

ADAPTING TO
CLIMATE CHANGE
ON THE SOMERSET LEVELS



Climate
Adaptation
Toolkit



Co-Adapt - Adapting the Levels

Adapting the Levels is a partnership project, empowering those who live and work on the Somerset Levels and Moors to take action on Climate Adaptation. Adapting the Levels is part of a larger climate adaptation programme called Co-Adapt, with partners in Belgium, France, the Netherlands and the UK.

This toolkit is designed to share the Adapting the Levels project's knowledge and messages across Somerset, leaving a legacy of empowering communities to adapt to climate change. Find out more about the project: adaptingthelevels.com

Co-Adapt has received a total of €7 million from the Interreg 2 Seas funding programme 2014-2020. Co-funded by the European Territorial Cooperation Programme and the European Regional Development Fund.

Adapting the Levels has also received generous match funding from the Somerset Rivers Authority.

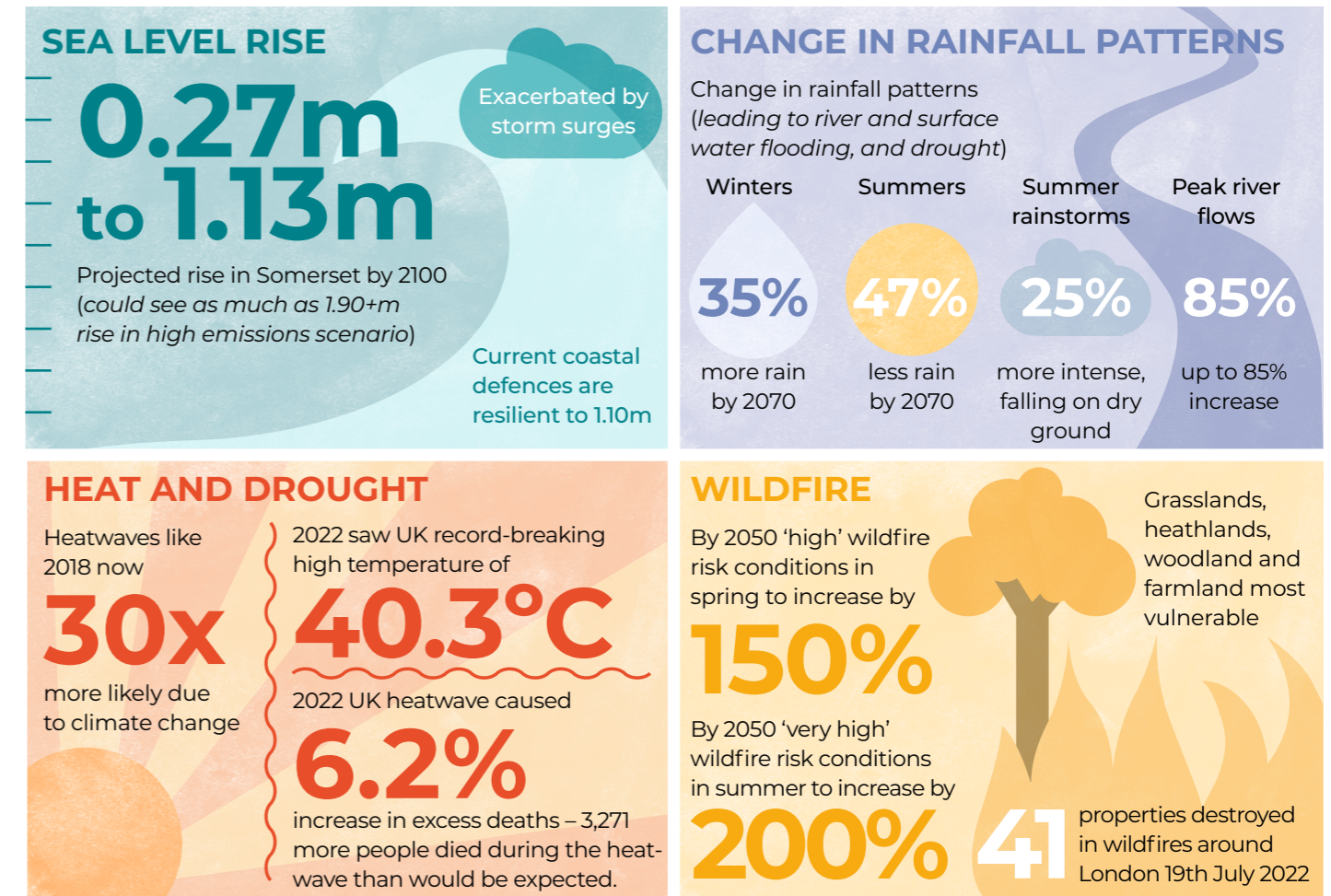
More information on the Co-Adapt project can be found here: interreg2seas.eu/en/co-adapt

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Climate projections



COVER: ROSS HODDINOTT/2020VISION
THIS PAGE: ROSS HODDINOTT



Somerset, climate change and adaptation

Climate change is already affecting everyone in Somerset, with heatwaves increasing food prices and affecting people's health, and flood events causing damage and disruption.

The good news is there are lots of ways we can act to adapt, making us better prepared for the changing climate. This toolkit is designed to help parish and town councils, community groups and individuals to start taking positive action.

ACT LOCAL

Parish and town councils are in a great position to act on climate change, but everyone has a part to play.

Think about involving people from your local pub, school, book club, football club, Women's Institute, allotment association, or even local businesses, professional bodies or friendly societies.

Every one of these groups can take action. Look at how you are all connected by the same risks and how this can help bring everyone together.

The Need to Reduce Emissions

Climate adaptation and mitigation go hand in hand. The faster we reach Net Zero, the fewer climate impacts we will face. Finding ways you and your community can cut emissions, as well as campaigning for emissions reductions, are all important actions to tackle the Climate Crisis.

Find out about how your community can reduce emissions here:

▶ assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/218799/tackling-climate-change.pdf

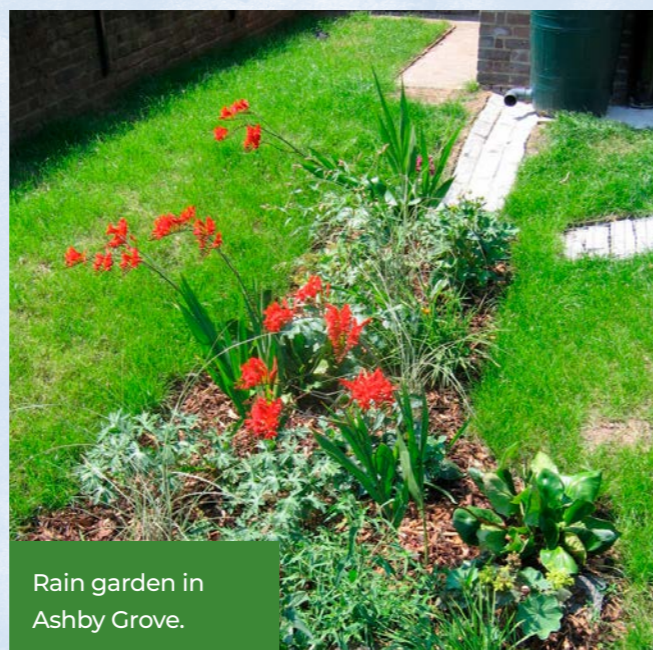
▶ nalc.gov.uk/our-work/climate-change

Nbs: Nature-based Solutions

Many adaptation options in this toolkit are Nature-based Solutions (Nbs): actions that harness the power of nature to help us adapt.

At its simplest, a Nature-based Solution could be installing a rain garden to slow the flow of water into the drains, helping to reduce flash flooding. At the other end of the scale, public greenspaces can be redesigned to capture stormwater whilst still providing space for recreation and nature.

Often, Nature-based Solutions provide multiple benefits. For example, planting trees in the right place can capture CO₂, reduce flooding and heat risks, and allow wildlife to thrive – a win-win-win!



Rain garden in Ashby Grove.

INFORMATION AND IMAGES COLLATED FROM SUSDRAIN.ORG, 2022



Simple change

Installing a water butt can reduce flooding and provide a water source during drought.



WHAT IS CLIMATE ADAPTATION AND WHY DO WE NEED IT?

Climate Adaptation is about taking action to adjust to, and plan for, our changing climate, now and in the future. Adaptation can take place at different scales.

Somerset is vulnerable to rising sea levels and river flooding, but it is not just low-lying land at risk. With more unpredictable weather patterns, the county will face increased surface water flooding and greater wildfire risk. Read about the climate change projections for our region on page 3.

