

Is your **business** Climate Ready?



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Adaptation Scotland provides advice and support to help organisations, businesses and communities in Scotland prepare for, and build resilience to, the impacts of climate change. We work with a range of partners including those with interests in policy, research and practical implementation. The Adaptation Scotland programme is funded by the Scottish Government and delivered by sustainability charity Sniffer.



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Foreword



From the early days of seafaring trade, dealing with the weather has been an integral part of doing business. Today, concerns over changes in climate are taking this to a whole new level.

We are already experiencing increased severe weather events, sea level rise and temperature increases. As a result, companies must respond to growing regulatory, environmental, and consumer pressures. As we decarbonise our economy at scale, businesses have an opportunity to future proof and to take the lead.

Climate change is a significant challenge that needs to be built in to business planning today. The businesses which are already taking action are reaping benefits, including cost-savings, enhanced reputation and increased investor confidence. New business opportunities are also emerging for climate-related products and services.

This guidance lays out six key business areas for considering climate impacts, threats and opportunities. Case studies provide practical examples of how businesses of all sizes, across different sectors, are responding to climate risks and identifying opportunities. Scotland's 2020 Climate Group encourages businesses to collaborate and consider both the challenges of climate change and the opportunities the changes to our economy may afford. By preparing for the challenges that your business will face you are not only effectively addressing business risk – you may gain a competitive advantage.

Susan Rice

Lady Susan Rice

Chair of Scotland's Climate 2020 Group



How to use this guide

This guide has been produced for businesses in Scotland. 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.

To get the most out of this guide:

- Read the introductory sections about what the effects of a changing climate are likely to be.
- Read the section on how to prepare for extreme weather events. This is split into topics such as insurance, your premises and your people. 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.

The information in this guide has been focused on actions that are relatively easy for 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 remain 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 businesses 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 later in this guide.



Climate trends in Scotland

We are already seeing evidence of Scotland's climate changing. Over the last few decades our climate has warmed, sea-levels have risen, rainfall patterns have changed and we have been impacted by extreme weather events.

Temperatures have been increasing, with the last decade the warmest since records began. Rainfall has been increasing in Scotland over the last thirty years, with more heavy downpours.

Climate projections for the next century indicate that the climate trends observed over the last century will continue and intensify over the coming decades. We can expect future changes in climate to be far greater than anything we have seen in the past.

The long-term trends for Scotland's climate are that:

- Weather will remain variable and may become more variable
- Typical Summers will be hotter and drier
- Typical Winters and Autumns will be milder and wetter
- Sea levels will rise

And we can also expect to see:

- An increase in summer heat waves, extreme temperatures and drought
- An increased frequency and intensity of extreme precipitation events
- Reduced occurrence of frost and snowfall



Impacts of weather and climate on your business

The climate changes described on page five will bring a range of both positive and negative impacts on businesses. The summary below takes the long-term trends for Scotland and explains how businesses might be affected by them.

More variable weather

Scotland has some key transport links that are particularly vulnerable to weather impacts, such as the 'Rest and Be Thankful Pass' on the A83, the Forth Road and Tay bridges, and the ferry services that operate between the West coast of Scotland and the Western Isles. Severe weather events such as storms and high winds will cause disruption to businesses that rely on products from further afield and cause delays for commuters.

Hotter drier summers

In offices, hotter summers may impact the thermal comfort and productivity of employees. Warmer conditions could also cause servers and other IT equipment to overheat. For businesses in the agricultural and forestry sector, a

warming climate and changing rainfall patterns may increase competition for water, but may also improve growing conditions and increase productivity. Rising temperatures are also likely to change marine species and their distributions.

Milder, wetter Autumns and Winters

Wetter winters will cause ground water levels to rise causing damp in buildings and prolonging the saturation of masonry.¹ Warmer winters will create a higher internal humidity, increasing moss and algae growth. New conditions may also allow existing pests and disease to spread and new threats to become established in Scotland.

¹ *Short Guide 11: Climate Change Adaptation for Traditional Buildings*. Historic Environment Scotland, 2016.



