our infrastructure
Our energy generation

Natural capital
The materials and services we rely on from the environment, especially water

Water consumption
Water quality
Carbon emissions

Human capital
Our workforce's capabilities and wellbeing

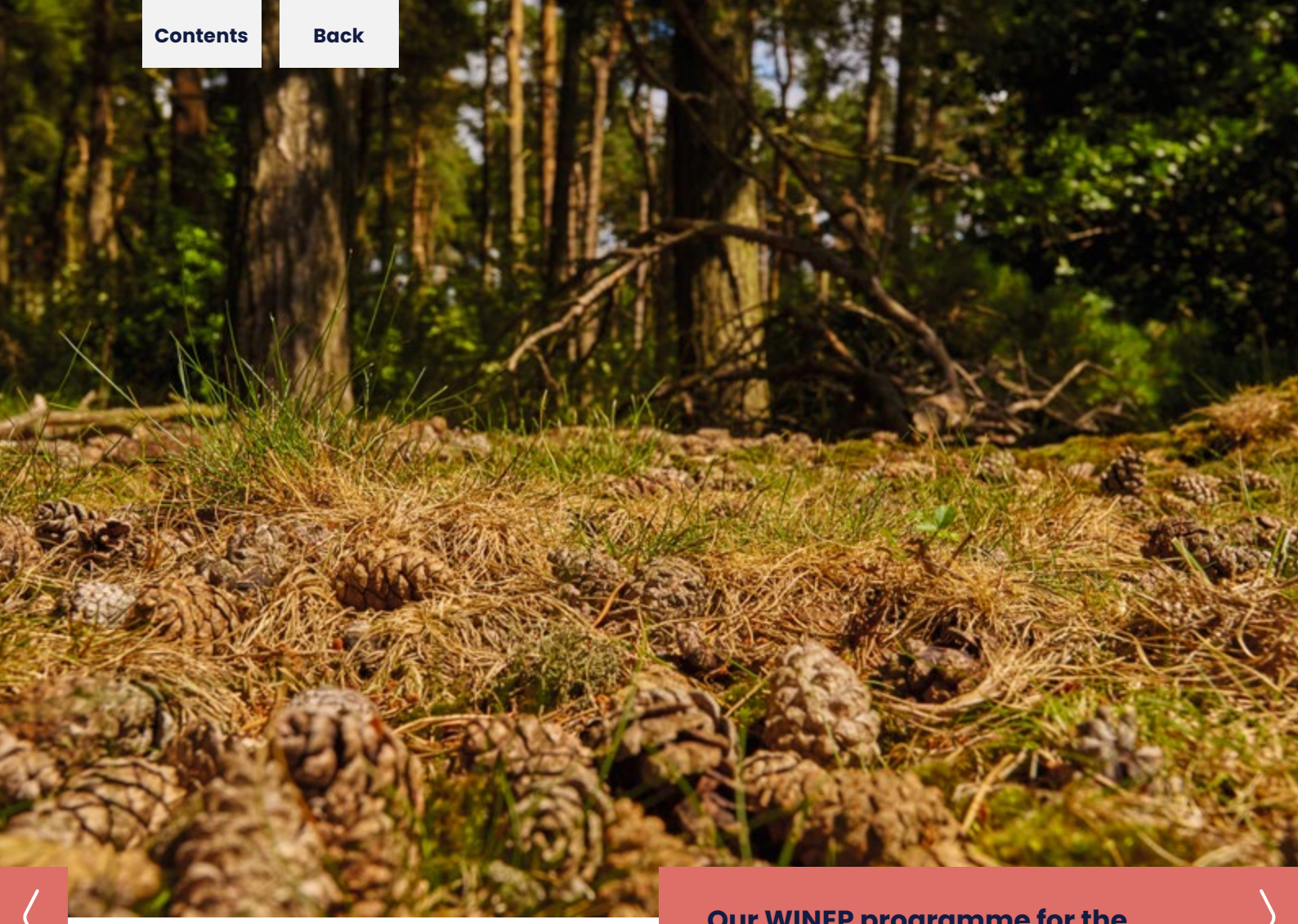
Accidents
Diversity
Education and training

