The Highland Council

Agenda Item	**7**
Report No	**CCC/21/25**

Committee: **Climate Change**

Date: **13 August 2025**

Report Title: **Climate Change Adaptation Strategy**

Report By: **Assistant Chief Executive - Place**

1 Purpose/Executive Summary

1.1 This report accompanies the Council's Climate Change Adaptation Strategy as detailed in Appendix 2 for consideration by the Climate Change Committee.

2 Recommendations

2.1 Members are asked to:-

i. **Agree to recommend to the Council** the approval of the Climate Change Adaptation Strategy set out at Appendix 2; and
ii. **Note** that the Climate Change Adaptation Action Plan will be brought to the Climate Change Committee for consideration, prior to full Council approval and publication.

3 Implications

3.1 **Resource** - Resource has been identified within the Climate Change and Energy Team to lead on the development and implementation of an Adaptation Strategy and Action Plan for the Council. The Adaptation Strategy and Action Plan is a Council-wide undertaking and will involve cross-service collaboration. It is essential that the Council understands the climate vulnerabilities of our assets, operations, and services, and translates these into potential costs. Failure to prepare and build resilience to the effects of climate change will result in the Council facing far greater additional costs in the future.

3.2 **Legal** - The Climate Change (Scotland) Act 2009 places a legal duty on the Council to adapt to the impacts of climate change.

3.3 **Risk** - There are financial and reputation risks relating to this report for the Council in not taking sufficient action to prepare for changes due to climate change impacts. The increasing public awareness of the issues around the climate and ecological emergency, as well as the increasing frequency of extreme weather events support these risks.

3.4 **Health and Safety (risks arising from changes to plant, equipment, process, or people)** – There are no Health and Safety implications arising directly from this report; however, inaction may lead to health and safety implications in the future due to the impacts of climate change affecting plant, process and people as detailed within the Adaptation Strategy.

3.5 **Gaelic** - There are no Gaelic implications arising from this report.

4 Impacts

4.1 In Highland, all policies, strategies or service changes are subject to an integrated screening for impact for Equalities, Poverty and Human Rights, Children's Rights and Wellbeing, Climate Change, Islands and Mainland Rural Communities, and Data Protection. Where identified as required, a full impact assessment will be undertaken.

4.2 Considering impacts is a core part of the decision-making process and needs to inform the decision-making process. When taking any decision, Members must give due regard to the findings of any assessment.

4.3 Integrated Impact Assessment - Summary

4.3.1 An Integrated Impact Assessment screening has been undertaken on 30 September 2024. The conclusions have been subject to the relevant Manager Review and Approval.

4.3.2 The Screening process has concluded the following impacts as set out in 4.3.3 and Appendix 1. Members are asked to consider the summary within **Appendix 1** to support the decision-making process.

4.3.3 Impact Assessment Area

Impact Assessment Area	**Conclusion of Screening/Full Assessment**
Equality	• Children and Young People – no impact • Children affected by disability – No impact • Older adults –No impact
Socio-economic	Positive
Human Rights	No impact
Children's Rights and Well-being	Positive
Island and Mainland Rural	Positive
Climate Change	Positive
Data Rights	No impact

5 Background

5.1 Our climate is changing - faster and more significantly than at any point in recent history. Climate change is not a distant threat; it is already affecting the lives of people across the Highlands. More intense rainfall, rising sea levels, and increased storm events are impacting our communities, our economy, and our precious natural environment. While global efforts to reduce emissions will help to slow these changes, many of the impacts are already locked in due to past emissions.

5.2 As a local authority, we have a critical role to play. Climate change affects the services we deliver, the infrastructure we manage, and the wellbeing of our residents.

5.3 The Climate Change (Scotland) Act 2009 places duties on relevant public bodies to:-

- reduce greenhouse gas emissions (mitigation);
- Contribute to delivery of the Scottish National Adaptation Plan (adaptation); and
- act in the most sustainable way

These duties are known as the Public Bodies Climate Change Duties. To ensure transparency and accountability, all public bodies subject to these duties must report annually on how they are complying.

5.4 Our changing climate brings new risks to the Highlands:-

- increased flooding and coastal erosion;
- heat stress and drought, including wildfires - impacting health, the natural environment, agriculture, and water supplies;
- threats to our economy, including tourism, agriculture, and energy infrastructure; and
- impacts on our rich biodiversity and natural heritage.

