Weathering the Storm

A Guide to Saving and Making Money in a Changing Climate

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1 How to use this guide

This guide has been produced for small and medium-sized businesses (SMEs) in the West Midlands. It will help you to understand how you could be affected by weather, including extreme events, and how you can improve your chances of a quick recovery. The guide also sets out business opportunities from responding to a changing climate and provides useful tools and contact information to help you become more resilient.

To get the most out of this guide:

- ✓ **Read the introductory sections** on why climate change is relevant now, what the **key impacts** can be and what's in it for your business.
- ✓ **Read the section on how to prepare for extreme weather events**. This is split into **topics** such as insurance, your premises and your employees. For each topic, the guide asks a **series of questions** to help you think about **how you might be affected** and identifies a **series of simple and low-cost actions** you could take.
- ✓ If you need further advice, you can refer to the **tools and contacts section**.

The information in this guide is focused on actions that are relatively easy for small businesses to achieve, tackling issues that are within your control or influence. You might not be able to stop flooding or an extreme storm event affecting your business, but you can take a few simple steps to reduce the impact these might have on your business so that you can keep operating. The list of suggested actions is not exhaustive and ticking all the boxes does not guarantee you are resilient. You must consider your specific circumstances.

There may also be opportunities that organisations can take advantage of, including identifying new markets or products, through to saving money from effective resource efficiency. Further suggestions on how to identify these are presented towards the end of the guide.

2 Key Definitions

Climate change: **Large-scale, long-term shift** in the planet's weather patterns and average temperatures.

Weather: The condition of the atmosphere in a particular area for a particular moment in time. It refers to the day-to-day conditions including **temperature, wind, humidity and rain**.

Flash flooding (also known as pluvial flooding): **a sudden and severe flood.** This can occur anywhere when rain falls so fast that the underlying ground cannot cope or drain it away fast enough. It is not dependent on proximity to water courses.

Fluvial flooding: This is flooding from **a flowing watercourse such as a river or stream**. During times of heavy rainfall the capacity of a watercourse can be exceeded, resulting in flooding to businesses, land, infrastructure and homes.

Drought: A **lack of water that builds up over time** and can last from as little as a few weeks to up to several years.

Heatwave: an **extended period of hot weather** relative to the expected conditions of the area at that time of year, which may be accompanied by high humidity.

Subsidence: A process where **soil shrinks and swells**, causing potential damage to land or buildings above ground, and the potential for them to sink to a lower level.

Adaptation (see page 8 of this document): **Adjustment in natural or human systems,** including business processes, in response to actual or expected changes to the climate and its impacts, to help moderate harm or to exploit opportunities.

Mitigation: Efforts to reduce or prevent emission of greenhouse gases (e.g. carbon dioxide) to reduce the likelihood of climate change impacts from occurring in the first place.

Resilience (see page 8 of this document): Ability of a system and its component parts, including businesses, to **anticipate, absorb, accommodate, or recover** from the effects of a hazardous event in a timely and efficient manner, including through ensuring the preservation, restoration, or improvement of its essential basic structures and functions.

3 What do I need to know?

Climate change will impact businesses in two primary ways:

1 Through **shifting temperatures and weather patterns** causing disruption to business operations and day-to-day tasks.
2 Through **regulations that increase the cost** of being an unsustainable business.

Businesses that continue to be affected by the impacts of climate change are likely to be badly impacted. However, businesses that are planning and being proactive to reduce climate-related risks, while finding competitive advantages, are likely to be less negatively impacted and could even benefit from climate change.

3.1 Where are we now?

Looking at the West Midlands, evidence shows that we have already experienced many impacts from extreme weather events. Some of these events have had devastating impacts on people's ability to go about their daily activities. Experience in the West Midlands and across England has shown that extreme weather could have some serious consequences to your business operations, not just for your premises and staff, but also by disrupting your suppliers, distribution, or customers.

Some of the extreme weather events we have experienced in recent times include:

- 2016 – Storm Angus
- 2017 – Ex hurricane Opiela
- 2017 – Storm Doris
- 2018 – Storm Callum
- 2018 – Storm Erik
- 2019 – Storm Hannah
- 2019 – Record breaking heatwave
- 2019 – Storm Lorenzo
- 2020 – Storm Ciara
- 2020 – Storm Dennis
- 2020 – Heatwave
- 2020 – Storm Bella
- 2020 – Storm Ellen
- 2021 – Storm Christoph
- 2022 – Another record breaking heatwave

There is also increasing evidence that events like this will become more frequent and intense in future.

3.2 What are the effects of climate change likely to be?

The changes in climate that we are already experiencing are projected to continue and intensify. In the second half of the century, the amount of change that occurs will depend strongly on how successful we are in reducing greenhouse gas emissions globally. This will influence the extent to which we need to adapt and, therefore, the required implementation of the actions included in this guide.

The latest set of projected changes in climate for the West Midlands come from the 2018 UK Climate Projections as summarised in the table below.

Baseline 2050 2099	Best-Case Scenario (RCP 2.6)		Worst-Case Scenario (RCP 8.5)	
	Summer	Winter	Summer	Winter
(Avg. temp.)	15.4°C 1.7°C warmer 2.3°C warmer	4°C 0.9°C warmer 1.2°C warmer	15.4°C 2.1°C warmer 6.5°C warmer	4°C 1.6°C warmer 4°C warmer
(Avg. precipitation)	171mm 17% drier 25% drier	195mm 4% wetter 7% wetter	171mm 23% drier 42% drier	195mm 7% wetter 24% wetter

Although some of the projected changes in the above table may seem modest, even in the best-case scenario, they could lead to profound effects on our climate and, therefore, on your business, as outlined below.

2.2.1 More frequent and severe flooding

Most flooding is caused by heavy rainfall which can lead to rivers bursting their banks (known as fluvial flooding) or drainage systems being unable to cope with the volume of water. With a changing climate, increased winter rainfall is projected throughout the West Midlands, with greater rates of rainfall increasing the risk of fluvial flooding.

Despite summers in the West Midlands likely to become drier, when it does rain there is an increased likelihood that it will be more intense. This creates a risk of flash flooding (known as pluvial flooding) because soil is less absorbent. Urban areas with little vegetation are also vulnerable to flash flooding due to impermeable surfaces causing water to move and accumulate quickly.

Ask yourself:

? Do you know if your business, or the homes of your employees, are in a flood risk area?

? Do you know if your business would survive a serious flood?

? How would electrical and computer systems, stock and machinery be affected?

2.2.2 Hotter summers

Climate change is likely to result in hotter summers in the UK. This may be a particular issue in urban areas due to the Urban Heat Island effect, a phenomenon where buildings and other developments which retain heat can add several degrees to the temperature in built up areas compared to areas of greenery. For your business, this could affect working conditions for staff, cause equipment to overheat, and cause your air cooling bills to increase. Heat can also have indirect impacts on businesses, such as through disruptions to infrastructure.

For example, the extreme heat in July 2022 caused damage to overhead wires, tracks and signalling systems, resulting in dozens of trains being cancelled or delayed across England. For the West Midlands, the extreme heat during the summer of 2019 saw no Virgin Trains stopping at Sandwell and Dudley, Wolverhampton and Birmingham International.

Extremely hot temperatures could also affect agriculture, changing the growing season and the types of crops that can be grown. It may change the nature of pests and diseases. It can also affect our health, as emphasised by the heatwave in 2020 which was estimated to have killed 2,556 people in the UK.

Ask yourself:

? Do you employ any staff members who may be more vulnerable to the impacts of extreme heat?

? How reliant are you on the infrastructure that heatwaves could affect?

2.2.3 Changes to frequency and severity of storms and extreme winds

Storm events can cause severe short term impacts including disruption to services. The tornado that hit Birmingham in 2005 lasted for just four minutes, but wreaked havoc across the Small Heath, Hall Green, Sparkbrook and Kings Heath areas of the city. It destroyed part of a supermarket, uprooted trees and damaged more than 100 homes.

Storm Doris, in 2017, also impacted the West Midlands causing 74 mph winds. This led to the death of a West Midlands resident from Stafford who was hit with unsecured debris from a roof. Storm Ciara, in 2020, brought heavy rain and very strong winds, up to 97 mph, to the UK. In the West Midlands, West Midlands Railway advised passengers not to travel due to fallen trees and flooding in several locations across the country.

The frequency and severity of storms may change due to climate change. While there is no clear picture yet as to exactly what these changes may be, storm events will still take place in the UK and must be considered in business planning.

Ask yourself:

? Have you undertaken a risk assessment of your business premises to determine how vulnerable it is to the impacts of storms?

? How reliant are your staff on having access to electricity, both in the office and at home?

4 How are the weather and climate relevant to my business?

A large variety of businesses are exposed, and will therefore be impacted, by the risks associated with climate change if they are not dealt with properly. According to this survey, all SMEs believe they are impacted by the weather to some extent, with 80% believing that weather has a moderate or significant impact on their business.

Businesses are also exposed to an increased risk of price volatility of materials and commodities. These are some of the knock-on impacts of climate change that, even if they do not directly impact your business, may impact on your supply chains and the infrastructure that you rely on. For example, long-term drought can raise the price and availability of water, and climate impacts can drive up the cost of energy.

However, there could also be opportunities for greater investment. Future-proofing your product range, premises and services now will encourage investor confidence that you can cope with increasing severe weather events. Therefore, preparing for a changing climate makes business sense, as shown below:

£	**Cost saving:** Make more informed investment decisions by understanding how current and future climate risks will impact your business's operational performance. This will allow you to manage or lower costs in the long-term. £ The total amount that could be collectively saved by UK SMEs if they check and act on accurate weather information is £15.4bn, and the total amount lost by not reacting to accurate weather is £9.9bn. £ 65% of UK SMEs have been financially impacted by their lack of response to weather information. £ 25% of UK SMEs have lost money from not checking or acting on the weather forecast, and 40% of SMEs who have checked have saved money. £ A farm in Herefordshire indicated that if it had not invested and adapted to hotter summers and warmer damper winters, the business would have collapsed due to crop failure.
	Business continuity: Address your exposure to climate risks to give your business the best chance to continue to operate and meet customer orders, at the same time as minimising the degree and duration of any disruption.
	Competitive advantage: Identify possible business opportunities such as developing new products or services, finding ways to reduce costs, or more effectively managing climate risks, to give your business the edge over competitors.