Rising sea levels

With sea level rise set to accelerate over the coming decades, we can expect to see more coastal flooding, erosion and coastline retreat. This will have an impact on businesses and infrastructure located on the coastline – with consequences for the tourism sector, maritime logistics, chemical manufacturing and oil and gas.

Increase in summer heat waves, extreme temperatures

Employers who have staff that work outdoors will need to ensure that during hot days, adequate breaks are provided out of the sun and ample drinking water is available. In offices, if temperatures reach 32°C, productivity decreases by 29%.² Heatwaves can also cause problems for the healthcare sector as the risk of heat-related mortality is larger in care homes than in the general population.

Increase in drought

Summer droughts may become more frequent and more severe causing

² Climate change and the effect on small businesses in the UK, AXA, 2006

problems for water quality and supply. For horticultural businesses and those in the agricultural and forestry sector, this will have consequences on the types of plants that can be grown, where animals can graze due to drier soils and the health of our trees.

Increase in frequency and intensity of extreme rainfall events

With changing rainfall patterns and more heavy downpours, we expect flood risk to increase in the future. This could impact business premises, damaging IT equipment and infrastructure. Extreme weather will also disrupt transport infrastructure (roads, rail, ports and airports). This is likely to result in unfulfilled orders, breach of delivery contracts, loss of revenue and damage to reputation. Staff may also be unable to travel in to work and customers may be unable to access shops and businesses.

Reduced occurrence of frost and snow

Reduced occurrence of frost and snowfall may have business implications for those that rely on the winter season, such as ski resorts.



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 businesses, regardless of your business sector. We have focused on actions that are relatively easy for a 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.

The challenges you face as a business will also be shared by many others,

either across your sector or within the place you are located. There are a number of place based initiatives such as Edinburgh Adapts, Aberdeen Adapts, Climate Ready Clyde and the Galloway and Southern Ayrshire Biosphere which businesses can get involved with. These initiatives bring partners together to identify shared climate impacts and take action to increase resilience and adapt. For more information please get in touch using the details below.

Further support

Adapting to climate change takes time and Adaptation Scotland are here to provide support and advice with all your adaptation queries and projects.

Contact Adaptation Scotland:

Email: adaptationscotland@sniffer.org.uk

Phone: 0131 6514674

Web: www.adaptationscotland.org.uk/business



Benefits to your business

Like any other issue facing your business, it is important to understand how extreme weather and climate change impacts could affect you. Planning ahead rather than responding reactively will help you with the following:

1: 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.

2: Business continuity

Address your business's 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.

3: 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.

4: Reputational benefits

Demonstrate to your customers and shareholders that the impacts of climate change are being managed to increase investor confidence and your business's reputation.





People

Climate change and extreme weather may disrupt the lives of staff and customers or clients. It could mean staff are unable to travel to work or tourists are unable to visit sites or events. However, a warming climate may provide more opportunity to be outdoors and for people to enjoy a healthy and active lifestyle.



Is your business climate ready?

- Q. Are any of your staff unable to get to work in extreme weather? Are their homes or travel routes or children's schools likely to be affected?
- Q. Are your staff vulnerable to extreme temperatures (heat and cold) and have you considered health risks and a reduction in productivity?
- Q. Do you have an up to date contact list? i.e. for staff, customers, clients, suppliers, local community.
- Q. Have you considered other people that could be at risk, such as nursing or expectant mothers, outside workers, manual workers who are physically active, delivery drivers, kitchen staff or staff operating equipment or machinery?
- Q. Are there any areas where slips and falls could occur during extreme cold or rainfall?



What are the opportunities for my business?

- There could be an increased demand in tourism and recreational industries as warmer weather allows more opportunity to be outdoors.
- Provide staff training to respond to diversification of employment patterns and demand for new skills, new crops, technologies, land management, etc.
- Improve work/ life balance by responding to climate change risks with flexible working hours and increased home working.

