Climate Change
Adaptation Business Tool
INTRODUCTION

The extreme weather events and storms of winter 2013/2014 caused considerable disruption for many tourism businesses in Wales through:

- transport disruption due to increased adverse weather conditions and other supply chain issues;
- staff absenteeism due to transport disruption, school closures, working conditions and
- loss of access to premises as a result of flooding events and infrastructure disruption such as energy and IT communications.

The science tells us that these types of events are likely to become more frequent. The climate is changing in Wales, along with the rest of the UK, with hotter, drier summers; milder wetter winters; and more storm surges as sea-levels continue to rise into the future. All regions will see a rise in summer temperatures and changes in rainfall patterns.

Taking action to prepare for extreme weather and climate change is essential. The best way to ensure your business can cope with extreme weather is by planning ahead and making sure you are well informed and prepared for such events, which is likely to lead to cost effective adaptation solutions. Carrying out such actions could help your business in a number of ways, for example by minimising the financial cost of disruption, by improving your business’ reputation and seizing the potential commercial opportunities.

Planning for severe weather and climate change does not have to cost as much as you may think - often the most cost effective way to make sure you are prepared is by making changes during planned upgrade or repair works. Implementing some of the actions suggested in this tool could help your business increase the flexibility and reliability of the services you provide to tourists, making you more prepared and hopefully more competitive and profitable into the future.

Climate change and extreme weather events are likely to affect all segments of the tourism sector, but these impacts will vary requiring a range of different responses to capitalise upon the opportunities and overcome the challenges. This tool will

- help you to identify the key risks to your business and sector
• show how you can reduce business risks and build resilience

• Signpost further resources.

A brief analysis of 'general' tourism impacts (such as impacts on premises, people, insurance, operations) likely to affect all segments is provided below followed by likely impacts for the below categories.

• accommodation and catering
• activities and adventure
• events and festivals
• heritage and culture
• protected landscapes and their buildings.

Take a look at some of the general tips that apply to all tourism businesses in Wales then move on to those which are of most interest to you. The actions you take will vary depending on the size of your business - the examples provided here are guidelines to get you thinking about what changes you could make to improve your business resilience.
The overall process is easiest thought through using the basic steps followed in plan-making as shown in the diagram below:

- **Starting:** Understanding your business risks from the weather and climate
- **Investigating:** Existing vulnerability, future threats and opportunities
- **Planning:** Identifying and planning adaptation actions against the threats and opportunities
- **Implementing:** The actions
- **Monitoring and reviewing:** Actions and how the threats and opportunities have changed
# GENERAL ACTIONS FOR ALL TOURISM BUSINESSES

**People (visitors and staff)** - a changing climate may impact on both the workforce and customers through high and low temperatures, flooding and extreme weather events

<table>
<thead>
<tr>
<th>What do you need to do?</th>
<th>How can you do it?</th>
<th>Where to go for more information</th>
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</thead>
<tbody>
<tr>
<td>Build resilience in your business and management plans</td>
<td>Devise a Plan for your business to deal with heatwaves or cold weather events. Ensure that you have identified your legal obligations in relation to working conditions in the workplace. Ensure health and safety advice and training is provided for staff so they understand what to do in an event and how to take care of visitors. Ensure staff plan and carry out regular drills Monitor Met Office heatwave forecast so you can prepare for such events Install thermometers and identify cool areas. Understand your local area so that you have knowledge of which areas to avoid in bad weather to pass on to visitors, protect your property and increase your awareness of access restrictions that could affect deliveries</td>
<td>Public Health Wales - General extreme hot weather advice for the public Health and Safety at Work Act 1974 – employers must still comply with duties in a heatwave Welsh Government Heatwave guidance Health and Safety Executive – Workplace temperatures Met Office – Heat-Health Watch (1 June - 15 September)</td>
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| Adapt your business premises to reduce the risk | Reduce potential overheating in your business through installing cooling measures such as:  - Adjustable window locks to make use of natural ventilation - this allows for a small breeze to enter buildings without compromising on security.  - Moving workstations away from direct heat and installing shutters or blinds on windows, especially those south and west facing, and keep them closed during the day  - Using trees as ornamental features and to help with cooling and provide shade  - Insulate high temperature pipes and plants to reduce temperatures in the summers and to increase efficiency in the winter. | |

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Climate Change Adaptation Business Tool

- Ceiling fans or air conditioning should only be installed as last resorts if necessary – both will use excessive amounts of energy in cooling buildings and negatively impact the environment.

<table>
<thead>
<tr>
<th>Implement actions in an event</th>
<th>Hot/cold weather</th>
<th>Flood</th>
<th>Good practice</th>
</tr>
</thead>
</table>
|                              | Provide sunscreen for staff and ensure staff take regular breaks and keep hydrated, especially when working outdoors. Make sure visitors know how to keep cool and safe in the sun such as keeping covered up and hydrated. Stock up to take advantage of increased demand for sunscreen, hats, refreshments, etc. In cold weather events ensure you have grit/salt supplies and that access routes have been gritted. Ensure staff wear appropriate clothing in the summer (such as loose fitting clothing) and the winter (e.g. footwear to prevent slips in icy conditions). | Provide visitors with information so they do not place themselves in dangerous situations, i.e. during stormy conditions. Provide visitors with information on recent weather related impacts in the local area, e.g. landslides affecting Wales Coastal Path, recently eroded cliffs etc. | Good practice
Cardiff and Vale University Local Health Board - Severe Weather Contingency Plan: Heatwave (example) |

Public Health Wales - General extreme hot weather advice for the public
Sun Smart website
RNLI beach safety guidelines (English) (Welsh)
**Premises** – a changing climate may affect business premises making them vulnerable to temperature changes and flooding

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| **Build resilience in your business and management plans** | Look to see if your business is at risk from flooding and understanding what you can do to prevent or minimise flood. Prepare a flood plan for your business so you know what to do in an event of a flood. Ensure health and safety advice and training is provided for staff so they understand: what to do in an event,  
  - how to turn off gas, electricity and water supplies,  
  - how to take care of visitors and  
  - how to install any flood barriers to the property.  
If moving to a new property, check whether the property is at risk from flooding and consider the lease condition and length of agreement. Develop contingency plans for your business in case you need to operate from alternative premises in an event. Sign up to Natural Resource Wales floodline Warnings service, where warnings can be sent through a number of ways. Regularly back up your computer files and store this in a safe place separate from your main computer. Understand what part of your business would be unavailable if your IT system went down e.g. payroll, orders, HR. | Natural Resources Wales – What to do before a flood happens  
Environment Agency - Prepare your property for flooding  
Floodline Warnings Direct registration |
| **Adapt your business premises so it can reduce the risks from** | Check buildings, gutters, drains and culverts. When undertaking maintenance work consider ways to make your property more resilient, for example: Increase flood resilience in your premises through:  
  - Considering installing Property Level Protection (PLP) measures to your site / |
| | | Sustainable Drainage Systems – SuDS Wales  
Your home in a changing climate (p46) |
<table>
<thead>
<tr>
<th>extreme weather events and climate change</th>
<th>property (image p.27)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fit non-return valves to pipes and drains</td>
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</tr>
<tr>
<td>Dry-line walls and varnish skirting boards</td>
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<tr>
<td>Raise electrical sockets</td>
<td></td>
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<tr>
<td>Move important paperwork and computer equipment onto shelving or higher floors if possible</td>
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</table>

Reducing surface water runoff outside by:
- Consider using Sustainable Drainage Systems (SUDS) during any upgrade or improvement works to manage runoff from your site
- Creating more drainage for surface water by install permeable paving, creating a green roof on your property and Plant trees to reduce run-off
- Install water butts and other rainwater harvesting equipment, such as underground storage tanks
- Increase size or number of drains

Reduce potential overheating in your business through installing cooling measures such as:
- Installing adjustable window locks to make use of natural ventilation - this allows for a small breeze to enter buildings without compromising on security
- Moving workstations away from direct heat and installing shutters or blinds on windows, especially those south and west facing, and keep them closed during the day
- Using trees as ornamental features and to help with cooling and provide shade
- Insulate high temperature pipes and plants to reduce temperatures in the summers and to increase efficiency in the winter.
- Ceiling fans or air conditioning should only be installed as last resorts if necessary – both will use excessive amounts of energy in cooling buildings and negatively impact the environment

If your premises are damaged by an event think about reinstalling items to a higher standard of resilience to prevent the same damage happening.

| Implement actions in an event | Use temporary flood doors or sandbags and cover air bricks when flooding is predicted |
### Good practice

Fonmon Castle, Barry increased the number of drains on their grade II listed stables from two to eight and constructed new drainage ditches along the driveway to cope with more intense rainfall.