5.5 Climate adaptation refers to the practical action we can take to successfully manage the impacts of climate change - both now and in the future. It involves implementing appropriate measures to reduce risks, protect communities, and build resilience across our systems, services, and environment.

5.6 Adaptation is essential because many climate impacts are already being felt, and others are projected to intensify in the coming decades. By planning ahead, we can reduce disruption, avoid costly damage, and ensure that our region remains safe, sustainable, and thriving.

5.7 Adapting to climate change will not only protect us from risks; it will create opportunities for a safer, healthier, and more prosperous Highland. By acting now, we can:-

- protect lives and livelihoods;
- safeguard our assets and cultural heritage;
- support our economy and vital services;
- enhance our natural environment; and
- improve health and wellbeing, especially for our most vulnerable communities.

5.8 Adaptation also opens the door to positive change, such as:-

- investment in nature-based solutions that support biodiversity and sequester carbon;
- green skills and local jobs in renewable energy and sustainable construction; and
- community-led initiatives that strengthen resilience and social cohesion.

6 Strategic Actions

6.1 The draft Climate Adaptation Strategy outlines how we will collaborate, across communities, businesses, and partners, to build resilience and secure a sustainable future. It sets out the actions we will take to protect our properties, services, and economy from the impacts of a changing climate.

6.2 The Strategy identifies a series of actions, organised under six Priority Themes:-

1. Flooding and Coastal Erosion;
2. Nature-based Solutions;
3. Heat and Health Resilience;
4. Resilient Infrastructure and Services;
5. Community Preparedness and Inclusion; and
6. Economic Opportunities in Adaptation

6.3 These priorities will guide the development of the Council's Adaptation Action Plan. By prioritising actions that deliver multiple co-benefits — for people, nature, and the economy — we aim to build a Highlands that is both prepared for and prosperous in a changing climate.

7 Delivering Adaptation

7.1 Delivering effective adaptation requires strong governance, collaborative partnerships, and clear mechanisms for delivery. The Strategy outlines how the Highland Council will turn strategic goals into tangible actions, strengthening resilience across all services and communities.

7.2 To move from strategy to action, the Council's approach focusses on the following key areas:-

- Governance and leadership;
- Partnership working;
- Embedding adaptation in Council services, including:-
  - Planning and Development;
  - Asset Management;
  - Business Continuity and Emergency Planning; and
  - Procurement and Capital Investment
- Monitoring and reporting;
- Resourcing and funding; and
- Building capacity and skills

8 Next Steps

8.1 The Strategy outlines the key next steps, as summarised below:-

- **Complete the Corporate Climate Risk and Opportunity Assessment**
  Identify and prioritise climate-related risks and opportunities across Council operations.

- **Develop and Implement the Climate Adaptation Action Plan**
  Translate strategic priorities into a detailed, actionable plan with clear timelines and responsibilities.

- **Embed Adaptation Across Council Services**
  Integrate climate resilience into planning, operations, and decision-making across all services.

- **Support Communities and Partners**
  Work collaboratively with partners to empower local communities and enhance their capacity to adapt to the impacts of climate change.

- **Monitor, Report, and Improve**
  Monitor progress, report outcomes, and continuously refine actions as new data and evidence emerge.

Designation:	Assistant Chief Executive - Place
Date:	1 July 2025
Author:	Claire Weaver, Climate Change Coordinator
Background Papers:	None
Appendices:	Appendix 1 – Integrated Impact Assessment Summary Appendix 2 – Climate Change Adaptation Strategy

The Highland Council
Comhairle na Gàidhealtachd

Integrated Impact Assessment

About proposal

What does this proposal relate to? Strategy, Action or delivery plan

Proposal name: Climate Change Adaptation Strategy and Action Plan

High level summary of the proposal: The Council's Climate Change Adaptation Strategy and Action Plan will highlight the main policy drivers, climate change risks and impacts, as well as detail the adaptation measures and solutions required to effectively respond to the impacts of climate change to build Highland's resilience to climate change in a way that is fair and inclusive with minimal disruption to business continuity.

Who may be affected by the proposal? Highland Council services and staff with impact on the wider community where applicable.