The climate will continue to shift for a long time to come, and we need to find a way to live with these changes. Taking adaptation actions can help limit or avoid the negative effects of climate change, and even maximise any positive opportunities it may present.

At a larger scale, actions like creating saltmarsh habitats along the coast can help us adapt to rising sea levels and provide a buffer for communities to flooding and erosion.



Adaptation actions

Plenty of adaptation actions are simple to carry out, giving you some quick wins. Other options require more time, planning or resources, but can make a big difference and also benefit wellbeing and nature. When well planned, many adaptation actions address more than one climate risk; for example, ‘Slow the Flow’ (see glossary) measures reduce flood risk and are also likely to make areas better adapted to drought and wildfire.

Develop a Community Emergency Plan to respond to emergencies and support vulnerable neighbours



A Community Emergency Plan will enable a quick and effective response to floods, wildfires or extreme heat. It can identify steps to take before, during and after an emergency, and include contact details for volunteers who can activate the plan. Help with drafting a plan can be sought from Somerset Council’s Civil Contingencies Unit—find out more by emailing:

info@somersetprepared.org.uk

Supporting community members through emergencies, especially those who are most vulnerable, should be at the heart of the plan. This could include a system for checking on neighbours and setting up community shelters.

Additionally, grants of up to £5,000 are available from the Somerset Prepared partnership for training or equipment that helps communities be better prepared for emergencies. See the ‘Funding’ section for more information.

Find a Community Emergency Plan template here: somersetprepared.org.uk/communities/

Create or influence a Climate-Smart Neighbourhood Plan for local development



Looking at development through the lens of future climate change risks can help to create a stronger community.

Although the Environment Agency (EA) and Council will comment on flood risk in planning applications, residents know their community better than anyone. Look at local water flow paths and challenge development designs where they could worsen, or be affected by, flooding.

Where you have concerns about a proposed development, strong advocacy about incorporating Sustainable Drainage Systems (SuDS) and other adaptations can have a positive effect on the final decision.

Some communities have even hired independent drainage consultants to review planning applications.

Where the local council is involved in designing community spaces, consideration needs to be given to the future climate. For example, a new play area might need sun shelters over play equipment, as is standard in hotter countries, or a new village hall could incorporate SuDS features to reduce runoff.








Impacts and co-benefits





In this toolkit, the following symbols represent the different climate impacts an adaptation option can address, and any co-benefits they offer.

A community will be better adapted to climate change by taking a range of actions. By exploring all the options in this toolkit, you can develop a tailored climate adaptation plan that will help your community to thrive.

Climate impacts

-  Sea level rise / Coastal flooding
-  River flooding
-  Surface water flooding
-  Wildfire
-  Heat and drought

Co-benefits

-  Benefits biodiversity
-  Benefits climate
-  Improves water quality
-  Benefits health and wellbeing

Join or set up a Community Climate Change / Resilience Group



An important foundation for successful climate change adaptation is strengthening connections within the community. For example, research has found that communities with good social links suffer fewer excess deaths during heatwaves. It's important to ensure messages shared within the community are accurate and well-informed. Keep up to date with advice from your local authorities.

Local resilience groups are an important part of creating a strong community. It might be a flood warden group that acts on the emergency plan, or it could be a climate change group spearheading action on adaptation or mitigation. Being part of a group that is taking action can also help reduce isolation and anxiety.

To find out more about joining or setting up a climate change group, check out:

▶ **Team Wilder and Somerset Climate Action Network**

(see Other Useful Contacts and Resources)

▶ **Friends of the Earth** - Take Climate Action: lists climate action groups around the UK and allows new groups to register takeclimateaction.uk/join

Install property flood resilience measures



Property flood resilience and resistance (PFR) measures prevent water from entering buildings and enable quick recovery from flooding. Examples include:

- ▶ **Raising electrical appliances and sockets**
- ▶ **Installing flood-proof doors and barriers, and air brick covers**
- ▶ **Installing non-return valves in toilets and appliances**
- ▶ **Using flood-resilient floor and wall materials**

Private property owners usually have to pay for PFR themselves. However, get in touch with the Council's Flood and Water Management team to see if there is any funding available, particularly if you are looking at installing PFR measures on a community building.

Contact: flooding@somerset.gov.uk

More information:

assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/451622/LIT_4284.pdf



Flood resilience

Raising plug sockets and appliances can help mitigate flood damage

PEXELS TIM MOSSHOLDER



Create 'Green Walls' to insulate and cool buildings

Training climbing plants up external walls, particularly those that are south facing, can help to insulate properties. This will help keep them cool during hot weather and prevent heat loss in the winter. In addition, this can provide important habitat and food sources for wildlife, and can act as a refuge during heatwaves.

More information: rhs.org.uk/science/articles/ivy-homes



Install rain gardens and water butts in your garden and community greenspaces



Maintaining a source of water for gardens during hotter, drier summers will be important to keep plants healthy and support wildlife. Installing water butts under drainpipes on buildings will collect and store water year-round. This can be used to water gardens during dry spells, reducing pressure on mains supplies.

Water butt overflows can be connected to rain gardens, which are designed to cope with large downpours. This takes pressure off drainage networks and reduces surface runoff. Rain gardens also feature drought-tolerant plants that will thrive during drier summers and provide food and shelter for wildlife year-round. Research also shows that greening our urban spaces makes people happier and healthier too!

Learn more about rain gardens:

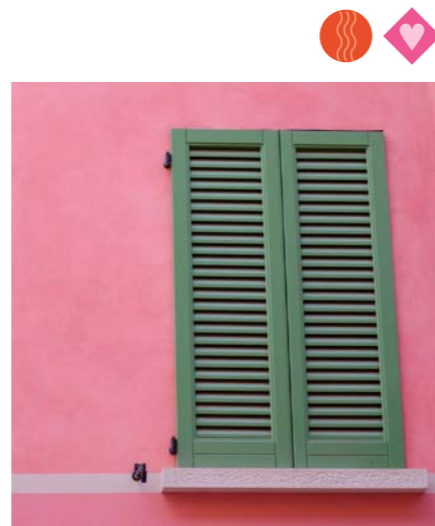
▶ raingardens.info/

Install external shuttering on windows

Windows let in a lot of warmth from the sun, and covering them during extreme heat helps prevent buildings from overheating. Shutting curtains helps, but only reduces temperatures slightly. Fitting windows with external shutters that can be closed during heatwaves is a much more effective way to keep homes cooler. Shutters are common in areas with hotter weather, such as the Mediterranean.

More information:

[construction.co.uk/construction-news/278131/blinds-and-shutters-declared-an-overheating-solution-by-climate-change-committee](https://www.construction.co.uk/construction-news/278131/blinds-and-shutters-declared-an-overheating-solution-by-climate-change-committee)



Install a heat pump in your home or community buildings

Heat pump technology is becoming more popular for heating buildings. But, unlike traditional boilers, some heat pumps can also cool buildings during hot weather. As well as making living spaces more comfortable and reducing the risk of heat-related illness, heat pumps are more environmentally friendly and could reduce your energy bills.

More information about heat pumps:

[which.co.uk/reviews/ground-and-air-source-heat-pumps/](https://www.which.co.uk/reviews/ground-and-air-source-heat-pumps/)



CASE STUDY: Retrofit Bruton and Cary

When Bruton Town Council declared a climate emergency in March 2019, members felt that the urgency of climate change demanded strong, decisive action.

Poorly insulated houses lose heat quickly, so more CO₂ is produced as people try to keep their homes warm. The Town Council homed in on this issue as something they could start working on locally. The Centre for Sustainable Energy came in as a partner with expertise, and the Town Council was awarded £75k from the Somerset County Council climate emergency fund. This was used to employ a retrofit coordinator to undertake assessments of people's homes. The project was an immediate success with lots of interest, meaning the Town Council hardly had to advertise!

One of the other aims of the project has been to stimulate the local contractor market and stop a vicious circle: householders don't know where

to get advice, so contractors think there isn't a market for retrofitting. The project's assessors have aimed to show there is a market, leading to interest from contractors wanting to learn about retrofitting.

The Town Council has had to concentrate on the able-to-pay market because of the local scale, but it joined forces with the District Councils on the Somerset Retrofit Accelerator Project, working with the Centre for Sustainable Energy to offer discounted assessments.