### Insurance - a changing climate may affect finances of your business, it is important to have the right type of insurance

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| Build resilience in through ensuring you have the right insurance. | Check your insurance policy details to ensure that it covers the full value of your business, if it has business continuity cover or what the conditions for replacements in such events are.  
Ask insurers for advice on how to prepare for flooding and minimise risks to property  
Contact the British Insurance Brokers Association (BIBA) who can put you in touch with a specialist flood risk insurer if appropriate  
Catalogue your assets and keep documents safe from weather impacts and store copies off site. Ensure your business will be covered by your insurance policy if damages from flooding or storms occur | Natural Resources Wales – Insure a property at risk of flooding  
Association of British Insurers – Preparing for a flood  
Association of British Insurers – Recovering from a flood  
BIBA: Obtaining flood insurance in high risk areas |
Good practice

Old Mill Hotel, Bath discussed their flood risk and potential measures to reduce risk with their insurers and after carrying out adaptation measures were able to reduce their premiums

**Products, operations, activities** - a changing climate may affect tourism activities, business operations and products

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| Build resilience in your business and management plans | Devise a Business Flood Plan and ensure it is displayed  
Look at the vulnerability of your supply chains and see if you can use local suppliers to reduce transport and logistical risks (also beneficial for wider sustainability reasons)  
Put plans in place to ensure safety of visitors and staff, continued supplies, property resilience and access arrangements  
Ensure your staff are trained on what to do in different extreme weather events and are able to take care of visitors  
Monitor flood warnings  
Create a reserve list of suppliers you could use in case your regular suppliers are flooded or you cannot access them because of flooding | Welsh Government Cyclists and Walkers Welcome Awards  
Visit Wales information on drying rooms  
Natural Resources Wales – Business flood plan  
National Flood Forum – Ready for flooding booklet  
Natural Resources Wales - Flood warnings  
Met Office – Severe weather  
Health and Safety at Work Act 1974 – employers must still comply with duties in times of flooding  
Rochdale Borough Council – flood advice for businesses |
| Adapt your                                  | Provide all-weather facilities                                                                                                                                                                               |                                 |
### Good practice

Cwmbiga Cottages, Llanbrynmair – have been awarded the Cyclists and Walkers Welcome Awards for their drying room and cycling facilities. They also provide an overnight washing service for wet clothing on request.

Imperial Hotel, Llandudno installed a backup electricity generator after winter 2013/14 storms to ensure continued power supply.

**General advice documents:**
- [Business Link – Adapting your business](#)
- [Climate change and tourism in the south of England](#)
- [Responding to extreme weather: A practical guide for tourism Businesses](#)
- [Be Climate Ready: Quick guide for small and medium businesses](#)
CHOOSE YOUR AREA OF INTEREST

- Accommodation providers - camping and caravans
- Accommodation providers - hotels and guest houses
- Accommodation providers - self-catering
- Catering facilities
- Activities & Adventure
- Events & Festivals
- Heritage & Culture
- Protected landscapes and their buildings
ACCOMMODATION PROVIDERS

Opportunities

• Warmer weather may lead to more visitors, overnight stays and an extension of the tourism season
• Businesses may benefit from less severe winters, improving access and increased levels of bookings.

Threats

• Hotels, restaurants and campsites could become flooded and access routes blocked as a result of increasing rainfall leading to disruption in the provision of goods and services, as well as affecting visitor access.
• Flood events may lead to an increase in insurance premiums, which could impact on profit margins.
• Locations on the coast and near rivers are attractive to visitors but are also vulnerable to extreme weather in terms of storm surges, coastal erosion and flooding with caravans and chalets being particularly vulnerable; across Wales, there are around 250,000 caravans in coastal campsites. In some areas, chalets and caravan sites are located behind sea and river flood defences which are privately owned and maintained. Long term maintenance could become a challenge with sea level rise and increased storminess which could threaten the businesses protected by the defences.
• Severe weather can also affect power supplies and telecommunications impacting on the ability of accommodation providers to supply electricity and also preventing visitors from making enquiries and bookings.
• High temperatures can increase food hygiene/poisoning issues requiring greater preventative measures from catering providers and water scarcity, due to increasing temperatures and decreasing rainfall in the summer could affect the level of service that can be provided by accommodation and catering businesses.
• Rising fuel costs (which in part is as a result of energy efficiency and renewable energy measures) is likely to affect all businesses, but could have a particular impact for older accommodation types such as the Victorian villa style hotels in many coastal locations where it is more challenging to install energy efficiency measures.
• Maintaining comfortable temperatures is likely to prove a challenge to accommodation providers, especially in older properties that may not easily be adapted via passive cooling measures such as installing shutters or using reflective paint on outer walls.
ACCOMMODATION PROVIDERS - CAMPING AND CARAVAN SITES

If your business also provides food – see advice section for catering facilities

Building resilience in your business

Flooding & storms:

- You have a legal obligation to ensure anyone on your site knows what to do if there is a flood, which means you need to understand your site’s flood risk, prepare a site flood plan and train staff on visitor safety. Set trigger points for action allowing plenty of time if the site is beginning to flood, have alarm systems in place to alert staff and guests, identify safe evacuation routes and assembly points and finally carry out regular drills and evacuation practices.
- Find out about the Shoreline Management Plan in your area, i.e. Welsh Shoreline Management Plans (SMP 19 – SMP 22) or seek advice from your local authority or local Natural Resources Wales office regarding these. Your activities should be in line with any practices in place, for instance not having camping pitches or static caravan sites placed too close to the cliff edge where coastal erosion could potentially cause damage or a risk to life.
- Make your visitors aware of flooding, e.g. include information in welcome packs, display flood warnings, the flood plan and evacuation plan, to raise awareness of the risk to the site and how to react in an emergency.
- Liaise with your local authority and local emergency services, i.e. police and fire service, about their own emergency plans and cooperate wherever possible to develop a coordinated response.
- Monitor weather forecasts and sign up to receive flood warnings, i.e. Met Office flood warnings and Floodline Warnings Direct registration, to provide visitors with up-to-date information. This will allow them to adapt their activities accordingly and be prepared on arrival or enable them to make alternative arrangements.
Adaptation actions

Flooding & storms:
- Consider current surface drainage and flood risk to site, e.g. keep drainage ditches clear, increase the size of drainage pipes where necessary, infill hollows where water tends to collect and consider installing Sustainable Drainage Systems (SUDS), to manage surface water run-off during wetter times and prevent flooding.
- If high winds are predicted in your area you should display warnings and ask guests if they are prepared for these conditions, e.g. can they secure their tents properly, to prevent losses and potential damage.
- Consider your site’s power needs, e.g. install a back-up generator or renewable energy system, to provide power to your visitors during power cuts. Safety note: generators and pumps must not be operated inside buildings due to the risks associated with carbon monoxide poisoning.
- Display safety notices warning guests of the dangers of carbon monoxide poisoning and death if they use portable heaters and disposable barbeques in enclosed spaces.
- Consider raising caravans using axel stands, installing floatation devices that allow static caravans to rise with floodwaters and also the need for tethering/anchoring when flooding is predicted.
- Provide ideas for visitors of alternative activities, e.g. indoor attractions and those not dependent on the weather, to minimise visitor disappointment and continue to attract visits to the area during bad conditions.