Start date of proposal:

End date of proposal:

Does this proposal result in a change or impact to one or more Council service? Yes

Which Council services are impacted by this proposal? Corporate, People, Place

Does this relate to an existing proposal? Yes

Provide details of the existing proposal: An additional Strategy related to the Net Zero Strategy published in June 2023; and is an update to the previous Adaptation Strategy published in 2012.

Author details

Name: Claire Weaver

Job title: Climate Change Coordinator

Email address: Claire.Weaver2@highland.gov.uk

Service: Place

Responsible officer details

Name: Fiona Daschofsky

Job title: Net Zero Programme Manager

Email address: Fiona.Daschofsky@highland.gov.uk

Sign off date: 2025-07-29

Evidence and consultation

What sources have you used to gather information relating to this proposal? National or local data, National or local research

Are there any gaps or missing information in the available sources selected above? No

Have any stakeholders been involved in the development of the proposal?

In addition to involving stakeholders, have there been any other formal consultations?

Will there need to be any further formal consultation undertaken prior to proposal implementation? Yes

How will you carry out these additional formal consultations and in what timescales? Stakeholders from across the Council including Members will be involved and consulted in the development of the Adaptation Action Plan.

Equalities, poverty and human rights

Protected characteristics

Bearing in mind the articles of the Human Rights Act, select what impact the proposal will have on the following protected characteristics:

Sex:

Age:

Disability:

Religion or belief:

Race:

Sexual orientation:

Gender reassignment:

Pregnancy and maternity:

Marriage and civil partnership:

Protected characteristics impact details:

Vulnerable groups

Select what impact the proposal will have on the following vulnerable groups:

Unemployed:

Lone parent families:

Young children:

Older people:

Homeless:

Looked after children:

Low-income households (in-work poverty):

Vulnerable groups impact details:

Human rights

Select what impact the proposal will have on the below human rights:

Article 8: Respect for private and family life, home, and correspondence:

Article 9: Freedom of thought, belief and religion:

Article 10: Freedom of expression:

Article 11: Freedom of assembly and association:

Article 12: Right to marry and start a family:

Article 14: Protection from discrimination:

Article 1, Protocol 1: Right to peaceful enjoyment of property:

Article 2, Protocol 1: Right to education:

Article 3, Protocol 1: Right to participate in free elections:

Human rights impact details:

Children's rights and wellbeing

What likely impact will the proposal have on children and young people?

Impact

Select whether the proposal will have positive or negative impact on the following children's rights articles:

Article 3 - best interests of the child:

Article 12 - respect for the views of the child:

Article 23 - children with a disability:

Article 27 - adequate standard of living:

Article 28 - right to education:

Article 29 - goals of education:

Article 31 - leisure, play and culture:

Children's rights impact details:

Will the proposal impact any other UNCRC articles not listed above?

Data protection

Lawfulness, fairness, and transparency

Why will you need to process personal data as part of this proposal?

Will the data subjects be aware that we are using their data for this purpose?

Purpose limitation

Will the data be used for purposes other than what is set out in the proposal?

Will data be shared with other services or organisations?

Data minimisation

Will you process personal data as part of this proposal?

Accuracy

How will you ensure data is kept up-to-date and accurate?

How will you monitor the quality of the data?

Storage limitation

How long will the personal data be kept for?

Is this included in the Council's retention schedule?

Does the IT system you use apply the retention appropriately?

Integrity and confidentiality

Will you utilise the Council's existing systems to process data?

Will data be held in the service provider's cloud?

Provide details of how you will control access to the data:

How will you ensure that staff are aware of their responsibilities?

Accountability

Is there an up to date privacy notice available on the Highland Council website?

Do you have policies and procedures for staff to follow?

What information will you provide to data subjects about how their data will be used?

Risks

Have any risks been identified in relation to personal data?

Island and mainland rural communities

What are the impacts on island and mainland rural communities?

Will the delivery of the proposal vary between impacted communities?

Climate change

The climate change full impact assessment does not currently sit within our digital tool. The climate change content is accessible either as an appendix to this document, or can be found on the Impact Assessment Register.

Climate Change Impact Assessment

A Climate Change Impact Assessment (CCIA) is an evaluation of the impact of a new proposed change to how we work, what we buy, or what we create. It applies to all new projects, policies, strategies, proposals, and decisions ("Proposals").