As well as reducing emissions, retrofitting can support climate adaptation, especially in the areas of heat and flood resilience. The Bruton scheme's work on insulation has created warmer, more comfortable homes, helped cushion against extreme heat, and is a great model for other communities that want to make a difference.

Maintenance of watercourses

Sometimes adaptation simply means stepping up business-as-usual activities. As climate risks increase, so does our need to maintain infrastructure.

Landowners have a responsibility to keep culverts clear and not increase flood risk elsewhere. As well as making sure pipes aren't blocked, responsible management of watercourses is important.

You might need to clear vegetation or debris where it could increase flood risk, but equally this vegetation might be slowing the flow, reducing flood risk downstream. Riverbanks are valuable wildlife habitats too, so it's important to take a balanced approach, only removing vegetation where it's causing a problem, and when it's a time of year that won't disturb wildlife.

For more information on sensitive watercourse management see catchmentbasedapproach.org/wp-content/uploads/2019/07/Watercourse-maintenance-for-landowners.pdf

Reporting and maintenance of blocked drains

Drains may not be glamorous, but they are vital for carrying runoff away from our streets and homes. Highway drains are only designed to carry water that falls on the road. As flood risk increases, so will pressure on the drain network.

Drains can easily get blocked by debris, especially with leaves in autumn. Some communities have a scheme to 'adopt a drain', where residents take responsibility for clearing the surface of particular drains. Some also have flood warden groups that run seasonal drain patrols.

▶ **Never lift a highway drain cover** or manhole, and do not enter floodwater to unblock a drain.

▶ **Blocked highway drains** or surface water flooding can be reported to Somerset Council: [somerset.gov.uk/roads-and-transport/report-a-problem-on-the-road/](https://www.somerset.gov.uk/roads-and-transport/report-a-problem-on-the-road/)

Fire-aware management of greenspaces

The conditions for 'high' and 'very high' fire risk in the UK are becoming more common. Community greenspaces, especially grassy areas, are vulnerable during long periods of hot and dry weather, when grasses and other vegetation can easily catch fire. As well as damage to habitats and wildlife, such fires could put property or lives at risk. To minimise the risk, communities could:

▶ **cut fire breaks**

▶ **cut buffer strips around properties** at or before times of high risk

▶ **prohibit the use of disposable BBQs or campfires.**

A balanced management approach should be taken, reducing wildfire risk but also maintaining the benefits that people and wildlife gain from local greenspaces. Contact Devon and Somerset Fire and Rescue Service to discuss management concerns.

Communicate messages about fire risk



The vast majority of wildfires are started by people, so responsible enjoyment of the countryside is very important. Communicating these issues locally can reduce the likelihood of wildfires being started. Sharing information online, in community spaces, shops etc. could help increase knowledge of how to safely enjoy the countryside and reduce wildfire risk, with messages such as:

- ▶ **don't have BBQs or fires**, especially during times of high risk
- ▶ **take all litter home**
- ▶ **avoid smoking** (and if you do smoke, take your butts home)
- ▶ **stick to footpaths**

Additionally, these messages should increase knowledge of what to do in the event of a wildfire, to reduce the effects on the community. Advice should include:

- ▶ **staying indoors**
- ▶ **closing windows** (but not locking them)
- ▶ **staying away from any wildfires**

This will help keep people safe and ensure fire crews can respond to events unimpeded.

More information:

- ▶ **Firewise** dorsetheaths.org.uk/firewise/
- ▶ **The Countryside Code** assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1052574/Countryside_Code_A5.pdf



Plant street trees

Trees reduce temperatures in towns and cities, providing shade and refuge for people and wildlife. They can minimise the effects of heatwaves on vulnerable residents, businesses and infrastructure. Trees also reduce flooding risk by taking up water through their roots, as well as capturing and holding rainwater in their leaves and boughs. Planting trees around a community has also been shown to slow down drivers and increase the time people spend in local businesses.

In urban environments, measures need to be taken to allow the tree to settle into the ground without affecting the surrounding pavement. Using structures called 'tree pits' can help to protect underground services and infrastructure, and prevent soil compaction, allowing trees to thrive. Maintenance is also crucial. Water the tree while it is first growing, and, if needed, trim roots and prune the tree where appropriate.

- ▶ **Highway tree management:** gov.uk/government/publications/highway-tree-management-operations-note-51/highway-tree-management-operations-note-51
- ▶ **Contact Somerset Council's Highways office for advice:** services.somerset.gov.uk/contact-somerset-highways

More information about planting street trees and their benefits:

- ▶ **A guide to planting street trees** cityoftrees.org.uk



BECCY WILLMETTS



Start a litter picking group and/or litter reduction campaign

Litter can increase the risk of wildfires. Glass bottles left in the sun can act like a magnifying glass, setting fire to dry grass. To reduce this risk, combine litter picking with a local information campaign to raise awareness of wildfires and their causes.

More information:

- ▶ **Litter Heroes** keepbritaintidy.org/get-involved/volunteer/litter-heroes



Campaign for a local ban on disposable BBQs

People are responsible for almost all wildfires, and disposable BBQs are one of the worst offenders. In addition to the fire risk they pose, they create waste and are not reusable. To reduce the likelihood of disposable BBQs starting fires, and to prevent the waste they create, communities could ask local shops to remove these products from sale, or campaign for a ban on their use. At some sites, it might be possible to provide a safer alternative, such as static, electric BBQs that are found at some beaches.

For inspiration and examples of resources, see Litter Free Dorset's webpage: litterfreedorset.co.uk/projects-campaigns/disposable-bbqs/#RemovedBBQs



Wildfire reporting volunteer group

Communities near areas of heathland, grassland or woodland are more likely to be affected by wildfires. Swift reporting of fire can enable a quick response and reduce the impact on habitats and people. Community members could volunteer to check on vulnerable sites during heatwaves or times of high fire risk, and notify the emergency services in the event a fire is discovered.

Ask the local Fire Service if there are wildfire management plans for vulnerable sites in your area. Approach landowners and ask if you can support them in managing fire risk on their sites. Try contacting local landowning organisations such as:

- ▶ **Somerset Council**
- ▶ **Wildlife organisations**, like Somerset Wildlife Trust, RSPB, the National Trust, the Wildfowl and Wetland Trust
- ▶ **Areas of Outstanding Natural Beauty** (AONBs)
- ▶ **Exmoor National Park**





Remember
 Right tree, right place!
 Choose species of trees that will be able to thrive in a climate with more extremes. Trees should not be planted on peat soils or species-rich grassland.

BOTH IMAGES: RICHARD OSBOURNE

Plant trees, hedges and woodland

Beyond streets, planting trees in and around your community can bring multiple benefits. Trees planted on hills and cross-slope hedges can reduce flooding risk. By capturing runoff they also prevent soil erosion and improve water quality.

Trees planted along watercourses reduce evaporation, supporting wildlife in these important habitats. By creating shade, they also provide refuge for wildlife and people from extreme temperatures.

As well as all these important benefits, trees capture carbon too!

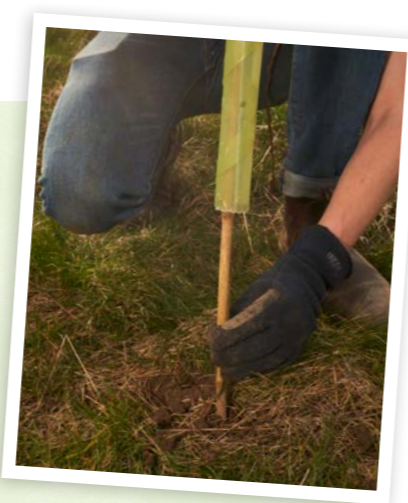
CASE STUDY: Westbury-Sub-Mendip Tree Group

During lockdown, Buffy Fletcher noticed just how bad the situation was for the many trees in her village. Ash dieback was starting to take hold, devastating hedgerows, trees and woodland, and the effects of climate change were becoming increasingly evident with unusually hot spring weather.

Despite the difficulties of organising and fundraising during the pandemic, Buffy pulled together interested people in the community to form the Westbury-Sub-Mendip Tree Group. Since 2020, the group has started its own nursery, producing 1,900 healthy saplings so far. The group has developed members' skills, and organises regular volunteering days, putting 3,500 trees in the ground around the parish during winter 2021-22 alone.

The tree group has pulled in funding, ideas and practical help from organisations including Mendip Hills AONB and Somerset Rivers Authority & Farming and Wildlife Advisory Group SouthWest (FWAG SW)'s Trees For Water project, and has developed good relationships with local landowners.