Heat:
- Increase the amount of shade provided, e.g. planting trees, installing awnings and sun sails in smoking and non-smoking areas, to keep staff and guests cool during hot weather.
- Assess your site’s water access, e.g. install more taps or provide free safe drinking water and manage pipes to avoid contamination in warmer temperatures, to ensure visitors have access to a clean, safe water supply, especially during hot days.
- Invest in or upgrade facilities, e.g. washroom and catering facilities, to meet the increasing demand from visitors in warmer summers.
- In permanent sites; assess how well access road surfaces can cope with increasing temperatures and provide hard turning pads for caravans and campervans to manoeuvre regardless of ground conditions to ensure your site can still be accessed during times of extreme hot weather.
Guidance documents

- Natural Resources Wales - *Flooding: minimising the risk in Wales. Your caravan/camping/holiday park site could be at flood risk*
- SuDS Wales - *techniques*

Case studies

- Triangle Wood Caravan Park, Holywell have prepared a flood plan with advice on actions staff and visitors should take during a flood
- Brookside Caravan Park, Narberth implemented their flood plan during flooding in 2012 and were able to quickly notify the emergency services using the emergency contacts section
- Gwydyr View Lodge Park, Snowdonia has installed flotation systems below a number of its holiday homes at risk of flooding
Characteristics of a business that is prepared for severe weather and future climate change

1. Coastal erosion and flood risks identified
2. Staff trained in evacuation procedures, how to notify visitors and get people to safety day and night
3. Flood information in welcome pack and displayed on site
4. Assessment of site drainage and maintenance work to improve, such as filling hollows and using SUDS to manage run-off
5. Good connections with local emergency services
6. Weather forecast and flood warnings monitored with warnings displayed to visitors
7. A back-up generator to provide energy during power cuts
8. Alternate ideas for visitors provided during bad weather
9. Increased shading for guests, e.g. trees and sun sails
10. Clear, safe water supply sufficient for all guests
11. Washroom and catering facilities with increased capacity
12. Hard turning pads for caravans and campers to manoeuvre
ACCOMMODATION PROVIDERS - HOTELS AND GUEST HOUSES

If your business also provides food – see advice section for catering facilities

Building resilience in your business

- When considering physical works to adapt your building to potential climate change impacts, you should check with your local planning authority whether planning permission or other consents (e.g. building regulations) are needed.
- Regularly check buildings for cracks and signs of subsistence to identify potential problems from drying or shrinking soils as early as possible.

Flooding & storms:

- You have a legal obligation to ensure anyone on your site knows what to do if there is a flood, which means you need to understand your site’s flood risk, prepare a site flood plan and detailed flood evacuation plan. This should detail how staff will wake guests if necessary and escort them to safety, and staff should be trained in preparation for a flood event.
- Make your guests aware of flooding, e.g. include information in welcome packs, display flood warnings, the flood plan and evacuation plan along with daily weather forecasts, to raise awareness of the risk to the site and detail how to react in an emergency.

Adaptation actions

Flooding & storms:

- If flooding is predicted then try to prepare emergency packs in advance, e.g. blankets, torches and waterproof clothing for staff to continue their duties in evacuating, to keep guests and staff safe and warm during an evacuation.
- Consider making your site more resistant to flooding during any maintenance or improvement works, such as dry lining walls, varnishing skirting boards or raising electrical sockets and circuit boards, to increase protection from flooding in a cost effective way.
- Consider raising access pathways around your site to ensure that vulnerable guests can still get to and from your site in times of flooding.
• Consider your site’s power needs, e.g. install a back-up generator or renewable energy system, so that your site can still provide power to guests during power cuts. Safety note: generators and pumps must not be operated inside buildings due to the risks associated with carbon monoxide poisoning.
• Keep a traditional plug-in landline phone in storage, i.e. one that will work without any power, to continue taking reservations if phone lines have been disrupted due to storm damage.
• Upgrade wet weather facilities, e.g. drying rooms and sale of wellies, raincoats and umbrellas, to provide your guests with appropriate facilities on site that make their participation in outdoor activities during wet weather as comfortable as possible.
• Provide ideas for visitors of alternative activities, e.g. indoor attractions and those not dependent on the weather, to minimise visitor disappointment and continue to attract visits to the area during bad conditions.
• Consider relocating ground floor/basement laundry facilities, i.e. to another storage area or external building away from flood risk, to ensure operations can continue if flooding occurs. Similarly, keep business records and IT systems upstairs or in a location away from flood risk, i.e. on shelves.

Heat:
• Increase the amount of shade provided, e.g. planting trees, installing awnings and sun sails in outside areas, to ensure staff and guests can keep cool during hot weather.
• Consider installing a rainwater harvesting system to provide water for flushing toilets and watering plants, i.e. water butts and underground storage tanks, to save money on water bills from improved water efficiency.
• Provide blinds and shutters for all windows, especially south-facing rooms, and ask guests to keep these closed during the day to keep rooms cool without the need for air conditioning units.

Guidance documents

• Natural Resources Wales – What to do before a flood happens
• Environment Agency – prepare for flooding and checklist for emergency packs
• SuDS Wales - Rainwater harvesting
Case studies

- **Bryn Eltyd Eco Guesthouse**, Gwynedd – installed rainwater harvesting for toilet flushing
- **Old Mill Hotel, Bath**
- **Kitley House Hotel, Devon**
Characteristics of a business that is prepared for severe weather and future climate change:

1. Flood information in welcome packs and displayed on site along with weather forecasts.
2. Emergency packs prepared if flooding is predicted.
3. Raised access pathways constructed with permeable materials.
4. Flood resistance measures during refurbishment work, such as dry lining walls, raising electrical sockets and circuit boards, varnishing skirting boards and installing temporary flood doors.
5. A back-up generator to provide energy during power cuts and a plug-in landline phone.
6. Wet weather facilities, such as drying rooms and umbrellas.
7. Alternative ideas for visitors provided during bad weather.
8. Basement laundry facilities and IT equipment relocated to higher floor or safer location.
9. Increased shading for guests, e.g., trees, awnings or sun sails.
10. Rainwater harvesting system (water butts) for toilet flushing and watering plants.
11. Blinds and shutters on south-facing windows.
ACCOMMODATION PROVIDERS – SELF-CATERING

Building business resilience

Flooding & storms:
- You have a legal obligation to ensure anyone on your site knows what to do if there is a flood, which means you need to understand each unit’s flood risk, prepare individual unit flood plans and clearly display instructions with emergency contact numbers within each unit. Self-directed guidance will be crucial in protecting your guests from harm during flooding.
- Monitor weather forecasts and provide warnings to guests, e.g. in welcome packs or displayed on notice boards within each unit, if flooding is predicted.

Adaptation actions

Flooding & storms:
- Prepare emergency packs if flooding is predicted, e.g. to be handed out or placed within each unit, which will provide guests with essentials if flooding occurs.
- Upgrade wet weather facilities, e.g. drying rooms and racks as well as selling umbrellas, to provide your guests with appropriate facilities within the unit that make their participation in outdoor activities during wet weather as comfortable as possible.
- Provide ideas for visitors of alternative activities, e.g. indoor attractions and those not dependent on the weather, to minimise visitor disappointment and continue to attract visits to the area during bad conditions.
- Consider raising access pathways around your site to ensure that vulnerable guests can still get to and from your site in times of flooding.
- Consider each unit’s power needs, e.g. install a back-up generator or renewable energy system, to ensure your site can still provide power to guests during power cuts.

Heat:
- Consider installing a rainwater harvesting system to provide water for flushing toilets and watering plants, i.e. water butts and underground storage tanks, to save money on water bills from improved water efficiency.
- Increase the amount of shade provided, e.g. planting trees, installing awnings and sun sails in outdoor areas, to keep staff and guests cool during hot weather.
• Provide blinds and shutters for all windows, especially south-facing rooms, and ask guests to keep these closed during the day to keep rooms cool without the need for air conditioning units.