Take Action

Ask your staff if their homes or travel routes are likely to be affected by extreme weather, or if they have children whose schools may be likely to close. Think about what procedures you can put in place to handle this, such as staff working from home if necessary.



Provide training to staff on the impacts of extreme temperatures in the workplace and encourage appropriate safety procedures for individuals with medical conditions likely to be aggravated by high levels of heat.

Identify a maximum temperature threshold where staff can work from home or for those that work outdoors, such as in the construction industry, develop contingency plans or change working hours to allow staff to work in the cooler hours of the day.

Keep up to date contact details for staff, customers and suppliers and review every 3 to 6 months. See the [Ready Scotland business pages](#) for more information on [Protecting your reputation](#): www.readyscotland.org/my-business/

Ensure you are aware of your legal obligations and understand your liabilities with respect to working conditions in the workplace. The Health and Safety Executive has [information on thermal comfort](#): www.hse.gov.uk/temperature/index.htm



People

RAISING AWARENESS OF ADAPTATION WITH RESIDENTIAL BUSINESS SERVICES AT THE UNIVERSITY OF ST ANDREWS



University of
St Andrews

The Residential and Business Services (RBS) department at the University of St Andrews manage the student accommodation and catering at the University. RBS operates throughout the year, serving students in term time and operating as a hotel in the busy summer period. During this time RBS run and provide catering for conferences, events, accommodation and weddings. This involves working with contractors to construct marquees and temporary structures, receiving deliveries from food suppliers and managing the Porters and Housekeeping staff, amongst other things.

As part of a Climate Impact Assessment carried out by RBS, raising awareness of the impacts of current and future climate change amongst staff was identified as an adaptation measure they could easily take to manage their climate-related threats and to identify any opportunities presented. RBS are now taking steps to include the potential climate impacts on their business and the adaptation measures required in their staff training.





Premises

There will be a growing need to adapt many of Scotland's buildings and outdoor spaces in the years ahead. This could mean retrofitting existing buildings as well as designing new buildings to be more resilient.

Is your business climate ready?

- Q. Do you know if you are in an area at risk from flooding? Remember that climate change means that risks will change.
- Q. If you are currently located in a flood risk area, do you have appropriate insurance and resilience measures (e.g. sandbags or metal barriers)?
- Q. How well do your buildings and building services cope with high temperatures?
- Q. Could you incorporate rain gardens, green infrastructure or green spaces as part of retrofitting and adapting your buildings and grounds?
- Q. Do you have the skills and equipment to clean up after an extreme weather event? Are you able to purchase this now?
- Q. Have you considered whether you could operate from alternative premises if you had to?

What are the opportunities for my business?

- A warmer climate may reduce heating demand in winter.
- Opportunities to increase requirements for green infrastructure and outdoor spaces to accommodate a more attractive working environment.
- Engineering, design, architecture and planning businesses can lead the way in developing innovative products and services that will enable more resilient buildings and places.
- If your premises are damaged by extreme weather, there is an opportunity to re-instate it at a higher standard of resilience to prevent the same damage happening again.

Take Action



- Visit Floodline Scotland www.floodlinescotland.org.uk/your-business/ and SEPA Flood Maps map.sepa.org.uk/floodmap/map.htm to check whether your business is at risk of flooding and to receive Flood Alerts.
- 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 agreement and potential implications.
- If you are in a flood risk area, make arrangements to operate from different premises. See Ready Scotland's Keep trading advice and checklists www.readyscotland.org/my-business/keep-trading-advice-and-checklists/ on how to protect your business.
- When upgrading your premises, consider ways to make your property more resilient to severe weather. You could, for example, consider simple measures such as improving drainage or introducing rain gardens.
- Monitor how well your buildings and building services cope with high temperatures.
- Forecast for an increase in maintenance costs due to severe weather.
- Check what is included in your insurance for severe weather events and whether it includes business continuity insurance.
- For built environment products and services be proactive in developing and marketing products, services and solutions that will enable clients to increase the resilience of their buildings and assets to climate impacts.