The tree group has raised awareness in the village, putting regular articles in the village magazine. The group aims to replace trees being lost to ash dieback and heat stress, and ultimately to increase the number of trees in the parish.



Install Sustainable Drainage Systems (SuDS) in flood-prone areas



Areas with lots of hard surfaces, such as roads, tarmac driveways and concrete patios, are at higher risk of surface water flooding. SuDS reduce flood risk by mimicking natural drainage, slowing the rush of stormwater to roads and drains, and allowing it to soak into the soil.

Options like green roofs and rain gardens hold more water during downpours and provide biodiversity, climate and water quality benefits. Impermeable surfaces can be replaced with permeable alternatives, from more porous tarmacs to pavers with space for plants to grow.

SuDS features are legally required in new developments of over 10 houses, but they can also be retrofitted, especially during home and garden improvements, such as replacing a driveway or building an extension.

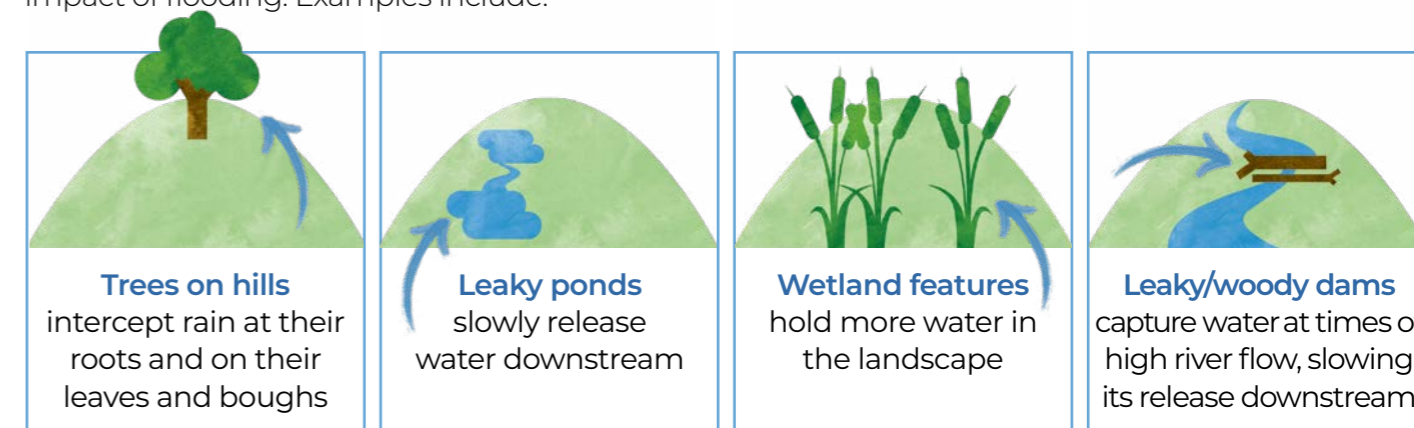
More information about SuDS and their maintenance:

► [Sustainable drainage susdrain.org/delivering-suds/using-suds/background/sustainable-drainage.html](https://sustainable-drainage.org/delivering-suds/using-suds/background/sustainable-drainage.html)

'Slow the Flow' to hold more water upstream



'Slow the Flow' measures prevent stormwater rushing downstream all at once, reducing the likelihood and impact of flooding. Examples include:

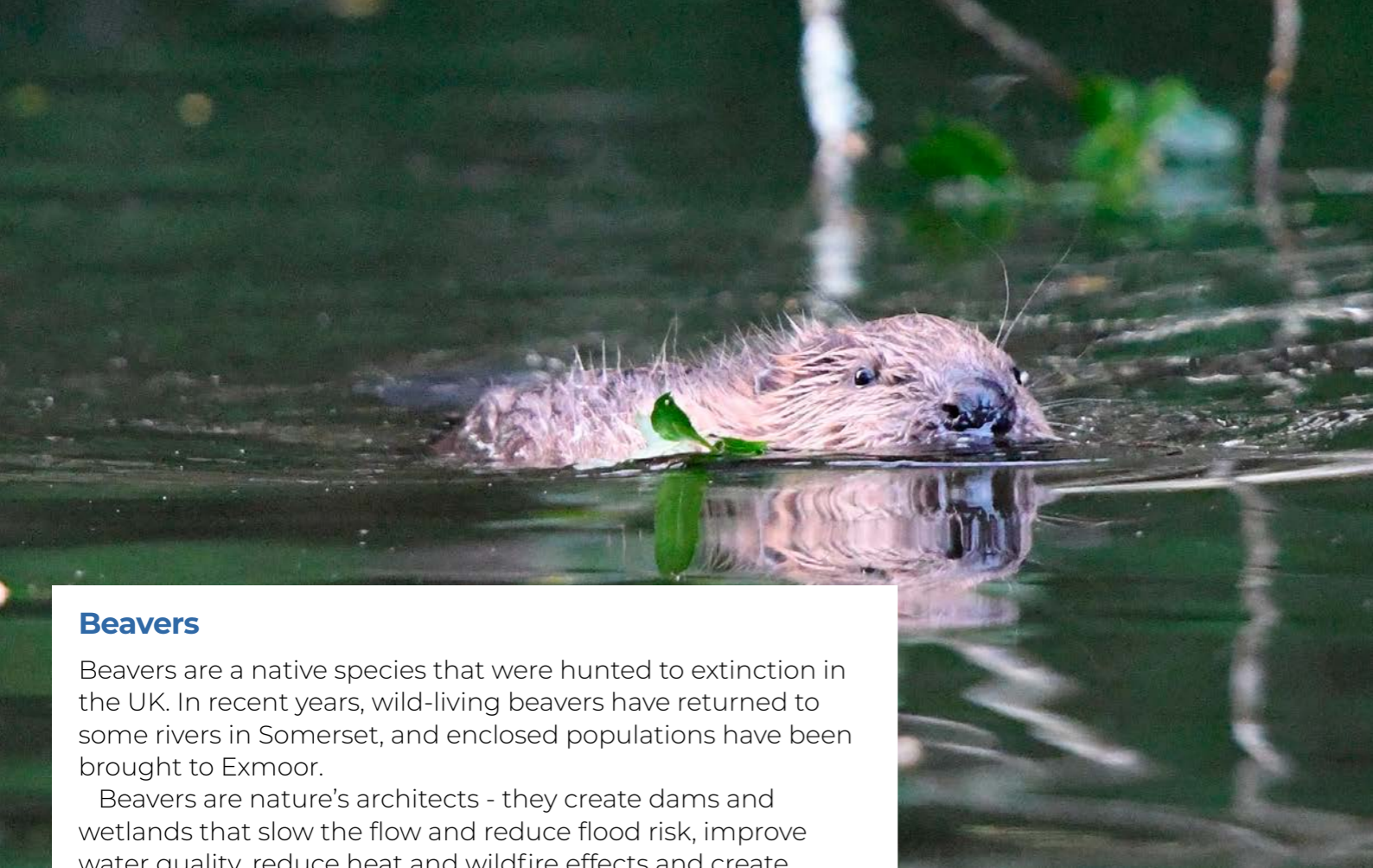


These actions lower peak water levels in rivers and streams after rain. By holding more water in the landscape, they also reduce the negative effects of heat and drought on wildlife, and minimise the risk of wildfires.

In Somerset, FWAG SW has installed hundreds of Slow the Flow measures. Funding and advice are available for farmers and landowners to create these interventions. Contact info@fwagsw.org.uk for more information.

More information about "Slow the Flow" actions:

► fwagsw.org.uk/natural-flood-management-videos
 ► [natural flood management measures southdowns.gov.uk/wp-content/uploads/2021/07/SDNPA-Natural-Flood-Management-Measures.pdf](https://natural-flood-management-measures.southdowns.gov.uk/wp-content/uploads/2021/07/SDNPA-Natural-Flood-Management-Measures.pdf)



Beavers

Beavers are a native species that were hunted to extinction in the UK. In recent years, wild-living beavers have returned to some rivers in Somerset, and enclosed populations have been brought to Exmoor.

Beavers are nature's architects - they create dams and wetlands that slow the flow and reduce flood risk, improve water quality, reduce heat and wildfire effects and create habitat. The wetlands they create also capture carbon.

If your community is downstream of beavers they may be helping to reduce your flood risk. However, beavers need to be carefully managed to avoid negative impacts on homes, farmland or infrastructure. Your community could offer to support the farmer or landowner with this work, minimising the impacts and ensuring the benefits beavers bring to your local area.