Guidance documents

• Natural Resources Wales – What to do before a flood happens
• Environment Agency – prepare for flooding and checklist for emergency packs
• SuDS Wales - Rainwater harvesting

Case studies

• Bluestone National Park Resort, Pembrokeshire – click here to see case study
• Higher Wiscombe self-catering accommodation in East Devon
• Craig Cottage, Cwmshon Cottages, Pontardawe – has a walkers drying room with background heating for drying wet boots and outdoor gear
• Green Snowdonia advise self-catering accommodation providers to keep traditional landline phones in case of power cuts

Image labelled as free to use courtesy of Best Roman Shades
Characteristics of a business that is prepared for severe weather and future climate change:

1. Clear instructions in every unit on flood evacuation plans and details of weather forecasts.
2. Emergency packs prepared if flooding is predicted.
3. Wet weather facilities, such as drying racks and umbrellas.
4. Alternative ideas for visitors provided during bad weather.
5. Raised access pathways created from permeable materials.
6. A back-up generator to provide energy during power cuts and a plug in landline phone.
7. Rainwater harvesting system (water butt) for toilet flushing and watering plants.
8. Increased shading for guests, e.g. trees or sun sails.
CATERING FACILITIES

Opportunities

- Warmer weather may lead to more visitors, overnight stays and an extension of the tourism season.
- Increased demand for outdoor catering facilities, providing diners with an alfresco experience during warm weather
- Businesses may benefit from less severe winters, improving access and increased levels of bookings.

Threats

- Hotels, restaurants and campsites could become flooded and access routes blocked as a result of increasing rainfall leading to disruption in the provision of goods and services, as well as affecting visitor access.
- Flood events may lead to an increase in insurance premiums, which could impact on profit margins.
- Severe weather can also affect power supplies and telecommunications impacting on the ability of accommodation providers to supply electricity and also preventing visitors from making enquiries and bookings.
- High temperatures can increase food hygiene/poisoning issues requiring greater preventative measures from catering providers and water scarcity, due to increasing temperatures and decreasing rainfall in the summer could affect the level of service that can be provided by accommodation and catering businesses.
- Rising fuel costs (which in part is as a result of energy efficiency and renewable energy measures) is likely to affect all businesses, but could have a particular impact for older accommodation types such as the Victorian villa style hotels in many coastal locations where it is more challenging to install energy efficiency measures.

Building business resilience

General:
- Source the products you buy in from sustainable sources, e.g. fish, meat and coffee from sustainable sources, to ensure that your business not having a negative environmental impact. Also if you buy local Welsh produce when you can, this should
be easier to access in periods of severe weather and you will reduce your impact on the environment by reducing food miles and greenhouse gas emissions.

- Consider sourcing products from a range of suppliers, or setting up a back-up contract with other suppliers if you plan to continue using your original suppliers, to ensure that your supply can continue when flooding disrupts services. Test this plan out.
- When considering physical works to adapt your building to potential climate change impacts, you should check with your local planning authority whether planning permission or other consents (e.g. building regulations) are needed.
- Regularly check buildings for cracks and signs of subsistence to identify potential problems from drying or shrinking soils as early as possible.

Heat:
- Contact your Local Authority Environmental Health Officer for advice on food hygiene and standards in increasing summer temperatures.
- Consider how your business will operate in warmer summers, e.g. the need for increased/enhanced refrigeration facilities, food hygiene courses and pest control systems, to ensure your business can continue working safely in hot weather. Your heating processes will need to become as efficient as possible to reduce the need for more artificial cooling of the staff working environment, e.g. air conditioning. Reconsider unsuitable staff uniforms in summer months for staff working in kitchens and outdoors.

Adaptation actions
Flooding & storms:
- Adapt your catering equipment/facilities so you can move it out of an area at risk of flooding, e.g. install casters on base of units where feasible and brief staff on how to transport large items safely, to a higher floor or lower risk location in order for business to continue during times of flooding. (See Old Mill Hotel)

Heat:
- Increase the amount of shade provided, e.g. planting trees, installing awnings and sun sails in smoking and non-smoking areas, to ensure staff and guests can keep cool during hot weather.
- Consider increasing the provision of outdoor facilities, e.g. more outdoor dining spaces, or outdoor catering and refreshments, to attract more visitors during longer tourist season.
• Consider serving Welsh/British wine and beverages as your house wine/bar stock, e.g. Wernddu Organics, to ensure you have a reliable source of beverages in the years to come with warmer temperatures producing better conditions for vineyards and also to promote local sourcing.
• Consider improving the water efficiency of your kitchen appliances, e.g. fit spray taps and replace old appliances with new, highly water-efficient ones, to continue to operate during times of water shortages.

Guidance documents

• Doggy box food safety
• Sustainability guidelines on fish
• Sustainability guidelines on coffee
• Towards Sustainable Growth: An Action Plan for the Food and Drink Industry 2014-2020

Case studies

• Old Mill Hotel, Bath
• Bistro Betws-y-Coed – source all meat, fish, seafood, fruit and vegetables locally
Catering Facilities

1. Source products sustainably where possible
2. Operation in hot weather considered, such as enhanced refrigeration, pest control and food hygiene
3. Catering equipment adapted to move away from kitchen at risk of flooding
4. Back-up list of suppliers for delivery of goods if flooding occurs
5. Increased shading for guests, e.g. trees or sun sails
6. Welsh/Beers wine and beverages as house wine and bar stock
7. More outdoor catering facilities provided
8. Improved water efficiency, e.g. taps and appliances

Characteristics of a business that is prepared for severe weather and future climate change
ACTIVITIES & ADVENTURE

If your business also provides food – see advice section for catering facilities

As activity and adventure-related tourism generally takes place outside, weather conditions are of key importance. The main impacts likely to have an effect on activities and adventure related tourism are increased precipitation during the winter months, higher temperatures in the summer months and increased frequency and incidence of storm events across the country, especially in the summer months.

Opportunities
- Wales has a reputation for being wet and has the potential to increase more adventurous outdoor activities to attract more visitors with more incidences of heavy rainfall and extreme weather.
- Marketing opportunities celebrating Wales’ weather and outdoor activities.
- Extreme weather could also be a draw for extreme outdoor sports.
- Warmer weather will also attract visitors to participate in outdoor activities more generally. For example, higher temperatures and a longer summer season could present new opportunities.

Threats
- Wales is generally viewed as an outdoor destination; its appeal to those seeking extreme sports is likely to be positively impacted by more severe weather, but visitors seeking tamer experiences such as walking and cycling are more likely to be deterred by increasing rainfall especially ‘opportunist’ day visitors who will visit alternative locations if the weather is poor. More specialist activities such as kayaking, climbing and potholing could also be negatively impacted by increasing rain and storminess.
- Beach activities could be affected by the changing coastline.
- Walking and cycling in forest based attractions may be negatively impacted by severe weather as a result of fallen trees which can disrupt access and deter visitors.
- Repair and maintenance costs of outdoor activities such as coastal.
- Increased temperatures in the summer could have health impacts for visitors participating in outdoor activities such as heatstroke, sunburn and sun stroke as well as the increased potential for more biting insects and vector borne diseases as insects migrate north.
Water scarcity in the summer months could also have an impact on recreational water based activities such as canoeing and kayaking.

Building business resilience:
- Display beach safety guidelines and any warnings, e.g. NHS beach safety guidelines, to make visitors aware of dangers so that they can adapt their behaviour accordingly.
- If your business provides activities along the coast; monitor changing wave patterns, e.g. shifts in sand or shingle and development of rip currents, to ensure your activities are compatible and do not endanger visitors.
- Market nearby beaches that provide desirable locations for different beach activity opportunities, e.g. coasteering or surfing, to take advantage of natural resources as the coastline changes.
- Provide ideas for visitors of alternative activities, e.g. when beach or cliff access is restricted, to minimise visitor disappointment and continue to attract visits to the area.
- Think about creating a road access contingency plan to get visitor to your site, e.g. during congestion in peak summer months or when flooding restricts certain roads, to prevent disruptions from affecting the number of visitors you receive.
- Target marketing strategies during extreme weather, e.g. novices may prefer alternative activities or there may be an increased demand for extreme sports such as white water rafting or ice climbing for those more experienced, in order to maximise on the exposure and uptake of activities offered.