Reputational benefits: It would also be beneficial for your business to report progress on climate change adaptation to your shareholders and institutional investors. Identifying and mitigating climate related risks can help to access finance and inward investment.

So, what happens if you are not proactive with ensuring that your business is adapting to climate change? Below are some facts to be aware of:

- 40% of businesses close for good after catastrophic flooding.
- A serious flooding event can potentially cost a business 50 working days and an average of £80,000 per incident.
- 75% of SMEs do not have a Business Continuity Plan that considers climate risk, and just 38% have flood insurance in place.
- 10% of new business premises built in England will be exposed to high or medium flood risk by 2050.
- July 2021 saw the highest monthly number of commercial flood claims, double the previous high.
- The autumn and winter floods of 2019-2020 led to homes being evacuated, transport disruptions and loss of life. During this time the Association of British Insurers estimated that businesses across the UK received £58 million in pay-outs for property and stock (see page 8 of this document).
- A National Farmers Union (NFU) member lost 80 sheep to flooding on land that was traditionally unaffected by flooding.
- After the 2020 flooding, businesses in Shrewsbury incurred unavoidable capital costs of at least £2.74 million. The flood impacted both businesses and residential properties and had a significant impact on transport infrastructure. The average insurance claim from businesses was £2,053, but 63% of the businesses who received this needed more financial support to recover. This flood event alone resulted in over 500 applications from businesses that needed support to the Defra flood support grant scheme.
- The 2022 heatwave left almost 15,000 homes without power after extreme temperatures caused equipment to overheat. This is likely to have impacted on employees who work from home.

Case Study: The Harbour Inn

Area: Flood resilient premises, hospitality

Source: Property Flood Resilience eMag – Mary Dhonau Associates

Overview

This pub in Southwold, Suffolk, employs a unique strategy to cope with regular and heavy flooding. Situated below sea level, the pub floods regularly, especially between the winter months of October and February. Rather than finding ways to stop the powerful and destructive force of water, Nick Attfield, the area manager for the local brewery, prepares the inn for water to flood in and back out. After the 2013 flood, the pub was closed for up to five weeks as it dried out. After the 2019 flood, it was able to reopen the next day.

How they adapted:

- ✓ The tiled flooring can be easily washed down.
- ✓ Toilets are also tiled and can be quickly cleaned.
- ✓ The bar is made of more flood resistant marine plywood.
- ✓ The seating and tables are made of hardwood, which can be hosed down to clean .
- ✓ The electric and gas supply outputs are situated high up and can be easily turned on and off before and after a flood.
- ✓ The kitchen equipment is on wheels so can be moved quickly and easily when preparing for a flood.
- ✓ The pub has its own sewage treatment system and they employ a local company, who will come and empty it at short notice to prevent it 'backing up.'
- ✓ Nick uses flood warnings from the Environment Agency and 'The National Tidal and Sea Level Facility' app that tell him when the floods will hit and how high they will be. This allows him to prepare the pub accordingly.

Benefits:

- Due to Nick's thorough planning and the steps he took to make the pub more resilient, he has retained insurance and hasn't made an insurance claim in over six years.
- The fast recovery time of the pub has meant that business is disrupted for a shorter period: the faster the pub re-opens, the lesser the financial impact of the flood.

5 What can I do to prepare?

Understanding how your business will be affected by weather and climate change impacts is a crucial first step, but what should you do next? The following pages cover some common issues, questions to ask yourself, and where to go for more information.

A number of these issues are common to all SMEs, regardless of your business sector. However, agriculture, horticulture and other rural businesses may face different challenges to urban businesses and therefore we have provided a separate section on page 39.

We have focused on actions that are relatively easy for a small business to achieve, tackling issues that are within your control or influence. Whilst some of the actions will have an initial cost, they should save you money in the long term.

Case Study: Blue Teapot

Risk area: Flood resilient premises, hospitality

Source: Hazard and Hope: Our Flood Resilient Business (YouTube series)

Overview

The Upper Calder Valley, West Yorkshire has steep slopes meaning that even when river levels are low, if there is a high amount of rainfall, surface water run-off can cause flooding. The Blue Teapot is a small café in Mytholmroyd. It had just been taken over by a new owner who was still getting to grips with how to run the café when a flood devastated the business, leaving her to pick up the pieces. Determined to prevent this from happening again, she set out to tackle the flood risk and improve the resilience of the business.

How they adapted:

- ✓ Resilient granite tiled flooring was installed to replace damaged vinyl flooring.
- ✓ Electrical sockets were raised and wiring now runs high across the wall.
- ✓ The kitchen counter is no longer fastened to the ground and can be more easily moved.
- ✓ Treatment has been applied to the brickwork to stop it absorbing water, allowing for faster drying.
- ✓ Kitchen equipment has been put onto wheels to make it more mobile.
- ✓ A detailed plan for emergency preparation and evacuation before the flood has been written, as well as a cleaning and sanitising procedure for after the flood.
- ✓ Minimum stock is stored in the café. It is now stored in the personal garage of the owner.
- ✓ Metal table legs with wooden tabletops that can be screwed off and removed have been installed.
- ✓ A mindset has been developed that all new additions to the café need to be installed above the flood limit to prevent them from getting damaged. For example, an air conditioning system was installed high above the flood level.

Benefits:

- After the previous flood, the café was closed for six weeks. The owner now aims to be closed for a maximum of one week before the café can resume business.
- The owner felt that the previous interior design was out-dated. Refurbishing the café gave her the chance not only to increase resilience, but also redesign the café.
- Being prepared for future floods gives the owner some comfort and has a positive effect on not only her mental health and well-being, but also that of her employees.

5.1 Governance, funding, communication, and policies

Ask yourself:

? Do you have a Business Continuity Plan and are climate risks embedded into this?

? Have you engaged with staff on the issue of risk, resilience and climate change adaptation, especially departments such as finance, marketing, procurement, logistics and operations? Effective engagement and communication processes will be crucial in awareness raising and winning interest and support for adaptive action within the business.

? Are there any times of the year during which your business is more vulnerable to the impact of a flood, fire or severe weather event?

? How would you fund additional costs arising from a severe weather event, fire or flood in the short term? The floods in 2019/2020 cost the average impacted business £70,000 (see page 8 of this document).

? Is your product or service weather or climate sensitive? Identifying how sales are influenced by seasonal variability and different types of weather is a useful activity in establishing if climate change may represent any future risks or opportunities for your business.

? How will your business withstand and absorb climate impacts?

? How will your business recover and then return to normal operations?

? Have you evaluated how many days your business could operate in the event of your supply chain breaking down, and how long would it take for an alternative supplier to deliver goods?

? Do you have buy-in from senior management on ensuring your business is resilient?

Take action:

As stated above, climate change risk can impact all aspects of a business. Businesses are encouraged to build adaptive capacity into continuity plans, risk management plans, operational and maintenance procedures. It is easier and more effective to integrate resilience into core business aspects, rather than creating new channels. You could:

✓ Conduct a climate risk assessment that will allow you to more accurately identify key risks to your business and actions you can subsequently take.

✓ Develop a Business Continuity Plan if you do not have one, and include climate related risks in the plan, and ensure all staff are well versed in the Plan's contents and allocated

responsibilities. This plan should include assessing how future climate change impacts can affect your products, services and large capital purchases. Ensure up-to-date staff contact details can be accessed away from the premises, either on a separate document or included in a Business Continuity Plan. Ensure that the task of updating details when staff join or leave the company is someone's specific responsibility.

- ✓ Put together cross-functional teams or identify a climate adaptation champion. These individuals may support the business benefits of adaptation and influence current and future decision making. These teams can identify and assess climate risks and opportunities, and then work to address, monitor, and evaluate the businesses response. This also provides a potential opportunity to 'piggyback' adaptation principles into new projects.
- ✓ Include climate change in risk management meetings, or in general staff meetings.
- ✓ When engaging with colleagues, avoid using terms such as 'adaptation.' Use business language to reference how it could affect general operations, such as profitability, disruption, staff welfare, client and customer service, liabilities, added value, winning business, loss of reputation, insurance costs etc.
- ✓ Ask your suppliers how resilient they are to climate change impacts. Consider sustainable procurement practices that require climate change resilience from your suppliers. Ensure that key customers in your supply chain also have Business Continuity Plans, especially if you are reliant heavily on one customer for your sales.
- ✓ Consider ways of coping with fluctuations in raw material prices as a result of externalities, such as finding new suppliers, buying in bulk when prices are low, developing strong supplier relationships, identifying upstream risks from materials and products sourced from international markets and research if similar goods can be purchased in other countries.
- ✓ When deciding on investing in adaptation responses, consider the cost of doing nothing in relation to business impacts, compared to the investment cost of being resilient. This is challenging, but businesses can estimate by assessing the impacts of past weather events.
- ✓ Consider changing working patterns during the hottest part of the day (usually 14:00-17:00) for example through changing work times or encouraging working from home where possible. This may also improve productivity.
- ✓ Consider the implementation of adaptation policies that your business can use to integrate adaptation into business operations, and also demonstrate to stakeholders that adaptation is being considered. These could include the integration of climate risks into health and safety policies, uptake of the adaptation standard ISO 14090:2019, and procurement stipulations to obtain goods from those that have considered resilience.

Case Study: Heart Gallery

Risk area: Flood resilient premises, retail

Source: [Property Flood Resilience eMag – Mary Dhonau Associates]

Overview

A small shop located in a former chapel (built in 1777) in Hebden Bridge experienced flooding in 2009 and 2015. This business had only recently been started by the owner before the 2009 flood, after many emotional and financial struggles. After the 2015 flood, the owner found out that the business was under-insured by 12%, leaving the owner to further contribute a significant amount of money. The shop was rebuilt after the 2015 flood, with the aim of becoming more resilient and more prepared.