The CCIA is a defined step-by-step process whereby a Proposal is assessed against different Climate Change related aspects, thereby allowing an informed evaluation of the impact of the Proposal to be produced. From this, proper and timely consideration of potential measures relating to mitigation, adaptation, and resilience to climate change can be considered and potentially incorporated into the Proposal, if deemed appropriate.

Do your CCIA as early as possible to ensure positive climate change impacts and emissions reductions are embedded into your Proposal. You may not have all the information available at the early stages, you can revisit the CCIA as the Proposal develops and a greater level of detail is understood. The ideal end point is to undertake a CCIA early enough that you can ask "what would a good net zero outcome look like?" and shape the Proposal accordingly.

To ensure improved outcomes it is advisable that the CCIA not be done in isolation and that authors should contact a Climate Change Team representative for advice and assistance with filling out the assessment and help with shaping thinking. Further online guidance can be found here.

It is important to note that the CCIA is not a replacement for a more in-depth Strategic Environmental Assessment which is a statutory requirement for larger proposals.

Stage 1 - Climate Change Impact Assessment: Please assess the impact of the proposal on each of the objectives listed using the impact criteria in the drop-down box in the impact column. Provide an explanation of the impact given using quantitative data where possible, as well as all actions required to enhance positive impacts or to mitigate and/or adapt to any negative impacts listed. Actions raised should then be added to the summary in Stage 2.

Service: Place	**Department: Climate Change & Energy**
Lead person/project manager: Claire Weaver	**Contact number:** **Email address: Claire.Weaver2@highland.gov.uk**
Proposal Title & summary: Climate Change Adaptation Strategy & Action Plan: The Highland Council's Climate Change Adaptation Strategy and Action Plan will highlight the main policy drivers, climate change risks and impacts, as well as detail the adaptation measures and solutions required to effectively respond to the impacts of climate change to build the Council's resilience to climate change in a way that is fair and inclusive with minimal disruption to business continuity.	

Energy, Emissions and Resources		
Objective	**Impact**	**Reasons/Mitigating Actions**
Energy Efficiency	**Positive**	Any energy efficiency measure/s will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.
Energy Generation	**Positive**	Any energy generation project/s will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.
Transport	**Positive**	Any transport projects/ activities will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.
Procurement & Material Consumption	**Positive**	Any procurement & material consumption activity will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.
Circular Economy	**Positive**	Any circular economy project/s will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.
Waste	**Positive**	Any waste projects/ activities will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.
Just Transition	**Positive**	Any Just Transition activities will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.

Natural Environment & Biodiversity		
Objective	**Impact**	**Reasons/Mitigating Actions**
Quality of Natural Environment	**Positive**	All climate adaptation considerations must include a nature-based solution or co-benefit to the natural environment & biodiversity where possible. The adaptation action plan will highlight specific relevancies.
Quantity of Natural Environment	**Positive**	All climate adaptation considerations must include a nature-based solution or co-benefit to the natural environment & biodiversity where possible. The adaptation action plan will highlight specific relevancies.
Biodiversity	**Positive**	All climate adaptation considerations must include a nature-based solution or co-benefit to the natural environment & biodiversity where possible. The adaptation action plan will highlight specific relevancies.
Adaptation and Resilience		
Objective	**Impact**	**Reasons/Mitigating Actions**
Adaptation	**Positive**	The Adaptation Strategy and Action Plan is all about climate adaptation and therefore will only include positive interventions. These will be highlighted within the Climate Change Adaptation Action Plan when available.
Infrastructure Resilience	**Positive**	The Adaptation Strategy and Action Plan will only include positive interventions relating to infrastructure resilience. These will be highlighted within the Climate Change Adaptation Action Plan when available.
Council Resilience	**Positive**	The Adaptation Strategy and Action Plan will only include positive interventions relating to Council resilience. These will be highlighted within the Climate Change Adaptation Action Plan when available.
Community Resilience	**Positive**	The Adaptation Strategy and Action Plan will only include positive interventions relating to community resilience. These will be highlighted within the Climate Change Adaptation Action Plan when available.