- ▶ [gov.uk/guidance/beavers-how-to-manage-them-and-when-you-need-a-licence](https://www.gov.uk/guidance/beavers-how-to-manage-them-and-when-you-need-a-licence)
- ▶ [beavertrust.org/](https://www.beavertrust.org/)



DAVID PARKYN



FWAGSW

CASE STUDY: Martock Flood Wardens and Slow the Flow

Martock has experienced several flooding events, with roads in and out of the village often becoming impassable, such as during the 2013/14 floods. The community has an active Flood Warden Group, which monitors river levels and coordinates responses to flooding events. Additionally, the group has identified opportunities to address flood risk using Slow the Flow techniques.

The group has worked with FWAG SW, meeting local landowners and visiting sites across the catchment to find suitable locations for Slow the Flow structures to be installed, as well as existing structures that could be restored or adapted to store floodwaters, reducing downstream flood risk.

In the Wellhams Brook catchment, more than 47 structures, including leaky woody dams and floodwater storage ponds, have been installed since 2016. These are helping to Slow the Flow of water downstream following heavy rainfall, reducing the likelihood of Martock being flooded.

The group's expertise and approach to flood management and adaptation has been recognised by Defra, who asked for their involvement in a Natural Flood Management 'toolbox', which will help other communities to replicate their successes.

Landscape Scale Actions

Climate change is an issue that demands a big response. These options are beyond the scope of your group, but taking action on a wider scale multiplies climate adaptation benefits.

Delivering adaptation at scale usually involves partnership working. Partners might include conservation charities, the Environment Agency, neighbouring parishes, local farmers and communities. There are important roles that local communities can play to help make these things happen, including building understanding and support for these nature-based solutions.

Reconnecting floodplains

Flooding is a natural phenomenon, and has shaped the landscape in Somerset over millennia.

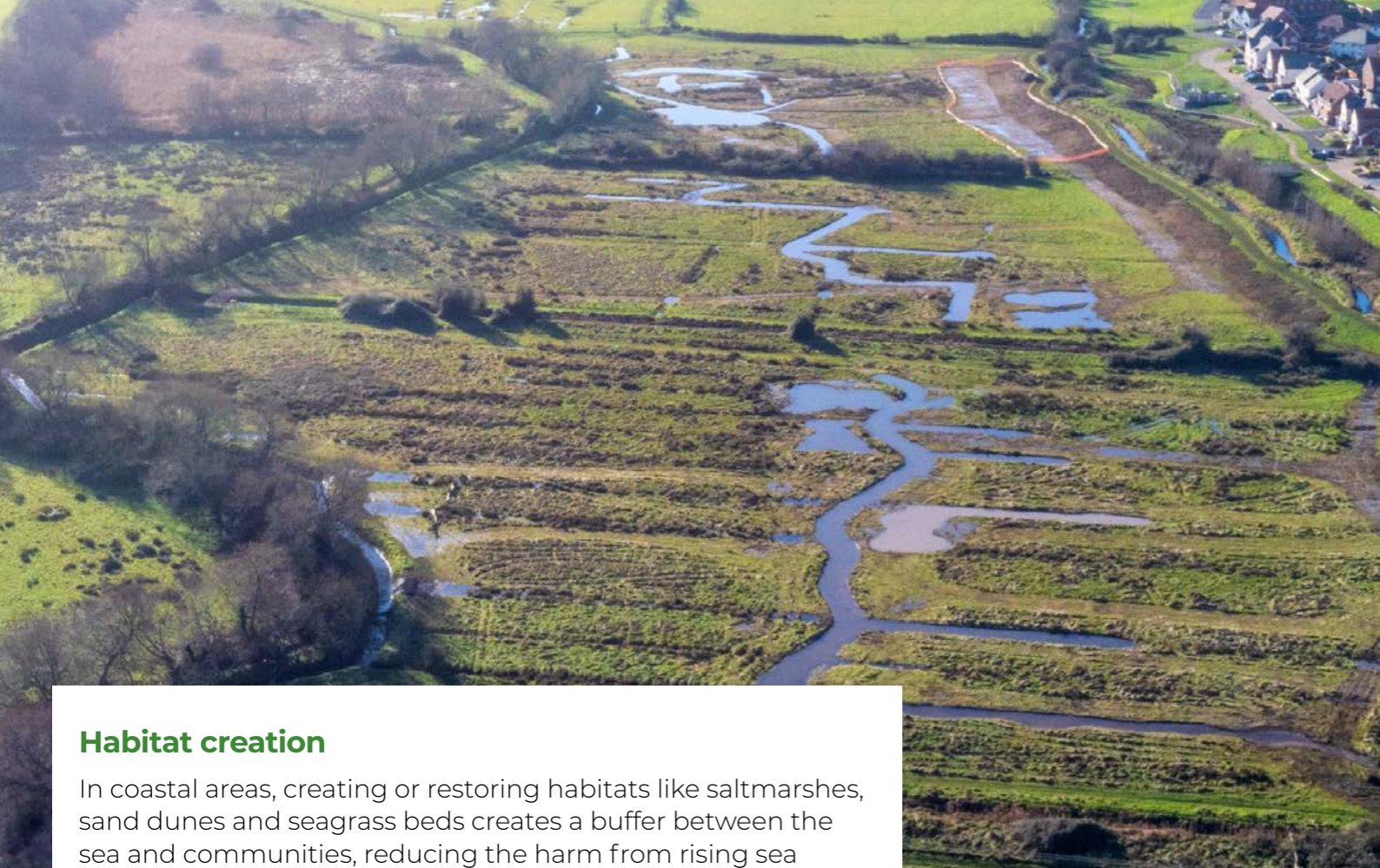
To drain land and/or reduce flooding, many rivers were disconnected from their floodplains by embankments. However, these channels have limited capacity to cope with excess water after heavy rainstorms. As climate change is increasing the frequency of extreme rainfall events, even the defences designed to prevent flooding are likely to be overwhelmed.

Reconnecting a river to a section of its floodplain gives excess water somewhere to go after storms. Modelling on one area of the Levels and Moors has shown that reconnecting a stretch of river to its floodplain would reduce the flow rates by 31% downstream, protecting nearby towns and villages.

In these areas, agricultural practices may need to be adapted, but the wetter conditions can reduce drought impacts and give more summer grazing and fodder. Carbon emissions from peat soils would also be reduced.



NATIONAL TRUST



Habitat creation

In coastal areas, creating or restoring habitats like saltmarshes, sand dunes and seagrass beds creates a buffer between the sea and communities, reducing the harm from rising sea levels and storm surges. These habitats can also store huge quantities of carbon, even more than the same area of forest.

In inland areas, creating wetlands also has multiple benefits - soaking up water and reducing flood risk, improving water quality and creating refuges for wildlife.

The UK has ambitious targets for woodland creation too. If there are opportunities in your area to reforest areas of two hectares or more, speak to the Forestry Commission about getting advice, support and funding.

► For more information on how to campaign for action, take a look at the Team Wilder Community Environment Pack: www.somersetwildlife.org/sites/default/files/2022-06/TW%20Community%20Empowerment_Online_0.pdf



BRYNDIMENT

Strengthen coastal defences and prepare for change

If sea level rise threatens your community, it might feel like there are few adaptation options within your power. However, by engaging with these big issues early on and proactively, your community stands a better chance of securing support.

Every situation is different and in areas where you can't use nature-based solutions, other potential actions include:

- installing new coastal defences
- increasing the height of existing defences
- relocating infrastructure and buildings to less vulnerable locations

You could contact your elected representatives to highlight the issues, start a petition, or campaign for action to be taken. Plans for protecting the coast are covered in the Shoreline Management Plans:

► southwest.coastalmonitoring.org/resources-2/ndascagsmp2/

To find out more information about coastal adaptation plans in your area, contact the Environment Agency: WessexEnquiries@environment-agency.gov.uk

Double win!

Traditional sea defences and nature-based solutions can be complementary, for example building a sea wall behind an area of saltmarsh. During storms, the saltmarsh slows the waves, taking the power out of them, so the sea wall isn't so easily overwhelmed or damaged.