Adaptation actions
- Consider partnering up with another local business, i.e. one that operates during weather conditions when your business cannot operate or offers alternative activities to yours, to jointly market your venture in order to provide tourists with opportunities in all weather conditions.
- Support any ‘visitor payback’ initiatives, e.g. mountain rescue and the RNLI, to ensure vital services can continue to save lives during adverse conditions.

Flooding & storms:
- Provide weather-proof facilities, e.g. indoor, all-weather activities and permeable, raised footpaths, to ensure visitors have a range of activities to chose from, whatever the weather. Combine this with expanding your expertise, activities and facilities to offer a range of opportunities for visitors in order to maintain a competitive edge and be flexible to future changes.
• Provide more all-weather surfaces, e.g. use of Sustainable Drainage Systems (SUDS) such as permeable surfaces and soakaways, to effectively manage drainage from your site so that it does not interfere with any activities.

Heat:
• Implement water saving measures, e.g. using less water, installing rainwater harvesting systems for use in any cleaning processes and/or toilet flushing, to help your site cope during times of water shortages.
• When managing golfing greens; consider planting drought-resistant grass species, e.g. kikuyu grass (*Pennisetum clandestinum*), to ensure greens maintain their intended purpose during summers with hotter temperatures and reduced rainfall. You could also consider adapting your irrigation practices or create a pond/lake feature to naturally collect water for use during periods of drought, which may also serve to reduce waterlogging in wetter times. Finally, carefully manage use of fertilisers and pesticides, e.g. consider other methods for managing greens or review application processes, to avoid causing negative environmental impacts.

Guidance documents
• SuDS Wales - Rainwater harvesting
• SuDS Wales - techniques
• RNLI beach safety guidelines ([English](#)) ([Welsh](#))

Case studies
• Portmore Golf Park, Devon
• High Post Golf Club, Wiltshire
• Tenby Golf Club – [click here to see case study](#)
• Brecon Beacons Tourism – actively working together
  Image- [http://creativecommons.org/licenses/by-sa/3.0/](http://creativecommons.org/licenses/by-sa/3.0/)
Characteristics of a business that is prepared for severe weather and future climate change
EVENTS & FESTIVALS

If your business also provides food – see advice section for catering facilities

Opportunities
- An increase in optimal weather condition (warm and dry) days provides a good opportunity for the events and festivals sector.
- Increased summer temperatures and a lengthening in the tourism season may lead to increased demand and markets for such type of events.

Threats
- Flooding of events could create attendance and safety concerns
- Climate impacts could affect transport routes and may restrict access to or from events.
- Water scarcity could impact on the ability to provide sufficient water and facilities for events if increased temperatures lead to summer drought. Increased temperatures could cause health problems for event goers such as heatstroke, sunstroke, sunburn, etc.

Building business resilience
- Employ trained staff, e.g. welfare officers, stewards and first aiders, to ensure they can respond quickly and react appropriately to anyone in distress.
- Monitor weather forecasts leading up to the event and sign up to receive flood warnings, i.e. Met Office flood warnings and Floodline Warnings Direct registration, to provide up-to-date information to visitors prior to the event who can then adapt their activities accordingly and arrive prepared or make alternative arrangements. Consider postponing the event in circumstances of extreme weather where you are concerned about managing the welfare of visitors.
- Devise a comprehensive flood plan, i.e. one that takes into account the rapid response time of Welsh catchments to intense rainfall leading to a risk of flash flooding, and train staff on visitor safety so that they can lead visitors to higher ground, even at night.
Adaptation actions

- Communicate real-time risks and advice to visitors during the event, e.g. via digital screens, announcements and social media updates, to keep visitors informed so they can prepare for any adverse conditions.

Flooding & storms:
- Consider current surface drainage and flood risk to your site, e.g. keep drainage ditches clear of rubbish, increase the size of drainage pipes where necessary, infill hollows where water tends to collect and consider installing Sustainable Drainage Systems, to effectively manage surface water run-off during wetter times and to prevent flooding.
- If high winds are predicted for the event, send out or display warnings that ask guests to prepare for these conditions, e.g. they will need to secure their tents properly, to prevent losses and potential damage.

Heat:
- Assess your site’s water access, e.g. install more taps or provide free safe drinking water and manage pipes to avoid bacterial contamination in warmer temperatures, to ensure visitors have access to a clean, safe water supply, especially during hot days.
- Increase site capacity and invest in or upgrade festival facilities, e.g. entrance gate, washroom and catering facilities, to take advantage of the increasing visitor demand for festivals in warmer summers and reduce the amount of time visitors spend queuing in the heat. You could also consider offering more dates.
- Increase the amount of shade provided, e.g. planting trees, installing awnings and sun sails in designated ‘cooling-off areas’ with water misters, to keep staff and visitors cool during hot weather.
- Assess how well access road surfaces can cope with increasing temperatures, e.g. provide hard turning pads to ensure buses and coaches can manoeuvre regardless of ground conditions, so your site can still be accessed during times of extreme hot weather.
Guidance documents
- Public Health Wales - Advice for those organising large public events during extreme hot weather
- SuDS Wales - techniques

Case studies
- Green Man Festival – Einstein's Garden comprises three stages powered by sustainable sources of energy - the area gives festival-goers the opportunity to engage with innovative low-carbon technologies like solar power and hydrogen fuel cells
- Hay Festival – Hay on Earth ongoing sustainability project
- Glastonbury Festival

Wikipedia User: Ser Amantio di Nicolao/gallery
Characteristics of a business that is prepared for severe weather and future climate change:

1. Trained welfare officers, stewards and first aiders employed
2. Weather forecasts and flood warnings monitored
3. Flood plan devised and staff informed of roles. The plan should be regularly tested
4. Real-time risks communicated via digital screens and social media
5. Assessment of site drainage and maintenance work to improve, such as infilling hollows and using Sustainable Drainage Systems to manage run-off
6. Clean, safe water supply sufficient for all guests
7. Entrance gate, washroom and catering facilities with increased capacity and more dates offered
8. Increased shading for guests, such as trees or sun sails
9. Hard turning pads for buses and coaches to manoeuvre
HERITAGE & CULTURE

If your business also provides food – see advice section for catering facilities

According to Cadw¹, 90% of visitors to Wales identify Welsh heritage as the main reason for their visit. Therefore any positive or negative climate change impacts for this segment are likely to have an effect on the overall visitor economy.

Opportunities

- As with other attractions, warmer summers may result in increased visits to outdoor heritage attractions and have a positive impact in lengthening the tourism season.

Threats

- Increased rainfall could lead to flooding of heritage sites and attractions and/or access routes meaning that such sites become inaccessible.
- Historic assets and archaeological sites along the coastline, particularly below the one metre contour line, will be at significant risk of negative impacts due to rising sea levels, coastal erosion and storm surges. Other archaeological sites, such as those located in upland areas, will be at risk of erosion from more frequent and more intense storms.
- Increased visitor numbers as a result of warmer weather could lead to damage to heritage assets affecting their long term draw to visitors. As such a fine balance needs to be managed between maximising visitor income and achieving the sustainability of assets and ensuring they are protected for future generations to enjoy.

Building business resilience

- Set up monitoring processes which record the impacts of extreme temperatures and weather to your business, e.g. regularly check historical assets’ structures for subsistence and cracking as well as recording changes in visitor numbers, in order to generate your own data to make informed business decisions in the future. Contact your local Welsh Archaeological Trust for advice and to borrow monitoring equipment for your historical assets. Consider involving volunteers and community groups who take a keen interest in the areas concerned, such as the Afordir Coastal Heritage Project, to identify and record

¹ www.cadw.wales.gov.uk/?lang=en
new exposed archaeological sites around the coastline. Notify the Welsh Archaeological Trusts of any new archaeological exposures revealed during storms or other severe weather events.

- Collect information about your site or asset. Consult Cadw / regional Historic Environment Record to see archive photographs / information and use this to compare and document changes. The use of online resources, such as Archwilio, can also be useful in obtaining historic information. Seek advice from heritage professionals, particularly about legal restrictions on what should and shouldn't be done in relation to your site.
- When undertaking building work be aware that heritage assets may require special permissions, e.g. listed buildings and those in conservation areas or World Heritage sites, therefore it is advised to discuss any changes you plan to make to adapt the building for the impacts of climate change with the relevant statutory body, i.e. local authority building conservation officer or planning officer.