How they adapted:

- ✓ Non-return valves were fitted to pipework, to prevent backflow due to high flows during floods.
- ✓ The original wooden floorboards were repaired and upcycled to make new counter tops and some of the material was given to a local carpenter for use in future projects.
- ✓ The gallery added concrete flooring with steel supports with porcelain tiling on the surface. This was designed to imitate the look of wooden floorboards, while still providing water-resistant flooring that can be easily cleaned and maintained after flooding, unlike traditional wooden flooding.
- ✓ Marine plywood (a water-resistant material) has been used for new counter tops and shelves.
- ✓ Electric sockets and wiring have been raised above the flood level.
- ✓ A 1.2m flood defence barrier has been fitted into the doorway.
- ✓ Plaster, which is easily damaged by water, has been removed from the walls and the brick and stone has been treated with a sealant and then a resilient concrete render applied to the walls. This means it is more resistant to water so prevents the floodwater from being absorbed into the walls.

Benefits:

- During the refurbishment process extra space was discovered that was previously hidden by a false ceiling. This space is now used to store stock high up when preparing for a flood.
- This refurbishment was not just beneficial for this business. The owner was insistent that she wanted to employ the services of local businesses during the refurbishment process, rather than those recommended by the insurance company. This boosted the local economy and encouraged connections to form in the local business community.

5.2 Insurance

Ask yourself:

? When did you last check that you have the insurance you need?
? Are you covered for floods, fires and storm events?
? Do you have business continuity cover if your business is interrupted?
? Does your insurance policy replace new for old or have limits for repairs?

Take action:

- ✓ Check your insurance cover at least annually. Confirm that you have a policy that covers the full value of your business and keep documents safe from weather impacts (and store copies off-site or on a trusted cloud server).
- ✓ Check that buildings and contents insurance covers flooding, fires and storms.
- ✓ Check if you have business continuity insurance that will cover you whilst you cannot operate.
- ✓ Catalogue your key assets and premises by photographs and/or videos.
- ✓ Make sure that the period of time that you are insured for is adequate. In the case of a major flood for example, there can be long delays while property dries out and affected customers return to do business with you.
- ✓ For leased premises, agree procedures with the landlord to ensure restoration arrangements, and define who is responsible for internal modifications and correct insurance cover in the event of your premises being damaged. Make a list of exactly what you are responsible for internally and get an outline estimate of what it would cost to reinstate it. Make sure this sum is factored into the scope of your insurance cover.
- ✓ Engage with your insurance company to ascertain if there are any proactive measures you can take to reduce premiums or policy excesses as a result of an extreme weather event. Ensure that your insurance cover includes business interruption, storm damage, is set at the right value, and has the correct policy excess.

Further information:

- Check with your own insurance broker for more information or contact The Association of British Insurers (ABI) or the Federation of Small Businesses.
- ABI also provides information on the types of insurance SMEs may need, including property, employees and financial risk.
- There are other types of insurance you can consider such as engineering insurance to repair/re-instate machinery and computers, goods-in-transit insurance to cover goods whilst they are being moved, frozen food insurance which covers you if there is a failure of the public electricity supply, and others such as glass insurance, cancelled event insurance etc. Cyber insurance should also be considered, especially as increasingly more data is being held digitally and at risk of cyber attacks.
- Do not forget to take into account the length of time an insurance payment could take and potential cash flow problems. A loss adjuster may need to visit.

NOTE: If your property is not fully insured for the right sum, but only for a proportion, then you will only be paid that proportion of your claim. Some companies waive this condition for buildings, so it is important to check!

Case Study: JLA

Risk area: Flood resilient premises, engineering

Source: Hazard and Hope: Our Flood Resilient Business (YouTube series)

Overview

JLA is a critical assets company in Ripponden, West Yorkshire. Like the wider community, they were severely affected by the floods during December 2015. The flash flood came on so rapidly that the team did not have sufficient time to put up flood defences. Despite having staff on site, the business did not have the resources to be able to prepare for the flood. This flood cost them £80,000 in damages and added an additional £60,000 onto their normal insurance premiums. Initially, the repairs were done to simply restore things as they were. It was only later that resilience was considered and forward-thinking actions were taken.

How they adapted:

- ✓ A flood wall was built around the property, which included deep foundations and a reinforced concrete core, sealed off with a waterproof membrane and finished with Yorkshire stone to provide an aesthetic wall along the edge of the property.
- ✓ Two weeks after the wall was built, another flood hit, testing its defence. The business realised that although the defence was effective, it needed to be extended to make it longer to allow it to hold back more water. This extension was then completed.
- ✓ The CCTV systems were upgraded, using infrared lighting which allows the staff to monitor the river levels in real time, at any time and from anywhere.
- ✓ Moving the logistic operation site to an alternative site with a lower flood risk.
- ✓ The next step is to refit the server room to the first floor to prevent damage to computer systems and hardware in case floodwater returns.

Benefits:

- After another flood in 2020, the business did not have to make an insurance claim.
- The business was keen to invite insurers to the site, show them the resilience measures that had been put in place, and achieve a significant reduction in their insurance premium.
- Within two weeks of first building the flood wall, the business was already seeing the positive impacts of being prepared and being resilient.

5.3 Premises

Flood risk – ask yourself:

? Do you know if you are in an area at risk from fluvial or flash flooding? Remember that climate change means that risks will change over time.

? If you are currently located in a flood zone, do you have appropriate flood defences (for example, flood doors or metal barriers)?

? If you are moving premises, have you checked whether the location is within a flood zone?

? Are you about to sign a long-term lease agreement which would make it difficult to relocate? If you are, have you checked if you can afford the relevant insurances, including business continuity insurance?

? Do you have the equipment to clean up after an extreme weather event? Are you able to purchase this now? Prolonged clean-up operations arising from stormwater contaminated with sewage is a particular problem for restaurants, takeaways, veterinary surgeries etc due to their thorough hygiene requirements.

? Have you created a flood plan and performed a risk assessment analysing specific risks to employee health and safety during a flood?

? Do you ensure regular inspection of drainage systems (guttering, downpipes and drains) to minimise blockage risk during heavy rainfall and, if necessary, have you fitted back-flow devices?

? Are you signed up to the Environment Agency's flood alerts system?

Take action:

✓ Create a flood plan and perform a risk assessment analysing specific risks to employee health and safety during a flood.

✓ You can check the Environment Agency's website to identify if you are in an area at risk of flooding from rivers.

✓ You can also sign up to the Environment Agency's free 24 hour Floodline Warnings Direct Service. Warnings can be sent by phone, text or email.

✓ Move electrical sockets to above the flood level and separate electrical circuits.

- ✓ Before you sign a lease, make sure you are comfortable with the lease conditions. If you are in a flood risk area, consider the length of the lease agreement and potential implications.
- ✓ If you come to upgrading your premises, consider ways to make your property more resilient to severe weather. You could, for example, consider relocating to a lower risk area (higher ground, not on a flood plain, etc). Existing buildings and estates that are not adapted to climate change can reduce in value, so you can inform your landlord of this if you ask for any improvements.
- ✓ Assess the implications of not being able to enter the premises due to extreme weather, and if there are any measures that could be taken to reduce this risk or mitigate the potential business disruption, including alternative accommodation if required.
- ✓ Implement a regular and routine premises maintenance schedule to ensure any issues are identified quickly.
- ✓ Lay ceramic tiles on the floor and use rugs instead of fitted carpets.
- ✓ Use lime plaster instead of gypsum.
- ✓ Fit stainless steel or plastic kitchens instead of chipboard.
- ✓ Ensure critical assets (e.g. ICT, machinery, electrics, heating systems, chemicals etc.) are moved away from the ground floor or basements and stored appropriately, especially if your premises is at risk of flooding. This will prevent terminal damage and potential pollution incidents.
- ✓ Replace wooden window frames and doors with synthetic ones.
- ✓ Fix flood boards to window and door frames to reduce water flow into buildings.
- ✓ Ensure regular inspection of drainage systems (guttering, downpipes and drains) to minimise blockage risk during heavy rainfall. If you are in a high flood risk area, fit back-flow devices to drains and sewers to prevent floodwater entering the property.
- ✓ Plastic covers can stop flood water coming through air bricks. Equipment such as pumps, driers and dehumidifiers will aid the clean up after a flood. If you have these prior to a flood it will save you time. Consider sharing the cost of equipment (e.g. a waterpump) with your neighbours.
- ✓ Consider property level flood resilience measures such as barriers, flood doors, airbricks, and pumps.
- ✓ Consider installing rain gardens or areas of greenery around your buildings and grounds, which help reduce rainfall run-off and overheating risk.

Overheating and drought risk – ask yourself:

? How well do your buildings and building services cope with high temperatures? Remind yourself what it was like when the UK reached 40°C in July 2022.

? Have you undertaken a survey of buildings and premises to understand areas that are most likely to overheat in hot conditions?

? Have you assessed the danger of fire breaking out inside and outside of your premises?

? Are your buildings in proximity to dangerous materials that can overheat and catch fire, putting premises at risk? How can these risks be mitigated against?

? Have you got provision of easy-to-access drinking water facilities?

? Have you considered methods of adapting the building to improve insulation and ventilation, passive cooling and installation of measures such as blinds, insulation of hot water pipes and plant, and solar film on windows?

? Could an increased chance of subsidence affect your business?

Take action:

✓ Provide low-energy desk fans or ceiling mounted fans.

✓ Use shading techniques to prevent employees from being exposed to direct sunlight, using blinds or reflective film on windows to reduce the heating effects of the sun.

✓ Provide easy-to-access drinking water facilities.

✓ Survey buildings and premises to understand areas that are most likely to overheat in hot conditions.

✓ Consider the installation of air-cooling mechanisms.