Premises

INSTALLING RAINGARDENS WITH TAYLOR WIMPEY

Climate change will increase the risk and severity of extreme events. Storm water management at plot level can reduce downstream flooding by managing rainfall at the source and avoiding the need for larger public infrastructure.

In 2015 a partnership between the Scottish Government, Taylor Wimpey, C&D Associates, CSGNT and Abertay University was formed to focus on encouraging greener gardens in new housing developments. Using shared resources and expertise they launched The Torrance Park Water Project to look at storm water management and the green infrastructure that is needed to cope with increased severe weather events.

The project involved the installation of a natural raingarden feature, a raised bed raingarden and a 250 litre water butt at the Taylor Wimpey Torrance Park development with water butts being made available to the first 80 new homes. These features act as a visible reminder to residents about the need to be more aware of water use and how little changes can have a big impact on the environment.

Photo opposite: a raised bed raingarden at the Torrance Park development.
Photo courtesy of Taylor Wimpey.



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Taylor
Wimpey



CSGNT
Central Scotland Green Network



Abertay
University





Markets

Changing demand for goods and services and impacts on customer access will result in changing markets. This will create business opportunities, for example where the private sector is able to provide the knowledge, skills and technologies required to help society adapt.

Is your business climate ready?

- Q. Is your business product or service, weather or climate sensitive?
- Q. Does your business have global markets or suppliers that could be affected by climate change in other countries?
- Q. Where markets are vulnerable to climate impacts in other countries, such as in agriculture, is there scope to develop new markets in Scotland, i.e. in food production?

What are the opportunities for my business?

- New innovative products, or modifications to existing products, in response to climate impacts experienced by customers.
- Advantages for early movers in response to changed markets and lifestyles.
- Increased business opportunity in some sectors as a result of extended tourist season, warmer summers and longer growing seasons.
- More extreme events mean opportunities for maintenance services.

Take Action

- Identify if your product or service is weather or climate sensitive and put in place measures to increase your business's resilience.
- Review business plans and strategic documents to see if they could be adjusted to align with new markets.
- Identify if there is scope to develop new innovative products to align with new markets.



SUPPORTING INNOVATION



In Scotland there is lots of support for good low carbon ideas and innovation and for start-ups who are putting climate adaptation and transformational thinking at the heart of their business models. ECCI is the official partner of Climate-KIC, delivering Europe's largest climate entrepreneurship programme in Scotland including:

ClimateLaunchpad Supporting a team of home-grown talent to compete in the world's biggest green ideas competition - putting Scottish developed low carbon, climate ready products and services firmly on the map. ECCI offers boot camps and coaching to prepare start-ups for success.

Climate-KIC Accelerator A three-stage accelerator process to get low carbon, climate ready start-ups investment-ready. ECCI works with fledgling companies to give them access to funding, a home in ECCI's awarding-winning low carbon hub and a programme of expert support to help them translate inventions into business plans.

For more information visit www.edinburghcentre.org



Markets

AN ADAPTATION BUSINESS OPPORTUNITY



Founders Michael Cockburn and Steven Jeans identified a business opportunity that will allow employees to have access to desk space, wifi, and like-minded people when they are unable to access their place of work during or after an extreme weather event.

Shoal is an app that allows people and companies to share their work space. The business promotes collaboration by escaping the isolation of working from home, and flexibility, to work whenever and from wherever you choose to be. It does this at the same time as lowering carbon emissions and improving resilience to climate change.

It is estimated that half the world's workforce will be working remotely by the year 2050 and Shoal seem to be ahead of the curve both in terms of changing work patterns and a changing climate.





Finance

Company finances will be affected by climate change through the cost of damage to assets and property, disruption and lost sales. The finance sector itself is also vulnerable with insurers and investment portfolios exposed to a wide range of climate risks.

Is your business climate ready?