Flooding & storms:

- Assess the flood risk to your site, e.g. likely flow of water on site and lower areas that would tend to pond flood waters, and consider raising the height of sensitive structures and access pathways during maintenance or upgrade works to ensure flood resilience. Consult with Cadw on any changes you plan to make to the drainage surrounding any scheduled ancient monument(s).
- Purchase temporary flood equipment, such as flood gates and sandbags, to protect areas which are liable to flooding.
- Devise a detailed flood and evacuation plan, which identifies actions such as how staff will move sensitive animals to safety in zoos and who will be responsible for deploying sandbags, and train staff on how to react during a flood. Staff will also need to be trained on visitor safety.
- Carry out a risk assessment of historic assets which are vulnerable to the impacts of climate change, e.g. Cadw risk assessment, to identify assets most at risk.

Heat:

- Devise a detailed heatwave plan, which identifies actions such as how specific sensitive animals or sites will be kept cool in zoos and provides advice on supplying water, and train staff on how to react in hot weather.
- Develop the ability to respond quickly to any opportunities that may arise as a result of hot weather, e.g. considering what your visitors might need and stocking plentiful supplies of those items such as sunscreen, hats and bottled water, to ensure you can meet the increase in demand and in turn increase your profitability.
Adaptation actions

Flooding & coastal erosion:

• Consult with your local authority conservation officer and Cadw for advice on suggested measures to protect assets that are vulnerable to extreme events. In some extreme instances, the most appropriate response may involve archaeological excavation where historical assets are at significant risk of damage or destruction, e.g. St Ishmael medieval village on the Carmarthenshire coastline. Consult with Cadw for advice on how to approach this response.

Heat:

• Consider installing rainwater harvesting systems on your site, e.g. water butts or underground storage tanks, to provide water for washing-down activities or watering plants, in order to be more water efficient and save money on water bills. To further improve water efficiency, consider using the rainwater harvested for flushing toilets or install waterless urinals or compostable toilets. Prepare for using a backup source of water in times of drought.

• In landscaped environments; consider planting more exotic or drought-resistant plant species, e.g. kikuyu grass (*Pennisetum clandestinum*), to ensure gardens maintain their intended purpose during summers with hotter temperatures and reduced rainfall. You could also consider adapting your irrigation practices or create a pond/lake feature to naturally collect water for use during periods of drought, which may also serve to reduce water logging in wetter times. Finally, carefully manage use of fertilisers and pesticides, e.g. consider other methods for managing gardens or review application processes, to avoid causing negative environmental impacts.

• Increase the amount of shade provided, e.g. planting more trees, installing awnings and sun sails in keeping with the cultural setting of your site, to allow staff and visitors to keep cool during hot weather. Planting more trees also helps reduce surface water flooding by providing increased drainage capacity.

Guidance documents

• [SuDS Wales - Rainwater harvesting](#)
• [CHARTS project – Best Practice Guide: Preparing the Historic Environment to Meet the Challenges of Climate Change](#)
Case studies

- **St Ishmael, Carmarthenshire** – example of local volunteers working with the Dyfed Archaeological Trust to record a site currently being eroded by the sea
- **Fonmon Castle** – [click here to see case study](#)
- **St Fagans** – [click here to see case study](#)
- **Newquay Zoo**
- **National Trust**
Characteristics of a business that is prepared for severe weather and future climate change

1. Risks to historical assets identified and assessed
2. Monitoring in place to assess the impacts of extreme weather on assets and visitor numbers including reactive monitoring following severe storms
3. Regular and appropriate maintenance of historic structures
4. Flood plan and heatwave plan devised and staff informed of roles, particularly in managing animals or sensitive structures and removal of valuable artefacts/paintings to secure areas. Regularly test the plans
5. Flood risk assessed with sensitive structures raised if necessary
6. Volunteers and community groups involved in monitoring and recording exposed archaeological sites
7. Plentiful supplies of sunscreen, hats and bottled water for safe during hot weather
8. Rainwater harvesting systems in place for washing down activities, watering plants and flushing toilets
9. For landscaped environments – plant exotic / drought resistant plant species, adapt irrigation practices and use less fertiliser
10. Increased shading in keeping with cultural setting, such as trees or parasols
PROTECTED LANDSCAPES AND THEIR BUILDINGS

If your business also provides food – see advice section for catering facilities

Opportunities

- Increased summer temperatures and an extension to the tourism season may result in increased visitors to landscapes and buildings of heritage or natural interest. Gardens are likely to be a key attractor as are outdoor heritage sites such as castles and forts.

- Changes to habitats and species including the migration of those more traditionally associated with more southern locations may also provide a draw for visitors.

- The way that the landscape is being changed by the effects of climate change may expose positive tourism attractions. For example, coastal erosion has exposed ancient woodlands at Tywyn and fossilised footprints on beaches which has led to bookings onto coastal tours to view these changes.

Threats

- Climate change impacts could affect protected buildings negatively in terms of increased weathering, erosion and flooding. In addition, it may be more difficult to install passive cooling measures in listed buildings due to regulations concerning the degree to which their building fabric can be changed.

- The natural environment may be affected by changes to species, habitats and ecosystems, resulting in different wildlife distributions and increased incidence of algal blooms.

- Sea-level rise and coastal erosion may result in physical barriers to natural environment tourism at the coast, for example, some beaches may be reduced in size and a shift in sand and shingle may affect the size and shape of some beaches. This could reduce the popularity of beach tourism in the summer months for coastal locations.

- Changes in the climate may lead to changes in bird migration patterns presenting a threat to the coastal environment.

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Other risks also arise in the natural environment from the increase in the number of visitors in the area, e.g. increasing erosion rates of habitats and the potential increase in number of fires started accidently which is already becoming a problem in the Brecon Beacons.

**Sector specific considerations (planning):**

- Carry out a risk assessment considering the vulnerability of your visitor amenities, e.g. car parks, toilets and pathways, to increasing temperatures, flooding and coastal erosion.
- Support any conservation or green infrastructure programmes taking place in your area, e.g. tree planting to connect urban areas to natural landscapes, and ensure your activities aid these to increase local resilience.
- When considering physical works to adapt your building to potential climate change impacts, you should check with your local planning authority whether planning permission or other consents (e.g. building regulations) are needed.
- Regularly check buildings for cracks and signs of subsistence to identify potential problems from drying or shrinking soils as early as possible.

**Coastal erosion & flooding:**

- Find out about the Shoreline Management Plan in your area, i.e. [Welsh Shoreline Management Plans (SMP 19 – SMP 22)](#), or contact your local authority or local Natural Resources Wales office for their advice, and make sure your activities are in line with any practices in place, for instance consider relocating coastal paths close to the cliff edge where coastal erosion could potentially destroy some sections.
- Provide ideas for visitors of alternative activities, e.g. when beach or cliff access is restricted, to minimise visitor disappointment and continue to attract visits to the area.
- Think about creating a road access contingency plan to get visitor to your site, e.g. during congestion in peak summer months or when flooding restricts certain roads.

**Heat:**

- Display beach safety guidelines, i.e. [NHS Beach Safety](#), to make visitors aware of dangers and suggest how they can adapt their behaviour on crowded beaches during warmer weather.
• Develop good connections with local emergency services, e.g. fire and police services, to quickly deal with any fires which breakout in hot weather and prevent extensive destruction of landscapes such as peat bogs. Try to enforce restrictions on the use of portable barbecues by visitors to aid in the reduction of fires.
• Increase the amount of shade provided, e.g. planting trees, installing awnings and sun sails in keeping with the natural setting of your site, to allow staff and visitors to keep cool during hot weather. Green roofs also provide insulation and cooling reducing the need for heating and air-conditioning – and they look great!
• Consider installing large-scale rainwater harvesting systems on your site, e.g. above ground or underground storage tanks (for larger businesses), to provide water for irrigation purposes or toilet flushing in visitor amenities to relieve pressure on water supplies and save money on water bills. Prepare for using a backup source of water in times of drought.
• Increase the capacity of your facilities and offer water-based activities, e.g. kayaking, wind surfing or boat hire, to take advantage of increasing demand in warmer summers.

