



Climate Change Adaptation Report 2021

Non-Technical Summary

AffinityWater

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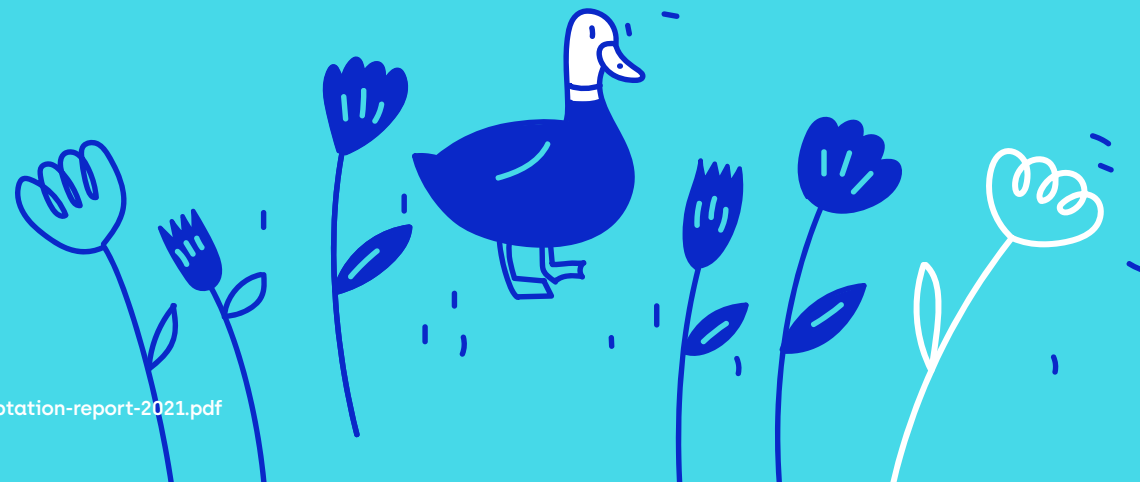
Glossary

AMP	Asset Management Period – 5 year investment period used for planning purposes
AONB	Area of Outstanding Natural Beauty
CCRA	Climate change risk assessment- National Climate Change Risk Assessment for the UK
Connect 2050	Connect 2050 will mitigate the risks associated with moving the water from SRO's across our Central region.
CSO	Combined sewage overflow
Ofwat	The economic regulator of the water sector in England and Wales
PCC	Per capita consumption – the amount of water typically used by one person in a day
Supply 2040	Programme to transfer surplus water from the south of our Central region to the north of the region.
UKCP18	United Kingdom Climate Projections 2018
WRMP	Water Resource Management Plan – 50 year plan which water companies use to plan ahead and manage their water resources
SRO	Our WRMP considers a number of strategic solutions that could significantly increase future supply. The potential solutions are known as our Strategic Resource Options.



Chapter 1

Introduction



Introduction







We are a water supply company situated in the South East of England, supplying parts of Bedfordshire, Berkshire, Buckinghamshire, Essex, Hertfordshire, Surrey, and North West London. We also supply water to the Tendring peninsula in Essex and the Folkestone and Dover areas of Kent. We provide on average of 950 million litres of drinking water to approximately 3.8 million people, or 1.4 million households, every day. Our supply area also includes 74,000 commercial customers.

We are facing a climate emergency and must take action to adapt and mitigate against the effects of climate change. As the UK's largest water supply only company, we recognise the important role we play, not only in providing an essential service but, also as stewards of the environment. We have therefore undertaken a risk-based review of the challenges posed by climate change to our business, both now and in the future.