- ✓ Consider implementing policies based on specific temperature limits. This means that specific procedures or actions are taken at certain temperatures, such as employees working from home, or procedures to deal with flammable materials that are on or around the business premises to reduce the risk of fire.

Other risks from severe weather:

- ? If your premises are damaged by extreme weather, have you considered re-instating to a higher standard of resilience to prevent the same damage happening again?
- ? Have you considered whether you could operate from alternative premises if you had to?
- ? Are there mutual weather warning systems that you could share with neighbouring businesses? Can you share alternative suppliers, accommodation, etc?
- ? Have you considered how your land and asset values could be affected by climate change and have you ensured this risk is factored into long term investment decisions?
- ? Have you assessed the implications of not being able to enter your premises and whether there are any measures that could be taken to reduce this risk or mitigate potential disruption? Risk could be reduced if staff can work remotely or from temporary premises. Alongside this, ensure your business has interruption insurance and that the policy specifically covers against the risk of denial of access.

Water efficiency:

- ✓ Consider rainwater harvesting to help maintain a reliable water supply during droughts and ensure any leaks are addressed.
- ✓ Encourage staff to use water wisely and install water efficiency devices.
- ✓ Ensure all your pipes and tanks are lagged well in advance of winter and insulate hot water pipes to retain heat and save money.

Further information:

- The Environment Agency provides further advice on how to prepare for a flood.
- Check the Met Office website for the latest weather forecasts and warnings. You can sign up to alerts for you area.
- Ask your plumber for advice; you can find at list of local plumbers here.
- More information is available on the repair and restoration of buildings following extreme weather at CIRIA's website.

Is your business at Flood Risk?

Find out now, call the Environment Agency Floodline

Telephone: 0345 988 1188
Textphone: 0345 602 6340

Open 24 hours a day, 7 days a week

You may be able to register for the free flood warning service that gives advance warning of flooding in your area.

Do not assume that because the Environment Agency does not identify your area to be at risk of flooding that you are not. You may still be at risk from flash flooding, surface water or groundwater flooding.

Case Study: Element

Risk area: Flood resilient premises, retail

Source: Property Flood Resilience eMag – Mary Dhonau Associates

Overview

This jewellery store in Hebden Bridge had previously experienced smaller floods. Some resilience measures were already in place, such as a concrete floor, which survived later floods well. However, in 2015 a devastating flood hit the business with over five feet of water coming into the jewellery store. When recovering and refurbishing after this flood, the goal was to create a space that was both contemporary and aesthetically pleasing, but also made of industrial, flood-resilient materials.

How they adapted:

- ✓ Walls were stripped back and sealed. Some walls were left with bare brickwork and some covered with a resilient render product.
- ✓ Electrics were raised above flood level.
- ✓ A bracing was added to the large display window, to protect the glass under high water pressure.
- ✓ A dedicated area was created to store flood-related equipment but also to store easily damaged items.
- ✓ Display cabinets were initially MDF which is easily damaged by flood water. They are now powder-coated acrylic which can be easily washed and cleaned after a flood.
- ✓ Furniture has been raised so that is easy to dismantle and store away quickly.
- ✓ Marine plywood has been used to replace wood.
- ✓ A sump pump was fitted by the front door to remove water as it arrives.
- ✓ A diesel generator has been purchased for back-up power in case of mains power outages.
- ✓ Modern-style computers that are easier to move have replaced older ones with base units on the floor.

Benefits:

- The business has been able to retain their insurance, despite many similar small businesses in the area not being able to do so.
- The staff feel more comfortable and prepared for floods, reducing the emotional stress and turmoil that floods bring.

5.4 People

Ask yourself:

? Are your staff vulnerable to extreme temperatures (heat and cold) and have you considered risks such as fainting, injury and reductions in efficiency?

? Do your staff have any medical conditions (such as high or low blood pressure, heart disease, epilepsy or diabetes) which might be made worst by extreme temperatures (hot or cold)?

? Have you considered other people that could be more at risk, such as nursing or expectant mothers, outside workers, manual workers who are physically active, kitchen staff or staff operating equipment or machinery?

? Are there any areas where slips and falls could occur during extreme cold or rainfall?

? Is there an option to provide staff training to respond to diversification of employment patterns and meet the demands for new skills, or training to better manage climate related risks?

Take action – In very high temperatures:

✓ Identify individuals with medical conditions, of advancing age and those with disabilities and educate them along with staff in general in the awareness of the impact of extreme temperatures on them and their responsibilities in this regard.

✓ Ensure that you have identified your legal obligations and understand your liabilities with respect to conditions in the workplace.

✓ If the task allows, encourage workers to wear suitable summertime and comfortable clothing at work to minimise discomfort.

✓ Install thermometers and identify cool areas of the building or premises.

✓ Insulate high temperature pipes.

✓ Ensure there is good ventilation and encourage regular breaks (provide water and ice).

✓ Move workstations away from direct heat and fit external shutters to windows to help reduce glare.

✓ If you do not have suitable air conditioning equipment and it is too expensive to install, consider other ventilation and the option to work from home. If working from home is uncomfortably warm for employees, encourage them to work wherever is most comfortable.

Take action – in very low temperatures:

- ✓ Ensure that you have grit/salt supplies and that adequate gritting of access routes is undertaken in snowy and icy conditions.
- ✓ For outside workers, increase breaks to avoid hypothermia and consider other measures such as cold weather clothing.
- ✓ Encourage staff to wear appropriate footwear to prevent slipping on ice.
- ✓ Encourage staff to wear appropriate warm clothing in the office.

Further information:

- The NHS provides advice on the risks of heat waves and how to prepare
- The HSE provides information on workplace temperature requirements

Case Study: ISM Recycling

Risk area: Flood resilient premises, services

Source: Weathering the Storm (Greater Manchester)

Overview

ISM is a recycling and waste management company in Ramsbottom, situated near the River Irwell. There were significant problems during Storm Eva on Boxing Day 2015, when the sewer system was overloaded with rainwater and unable to cope. The water backed out and flooded the property, damaging everything within three feet of the ground. Peter Allen, the Director of this family business, said that "just inventorying and costing everything that was lost in the floods took almost three months." Because this flooding was relating to overloading of foul water drainage, rather than higher than usual river levels, this business needed something else in addition to the flood warnings issued by the Environment Agency and the Met Office.

How they adapted:

- ✓ Files were stored in units away from ground level.
- ✓ They invested in flood defence barriers that can be erected to block access.
- ✓ Eight non-return valves were fitted to pipework to prevent back flow.
- ✓ Using some innovation, an inexpensive float alarm was fitted four feet below the ground into a sewer manhole on the property. When the water levels rise in this manhole, the alarm is triggered, notifying staff to prepare flood barriers. ISM Recycling has also partnered with the local community, providing this flood warning to several local residents so they too can prepare.

Benefits:

- The rising water level warning system in the sewer is useful not only for ISM Recycling but also for the local community, giving everyone time to prepare defences and take steps to be ready for any potential flooding
- The business will now experience fewer devastating consequences because of flooding. The water can be better contained, essential files are more secure, and office space is at reduced risk of being damaged.

5.5 Utilities

Ask yourself:

? If your pipes freeze, are they vulnerable to bursting?

? What would you do if your business was cut off from the mains power supply?

? Do you know how to turn off the gas, electricity and water supplies to your business?

? Does your business depend on water? If there was a drought and a resulting hosepipe ban or other restrictions, would you be able to continue to do business? Water companies have a legal duty to supply households, but not businesses.

? How will your business be disrupted if your phones don't work?

? How reliant are you on energy from the grid? Can people work from home or at the office?

Take action:

✓ Consider alternative power supplies such as solar or standby/back-up generators. There are grants available for energy saving products which will prevent you from losing money on energy bills in the long run, and also make your business more resilient to power cuts. This will also reduce your carbon footprint.

✓ Consider looking at installing an on-site renewable energy supply that can provide your business electricity needs.

✓ Position main parts of a heating or ventilation system upstairs, above the ground floor.

✓ Talk to your suppliers to find out how to turn off the water, gas and electricity to your business. By turning them off before a flood or storm, you may reduce the amount of damage.

✓ Talk to your plumber on ways to avoid burst pipes or reduce the damage.

✓ Consider alternative water supplies, such as installing water tanks to store rainwater. This can also save you money and help reduce your carbon footprint.

✓ Consider installing a smart water meter to assess and manage your water use.

✓ Ensure the implications of losing water supply are included when carrying out an impact analysis as part of the business continuity management process. If water is critical to the business, ensure a supplier of emergency water is sourced and the auxiliary equipment to interface with the existing supply has been provided prior to an emergency incident taking place.

✓ Install water saving measures such as low flow systems and timers to minimise usage.

Further information:

- Gas suppliers in the West Midlands
- Electricity suppliers in the West Midlands
- Water suppliers in the West Midlands
- Business Link is the Governments online resource for businesses
- Information about Property Level Flood Protection

Case Study: United Utilities

Area: Emergency response, utilities

Source: Cheshire Fire and Rescue Service

Overview

On a hot day in July 2015, a faulty air-conditioning unit set alight a meeting room at the Head Office of United Utilities, a provider of water and wastewater services in the Northwest of England. Due to the business having a strong forward-planning approach with business continuity plans in place, the fire disaster was quickly and safely averted.

The heatwaves and droughts in the summer of 2022 have shown us that fire events such as this could become much more likely with hotter and more frequent heatwaves. Hence, it is vital that businesses have detailed plans in place to keep staff and the business itself safe.

How they adapted:

- ✓ An emergency incident team ensured that a third-party work area recovery provider was on standby.
- ✓ Emergency transport had been organised in case of urgent evacuation.
- ✓ Two vulnerable people were evacuated by an alternative escape route to ensure their safety.
- ✓ An evacuation message was placed on phone lines to alert customers that an incident was taking place. The incident team also worked with the communications team to make sure the staff were kept updated.
- ✓ Training rooms in an alternative site were ready to be occupied by evacuated workers if needed.
- ✓ A business decision was taken to send employees home after the fire had been averted.