Flooding & storms:
• Consider making your visitor amenities more sustainable, e.g. by integrating Sustainable Drainage Systems like permeable paving for footpaths, green roofs and soakaways or rain gardens to drain surface water, to prevent more intense rainfall from making amenities inaccessible.

Guidance documents
• SuDS Wales - techniques
• SuDS Wales - Rainwater harvesting
• Green Infrastructure – Making the most of our landscape
• Defra - Natural Environment Adapting To Climate Change

Case studies
• Coppet Hall Beach Centre – click here to see case study
• National Trust Properties
• Moorland Wildfires in the Peak District National Park (page 21) – using modelling and analysis to the location and timing of future fires
Characteristics of a business that is prepared for severe weather and future climate change

1. A risk assessment of climate impacts on the protected landscape and visitor amenities
2. Beach safety guidelines displayed
3. Awareness of Shoreline Management Plans in the area
4. Alternative ideas for visitors when access becomes restricted
5. Road access contingency plan in place
6. Good connections with local emergency services
7. Shading provided for visitors, e.g. trees, awnings and sun sails
8. Rainwater harvesting systems, such as above ground or underground storage tanks
9. Water-based activities available
10. Sustainable Drainage Systems installed during refurbishment works, e.g. green roofs, soakaways and permeable paving in car parks
1 Bluestone National Park Resort
Location: Bluestone Resorts Ltd, Canaston Wood, Narberth, Pembrokeshire, SA67 8DE
Contact - Corporate and Events Telephone: 01834 862402
Website: http://www.bluestonewales.com

Introduction
Bluestone National Park Resort is a 5 Star resort, located in Pembrokeshire. The resort falls partly within the boundaries of the Pembrokeshire Coast National Park. The park is owned by several private backers along with Pembrokeshire County Council and employs over 500 people. Since its opening in 2008 it has become one of Wales' leading tourist destinations. http://en.wikipedia.org/wiki/Bluestone,_Pembrokeshire

The resort's accommodation consists of 268 timber lodges, as well as cottages and studio apartments set in 500 acre area. This area also includes the Blue Lagoon indoor water park, Steep Ravine outdoor activity area, an indoor playground and a medieval themed activity area. The resort itself is centred on the "village" which has shops, restaurants, a pub, wine store and a spa. Within the boundaries of the resort are a ruined manor house (known locally as Castell Coch) and the external structure of Newton North parish and church. The park itself is car-free (except on check-in and check-out days), with walking and cycling encouraged. Electric golf buggies can be rented by day or for a full stay and are commonly seen around the park.

Bluestone takes a "common sense approach" to the environment and sustainable development. It uses the Green Dragon Environmental Management System and has identified that the main areas of concern are: energy consumption, resource consumption, waste generation, enhancement and protection of the natural environment and transport of staff and guests.

Bluestone achieved Green Dragon Level 3 in April, and hopes to achieve Level 5 soon.
Actions taken to prepare for climate change

- The Blue Lagoon indoor water park is heated by an on-site energy centre, housing two 28-ton biomass boilers, which burn a blend of woodchip and energy crops grown by local farmers. Bluestone’s Environment Manager said “By using biomass instead of oil, we are saving the emission of 3000 tonnes of carbon dioxide a year; we’re saving money, and we’re supporting the local farming community.”
- All feedstock, including miscanthus and willow, is sourced from within a five radius of the site.
- All lodges have been fitted with triple glazing and solar panels to be energy efficient.
- More than 168,000 trees, shrubs and bulbs have been planted.

Information from:
http://en.wikipedia.org/wiki/Bluestone,_Pembrokeshire

http://www.bluestonewales.com/

Taken from http://commons.wikimedia.org/wiki/File:Blue_Lagoon_Waterpark.jpg
Tenby Golf Club

Location: Tenby Golf Club, The Burrows, Tenby, SA70 7NP
Contact details - Telephone: 01834 842978
Website: http://www.tenbygolf.co.uk/pages.php/index.html#top

Introduction
Tenby Golf Club, founded in 1888, has the oldest golf course in Wales and is recognised as one of the best championship links courses in the country. The course stretches for 6,337 yards along the ancient burrows of Tenby’s South Beach with several holes running parallel to the coastline. The golf club is easily accessible by car or train.

During the winter 2013-14 severe storms and high tides caused the sand dunes close to part of the course to become badly eroded. The damage caused by the erosion is demonstrated by the distance of the dunes from one of the tees; prior to the storm this was 12m and afterwards was only 4m. If the sea had reached any further it would have affected the green and subsequently the course.

In order to protect the dunes and the golf course, action and emergency repairs are being carried out with the help of funding from the Welsh Government’s TISS programme. The dunes will be protected from erosion at their current level with stone-filled gabion baskets installed on the beach side. The budget is limited and will only provide funding for repairs, no additional regeneration or repairs will be possible. Consents for the work have been obtained from Natural Resources Wales (NRW) as the site is in the National Park and holds SSSI status, therefore the work is being carried out by engineering contractors with specialist experience in this type of protection.

Over the last 2 years, staff noticed standing water on parts of the course, which has never been a problem for the last 40-50 years. Standing water is a problem for Tenby Golf Club because it kills the grass after a period of time. Seeding programmes and fertiliser are being used to address the problem of grass die-out, however these methods cannot be sustainable if the water stands for long periods of time. Investigation works are currently under way to determine the makeup of the ground substructure as there are known to be underground lakes in areas of the golf course.

Actions taken to adapt to climate change
- The Greens Committee works on a 3 to 5 year planning cycle. They are currently thinking about creating a contingency hole on an extra green that could be brought into play in the event of losing an existing hole due to flooding or coastal erosion.
- Preventative actions under consideration include building up some areas of the course to prevent water entering some of the fairways and planting different grasses to hold the dunes in place. In the past marram grass has been planted which can help to stabilise sand dunes and reduce erosion.
- Seeding programmes and fertiliser application have been put in place to try and repair areas where the grass has been killed.
• There is the possibility that the groundwater levels are rising. Advice has been sought from Natural Resources Wales.

**Benefits to the business from actions taken to adapt**

• There were concerns as to how the areas of standing water in the past two years would affect the number of visitors but so far there has been no change and the grass growing season is extending with cutting continuing till late autumn.

![Image](http://en.wikipedia.org/wiki/Tenby)

Taken from Wikipedia [http://en.wikipedia.org/wiki/Tenby](http://en.wikipedia.org/wiki/Tenby)
Creative Commons [http://creativecommons.org/licenses/by-sa/2.0/](http://creativecommons.org/licenses/by-sa/2.0/)
2 Fonmon Castle
Location: Fonmon Castle, Fonmon, Barry, Vale of Glamorgan, CF62 3ZN, Wales
Contact details: Telephone: 01446 710 206
Email: fonmon_castle@msn.com
Website: http://www.fonmoncastle.com/

Introduction
The Fonmon Castle estate consists of the castle itself, which is open to the public and hosts a considerable number of weddings and events each year, farmland, caravans, quarrying/mining activities and also as a site for ash to be deposited from the nearby Aberthaw Power Station. Fonmon is a private residence.

The owners are already taking action to prepare the estate for the impacts of climate change, focussing on long-term preparation. They have looked at climate change forecasts and are preparing for events with greater intensity in the future, e.g. storms with greater intensity and more intense solar radiation. They tend to look for case studies to provide advice on adapting to climate change and increasing the resilience of the estate. For example, St Fagan’s was considered which had increased the drainage capacity on the main house (from 4 inch diameter pipes to 6 inches) and also to the National Trust properties when considering what action to take.

Climate change impacts on the estate include the potential for disease to affect the trees, which not only provide aesthetic value but also have a wind-reduction function in protecting the gardens and farmland from strong, on-shore Atlantic winds. With storminess and wind speed predicted to increase/intensify and the potential for more disease/pathogens to reach Britain, the estate is facing some difficult decisions – more trees should be planted but there are questions over which species. If indigenous species are planted to increase the aesthetics of the estate, will these survive in 50-80 years time, or should non-native, hardier trees be planted which are likely to survive, such as black conifer trees?