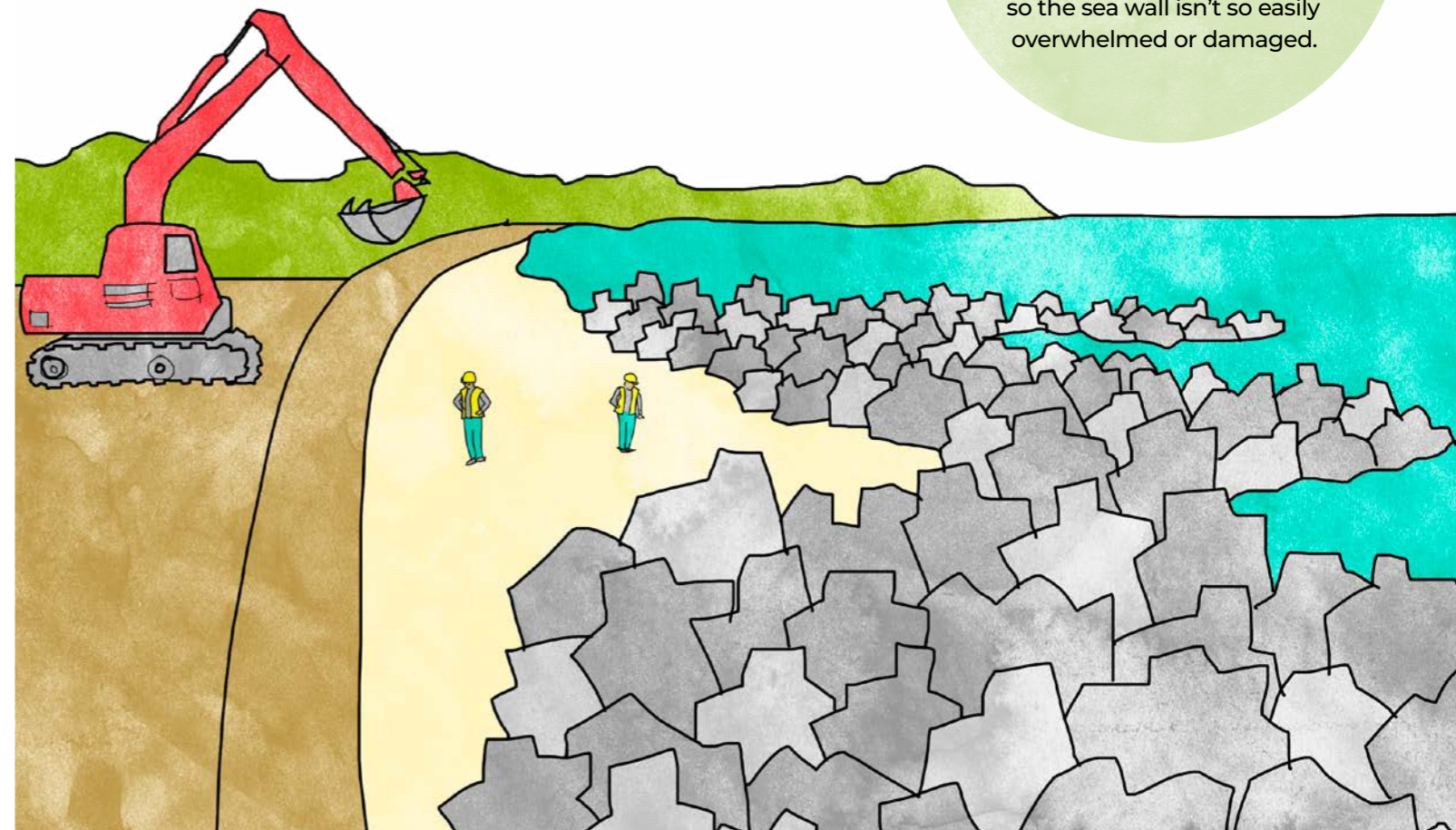
CASE STUDY: Bridgwater Meads – restoring floodplain grazing marsh (above)

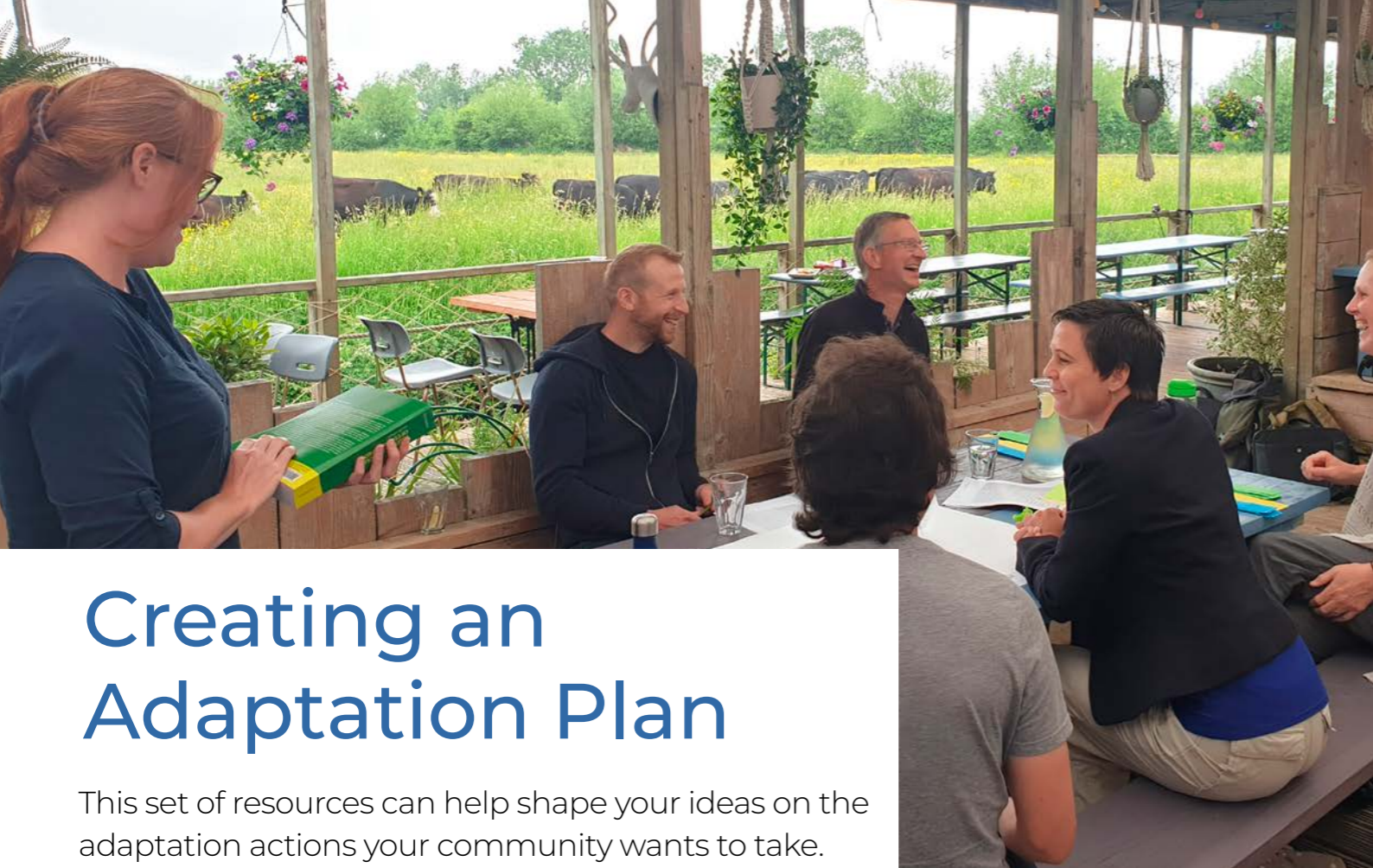
With its position on the banks of the River Parrett and the mounting impacts of climate change, Bridgwater is facing an increased threat of flooding. Recognising a need to help the town adapt to this risk, a partnership led by The Wildfowl and Wetlands Trust (WWT) came together to restore The Meads, an area of floodplain grazing marsh that had been drained for farming.

Work began in 2021 to rewet and restore the site, including the revival of the former course of the Durleigh brook, allowing ditches to fill up with

water and creating a mosaic of habitats. Local volunteers planted new reedbeds and are helping to monitor water levels and wildlife.

All of this work allows more water to be stored for longer, protecting the town following heavy rainfall and creating fantastic habitats for nature. The project will also improve public access by creating new walkways and bridges, and re-establish nature-friendly farming on The Meads, demonstrating how nature and farming can go hand in hand.





Creating an Adaptation Plan

This set of resources can help shape your ideas on the adaptation actions your community wants to take.

Use the “mind maps” (see inserts) to:

- ▶ **consider your community's adaptation priorities**
- ▶ **plan out how to develop your chosen actions**

The accompanying prompts (see Appendix I) might be helpful when answering the questions. You might want to use these in a workshop setting that allows community involvement, brainstorming and conversations to happen.