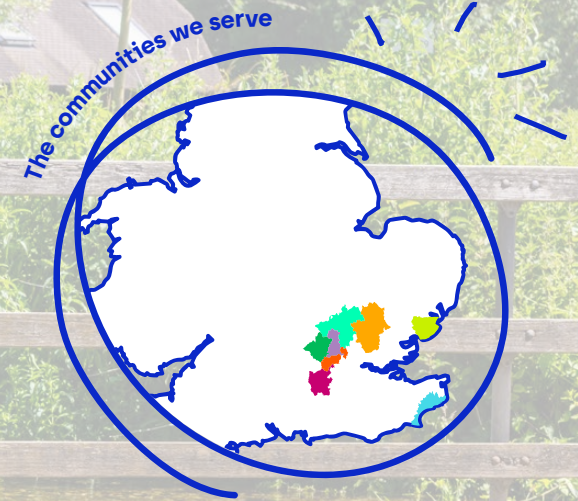
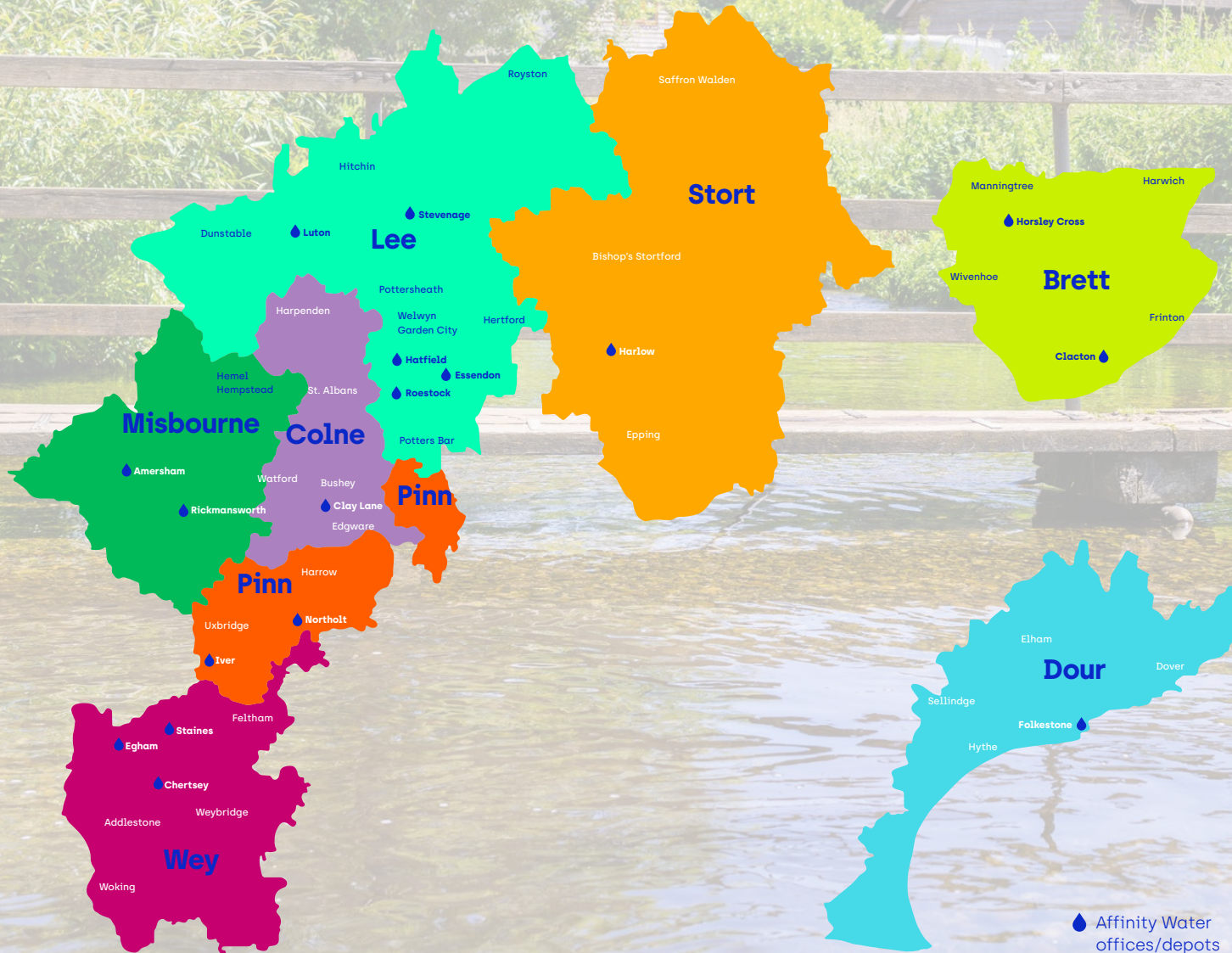
The combination of population growth, demand for water, climate change and the need to leave more water in the environment, particularly for our vulnerable chalk streams, means we need to identify and implement some significant changes to the way that we manage both the supply and demand for water in our area.