Stage 2 – Summary of Actions Please provide a summary of the mitigating actions raised in the above tables here along with timescales and identify a lead person for each action. This can be referred to throughout the proposal development and in the final CCIA. (Use TAB to add more rows if required)		
Action	**Timescale**	**Lead Person**
Any energy, emissions and resources projects or activities will need to consider climate adaptation and must be resilient to the future impacts of climate change. The risk assessment & action plan will highlight specific relevancies.	As defined by the action plan	Claire Weaver
All climate adaptation considerations must include a nature-based solution or co-benefit to the natural environment & biodiversity where possible. The adaptation action plan will highlight specific relevancies.	As defined by the action plan	Claire Weaver
The Adaptation Strategy and Action Plan will only include positive interventions relating to adaptation and resilience. These will be highlighted within the Climate Change Adaptation Action Plan when available.	As defined by the action plan	Claire Weaver

Stage 3 - Review & Approve Please provide the name of your Service Manager who will be your main approver and a co-approver in your service. Once completed please email the form to the integrated impact assessment mailbox (impactassessments@highland.gov.uk) for the team to review and then pass on to your Service Manager for final review and approval.	
Service Manager	Fiona Daschofsky
Co-Approver	Neil Osborne
Date form sent for review & approval.	23/06/25
Reviewers' comments	Potential impacts will be identified and assessed as part of the development of the Risk and Opportunity Assessment and the Council's Adaptation Strategy Action Plan.

	Neil Osborne
Service Manager approval & comments	I approve this assessment, which sets a clear and practical foundation for embedding climate adaptation and resilience across Council services. The approach is aligned with strategic priorities and supports delivery through the forthcoming Action Plan and Risk Assessment.

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Appendix 1: Observed trends in Highland - climate data

Appendix 2: LCLIP for Highland

Appendix 3: Future climate projections - Met Office Climate Report for Highland

Appendix 4: Implications for the Highlands – LCAT hazards

Appendix 5: Climate Impacts – why it matters – Adaptation Scotland, LCAT & NZ strategy impacts

Appendix 6: Climate Impacts – why it matters – LCAT personal & social vulnerabilities

Appendix 7: Policy Drivers – strategic context

Appendix 8: Adaptation in Action at The Highland Council

Appendix 9: What Adaptation means for Highland – Adaptation in practice, Adaptation Scotland Climate Ready Places

Appendix 10: Prioritising Actions with Co-Benefits – LCAT measures & solutions spreadsheet

Introduction

The scientific evidence is unified and unequivocal: our climate is changing. These changes are being felt both globally and here in the Highlands, with increasing impacts on our communities, infrastructure, and natural environment.

While weather refers to short-term conditions, such as rain, sunshine, or wind, climate describes long-term weather patterns over decades. It is these long-term shifts that are now clearly observed and attributed to rising greenhouse gas emissions, primarily from human activity.

Climate change is already impacting life across the Highlands. From more intense rainfall and frequent flooding to increasing temperatures and sea level rise, we are seeing its effects on our communities, businesses, and natural environment.

The scale of future climate change will depend on how quickly we reduce emissions. However, due to the cumulative effect of past and ongoing emissions, many climate impacts are now unavoidable. This means that adaptation - taking proactive steps to prepare for and respond to climate risks - is essential.

[Suggested Infographic or Photo]
A compelling visual (e.g. a local flood event, a heatwave, or coastal erosion) that captures the urgency of action.
Caption: "Flooding and extreme weather are increasingly affecting homes, infrastructure, and communities across Highland."

What Adaptation Means and Why it Matters

Climate adaptation refers to the practical action we take to manage the impacts of climate change - both now and in the future. It involves implementing appropriate measures to reduce risks, protect communities, and build resilience across our systems, services, and environment.

Adapting to climate change is not just about protecting ourselves from risks; it is about creating opportunities for a safer, healthier, and more prosperous Highland. By acting now, we can:

- Protect lives and livelihoods.
- Safeguard our assets and cultural heritage.
- Support our economy and vital services.
- Enhance our natural environment.
- Improve health and wellbeing, especially for our most vulnerable communities.

Adaptation is essential because many climate impacts are already being felt and are projected to intensify in the coming decades. By planning ahead, we can reduce disruption, avoid costly damage, and ensure that our region remains safe, sustainable, and thriving.