Benefits:

- Because of these measures already being in place, the fire was quickly and safely dealt with. Staff were kept safe and business disruption was kept to a minimum.
- The incident took place on Friday. The office was cleaned up over the weekend, opening as normal on Monday, with business continuing as usual.

5.6 Information technology and security of data

Ask yourself:

? Flooding, storms, power surges or fire could damage computers and electronic files could be lost. Are your systems cloud-based and backed up regularly? If they are not cloud based, do you have an off-site back-up that is saved on the cloud or in a safe and in a separate location?

? If your computer was unavailable, what processes would be affected (e.g. orders, payroll, contacts etc.) and would your business still function?

? What alternative arrangements do you have to access vital data?

? Assess whether your workforce can work flexibly and from home when severe weather occurs to avoid unnecessary travel disruption. Learn from how you adapted during the Covid-19 pandemic.

? Is your server room vulnerable to extreme temperatures? Do you rely on air conditioning to keep cool, which can be vulnerable to power cuts? Is the room well ventilated?

? Have you identified equipment that is potentially vulnerable to flooding and critical to your operations? Think about what you will be able to move, how quickly and to where, and if it is possible to permanently raise equipment off the ground.

? Have you recorded serial numbers, product keys and software licences of company software in the event of loss to the premises? Are these just on paper or also cloud based or backed up on digital devices and backed up in two separate locations?

? Have you ensured that not all company mobile phones are on the same network in case there is any loss of coverage that may only affect certain networks?

? Have you put together a list of business critical (e.g. suppliers, landlords) and emergency (e.g. utilities, emergency services) contacts? Have critical contacts been saved on all employee mobile phones and on digitally backed up or cloud based systems?

? Can you cope with lost orders and enquiries?

Take action:

✓ Regularly back-up your computer files to the cloud or, if it is on an external hard drive, store this in a safe place, separate from your computer's hard drive, ideally in a separate location. It is recommended that you use a secure and trusted cloud provider. This also reduces the risk of you losing your files or disc. Consider the volume of data processed by your business. Larger volumes may require multiple back-ups in the day to ensure minimal disruption if something goes wrong.

✓ Review the location of your key IT equipment to identify if it is at risk from increased temperatures and/or flooding.

- ✓ Record and archive serial numbers, product keys and software licences of company software for reference in the event of loss to the premises.
- ✓ Ensure that not all company mobile phones are on the same network in case there is any loss of coverage that may only affect certain networks.
- ✓ Put together a list of business critical (e.g. suppliers, landlords) and emergency (e.g. utilities, emergency services) contacts.

Further information:

Seek advice from an IT management company or your hardware and software provider on how to back-up your files, and how to access your computer systems if they are damaged at your premises and how to access your computer files remotely.

5.7 Suppliers, logistics and delivery

Ask yourself:

? What happens if your suppliers cannot get to you because of weather-related disruptions?

? What would happen if you could not get your products or services to your customers because of weather-related disruptions to road, rail or air services? Equally, perhaps your customers could not get to you.

? Do you lease equipment or plant which could be damaged at a customer's property? Would production come to a halt?

? What happens if your staff cannot get to work?

? If you have international suppliers or customers, are they at greater risk to climate change impacts than you?

? Does your supply chain involve shipping along rivers that might become too shallow during periods of drought? Some shipping companies have had to reduce their cargo by 25% to navigate through shallow waters.

? Ensure, where possible, that you have accounts in place with at least three suppliers for all critical goods and consider the risks if at least one of these cannot deliver.

Take action:

✓ Consider alternative suppliers and/or increasing storage capacity to increase the ability to operate without deliveries in the event of transport disruption.

✓ Be aware that if your property is at risk of flooding that your stock could be damaged. Make sure to store it in a safe space or not on the ground floor. Consider using shelves/racking with high bottom shelves and minimise storing items on the floor.

✓ Consider sharing suppliers with similar businesses in your area. This can also help to reduce your carbon footprint.

✓ Consider whether you can supply local markets. This will also reduce your product miles.

- ✓ Consider whether you can develop a diverse network of suppliers to make it easier for you to deliver your goods or services in bad weather, increasing your business's resilience. This also creates a competitive advantage for companies with flexibility built into delivery systems and supply chains.
- ✓ Evaluate how many days the business could operate in the event of your supply chain breaking down, and how long would it take for an alternative supplier to deliver goods. The business should have enough buffer stock to facilitate this downtime.
- ✓ Make sure the drivers of vehicles transporting your products are experienced and are aware of the risks of driving in extreme weather (i.e. through floodwaters, on icy roads or during high winds).
- ✓ If your staff drive for business, make sure they are aware of procedures for driving in severe weather. Alternatively have a 'working from home during extreme weather' policy.
- ✓ Where possible, consider using online meetings such as Teams or Zoom when you cannot meet in person.
- ✓ Ensure that company car owners take responsibility for regularly checking the road worthiness of their vehicles. Write a procedure and ensure employee compliance is documented.
- ✓ Check the National Highways website for traffic information when undertaking long road journeys.

Further information:

Seek advice from your suppliers to identify alternative options.

Case Study: Cleone Foods

Risk area: Suppliers, logistics and delivery, food manufacturer

Source: Sustainability West Midlands

Overview

Cleone Foods is a small, food manufacturing business based in Birmingham. It is a supplier to large supermarkets of the Island Delight range, and late deliveries can incur financial penalties, presenting a huge challenge for the company's business and profitability. Extreme weather events, especially heavy snowfall, can disrupt transport as well as production, so it was vital for this company to find measures to become more resilient and continue business despite weather disruption.

How they adapted:

- ✓ Purchase of specialist equipment (including a forklift snowplough and a grit spreader).
- ✓ Became local 'snow champions,' clearing public roads during heavy snowfall and lending specialist equipment to local businesses.
- ✓ Implemented a policy of hiring employees that live near the production site, so that employees are less likely to be disrupted and can continue to commute to work.
- ✓ Drew up an agreement with Shire Foods in Warwickshire, arranging an alternative production site to allow production to continue if the Birmingham site is affected.
- ✓ Purchased a diesel generator for back-up power in case of power loss. This allows the food stock stored in freezers and chillers to be retained.
- ✓ IT facilities now allow senior employees to work from home .
- ✓ Measures were reviewed monthly by managers until they were set up and put in place and today, they remain under constant review.

Benefits:

- Signed an agreement with a supermarket upon demonstrating that they are reliable and resilient, achieving an 11% increase in sales.
- No recorded business disruption due to extreme weather events since 2009, when these measures were implemented.
- Winners of the Business in the Community (BITC) 2013 Business Resilience Award.

5.8 Products, processes, stock and raw materials

Ask yourself:

? Have you thought about where you store your products, stock and raw materials?

? Do you know how to contact your employees out-of-hours to get assistance in moving or protecting stock?

? Do you have any processes or products that are temperature or climate sensitive?

? Where does water typically accumulate when there is heavy rain? Is your stock stored close by?

Take action:

✓ Raise your stock off the floor to reduce its vulnerability to a flood. Do not store stock in the basement if possible. Consider using high bottom shelves/racking and minimise storing items on floor.

✓ Establish a process of relocation of critical or high value assets (e.g. high value stock, plant, vehicles, important paperwork etc.) if required after an emergency.

✓ Know where your drains are and keep them unblocked.

✓ Empty oil traps regularly to minimise pollution in the event of floods.

✓ Prepare a digital inventory of machinery and equipment to facilitate replacement.

Further information:

The Government's Business Support pages provide a range of information.

5.9 Agricultural, horticultural and rural businesses

In addition to the potential impacts that are common to all businesses, the agricultural and horticultural sector faces a different set of issues. These are directly affected by climate, and extreme weather events can have a significant impact. For example, drier conditions will create more dust in agricultural fields.

Ask yourself how your business may be affected both negatively and positively by the following potential changes in the West Midlands:

- Increased rain and subsequent flood risk.
- Reduction in quality and quantity of grass caused by lower rainfall and higher temperatures during summer, which may require feed for livestock to be supplemented.
- Reduced water availability and quality which may affect yields of fruit, vegetables and cereals, and irrigation availability.
- Higher temperatures and potential stress on certain crops, affecting yield quality and quantity.
- Changing climate conditions over time, which could make it possible to grow alternative crops, including crops for energy.
- Increase in storm events could provide opportunities for increased water storage for use during water shortages.
- Higher summer temperatures and reduced cloud cover, which could increase the risk of heatstroke and sunburn for livestock in open pasture.
- Climate change may cause shifting weather patterns, changing typical seasonal weather and thus altering harvesting timescales.

- Drought-resistant crop strains, vaccines and treatments for insect-borne diseases will become more valuable. These products may be less valued in the UK, but abroad the demand for such products will increase dramatically overtime.
- Higher average winter temperatures, which could reduce problems for livestock in freezing weather.
- Higher winter temperatures and fewer days of freezing weather, which affects vernalisation of winter cereals and formation of flower buds on some fruit trees.
- Higher temperatures, which could increase the risk of pests and diseases in arable and horticultural crops.
- Higher temperatures and reduced cloud cover, which could increase the demand for outdoor leisure and tourism, creating opportunities for diversification.

Take action:

✓ Think about current trends and potential climate changes and seek further advice – see below.

Further information:

- Risks from climate change to agriculture and food
- Water conservation publications page
- Waterwise on the farm
- Thinking About an Irrigation Reservoir?
- Rainwater Harvesting: an on farm guide
- Farming Adaptation measures: Vale of Evesham example

Case Study: Pixley Berries, Herefordshire

Risk area: Climate resilient land, agriculture

Source: 2011 edition of Weathering the Storm

Overview

Pixley Berries in Herefordshire has been particularly affected by climate change. To grow healthy berries, the plants must remain dormant through the frosty weeks. If the plant awakens too early, the buds die off. This not only affects the current crop but the following year as well. As winters and springs become gradually warmer, this could seriously affect future crops. Following a devastating and unexplained crop failure in 1998, the farm explored how climate change affected their blackcurrant crop. They visited farms abroad to identify different varieties that could cope with hotter summers and warmer winters.