In undertaking this risk assessment, we have sought to:

-  Identify current and future options to address climate risks.
-  Ensure that plans are consistent with both a 2°C and a 4°C temperature rise and that plans do not prevent further adaptation.
-  Provide transparency on trade-offs with other objectives such as reducing consumer bills and the implications this has for levels of investment.
-  Make clear the implications of any reduced investment on levels of resilience.
-  Identify any enablers and barriers to managing climate risks.
-  Review our mitigation options with key Water Resources Management Plan (WRMP) 24 and Price Review (PR) 24 investment needs to help make the case for resilience.

Where we operate



We supply:

950m
 litres of drinking water
 provided a day

3.6m
 people

1.4m
 households

Chapter 2

Risk

Assessment



Risk Assessment

Our assessment identified a series of climate related risks which we scored based on

- The likelihood and consequence of the risk occurring in 2050.
- The two scores were then multiplied to give a total risk score of between 1 and 25.

We have scored each risk three times:

- 01** The risk in 2050 if we take no further action
- 02** The risk in 2050 which takes account of actions we have committed to deliver in Asset Management Period 7 (AMP7)
- 03** A target risk score which we would like to achieve

Risk matrix

		Consequence				
		Negligible 1	Minor 2	Moderate 3	Major 4	Critical 5
Likelihood	Almost Certain 5	5	10	15	20	25
	Likely 4	4	8	12	16	20
	Possible 3	3	6	9	12	15
	Unlikely 2	2	4	6	8	10
	Very unlikely 1	1	2	3	4	5

The gap between the second and third risk scores highlights where we need to target additional action to further adapt to the risk.

We assessed and prioritised the risks, and from this developed six headline risks. We will focus on the six headline risks in the remainder of this summary document.

As well as looking at the climate risks which impact us directly we also considered how climate change could impact the services provided to us by third parties, without which we could not operate. These are known as 'interdependencies'.

We scored the interdependencies using the same method as the main climate related risks.

For more information on all the climate related risks we assessed and the interdependencies, please see our main [Climate Change Adaptation Report 2021](#).

Chapter 3

Our Headline

Risks

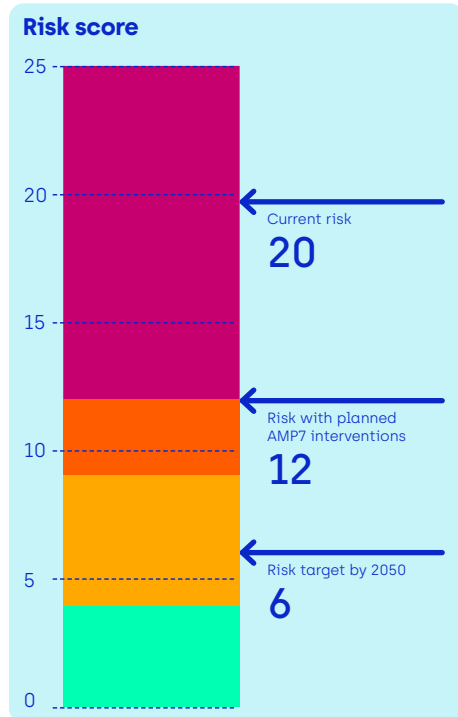


Our Headline Risks

1. Increase in demand due to higher temperatures

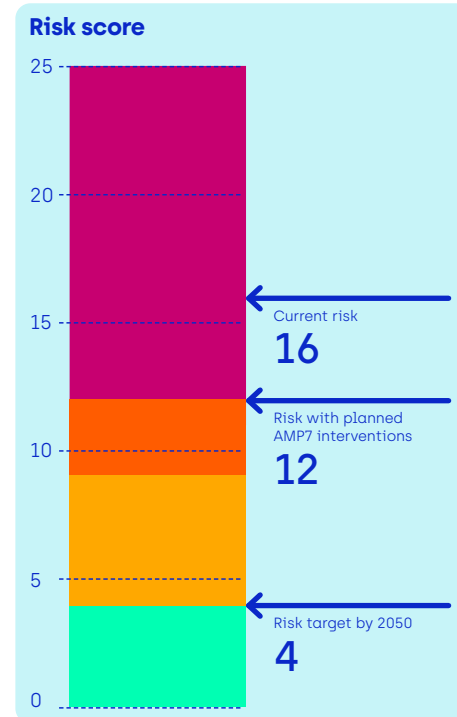
Climate change will lead to higher average temperatures throughout the year but particularly during the summer.