You can use the templates provided here, or create your own, to draw up a list of actions and next steps.

Finding you need more structured or specialist resources? Try searching online for project planning and management tools which might better complement your project. Or ask if any members of your group or community have project management skills they could offer.

The more that people in your community understand the need for adaptation, the greater the chance of success for your projects. Talking about climate change and adaptation is one of the most important things you can do, from chatting with neighbours, talking to local business owners and putting up posters, to organising talks, speaking at Parish and Town Council meetings, and posting on social media. This will build local support and a sense of community buy-in and pride for taking adaptation action.

When talking to your community, take the opportunity to collect their feedback. This might result in new ideas for action, identify challenges that need overcoming, or suggest different ways of achieving the same result. This could make your climate adaptation plans better and more comprehensive.

Maladaptation

Good planning will avoid your adaptation actions having any unintended consequences that could result in your community becoming 'maladapted' - less able to adapt and respond to climate change. Check your plans with relevant local organisations and experts to ensure they lower your climate risks.

Funding

Discuss the budget needed for your community's projects, and how you could raise this money. Is there someone good at writing funding bids? Does the Parish or Town Council have some funds? Would members of the community be willing to contribute towards the costs? Could you organise local fundraising efforts to secure donations? Are there any local businesses that may be willing to support community projects?



You could also apply for funding from a variety of organisations that provide grants or other opportunities. A few examples include:

- ▶ **Somerset Community Foundation** – offers grants and social investments to charities, community groups and social enterprises somersetcf.org.uk/grantfunding
- ▶ **SPARK Somerset** – offers funding advice and has a Somerset Funding Portal with details of different funding opportunities. sparksomerset.org.uk/funding
- ▶ **Somerset Prepared** – offers advice, training and funding to support community emergency arrangements somerseprepared.org.uk/get-support/funding-support/
- ▶ **Somerset Rivers Authority** – raises £3 million per year for works to reduce flooding and increase resilience to flooding. Contact the SRA for more information: sra@somerset.gov.uk
- ▶ **Wessex Water** – provides funding to communities looking to improve their local environment and the lives of local people, with grants of up to £1,500. wessexwater.co.uk/community/apply-for-funding
- ▶ **The Tree Council** – provides grants between £200 and £2,000 for local communities to plant trees, orchards or hedgerows. treecouncil.org.uk/what-we-do/planting-and-care/our-grants/
- ▶ **The Woodland Trust** – provides free tree packs for schools and communities, including an 'Urban trees' pack for residential areas. woodlandtrust.org.uk/plant-trees/schools-and-communities/
- ▶ **Somerset Independence Plus** – supports home improvements and retrofitting for vulnerable and disabled people somerseindependenceplus.co.uk/
- ▶ **Scottish and Southern Energy Resilient Communities Fund** - aims to help communities be more resilient to severe weather ssen.co.uk/about-ssen/our-communities/resilient-communities-fund/central-southern-england-fund/
- ▶ **Lendology** – provides low-interest, long-term loans for home decarbonisation lendology.org.uk/

Consents and permits

No-one wants their project to get snared up in bureaucracy. Your team of volunteers has limited time and resources, and paperwork can feel like a frustrating labyrinth. Fortunately, there are plenty of people out there who can help.

Watercourses

If you are thinking of doing some work that involves a watercourse, the first thing to do is to check how it is categorised.

▶ **See if it is listed as a main river** here: environment.maps.arcgis.com/apps/webappviewer/index.html?id=17cd53dfc524433980cc333726a56386

▶ **If it is a main river**, the Environment Agency will handle any permissions needed. Anything that could affect the river's flow (including on the floodplain) may need a flood risk activity permit. Find out more: gov.uk/guidance/flood-risk-activities-environmental-permits

▶ **If it is not a main river**, then it is known as an 'ordinary watercourse'. Work that could affect the flow – for example, leaky dams – may need a Land Drainage Consent. These are simple to apply for and cost £50.

▶ **If you are in an Internal Drainage Board (IDB) area**, which is mainly the Levels and Moors, then the IDB issues Land Drainage Consents. somerse排水boards.gov.uk/

▶ **In other areas**, you can get a permit from Somerset Council somerse排水.gov.uk/waste-planning-and-land/apply-for-consent-to-work-on-an-ordinary-watercourse/

▶ **More information about watercourses:** gov.uk/guidance/owning-a-watercourse



Tree Planting

If you are planning to plant trees on a large scale and you are applying for a grant, there will probably be conditions and guidance attached to the funding.

For urban or roadside tree planting, you will need to contact the landowner and ask for permission. This will often be the local council. If you are looking to plant trees as part of a grant-funded scheme, you will often have to ensure that you have permission for the trees to be on the site for a certain length of time.

For more information, visit the Woodland Trust's website: woodlandtrust.org.uk/plant-trees/advice/

Planning Permission

If you are looking at a bigger project, for example changing the use of a piece of land, you need to investigate whether this needs planning permission. Planning officers are available to give advice – get in touch with Somerset Council's planning office.

Actions that might need planning permission include SuDS, tree planting of over two hectares, habitat creation, and some works within conservation areas or on listed buildings.



Other useful contacts and resources

► **Somerset Wildlife Trust - Team Wilder:** a new initiative helping people to take action for nature across the county somersetwildlife.org/get-involved/team-wilder



► **Environment Agency** – Check your flood risk: shows areas that are vulnerable to surface water, river or coastal flooding check-long-term-flood-risk.service.gov.uk

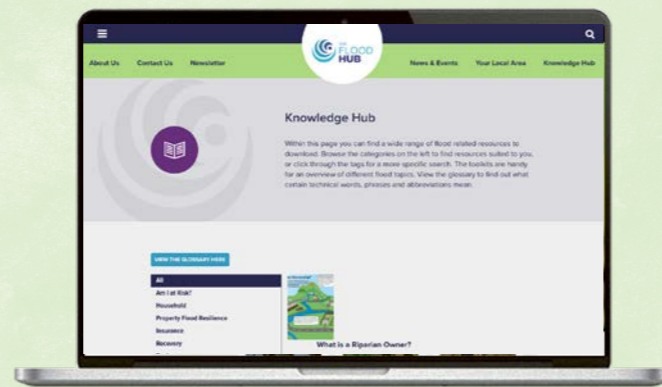
► **FWAG SW** – Farming and Wildlife Advisory Group SouthWest: an organisation working with farmers to support food production, wildlife conservation and climate adaptation. FWAG SW has strong expertise in implementing Slow the Flow measures. fwagsw.org.uk

► **Somerset Rivers Authority:** a unique partnership of all of Somerset's flood risk management agencies, its website is a useful place to find more information about flood and water management issues. somersetriversauthority.org.uk

► **Somerset CAN** – Somerset Climate Action Network: a county-wide group and resource centre for all aspects of climate action, from renewable energy and zero-carbon projects, to travel and transport, food, flooding, recycling and more. somersecan.org.uk

► **Reimagining the Levels:** a group based on the Somerset Levels and Moors, working to achieve their vision of a well-adapted, resilient and thriving region. reimaginingthelevels.org.uk

► **The Flood Hub's 'Knowledge Hub':** Click on the 'Booklets and Toolkits' section for a selection of resources on managing flooding, resilience and recovery. thefloodhub.co.uk/knowledge-hub



► **Free Flood Packs for Somerset Residents:** Rotary Clubs in Somerset have a supply of free flood packs to homes which are in danger of flash floods. The pack consists of compact, self-inflating bags which can be used to protect homes against flash floods. To find out more, please email david303welch@btinternet.com. A video demonstrating how the flood bags work is available here - youtu.be/5w91phm37Lge

Glossary:

Climate Adaptation: Actions taken to adjust to climate change and its impacts, both now and in the future, to limit or avoid harm, and exploit any opportunities it might present.

Climate Mitigation: Actions that limit the extent of climate change by reducing greenhouse gas emissions, or by removing carbon dioxide from the atmosphere, for example through tree planting.

Climate Resilience: The ability of communities and natural ecosystems to cope with, bounce back and learn from harmful events caused by climate change.

Greenhouse gases: Gases such as carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O) that trap heat from the sun when they are present in the atmosphere.

Nature-based Solutions (NbS): Actions that harness the power of nature to address challenges facing society, such as climate change.

Peak river flow: The maximum amount of water in a river following a rainfall event.