- Q. How would a severe weather event impact on your business's finances?
- Q. Are there any time periods during which your business is more vulnerable to the impact of a flood or severe weather event?
- Q. When did you last check that you have the insurance you need?
- Q. Are you covered for floods and storm events?
- Q. Do you have business continuity cover if your business is interrupted?
- Q. Does your insurance policy replace new for old or have limits for repairs?
- Q. How would you fund additional costs arising from a severe weather event or a flood in the short term?

What are the opportunities for business?

- Potential risks reduced and liabilities diminished through pro-active risk assessment and implementation.
- Clients and customers attracted to businesses that can show they are resilient to climate change.
- New insurance products and services that spread the risk of climate change.

Take Action

- Integrate climate change within standard business processes i.e. business continuity plans, risk registers and risk management plans, then monitor climate trends and impacts, and revise operating and maintenance procedures.
- 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).
- Check that buildings and content insurance covers flooding and storms.
- Check if you have business continuity insurance that will cover you while you cannot do business.





Finance

ADAPTING SP ENERGY NETWORKS TO CLIMATE CHANGE



SP Energy Networks own and operate the electricity network infrastructure that delivers electricity to around 3.5 million homes and business in Central and Southern Scotland, Cheshire, Merseyside and North Wales. This includes constructing, maintaining and repairing a network of over 30,000 substations, 4,000km overhead lines and 65,000km underground cables. The priority for SP Energy Networks is to ensure customers have a secure and reliable supply of electricity.

Some of the traditional overhead lines network runs through woodland or sits adjacent to trees. These lines can be potentially vulnerable during severe weather as high winds can cause trees to fall on the lines, leading to power cuts. These parts of the network are potentially vulnerable to the anticipated increase in severe weather caused by climate change.

In the late 1990s and early 2000s several major storms had a significant impact on the electricity network. In response, SP Energy Networks designed new overhead line routes that avoid trees where possible, established leading programmes for managing trees within falling distance of traditional lines, increased levels of network automation, and approved new, resilient construction standards to withstand the most severe weather conditions.

The programme to create a storm resilient network in severe weather areas has been fully justified. In January 2012 severe storms involving high winds and rain, soaked soils and uprooted trees caused power cuts across the UK. Of the lines that were rebuilt or refurbished, only four faults were reported. Furthermore, there was no damage on High Voltage lines where the enhanced tree clearance programme was carried out. In general, SP Energy Networks have seen 25% fewer faults caused by winter weather than a decade ago, demonstrating the effectiveness of their investment.





Process

Some business processes, equipment and activities are temperature or climate sensitive. These include IT servers, and those working in food preparation, the agricultural sector and the construction industry. This could mean that new equipment or ways of doing things are required in order to maintain productivity and business continuity.



Is your business climate ready?

- Q. Do you have any processes or products that are temperature or climate-sensitive?
- Q. Have you thought about where you store your products, stock and raw materials?
- Q. Do you know how to contact your employees out of hours to get assistance in moving or protecting stock?



What are the opportunities for my business?

- A warming climate may improve growing conditions in Scotland and increase the productivity for agriculture and forestry.
- Warmer conditions and longer growing seasons will mean new species and varieties of plants can be grown.
- An increase in frequency and intensity of heavy rainfall events will present opportunities to develop expertise and technology in water management and drainage.
- As the climate continues to change, there will be an increased need for skills and expertise in the design of well-adapted buildings and managing construction processes in response to climate change.
- There will be opportunities to develop new farming and forestry practices that support increased resilience.

Take Action

- Check your server or server providers have the IT equipment in a well ventilated room.
- Identify which equipment is potentially vulnerable to flooding, and which equipment your business could not operate without. Think about what you will be able to move, how quickly and to where, and if it is possible to permanently raise equipment.
- Raise your stock off the floor to reduce its vulnerability to a flood or leaks during heavy rainfall events.
- Develop contingency plans for managing disruption to production processes.
- Assess risks to climate sensitive processes and be proactive in testing solutions and alternative processes.