For Affinity Water, this means an increase in demand for water, particularly peak demand in summer.



2. Equipment and asset failure due to extreme weather events

Climate change will lead to more frequent and more intense extreme weather events, including extreme rainfall events, heatwaves and storms. The assets and equipment that underpin the service we deliver to customers are exposed to a range of direct risks associated with these extreme weather events.



This could lead to more frequent or severe occurrences of:

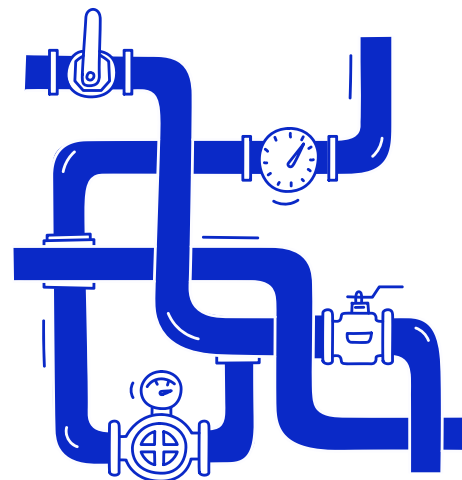
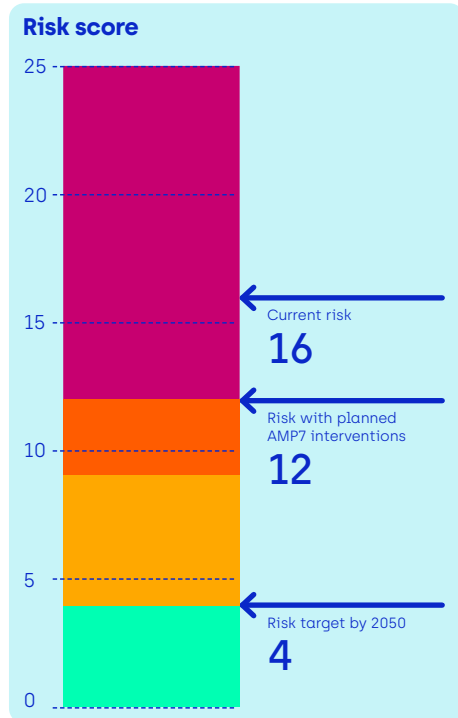
- overheating of mechanical and electrical equipment during heatwaves
- flooding of assets leading to damage or contamination pipe bursts following shrink-swell events
- damage to pipes crossing major rivers as a result of high flows and increased scour.



3. Increase in competition for, and price of, raw water imports

With the expected increase in the frequency and length of drought conditions, as well as changes to water quality because of changing temperature and rainfall patterns across southeast England, there is potential for greater competition for raw water imports in the future.

The price we pay for water imports will likely increase, alongside the requirement for companies to consider higher cost and higher carbon solutions.



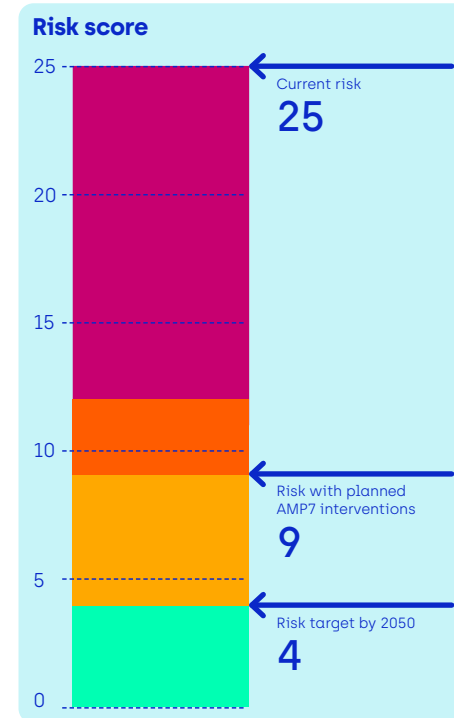
4. Reduced availability of ground and surface water due to drought

On average we supply around 950 million litres of water a day. Approximately 65% of water we supply comes from groundwater sources whilst the remainder comes from surface water and imports.