Adaptation addresses both risks and opportunities; and takes place on two key fronts:

1. **Responding to current climate and weather extremes**

   This includes responding to the increasing frequency and severity of:

   - Storms and high winds
   - Flooding and surface water events
   - Wildfires and heatwaves

2. **Preparing for future projected climate changes**

   This involves long-term planning for:

   - Rising sea levels and coastal erosion
   - Drier conditions causing heat stress, droughts, and shifts in growing seasons and agricultural patterns
   - Changes in biodiversity and ecosystems
   - Impacts on infrastructure, health, and the economy

Adaptation also opens the door to positive change, such as:

- Investment in nature-based solutions that support biodiversity and sequester carbon.
- Improved operational efficiencies and more resilient supply chains.
- Resilient infrastructure and travel networks – reducing avoidable disruption.
- Green skills and local jobs in renewable energy and sustainable construction.
- Community-led initiatives that strengthen resilience and social cohesion.

[Suggested Image or Diagram]
A Highlands map with icons illustrating key risks and opportunities by area (e.g. coastal erosion hotspots, green skills clusters).
Caption: "Climate adaptation creates opportunities for nature, economy, and community resilience."

The Role of the Council

As a local authority, we have a critical role to play. Climate change affects the services we deliver, the infrastructure we manage, and the wellbeing of our residents.

We are committed to embedding adaptation across all areas of our work - from planning and investment to community engagement and service delivery. By working

together, we can ensure that the Highlands is ready to meet the challenges of tomorrow while building a more sustainable and inclusive future for everyone.

[Suggested Callout Box]
"Adaptation is not an optional extra - it is essential to protecting what matters most."

Next Steps

This Strategy sets out how The Highland Council will act, in partnership with our communities and stakeholders, to build a climate-ready Highland. The chapters that follow outline the climate trends, risks, and priority actions that will guide us in delivering a resilient future for all.

Use a **sidebar or margin box** for key stats, quotes, or definitions (e.g. “Adaptation means…”).

Chapter 1 – Our Changing Climate

A Climate Already Changing

Climate change is no longer a distant risk; it is already affecting the Highlands. From heavier rainfall and stronger storms to warmer temperatures and rising sea levels, these shifts are altering our communities, economy, and natural environment. While global efforts to reduce emissions will help to limit these changes, many of the impacts are already locked in due to past emissions.

[Suggested Infographic or Photo]
Visual: Localised image or infographic showing flooding, storm damage, or heat impact.
Caption: "Flooding and coastal erosion are already reshaping Highland communities and landscapes."

> **"Climate change is already costing Scotland billions of pounds a year. Unchecked climate change could drive these costs to 5-20% of GDP, around £11bn-£45bn a year, by 2050."**
>
> *Into the Red Report, Dr Richard Dixon for the Royal Scottish Geographical Society, May 2025*

Observed Trends in Highland

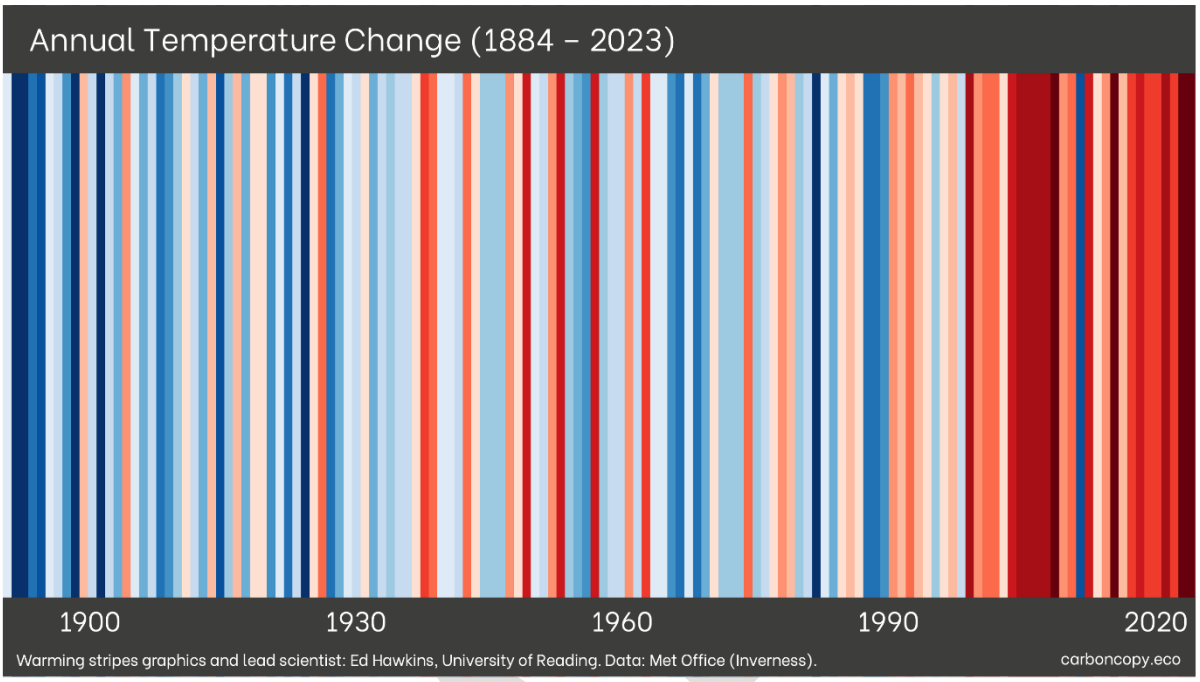
We are already seeing significant changes (***Appendix 1***):