Process

INCREASING SKILLS FOR ADAPTING AND MAINTAINING TRADITIONAL BUILDINGS



Scotland's traditional buildings were designed, and constructed, with an in-built resilience to the climate in which they were situated. Small details such as drip moulds below window sills and overhanging eaves, all played an aesthetic and practical role in allowing these buildings to effectively shed water, protecting them from damp and stone decay. However, the resilience of these buildings is now being challenged by the continuing impacts of climate change. Although many of Scotland's traditional buildings have stood the test of time, increasing amounts of rainfall and extremes of wind are causing problems. These problems are being made worse by poor maintenance. Historic Environment Scotland is pioneering work to train and educate the public, staff and apprentices in traditional craft skills to equip them with the practical experience and knowledge to be better able to adapt and maintain buildings to withstand the impacts of a changing climate.





Logistics

Business logistics such as supply chains, utilities and transport arrangements can be disrupted by extreme weather events. This is likely to affect businesses across all sectors to some extent, threatening business continuity. Those that rely heavily on utilities, the transport network or who have inflexible supply networks will be particularly vulnerable.



Is your business climate ready?

- Q. What happens if your suppliers cannot get to you because of weather-related disruptions?
- Q. 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? Or if your customers could not get to you?
- Q. Do you lease equipment which could be damaged at a customer's property? Would production come to a halt?
- Q. What happens if your staff cannot get to work?



What are the opportunities for my business?

- Competitive advantage for companies with redundancy or flexibility built into delivery systems and supply chains or those undertaking business continuity planning.
- Supplying local markets creates an opportunity for a marketing approach based on regional distinctiveness or reduced product miles.
- Developing a diverse network of suppliers can make it easier for you to get supplies in bad weather, increasing your business's resilience.

Take Action

- Consider alternative suppliers and/or increasing storage capacity to increase your ability to operate without deliveries.
- Think about how you get your products to your customers or how your customers get to you. Consider how the routes could be disrupted by extreme weather.
- Check your server or server providers have the IT equipment in a well ventilated room.
- Identify which equipment is potentially vulnerable to flooding, and which equipment your business could not operate without. Think about what you will be able to move, how quickly and to where, and if it is possible to permanently raise equipment.
- Raise your stock off the floor to reduce its vulnerability to a flood.
- If your staff drive for business, make sure they are aware of procedures for driving in severe weather.
- Alternatively, consider using teleconferences for meetings when you cannot deliver your service in person.





Logistics

IMPROVING TRANSPORT RESILIENCE WITH AMEY



The Forth Road Bridge operations at Amey are taking a strong and proactive response to increasing awareness and managing climate risks. They have put in place a number of systems to increase their capacity to adapt to more severe weather conditions. These include signs to inform drivers of high wind speeds, changes to practices and guidance, new materials and innovative designs to the bridge itself. Amey's procedures over the years have moved from an approach where the roads must always remain open towards an approach that accepts, and communicates to the public, that travel will not always be possible during severe weather events. This is in line with the approach that Transport Scotland are moving towards.

The construction of the new Queensferry Crossing has also provided an opportunity to incorporate changes that will allow the bridge to be more resilient to severe weather conditions and a changing climate. These changes include using the latest and most durable materials, cables that can be replaced with more ease than on the existing Forth Road Bridge as it can be done as part of normal maintenance works without closing the bridge, a dehumidification system which reduces moisture and prevents corrosion, and thicker road surfacing which has a longer surface life and can be machine laid, making it easier to replace. The biggest change incorporated into the new bridge is wind shielding which will make the crossing less susceptible to closure during high winds. Experience of other estuarial crossings, such as the Second Severn Crossing, shows that wind barriers provide a high degree of reliability against closure.



Further information

Adapting to climate change takes time and Adaptation Scotland are here to provide support and advice with all your adaptation queries and projects.

Email: adaptationscotland@sniffer.org.uk

Phone: 0131 6514674

Visit: www.adaptationscotland.org.uk/business



Online guidance

Please visit the Adaptation Scotland website to see our interactive business guidance. Here you will also be able to download a compiled action list to help you with your Business Continuity Plan.

www.adaptationscotland.org.uk/business

Adaptation
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