How they adapted:

- ✓ Pixley re-mechanised to protect the soil and plant roots from warmer, wetter winters.
- ✓ Six-wheeled, low-pressure vehicles have been introduced, along with low volume, controlled droplet applications and targeted spraying.
- ✓ Winter water storage has been doubled to allow for hotter, drier summers and trickle irrigation has been introduced in place of frost protection.
- ✓ Weather stations are used to monitor long-term conditions and the impact on growing seasons.

Benefits:

- Being better able to determine harvesting start and end dates has optimised quality and yield.
- Pixley are now looking into growing fruit varieties that will be more tolerant to climate change.

5.10 Emergency contacts and important documents

Ask yourself:

? Do you have a list of contacts that you can reach in an emergency? Do your employees have access to this list?

? Have you got a copy of your important documents saved in separate locations, for example insurance policies, accounts documents, product specifications, client details etc?

? Do you archive paper records off site?

Take action:

✓ Make sure you have out-of-hours details of your staff so they can be contacted in an emergency. Save all critical numbers on a mobile phone.

✓ Ensure up-to-date staff contact details can be accessed away from the premises, either on a separate document or included in a Business Continuity Plan. Ensure the task of updating the details when staff join or leave the company is someone's specific responsibility.

✓ Keep your important documents in a safe place online. This will help to make an insurance claim move more quickly.

✓ Embed emergency contact information into your Business Continuity Plan and ensure it is reviewed every six months.

✓ Draft a pre-prepared emergency communication plan written for employees and other key stakeholders, including customers and suppliers. This should include a 'chain' of communication identifying who to contact in what situation, e.g. 'if X is unavailable contact Y.'

Further information:

- A template list of emergency numbers is provided on page 6 of the Environment Agency document, 'What to do before, during and after a flood.'
- There is also step-by-step guidance on how to prepare for flooding available on the Government website.

5.11 Community resilience

While this guide primarily focuses on helping to improve the resilience of your business, it is important to consider how resilient the community in which you are geographically situated is to extreme weather and other hazards. This section is for businesses but also for those authorities, such as councils, fire services and local community groups who have a role to play in ensuring community resilience.

Essentially, community resilience is enabled when the public are empowered to harness local resources and expertise to help themselves and their communities to:

- Prepare, respond, and recover from disruptive challenges, in a way that complements the activity of Category 1 (e.g., emergency services and local authorities) and Category 2 (e.g., water and transport companies) emergency responders.

- Plan and adapt to long-term social and environmental changes to ensure their future prosperity and resilience.

Community is defined as 'a group of people situated in the same place or having a particular characteristic in common.' Usually, community resilience projects would be rolled out in a place the size of a parish, village or a suburb of a town or city, but this varies depending on the risks faced by individual areas and the social characteristics of each area.

Ask yourself:

? Has your community engaged with its Local Resilience Forum (LRF), who are there to support vulnerable communities at risk?

? Through engagement with the LRF and your local authority, are you aware of the key risks that could affect your local area?

? Are you aware of any existing plans or projects taking place in your area to strengthen your community's resilience?

? Does the community have a coordinator who can act as a primary point of contact to enhance resilience in your local area?

? Has this person, and other members of the community, signed up to flooding / severe weather alerts from the Environment Agency or Met Office?

? Have you developed a 'call tree,' i.e. a hierarchical communication model that is used to notify specific individuals of an event and coordinate recovery, if necessary?

? Has your community identified organisations with existing expertise and relationships with your community, and partnered with them for any planned engagement? This could include local businesses.

? Do you know who and where the most vulnerable people are in your community?

? Do you have any community-owned assets that are situated within an area of risk?

? Do you have any existing evacuation procedures that need to be refreshed or updated?

Take action:

✓ Develop a community emergency plan that will provide a one-stop document, which contains details of how the community can respond to a threat should one occur. The Government provides a template that can be used.

✓ Run engagement sessions across the community to develop this plan, ensuring a collaborative approach has been taken, and to clearly disseminate the key elements of it when it is complete.

✓ Ensure that local responders are aware of the plan when it is complete and, ideally, involve them in its development from the start.

✓ When the emergency plan is developed, ensure it is tested first. Organise a day when you can practice the actions set out in the plan based on a specific scenario (e.g. flood event).

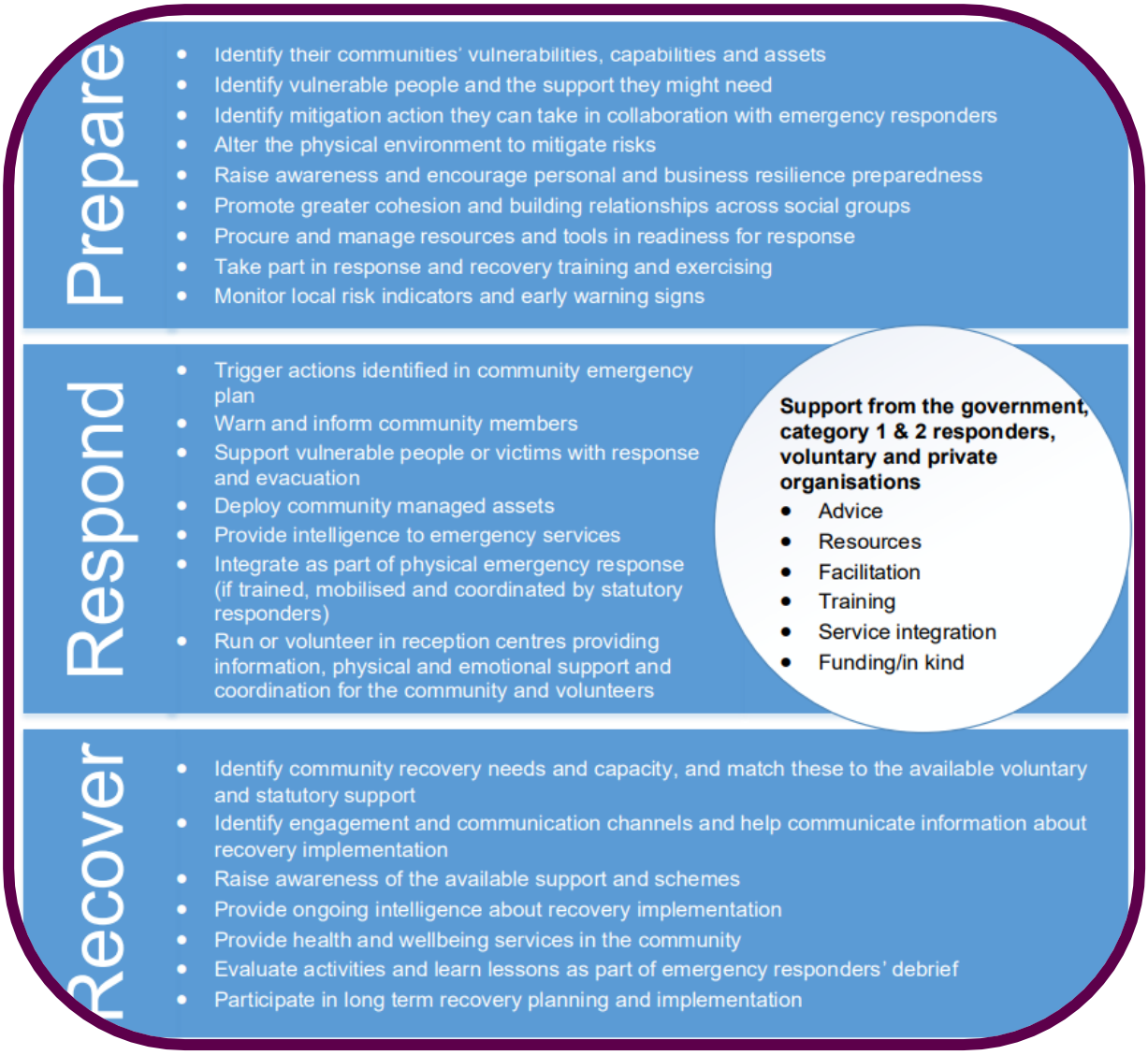
✓ Ensure that the plan is updated at least every six months, especially where contact details are included to ensure they remain up to date.

✓ Engage with LRFs and other bodies to provide training to local community leaders in resilience practices.

✓ Use other communications channels, such as social media, to maintain engagement. Consider accessibility needs and recognise that different forms of communication work for different people.

✓ Ensure that communications and messaging relating to local climate risks is kept simple and accessible to be inclusive of the wider community.

The following diagram, taken from the UK Government's Community Resilience Development Framework, summarises some of the actions that can be taken to strengthen community resilience.