Intellectual capital
Our knowledge and processes

The reliability of our operations
Innovations

Social capital
Our relationships and customers' trust in us

Customer feedback
Charitable donations
Education services



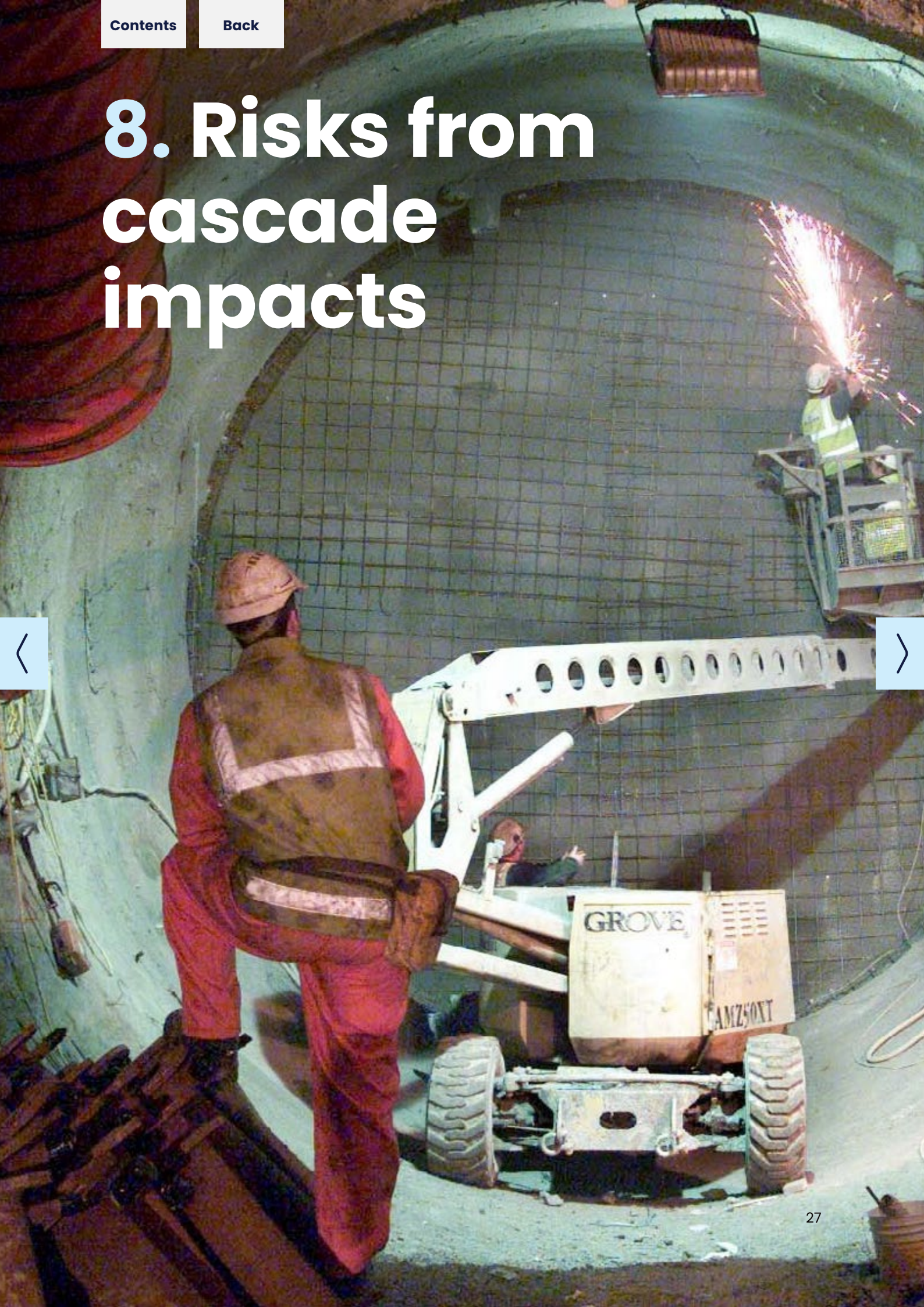
Our WINEP programme for the next five years is £750 million. This includes £4 million on new modelling and investigations to understand our environmental impacts, £598 million on managing our environmental impacts from our sewage treatment works, £5 million on invasive species, £4.3 million on fish passes, £4.7 million on improving flows in Yorkshire's rivers and £6.3 million on biodiversity enhancements.