Peat: A type of soil made from partially decomposed plant materials that stores huge quantities of carbon dioxide when kept wet. Healthy peatlands can continue absorbing carbon dioxide from the atmosphere, locking it up safely in the ground.

Riparian: Relating to rivers and areas alongside rivers.

Runoff: The draining of water (and any substances carried in it, like soil or pollutants) away from the surface of an area of land, a building or structure, etc.

Slow the Flow: Actions that slow the passage of water downstream, reducing the peak height of a river during heavy rainfall events and reducing flood risk.

Sustainable Drainage Systems (SuDS): Measures that mimic natural processes and increase the ability of rainwater to soak into the soil or drain away more slowly.



Appendix I

Planning mind map prompts

Identifying our community's adaptation priorities

What climate impacts concern/threaten our community most?

- ▶ Has our community previously been affected by flooding, heat and drought or wildfires?
- ▶ What were the impacts? What would happen if a similar event happened again?
- ▶ How could the climate projections for Somerset impact our community?
 - Check the EA's flooding risk maps for your community
 - Are there any areas that could be vulnerable to increasing wildfire or drought risk?
 - Are there areas or vulnerable groups that could be most impacted by extreme heat?

Where are we most vulnerable?

- Mark on a map (or write down) any areas or groups that are:
- ▶ Vulnerable to flooding
 - ▶ Vulnerable to increased wildfire risk
 - ▶ Vulnerable to increased heat and/or drought risks
 - ▶ More vulnerable or less able to deal with emergencies

Review your map or list. Where is most vulnerable to climate change? This could be a good place to focus on taking action.

Areas where climate impacts overlap could become a priority. Many options in the toolkit can support adaptation to different climate impacts and could be used in such areas.

What are our triggers for taking action?

- ▶ What needs to happen for our community to start implementing action?
- ▶ Are there some actions that can be implemented quickly?
- ▶ Will some actions be taken only after it becomes clear they are needed? (i.e. after a flood)
- ▶ Does the community need to identify a group that will lead on taking action?

What opportunities do we have for taking action?

Are there areas where adaptation action could be taken? Such as:

- ▶ Watercourses
- ▶ Public greenspaces
- ▶ Community buildings (i.e. Halls, libraries, churches etc.)
- ▶ Private land with landowners interested in taking climate action



What opportunities are there to adapt structures and processes to make them more resilient and able to respond? Think about:

- ▶ Parish/Town Council structures
- ▶ Local plan
- ▶ Community groups/networks

What knowledge do we need/what do we want to learn more about?

Is there any missing information on:

- ▶ Local climate change projections
 - ▶ How climate impacts might unfold in our community
 - ▶ How specific adaptation actions could work
 - ▶ How to realise adaptation actions (including funding, permissions etc.)
 - ▶ Who is responsible for managing land/resources in our community
 - ▶ Other key contacts
- Think about how you could answer these questions and fill in these knowledge gaps.

What existing resources can our community draw upon?

- Does the community have:
- ▶ Anyone who can access useful resources (for example, cost-price water butts)
 - ▶ Anyone with expertise (in planning, construction, habitat management etc.)

- ▶ A group of willing volunteers
- ▶ Anyone with links to funding opportunities
- ▶ Someone who is good at organising

Which options are the community most interested in/excited by?

Discuss amongst the group/the wider community which adaptation options appeal the most. Actions with broad support and enthusiasm will be more likely to be realised and successful.

What are our priority actions?

What has emerged as our community's priority adaptation actions? List as many as you would like (we recommend choosing up to five as a good starting point).



Adaptation Option planning sheet:

Fill in this mind map sheet for each adaptation action. Add any other information or questions you have to the sheet.

Where is action needed?

Where in our community is suitable for taking action to adapt to climate impacts?

When to take action?

- ▶ Is the adaptation action urgent?
- ▶ Will support need to be built within the community?
- ▶ Will permissions or funding need to be sought?
- ▶ What time can the group/community commit to realising this action?
- ▶ How long will it take to implement the action?
- ▶ Is any ongoing work/maintenance required? What will these tasks be and who will do them?

What resources do we already have/can obtain?

Such resources might include tools and equipment, funding, volunteers and expertise, for example. Are there any contacts or opportunities that we can use to obtain the resources needed?

What resources and knowledge do we need?

Discuss:

- ▶ The remaining resources needed to achieve the adaptation action
- ▶ Where and how these can be obtained
- ▶ Any additional knowledge needed to successfully realise the project, and how to get this

Who will make up the project team?

Discuss how big this team should be, the different roles needed, and who could best fill them.

Who will lead the project?

Discuss who will take responsibility and ensure milestones are met and the project is delivered.

Who to partner with?

Discuss potential partners (i.e. organisations, councils, local groups, businesses, etc.) that:

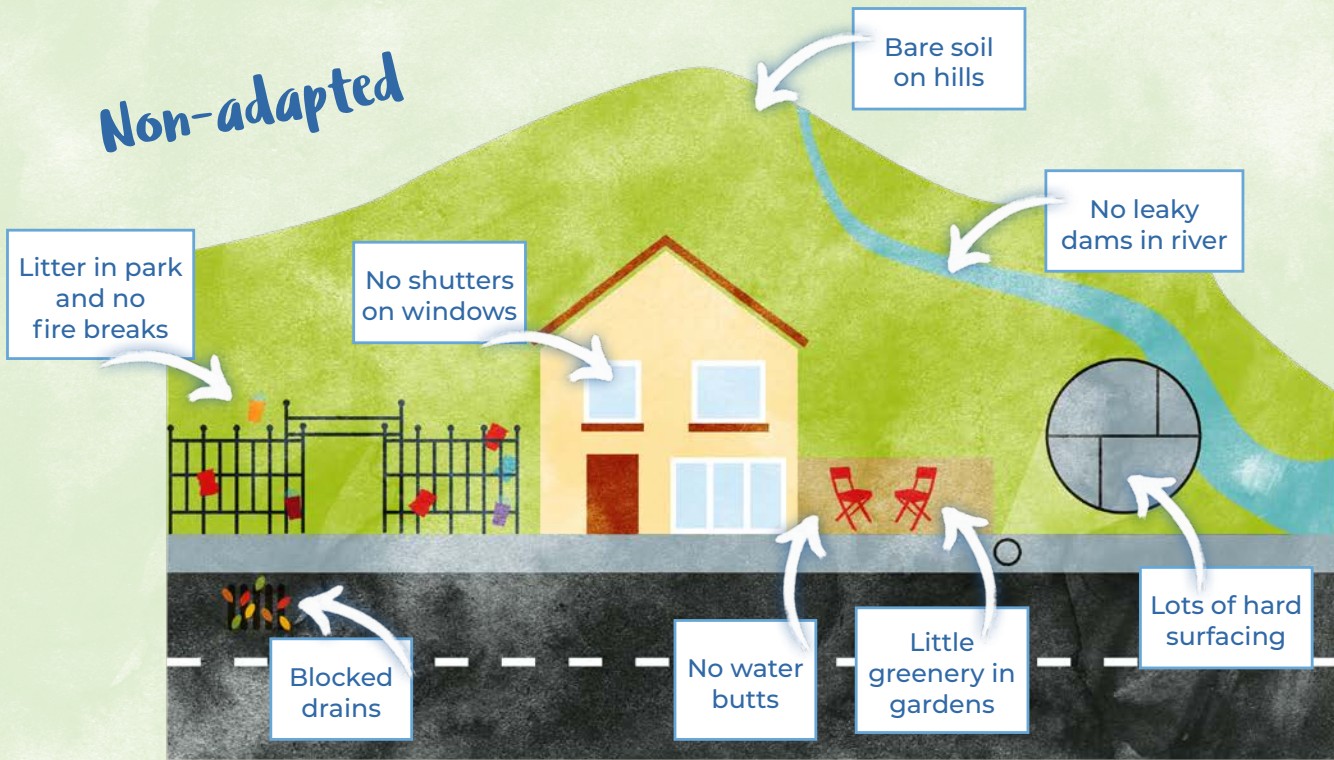
- ▶ Could grant permission for a project
- ▶ Have land that could be used to take adaptation action
- ▶ Could provide funding
- ▶ Have useful expertise or skills
- ▶ Can support/build support for the project

How will we fund this project?

How much will the project cost? Where could funding be sourced from?

- ▶ Do we have funding pots for local projects?
- ▶ Could we fundraise locally?
- ▶ Is there funding available from local councils?
- ▶ Could there be a potential partner willing to fund part or all of the project?
- ▶ Other funding sources – see examples in the toolkit

Non-adapted



Adapted