Groundwater sources are at risk from more frequent and longer droughts and warmer temperatures earlier in the calendar year, shortening the recharge season. Increasing rainfall

intensity (more rain falling in short, sharp extreme rainfall events) also poses a risk to groundwater recharge as it increases runoff and reduces infiltration.

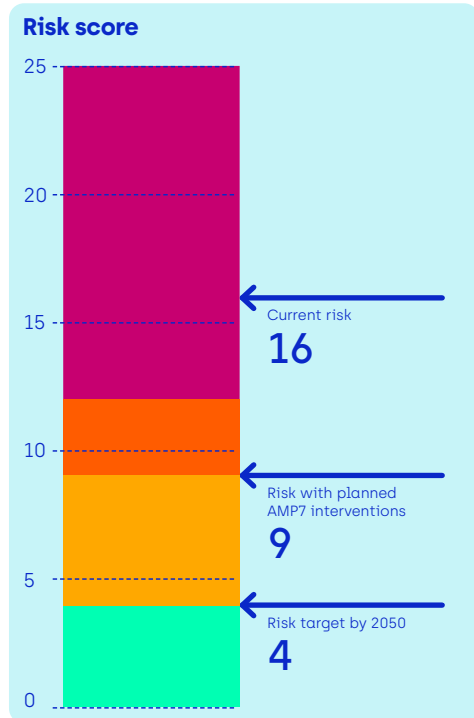
Reduced river flows associated with drought and changes in rainfall patterns can affect how much groundwater we are able to abstract. This is due to constraints on certain abstraction licences which are triggered by low river flows.



5. Outage due to flooding of assets

Supplying our customers with clean, safe drinking water relies on a network of sites and assets, including water treatment works, pumping stations, booster stations and depots. Several of our sites are already at risk of flooding from a range of sources – rivers, the sea, groundwater and surface water.

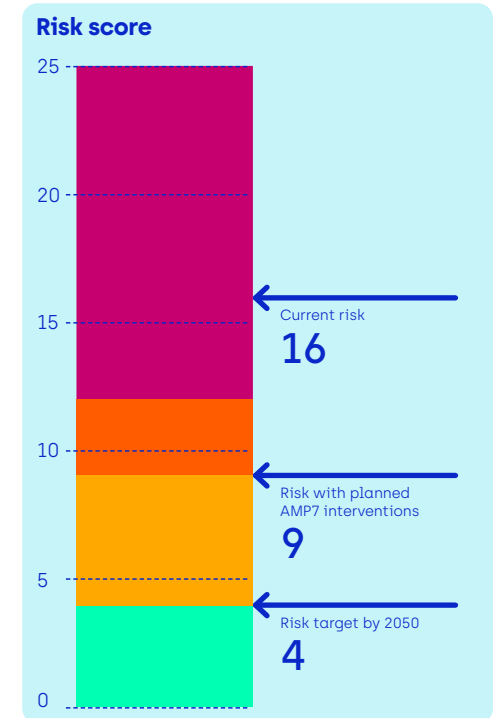
Changing rainfall patterns, more extreme rainfall events and sea level rise as a result of climate change will exacerbate these risks, as well as potentially putting more sites at risk of flooding.



6. Changes to raw water quality

We take water from the environment and treat it to meet drinking water quality standards, before supplying our customers. The treatment requirements for our sources are influenced by the quality of the raw water we abstract. Changes in rainfall and temperature patterns could affect raw water quality of both groundwater and surface water sources in different ways at different times of the year, meaning that it can be difficult to determine the overall impact of climate change on raw water quality. Raw water quality could be impacted by:

- wetter winters and flood events leading to increased nutrient and pesticide runoff
- wetter winters leading to increased urban runoff and increased Combined Sewage Overflows [CSO] incidents
- extreme rainfall following a period of long, dry weather results in a 'first flush' effect where higher than normal levels of pollutants are washed into surface water sources.
- flooding leading to contamination
- sea level rise potentially leading to saline intrusion at coastal sources



Chapter 4

Managing the Headline Risks



Taking care of water

By using water more efficiently we can improve our resilience to drought and other extreme weather events.

In 2020, we set ourselves a target to reduce the amount of water used by each person per day (known as per capita consumption or PCC) by 12.5% compared to the amount used in 2019/2020. However, in 2020/21 we saw a rise in demand, due to more people staying at home within our supply area as a result of the COVID-19 pandemic. We have responded by investing significantly in an extensive Demand Management Programme. As a result trends in usage per person are now moving downwards.