The Six Capitals concept is embedded into our Decision Making Framework (DMF) which we use to quantify risk and value, to optimise investment and management decisions about our assets and operations and help us provide the greatest net benefit to our customers and wider society. We also use our Six Capitals Framework to report our Total Impact and Valuation Assessment (TIVA) on an annual basis. You can read more about our Six Capitals approach and our TIVA reports here.

Every year the Environment Agency assess each water and sewerage company's performance against a range of measures including the number of pollution incidents and compliance with their discharge permits. Each company gets a rating from one to four (one is worst) and reports are available on the Government website here.

As well as the Environmental Performance Assessment measures, we also report against another eight metrics which are specific to Yorkshire Water relating to our impact on the natural environment such as the length of river we have improved, the area of land we have restored and how we are managing invasive species. You can read more about these here.

8. Risks from cascade impacts



Risks from cascade impacts

The final risk we are reporting against in our Adaptation Report is that of cascade failures. This term generally refers to interaction of multiple hazards or events that combine to produce widespread effects across multiple systems, like a series of dominos. These events are rare but can have widespread and potentially unforeseen effects, such as the lightning strike which caused a power cut across large parts of southern England in August 2019, which then impacted on the rail network for many days afterwards.

Whilst we can never foresee every eventuality, we regularly practice for the impacts of multiple hazards and cascade impacts with local, regional and national Resilience Forums, the emergency services, providers of other infrastructure such as the National Grid and Highways England, as well as organisations such as the Red Cross. We have a well developed and robust emergency planning and response capability and all water companies are category two responders under the Civil Contingencies Act, 2009 (CCA) which is the legislative framework for emergency planning in the UK.

The Act defines the obligations of various organisations in preparing for emergencies, including exercises and planning with other agencies. We are audited on these capabilities an annual basis by Defra and were classed as "excellent" in our most recent audit. Since our previous report we have taken part in more than 80 different exercises with other organisations covering hazards ranging from widespread floods to North Sea Oil spills. We also keep strategic stockpiles of equipment such as high capacity pumps, demountable flood defences, welfare vehicles, 4x4 vehicles, tankers and water treatment chemicals and have mutual aid agreements with neighbouring water companies to share equipment, staff and other resources as necessary during emergencies. We have a regional control centre which provides a central point of co-ordination for any incident and which allows us to remotely operate our assets using real time asset performance data.

We don't have any metrics related to cascade impacts. We have both internal and external audits of our emergency planning capabilities and business planning maturity however these are business sensitive and not available to the public. Our Organisational Resilience policy is however available on our website here.

9. Closing comments

We are proud of the progress we have made in the last five years and hope this report brings confidence that climate change risks are well embedded in our long term planning and that we are constantly working to improve our understanding and response to these risks.

We know that we face an uncertain future and there is always more to do, more to learn and more to collaborate on. We look forward to playing our role in ensuring good quality drinking water and sanitation services are maintained in the face of a changing climate and will work hard to ensure the precious habitats, landscapes, rivers and coasts under our stewardship are protected for the future, and we will collaborate and bring people and organisations together to deliver landscape scale, city wide solutions to the challenges we face.

yorkshirewater.com

Yorkshire Water Services Limited,
Western House, Halifax Road, Bradford, BD6 2SZ.
Registered in England and Wales No.02366682

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