Further information:

- Climate Just
- Community Resilience Development Framework
- Emergency planning toolkit
- Environment Agency flood warnings
- Find your Local Resilience Forum
- Government's Preparing for Emergencies advice
- Met Office weather warnings
- National Flood Forum
- West Midlands Climate Change Risk Assessment and Adaptation Plan

6 Useful resources and further information

Who	How can they help?	Website
Adaptation Scotland	Although focussed on Scottish businesses, Adaptation Scotland have written the document 'Is your business climate ready' which we have used to supplement some parts of this document, and which is largely applicable to SMEs in England too.	https://www.adaptationscotland.org.uk/application/files/5315/1542/7366/Climate_Ready_Business_Guidance_002.pdf
Association of British Insurers (ABI)	ABI provide advice on insurance issues and have a range of insurance publications for SMEs.	http://www.abi.org.uk
Business in the Community (BITC) and Environment Agency	The BITC Business Resilience Health Check Tool helps businesses to become more resilient to interruptions that they may face, identifies areas where business operations could be impacted by climate change, and offers advise on how businesses can adapt and prepare for these changes.	http://www.businessresiliencehealthcheck.co.uk/
British Chambers of Commerce (BCC)	Your Chamber of Commerce can provide advice, support and guidance on climate change adaptation issues.	https://www.britishchambers.org.uk/page/join-a-chamber
British Insurance Brokers' Association (BIBA)	Contact your own insurance broker for advice, or alternatively contact BIBA who can help you find a member broker.	http://www.biba.org.uk
Business and self-employed	Simple to use, up to date and practical, this resource is the first place to go to find guidance on regulations and to access government services. It also has a number of useful online tools, calculators, and best practice case studies, and provides access to funding options, as well as wider support.	https://www.gov.uk/browse/business
Chapter Zero	This is a 'climate change boardroom toolkit' which aims to help you to understand the key issues relating to climate change and the actions you can take to start addressing them.	https://chapterzero.org.uk/wp-content/uploads/2021/09/Chapter-Zero-Board-Toolkit-2020.pdf
Climate Change Committee	Briefings that outline the risks to businesses and other sectors to climate change, including actions that can be taken.	https://www.ukclimaterisk.org/independent-assessment-ccra3/briefings/
Confederation of British Industry (CBI)	The CBI helps create and sustain conditions in which business in the UK can compete and prosper. CBI provides advice on how to reduce	https://www.cbi.org.uk/

Who	How can they help?	Website
	your carbon footprint, case studies and information on climate change events.	
Construction Industry Research and Information Association (CIRIA)	CIRIA provide information on the repair and restoration of buildings following floods.	http://www.ciria.org/flooding
Department for Environment Food and Rural Affairs (DEFRA)	DEFRA is the lead central Government department on climate change adaptation and provides key information about flooding.	http://www.defra.gov.uk
Environment Agency	'Adapting to climate change: industry sector examples for your risk assessment' report and guidance by the Environment Agency.	https://www.gov.uk/government/publications/adapting-to-climate-change-industry-sector-examples-for-your-risk-assessment
Federation of Small Businesses (FSB)	The FSB is the UK's largest campaigning pressure group promoting and protecting the interests of the self-employed and owners of small firms.	http://www.fsb.org.uk
Health and Safety Executive (HSE)	HSE have produced guidance on temperature legislation for working environments in the UK.	https://www.hse.gov.uk/temperature/index.htm
HM Government	A toolkit to assist you develop a Business Continuity Plan.	https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/137994/Business_Continuity_Managment_Toolkit.pdf
Kitemark	Tested and approved flood protection products and organisational resilience tools.	https://www.bsigroup.com/en-GB/our-services/Organizational-Resilience/
National Farmers Union (NFU)	The NFU has various articles and reports on how climate change will affect agriculture and provides information by sector.	http://www.nfuonline.com
National Flood Forum	The National Flood Forum is a charity providing support and advice to communities and individuals that have been flooded or are at risk of flooding. Their website includes a directory of builders, suppliers and other service providers who install or provide information on flood protection and resilience products.	https://nationalfloodforum.org.uk/

Who	How can they help?	Website
Natural England	An independent public body that works to protect and improve England's natural environment.	http://www.naturalengland.org.uk
Sustainability West Midlands	A not-for profit company that works with its members who are leading individuals and organisations in the business, public, and voluntary sectors. We coordinate the regional response on climate change adaptation.	www.sustainabilitywestmidlands.org.uk
The Met Office	The UK's national weather service, with forecasts available from its website. Forecasts are for anything from the next few hours to the coming season.	http://www.metoffice.gov.uk
UK Climate Impacts Programme (UKCIP)	UKCIP helps organisations assess how they might be affected by climate change, so they can prepare for its impacts.	http://www.ukcip.org.uk
West Midlands Combined Authority (WMCA)	A Summary of Climate Change Impacts in the West Midlands Combined Authority Area	https://bit.ly/3XXwPQj
WMCA & SWM	West Midlands Net Zero Business Pledge; also includes guidance on resilience	https://bit.ly/3uvzrqZ

7 Potential opportunities for small businesses from climate change

Markets	Finance	Logistics	Premises	People	Process
New products or modifications to existing products to respond to a changing market	**Good risk management will appeal** to financiers and insurers and other stakeholders, leading to **reduced insurance premiums**	**Competitive advantage for companies** with redundancy or flexibility built into delivery systems and supply chains or those undertaking **business continuity planning**	Maintenance of **thermal comfort** in winter months is less of a challenge	Greater comfort and **lower fuel bills** in winter	**Agriculture: Longer growing season and new species and varieties** of plants can be grown
Advantages for early movers in response to changed markets and lifestyles	Potential **risks reduced and liabilities diminished** through pro-active risk assessment and implementation	Supplying local markets creates an opportunity for **marketing approach based on regional distinctiveness** or reduced product miles, which will also **reduce your carbon footprint**	**Opportunities for high thermal mass building solutions**, which can reduce air-conditioning requirements. This can also **reduce your operational costs** and your carbon footprint	**Reputational opportunities** of responding effectively as a good employer increases recruitment and retention of high quality staff	**Manufacturing: Developing expertise** in managing industrial processes and technologies in response to climate change
Increased passing trade in some sectors during long hot summers	**Clients and customers attracted to businesses** that can show they are resilient to climate change		**Opportunities for those in built environment** industries to develop expertise and reputation in climate-related building services	Opportunity to **improve work/life balance by responding to climate change** risks with flexible working hours and increased home working	**Finance: New insurance products and services** that spread the risk of climate change and incorporate underwriting that takes account of climate change
Increased demand for some products and services			Opportunity to **exploit external spaces** to accommodate outdoor living **Engineering, design, architecture and planning businesses** can develop products and services that will create **resilient buildings**	Opportunities for **recruitment, housing and service provision** in areas away from urban centres, which could become more attractive	**Construction: Fewer delays** on site due to less frequent frosts and snow events Opportunities to **develop expertise and technology** in water management and drainage

8 Resilience checklist for businesses

The following list puts all of the 'take action' elements of this document together in one place in the form of a checklist that your business can use to ensure that you have covered all bases to improve your resilience.

Action	Done
Governance, funding, communications and policies	
Conduct a climate risk assessment that will allow you to more accurately identify key risks to your business and actions you can subsequently take.	
Develop a Business Continuity Plan if you do not have one, and include climate related risks in the plan, and ensure all staff are well versed in the Plan's contents and allocated responsibilities. This plan should include assessing how future climate change impacts can affect your products, services and large capital purchases. Ensure up to date staff contact details can be accessed away from the premises, either on a separate document or included in a Business Continuity Plan. Ensure the task of updating the details when staff start or leave the company is someone's specific responsibility.	
Put together cross-functional teams or identify a climate adaptation champion. These individuals may support the business benefits of adaptation and influence current and future decision making. These teams can identify and assess climate risks and opportunities, and then work to address, monitor, and evaluate the businesses response. This also provides a potential opportunity to 'piggyback' adaptation principles into new projects.	
Include climate change in risk management meetings, or in general staff meetings.	
When engaging with colleagues, avoid using terms such as 'adaptation.' Use business language to reference how it could affect general operations, such as profitability, disruption, staff welfare, client and customer service, liabilities, added value, winning business, loss of reputation, insurance costs etc.	
Ask your suppliers how resilient they are to climate change impacts. Consider sustainable procurement practices that require climate change resilience from your suppliers. Ensure the key customers in your supply chain also have Business Continuity Plans, especially if you are reliant heavily on one customer for your sales.	
Consider ways of coping with fluctuations in raw material prices as a result of externalities, such as finding new suppliers, buying in bulk when prices are low, developing strong supplier relationships, identifying upstream risks from materials and products sourced from international markets and research if similar goods can be purchased in other countries.	
When deciding on investing in adaptation responses, consider the cost of doing nothing in relation to business impacts, compared to the investment cost of being resilient. This is challenging, but businesses can estimate by assessing the impacts of past weather events.	
Consider changing working patterns during the hottest part of the day (usually 14:00-17:00), e.g. through changing work times or encouraging working from home where possible, which may improve productivity.	
Consider the implementation of adaptation policies that your business can use to integrate adaptation into business operations, and also demonstrate to stakeholders that adaptation is being considered. These could include the integration of climate risks into health and safety policies, uptake of the adaptation standard ISO 14090:2019, and procurement stipulations on choosing companies to obtain goods from those that have considered resilience.	
Insurance	
Check your insurance cover at least annually. Confirm that you have a policy that covers the full value of your business and keep documents safe from weather impacts (and store copies off-site or on a trusted cloud server).	
Check that buildings and contents insurance covers flooding, fires and storms.	
Check if you have business continuity insurance that will cover you whilst you cannot do business.	
Catalogue your key assets and premises by photographs and/or videos.	