This is a long-term strategic decision; especially as tree planting is a practical action to combat the effects of climate change will take many years to reach its full potential. There may also need to be a strategic decisions made in the future about the crop species planted in the farmland of the estate, with wheat likely to remain reliable but the varieties that are planted may need to be better adapted to future conditions.

Actions taken to adapt to climate change
• Last winter the castle undertook repair/upgrade works on a Grade II Listed stable block in its grounds, which involved remodelling six new copies of the original cast iron drain pipes. There had previously only been two drains for this structure, however due to the predicted increase in storms due to climate change the owner decided to increase the capacity of the drainage system here to ensure that more intense rainfall does not damage the listed building in the future.
• There has been a similar increase in drainage capacity along the driveway where new drainage ditches have been dug. This is to reduce the threat of
flash flooding and rapid runoff flowing straight down into the Main Hall where parquet flooring could be irreversibly damaged.

- The main building of the castle, which is a Grade I Listed Building, has had secondary glazing fitted in keeping with the rest of the building, as no changes to the original windows could be made.
- In the farming side of the estate, there has been a widening of ditches to cope with excessive runoff in the future and tree planting of poplar and willow species has been used to intercept rainfall and help manage runoff.
- Fonmon Castle has facilitated further climate change action through a drainage bypass function for the local village of Llancadle, who suffered terrible flooding in 2012 owing to the lack of a main sewerage system. Fonmon opened up its drainage network and watercourse to the village where the local council have now permanently re-routed the drainage pathways away from the village.

Benefits to the business from actions taken to adapt

- The owners view taking adaptation action as an insurance and protection policy, as it is unlikely that there will be an immediate return from the investment but the measures carried out should protect the estate for many years to come.
- For example, taking action to reduce the impact of more intense rainfall/runoff will prevent the business from having to make significant and costly repairs, which could force them to close for business and could damage their reputation, should damage occur in the listed buildings of the estate. If the Main Hall were to be flooded, this would require closure of this building to carry out extensive drying out works on the parquet flooring and any functions booked during the clean-up period would have to be cancelled, potentially leading to negative publicity of Fonmon Castle.
- Fitting secondary glazing to the windows of the main building of the castle has the dual function of providing better insulation in the winter, improving the energy efficiency of the building, and also helps protect the interior of the castle from more intense solar radiation. Period furniture, material and decor will require less upkeep from reduced solar intensity and therefore require less renovation work.
Image courtesy of http://placesinwales.co.uk/valeofglamorgan.htm - labelled for reuse
3 Coppet Hall Beach Centre
Location: Coppet Hall, Saundersfoot, Pembrokeshire, SA69 9EY
Telephone: 01834 810800
Website: http://www.pembrokeshire-coastal-tourism.co.uk/locations/coppet-hall.aspx

Introduction
Coppet Hall comprises a small cluster of properties adjacent to Coppet Hall Beach at the foot of a wooded valley within the Pembrokeshire Coast National Park. Coppet Hall Beach Centre, funded through the £35 million European Regional Development Fund (ERDF)-backed Environment for Growth project via Visit Wales, aims to improve visitor facilities and experience of the Welsh coastline. Coppet Hall has been used as a tourist facility and car park for 50 years.

In September 2012, planning permission was granted for the redevelopment of the area to build a new visitor centre and parking facility providing family changing & showers, a restaurant, activity centre, shop and education area. The facilities are located in a new bespoke building designed to complement the surrounding National Park.

The new building has been positioned to maximise sun and the view across the bay. This also happens to be the highest point of the site. The car park incorporates Sustainable Drainage Systems (SUDS) with permeable tiles used in the car parking bays. The building has been constructed to BREEAM excellent standards but the driver for this was Welsh Government funding. This was not a client/architects’ choice and meeting the Excellent standard has been the biggest challenge, particularly as the style of building (glass front to maximise the view) is not ideal for achieving energy efficiency.

Actions taken to adapt to climate change
- To reduce the damage that flooding could cause site development has been driven by Planning Policy Technical Advice Note 15: Development and Flood Risk, building regulations and achieving BREEAM Excellent standard. The site architects have been responsible for meeting all requirements.
- Extensive tidal, sea level rise, storm surge and hydrological reports were carried out by external consultants, commissioned by the architects.
- A Flood Risk Assessment has been undertaken.
- The building design and location has been assessed as providing protection to a 1 in 75 year flood event. The building has been designed to minimise structural damage in the event of flooding to the ground floor. The ground floor is serviced and electrically wired from above, with fuse boards at a high level, and plumbing also brought down to the ground floor.
- The building has been constructed to BREEAM excellent standards, incorporating solar panels, air source heat pumps to the majority of the building, a blanket sedum green roof, LED lighting and extensive insulation.
Benefits to the business from actions taken to adapt

The centre, which was completed in 2015, has created 18 new direct jobs increasing to 30 over the peak summer months. It has already received a number of accolades for quality.

(Photos Courtesy of Hean Castle Estate)

References:

http://www.pembrokeshire-coastal-tourism.co.uk/locations/coppet-hall.aspx

http://www.acanthus-holden.co.uk/projects/public/2/project.html?expandable=1&subexpandable=5
4 St Fagans National History Museum
Location: Cardiff, CF5 6XB
Telephone: 029 2057 3500
Website: https://www.museumwales.ac.uk/stfagans/

Introduction
St Fagans is one of Europe's leading open air museums and Wales's most popular heritage attraction. The museum stands in the grounds of the St Fagans Castle and gardens, a late 16th-century manor house donated to the people of Wales by the Earl of Plymouth. During the last fifty years over forty original buildings from different historical periods have been re-erected in the 100-acre parkland, among them houses, a farm, a school, a chapel and a Workmen's Institute.

St Fagans was developed as a result of a Scandinavian-inspired movement, concerned with collecting and preserving examples of a disappearing, primarily rural, way of life. Technology, industry and urbanisation were seen as the great threats to a pattern of life and dependence on land and sea that had been in existence since the Middle Ages. Each building displayed at Fagans was originally at another site and was deconstructed and rebuilt at the museum in order to preserve them for future generations. Unless a building is at risk of demolition or decay it is left in its original setting and not moved to the museum. Some of the buildings such as the Derwen Bake House had been partly demolished before being moved and restored.

The majority of the buildings moved to St Fagans had fallen into disuse; there is little information available as to the degree of risk they faced in relation to demolition or decay. However, it is possible that in the future more historic assets at risk of destruction from the impacts of climate change could be relocated here to ensure tourists can continue to enjoy these attractions. One example is of a Victorian shelter on the Aberystwyth promenade that was badly damaged by the storms of winter 2013/14 which has been dismantled with the intention to be rebuilt and restored, potentially in St Fagans Natural History Museum. This should only be considered when there is no other alternative as heritage assets should be kept in situ unless there is an overwhelming risk of destruction.

Actions taken to adapt to climate change

- St Fagans is a part of the National Museum Wales Organisation, which has policies in place to promote sustainability. For example, the museum has started to develop a sustainable travel plan with the aim of reducing the number of journeys made by car by encouraging the use of sustainable modes of transport for journeys to the museum by both visitors and staff and raising awareness of travel choices available for journeys to the site.

- At St Fagans there is a 5kW solar panel array providing renewable energy to the main building. St Teilos Church is a medieval church which had a ground source heat pump installed when reconstructed at the museum to provide a sustainable and hidden means of heating the building.

- As a result of the sustainability efforts taken by St Fagans, the museum as a whole has achieved Level 3 of the Green Dragon standard.
Benefits to the business from actions taken to adapt

- The aim of St Fagans is to educate the public, which they are now able to expand into sustainability education based on the positive steps being taken in this area.

References:
http://www.museumwales.ac.uk/stfagans/historic-buildings/
http://www.museumwales.ac.uk/stfagans/
http://www.museumwales.ac.uk/3064/
https://www.museumwales.ac.uk/sustainability/