Our Demand Management Programme includes activities to help our customers reduce the amount of water they use each day. We have been helping customers to more easily understand how much water they are using and to understand why reducing their water wastage is important.

Save our Streams is a campaign which is aimed at helping our customers understand the link between local rivers, streams, and their own water use. As part of the campaign we have provided practical

advice to customers on how to waste less water by completing the Water Footprint quiz and claiming free water saving devices. Over 210,000 customers have signed up to be part of the Save our Streams initiative, representing over 15% of properties we serve. The measured impact of this campaign to date has been a saving of up to 21 million litres of water per day at the campaign peak.

To achieve our target of a 12.5% reduction in PCC by March 2025, we will continue to work with our customers and collaborate with others around water efficiency and smart metering.

We continue to campaign to involve water companies more in planning applications involving large scale developments. We want to increase our influence within the planning system to ensure that new developments are as water efficient as possible. This is vitally important in our region where significant new development is planned against a backdrop of existing water stress.



210 
customers have engaged
in Save our Streams

Taking care of the environment

By carefully managing and diversifying where our we source our water, we can increase our resilience to drought and improve the environment. By working with farmers and land managers we can improve raw water quality and deliver wider benefits.


We are proactively reducing our reliance on sensitive groundwater sources by reducing abstraction from our existing sources, and through managing abstraction during periods of drought. Our Water Resources Management Plans (WRMP) model the impact of climate change on water resources and help us to identify what action we need to take to increase our resilience.

As part of our current WRMP we identified an opportunity to invest in 'Supply 2040', a project which will allow us to transfer surplus water in our Central region to areas where there is a deficit. This includes transferring water to areas where we will have a deficit following reduced abstraction from chalk aquifers.

The WRMP also identified the need for a major strategic import to the Affinity Water supply area in the mid to late 2030s. We have also been working with others to develop six Strategic Resource Option (SRO) schemes that provide a combination of treated and raw water transfers from three other companies.

As we continue to develop the SROs between now and 2025, we will work to understand which 'front runner' is to be selected as the first SRO in the regional plans

We are in the process of, and will continue to, review our abstraction. This will allow us not only to be resilient to drought risk, but leave more water in sensitive catchments during dry periods. During periods of drought, our recently updated Drought Management Plan will ensure we manage water with an increased focus on the environment.



We know that climate change (and other factors) will change the raw water quality and we are taking a holistic approach to addressing the challenge through catchment management initiatives as well as treatment solutions. Many of our catchments are dominated by agricultural land, predominantly used for arable crop production. Working with farmers to address water quality challenges is at the forefront of our catchment management programme.

Our catchment management work is a targeted way to address specific water quality challenges such as pesticide and nutrient pollution, and to promote landscape scale approaches such as regenerative agriculture to improve biodiversity, implement natural flood risk management and help address climate change.

Taking care of our network

Reducing the risk of flooding

By investigating flood risk and investing in flood defences we can be better prepared for extreme events.

Following our last region-wide flood risk assessment in 2014, we have focused investment in flood defences at critical sites at most risk of flooding. We have invested in temporary flood defences, including flood gates and demountable barriers which can be deployed to reduce the risk of flood water ingress and damage to assets.

In the future we will be updating our flood risk assessment to take account of the latest understanding of climate change. We will also look more broadly at the types of flood risk which could affect our assets. An updated assessment will help us prioritise where we need to invest further in permanent and temporary flood defences.

Reducing the risk of extreme weather

Upgrading our pipework improves our resilience to drought and reduces the chances of pipe-bursts occurring.

Between 2015 and 2020 we met our target of reducing leakage by 15% and have a longer term target of 50% overall reduction from 2015 by 2045. We have a proactive approach to replacing our underground assets based on age, condition, and burst history. We replaced 13.6km of pipes in year 1 of AMP7.

Our leakage reduction ambition is very challenging and will mean we need to find and adopt innovative approaches to help us achieve our target. It is likely that we, along with the rest of the industry, will need to increase the rate at which we replace our water network pipes to make these challenging levels of leakage reduction possible and sustainable.