Action	Done
Make sure that the period of time that you are insured for is adequate. In the case of a major flood, for example, there can be long delays while property dries out and affected customers return to do business with you.	
For leased premises, agree procedures with the landlord to ensure restoration arrangements, and who is responsible for internal modifications and correct insurance cover in the event of your premises being damaged. Make a list of exactly what you are responsible for internally and get an outline estimate of what it would cost to reinstate it. Make sure this sum is factored into the scope of your insurance cover.	
Engage with your insurance company to ascertain if there are any proactive measures your business can do to reduce premiums or policy excesses as a result of an extreme weather event, and ensure your insurance covers business interruption, storm damage, is set at the right value, has the correct policy excess and that the cover is reviewed annually.	
Premises: Flood risk	
Create a flood plan and perform a risk assessment analysing specific risks to employee health and safety during a flood.	
You can check the Environment Agency's website to identify if you are in an area at risk of flooding from rivers. Move electrical sockets to above the flood level and separate electrical circuits. You can also sign up to the Environment Agency's free 24 hour Floodline Warnings Direct Service. Warnings can be sent by phone, text or email.	
Before you sign a lease, make sure you are comfortable with the lease conditions. If you are in a flood risk area, consider the length of the lease agreement and potential implications.	
If you come to upgrading your premises, consider ways to make your property more resilient to severe weather. You could, for example, consider relocating to a lower risk area (higher ground, not on a flood plain, etc). Existing buildings and estates that are not adapted to climate change can reduce in value, so you can inform your landlord of this if you ask for any improvements.	
Assess the implications of not being able to enter the premises due to extreme weather, and if there are any measures that could be taken to reduce this risk or mitigate the potential business disruption, including alternative accommodation if required.	
Implement a regular and routine premises maintenance schedule.	
Lay ceramic tiles on the floor and use rugs instead of fitted carpets.	
Use lime plaster instead of gypsum.	
Fit stainless steel or plastic kitchens instead of chipboard.	
Ensure critical assets (e.g. ICT, machinery, electrics, heating systems, chemicals etc.) are moved away from the ground floor or basements and stored appropriately, especially if your premises is at risk of flooding. This will prevent terminal damage and potential pollution incidents.	
Replace wooden window frames and doors with synthetic ones.	
Fix flood boards to window and door frames.	
Ensure regular inspection of drainage systems (guttering, downpipes and drains) to minimise blockage risk during heavy rainfall. If you are in a high flood risk area, fit back-flow devices to drains and sewers.	
Plastic covers can stop flood water coming through air bricks. Equipment such as pumps, driers and dehumidifiers will aid the clean up after a flood. If you have these prior to a flood it will save you time. Consider sharing the cost of equipment (e.g. a waterpump) with your neighbours.	
Consider property level flood resilience measures such as barriers, flood doors, airbricks, and pumps.	
Check buildings maintenance, gutters, drains and culverts.	
Consider installing rain gardens or areas of greenery around your buildings and grounds, which help reduce rainfall run-off and overheating risk	
Premises: Heatwaves	
Provide low-energy desk fans or ceiling mounted fans.	
Use shading techniques to prevent employees from being exposed to direct sunlight, using blinds or reflective film on windows to reduce the heating effects of the sun.	
Provide easy-to-access drinking water facilities.	
Survey buildings and premises to understand areas that are most likely to overheat in hot conditions.	
Consider the installation of air-cooling mechanisms.	

Action	Done
Consider implementing policies based on specific temperature limits. This means that specific procedures or actions are taken at certain temperatures, such as employees working from home, or procedures to deal with flammable materials that are on or around the business premises to reduce the risk of fire.	
Premises: Water efficiency	
Consider rainwater harvesting to help maintain a reliable water supply during droughts and ensure any leaks are addressed.	
Encourage staff to use water wisely and install water efficiency devices.	
Ensure all your pipes and tanks are lagged well in advance of winter and insulate hot water pipes to retain heat and save money.	
People: High temperatures	
Identify individuals with medical conditions, of advancing age and those with disabilities and educate them along with staff in general in the awareness of the impact of extreme temperatures on them and their responsibilities in this regard.	
Ensure that you have identified your legal obligations and understand your liabilities with respect to conditions in the workplace.	
If the task allows, encourage workers to wear suitable summertime and comfortable clothing to work to minimise discomfort.	
Install thermometers and identify cool areas of the building or premises.	
Insulate high temperature pipes and plant.	
Ensure there is good ventilation and encourage regular breaks (provide water and ice).	
Move workstations away from direct heat and fit external shutters to windows to help reduce glare.	
If you do not have suitable air conditioning equipment and it is too expensive to install, consider other ventilation and working-from-home options. If working from home is uncomfortably warm for employees, encourage them to work wherever is most comfortable	
People: Low temperatures	
Ensure that you have grit/salt supplies, and that adequate gritting of access routes is undertaken in snowy and icy conditions.	
For outside workers, increase breaks to avoid hypothermia and consider other measures such as cold weather clothing.	
Encourage staff to wear appropriate footwear to prevent slipping on ice.	
Encourage staff to wear appropriate warm clothing in the office.	
Utilities	
Talk to your plumber on ways to avoid burst pipes or reduce the damage.	
Consider alternative power supplies such as solar or standby/back-up generators. There are grants available for energy-saving/energy efficiency projects which will prevent you from losing money on energy bills in the long run and also make your business more resilient to power cuts. This will also reduce your carbon footprint.	
Talk to your suppliers to find out how to turn off the water, gas and electricity to your business. By turning them off before a flood or storm, you may reduce the amount of damage.	
Consider alternative water supplies, such as installing water tanks to store rainwater. This can also save you money and help reduce your carbon footprint.	
Consider installing a smart water meter to assess and manage your water use.	
Consider looking at installing an on-site renewable energy supply that can provide your business electricity needs. Extreme weather can cause parts of the national grid to shut down; installing renewable energy can increase business resilience and reduce costs.	
Ensure the implications of losing water supply are included when carrying out a business impact analysis as part of the business continuity management process. If water is critical to the business, ensure a supplier of emergency water is sourced and the auxiliary equipment to interface with the existing supply has been carried out prior to an emergency incident taking place.	
Install water saving measures such as low flow systems and timers to minimise usage.	
Information technology and security of data	
Regularly back-up your computer files to the cloud or, if it is on an external hard drive, store this in a safe place, separate from your computer's hard drive, ideally in a separate location. It is recommended that	

Action	Done
you use a secure and trusted cloud provider; this also reduces the risk of you losing your files or disc. Consider the volume of data processed by your business; larger volumes may require multiple back-ups in the day to ensure minimal disruption when something goes wrong.	
Review the location of your key IT equipment to identify if it is at risk from increased temperatures and/or flooding.	
Record and archive serial numbers, product keys and software licences of company software for reference in the event of loss to the premises.	
Ensure that not all company mobile phones are on the same network in case there is any loss of coverage that may only affect certain networks.	
Put together a list of business critical (e.g. suppliers, landlords) and emergency (e.g. utilities, emergency services) contacts.	
Suppliers, logistics and delivery	
Consider alternative suppliers and/or increasing storage capacity to increase the ability to operate without deliveries in the event of transport disruption.	
Be aware that if your property is at risk of flooding that your stock could be damaged. Make sure to store it in a resilient space or not on the ground floor. Consider using shelves/racking with high bottom shelves and minimise storing items on the floor.	
Consider sharing suppliers with similar businesses in your area; this can also help to reduce your carbon footprint.	
Consider whether you can supply local markets. This will also reduce your product miles.	
Consider whether you can develop a diverse network of suppliers to make it easier for you to deliver your goods or services in bad weather, increasing your business's resilience. This also creates a competitive advantage for companies with flexibility built into delivery systems and supply chains.	
Evaluate how many days the business could operate in the event of your supply chain breaking down and how long would it take for an alternative supplier to deliver goods. The business should have enough buffer stock to facilitate this downtime.	
Make sure the drivers of vehicles transporting your products are experienced and are aware of the risks of driving in extreme weather (i.e. through floodwaters, on icy roads or during high winds).	
If your staff drive for business, make sure they are aware of procedures for driving in severe weather. Alternatively have a 'working from home during extreme weather' policy.	
Where possible, consider using online meetings such as Teams or Zoom when you cannot meet in person.	
Ensure that company car owners take responsibility for regularly checking the road worthiness of their vehicles. Write a procedure and ensure employee compliance is documented.	
Check the highways agency for traffic information when undertaking long road journeys.	
Products, processes, stock and raw materials	
Raise your stock off the floor to reduce its vulnerability to a flood. Do not store stock in the basement if possible. Consider using high bottom shelves/racking and minimise storing items on floor.	
Establish a process of relocation of critical or high value assets (e.g. high value stock, plant, vehicles, important paperwork etc.) if required after an emergency.	
Know where your drains are and keep them unblocked.	
Empty oil traps regularly to minimise pollution in the event of floods.	
Prepare a digital inventory of machinery and equipment to facilitate replacement	
Agricultural, horticultural and rural business	
Think about current trends and potential climate changes and seek further advice from: • Risks from climate change to agriculture and food • Water conservation publications page • Waterwise on the farm • Thinking About an Irrigation Reservoir? • Rainwater Harvesting: an on farm guide • Farming Adaptation measures: Vale of Evesham example	
Emergency contacts and important documents	
Make sure you have out-of-hours details of your staff so they can be contacted in an emergency. Save all critical numbers on a mobile phone.	

Action	Done
Ensure up to date staff contact details can be accessed away from the premises, either on a separate document or included in a Business Continuity Plan. Ensure the task of updating the details when staff start or leave the company is someone's specific responsibility.	
Keep your important documents in a safe place online. This will help to make an insurance claim move more quickly.	
Embed emergency contact information into your Business Continuity Plan and ensure it is reviewed every six months.	
Draft a pre-prepared emergency communication plan written for employees and other key stakeholders, including customers and suppliers. This should include a 'chain' of communication identifying who to contact in what situation, e.g. 'if X is unavailable contact Y.'	
Community resilience	
Develop a community emergency plan that will provide a one-stop document, which contains details of how the community can respond to a threat should one occur. The Government provides a template that can be used.	
Run engagement sessions across the community to develop this plan, ensuring a collaborative approach has been taken, and to clearly disseminate the key elements of it when it is complete.	
Ensure that local responders are aware of the plan when it is complete and, ideally, involve them in its development from the start.	
When the emergency plan is developed, ensure it is tested first. Organise a day when you can practice the actions set out in the plan based on a specific scenario (e.g. flood event).	
Ensure that the plan is updated at least every six months, especially where contact details are included to ensure they remain up to date.	
Engage with LRFs and other bodies to provide training to local community leaders in resilience practices.	
Use other communications channels, such as social media, to maintain engagement. Consider accessibility needs and recognise that different forms of communication work for different people.	
Ensure that communications and messaging relating to local climate risks is kept simple and accessible to be inclusive of the wider community.	

-END-

Weathering the Storm

Saving and Making Money in a Changing Climate

This publication was written by Sustainability West Midlands in 2022 in collaboration with the Environment Agency. It builds on the original 'Weathering the Storm' published in 2011.

Weathering the Storm can be used by freely by organisations to help with their company's resilience. Please cite '*Weathering the Storm: Saving and Making Money in a Changing Climate*' if referencing this document in other publications.

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