- **Temperature:** Average annual temperatures in Highland have risen by around 1°C since the 1960s.
- **Rainfall:** Annual rainfall is up 10% on the 1961-1990 average, with winter rainfall up nearly 30%.
- **Sea Level Rise:** Around the UK, sea levels have risen by 18.5 cm since 1900 - and the rate of rise has tripled since the 1990s.

These trends are already having visible impacts across Highland (***Appendix 2***):

- More frequent and intense flooding
- Accelerated coastal erosion
- Greater risk and incidence of wildfires
- More extreme heatwaves
- Increased drought days and water shortages
- Reduced snowfall and frost-free days

- Blurring of seasonal patterns, with some years showing little distinction between winter and summer conditions.



Annual temperatures in Highland are steadily increasing, affecting our communities and environment.

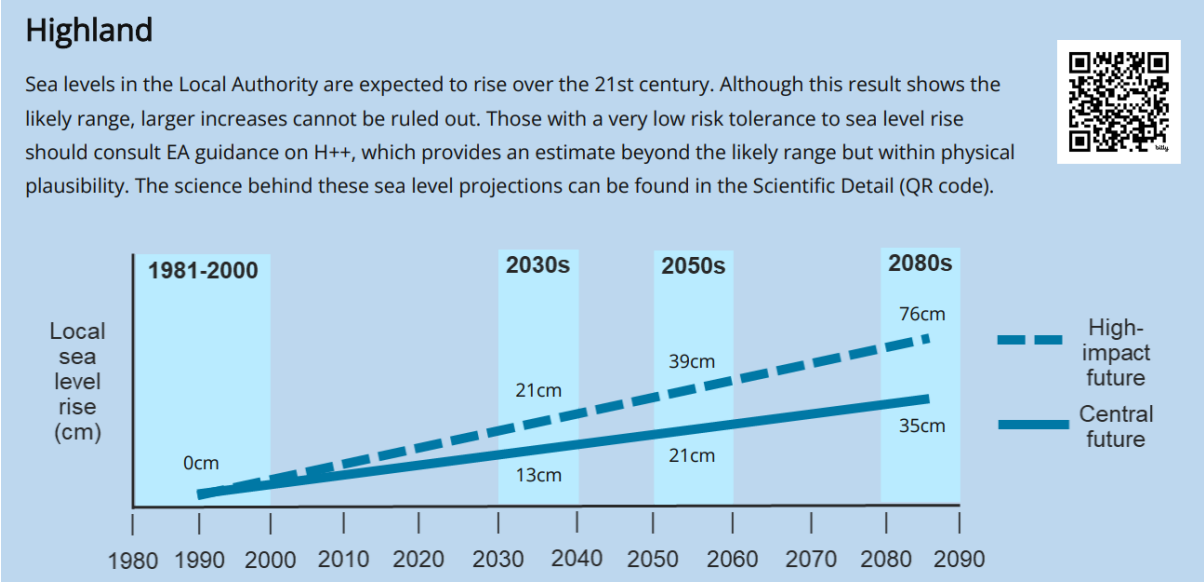
The annual temperature change diagram for Highland (above) clearly illustrates that the hottest temperatures have been experienced consistently over the last 20 years.

Future Climate Projections

Looking ahead, climate change is expected to intensify (***Appendix 3***):

- **Hotter, drier summers** will increase the risk of droughts and wildfires, while placing growing pressure on water supplies and agriculture.
- **Wetter, milder winters** will lead to more frequent flooding and landslides, along with increased strain on transport networks and other infrastructure.
- **Sea level rise** could reach up to 39 cm in parts of Scotland by 2050, with further acceleration likely if global emissions are not significantly reduced.