15% 

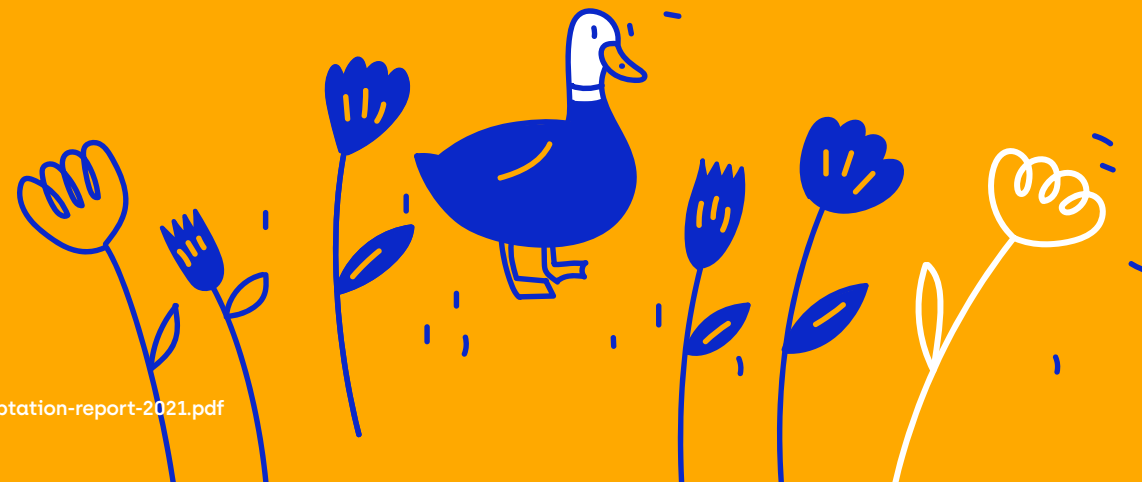
Leakage reduction target met between 2015 and 2020

13.6km 
of pipes replaced in year 1 of AMP7



Chapter 5

Interdependencies



Interdependencies

We have also assessed how climate change could impact the goods and services provided to us by others. We rely on these goods and services to operate and provide our service to customers. For example we rely on others to provide us with electricity, communications and transport infrastructure. We call the risks associated with others 'interdependencies'.

We identified and assessed our interdependencies in the same way as our main risk assessment.

Here are some of the interdependency risks we have identified. The full assessment can be found in Appendix 2 of the main Climate Change Adaptation Report 2021.



Power Supply

Climate change and more frequent extreme weather events may lead to loss of power supply. For example, this could result in disruption to energy generation infrastructure.



ICT and communications

As climate change is leading to increased frequency and severity of extreme weather events such as floods, storms and heatwaves, there is a greater risk of damage to ICT and communications assets and disruption to the service we receive.



Transport

Most of our sites are accessible only by road. Climate change will result in increased frequency and severity of extreme weather. These events may cause disruption to the strategic road network and local routes due to roads being flooded, surface melting and deformation, sink holes or embankment failure.



Supply chain

Increasing disruption to global manufacturing and supply chains as a result of more frequent and prolonged extreme weather means that we are likely to face increasing competition for supplies. The cost of resources is also likely to increase.



Agriculture

The potential responses of farmers and land managers to climate change may be detrimental to both water resources and water quality.



Chapter 6

Conclusions



Conclusions

We are all facing a climate emergency and must take action to mitigate against the effects of climate change. This update of our Climate Change Adaptation Report is timely and has allowed us to reevaluate risk.

The risk assessment and prioritisation process has identified a variety of risks to our assets and operations. These headline risks, which if left unchecked, have the potential to have an unacceptable impact on our core business functionality by 2050, alone or in combination.

As the UK's largest water supply only company we recognise the important role we have to play. Our customers look to us to lead the way by taking proactive action to protect both the environment and customer supplies. Doing nothing, is therefore not an option.

The interventions we have planned for during, and after AMP 7 reduce the forecast risks posed by climate change, but they still have the potential to have a significant impact on our business. For this reason, we know we need to do more. The additional interventions which we plan to implement make the risks posed by climate change in 2050 more manageable. For all but one of the six headline risks, our plans reduce the impact on our business to acceptable levels. The exception to this (increase in demand due to higher temperature), is being closely managed through our WRMP, a process which intrinsically considers climate change impacts.

We are proud of the role we play, not only in providing an essential service but, also as stewards of the environment.



Affinity Water