These projections highlight the need to plan for a range of scenarios, ensuring that our communities, services, and infrastructure are prepared for what is to come. While the above outlines the broad projected trends, it must be stressed that we are to expect more volatile and extreme weather.



"Sea levels could rise by up to 39cm by 2050"
(Climate Report for Highland, Met Office)

[Suggested Infographic or Map]
A Highlands map showing areas at risk from key hazards: flooding, coastal erosion, heatwaves, landslides.
Caption: "Climate hazards vary across Highland communities - local planning is essential."

Implications for the Highlands

These changes are already affecting us, and will continue to intensify (***Appendix 4***):

- **Flooding:** More intense rainfall events are overwhelming drainage systems, flooding roads and homes.
- **Storms:** Stronger storms are damaging buildings, disrupting transport, and affecting power supplies.
- **Coastal Erosion:** Rising sea levels and storm surges are accelerating erosion and threatening coastal communities.
- **Wildfires:** Drier summers are increasing the frequency and severity of wildfires, impacting health, nature, and emergency services.
- **Health Risks:** Heatwaves, air pollution, and the spread of vector-borne diseases are increasing risks to vulnerable groups, including older people and young children.

Climate Tipping Points

There is also the potential for 'Climate Tipping Points' – critical thresholds in the Earth system that, if crossed, could lead to abrupt and irreversible changes. One such example is the Atlantic Meridional Overturning Circulation (AMOC) which

circulates water from the north to the south and back in a long cycle within the Atlantic Ocean. This circulation brings warmth to various parts of the globe and carries nutrients necessary to sustain ocean life. A collapse of the AMOC would result in major cooling in the Arctic region and warming of the surrounding regions.

Into The Red: Counting the cost of climate inaction Report states:

"*Work by the Stockholm Resilience Centre defines 16 climate tipping points – major changes to the Earth's systems that could be triggered by climate change. They conclude that five of them are at risk of being triggered even at today's temperatures including the collapse of ocean currents, melting of the West Antarctic and Greenland ice sheets, abrupt thawing of permafrost and widespread died off of coral reefs (with severe consequences for fisheries). The one of most concern for Scotland is the slowing down of the ocean current – the Atlantic Meridional Overturning Circulation - that keeps Scotland and north-west Europe warmer than they would otherwise be.*"

(Dr Richard Dixon for the Royal Scottish Geographical Society, May 2025)

The Need for Action

Climate change is happening here and now. By understanding these trends, we can plan effectively, invest wisely, and protect our lives, land and livelihoods.

[Suggested Callout Box]
"Scotland's 10 warmest years on record have all occurred since 1997 - a clear signal that the climate is changing."

Consider **pull quotes or testimonials** from local communities or Council staff to humanise the impact. – Highland Adapts or Climate Hub should be able to provide

Chapter 2 – Climate Impacts in the Highlands

Why It Matters

The impacts of climate change are already being felt across the Highlands (***Appendix 2***). From increased flooding and storms to risks to biodiversity and health, these challenges threaten our people, economy, and environment (***Appendix 5***). However, the impacts are not experienced equally - they vary by location and vulnerability (***Appendix 6***). Understanding these impacts is essential to inform the actions we take to build resilience.

[Suggested Infographic or Photo]
Image: Flooded road, storm damage, or a community affected by landslides.
Caption: "Flooding, storms, and coastal erosion are increasingly disrupting life in the Highlands."

Flooding and Coastal Erosion

More intense rainfall events are causing:

- **Flooding of homes, roads, and key infrastructure** – leading to higher maintenance costs, insurance challenges, and disruption to agriculture and food security.
- **Landslides and erosion** affecting transport routes and isolated communities.
- **Rising sea levels** increasing risks of coastal erosion and damage to critical assets.

[Suggested Infographic]
A map highlighting areas at greatest risk from flooding and coastal erosion.
Caption: "Areas of Highland most at risk from flooding and coastal erosion."

"For every £1 spent on protecting communities from flooding, around £9 in property damages and wider impacts can be avoided."

Into the Red Report, Dr Richard Dixon for the Royal Scottish Geographical Society, May 2025.

Storms and Extreme Weather

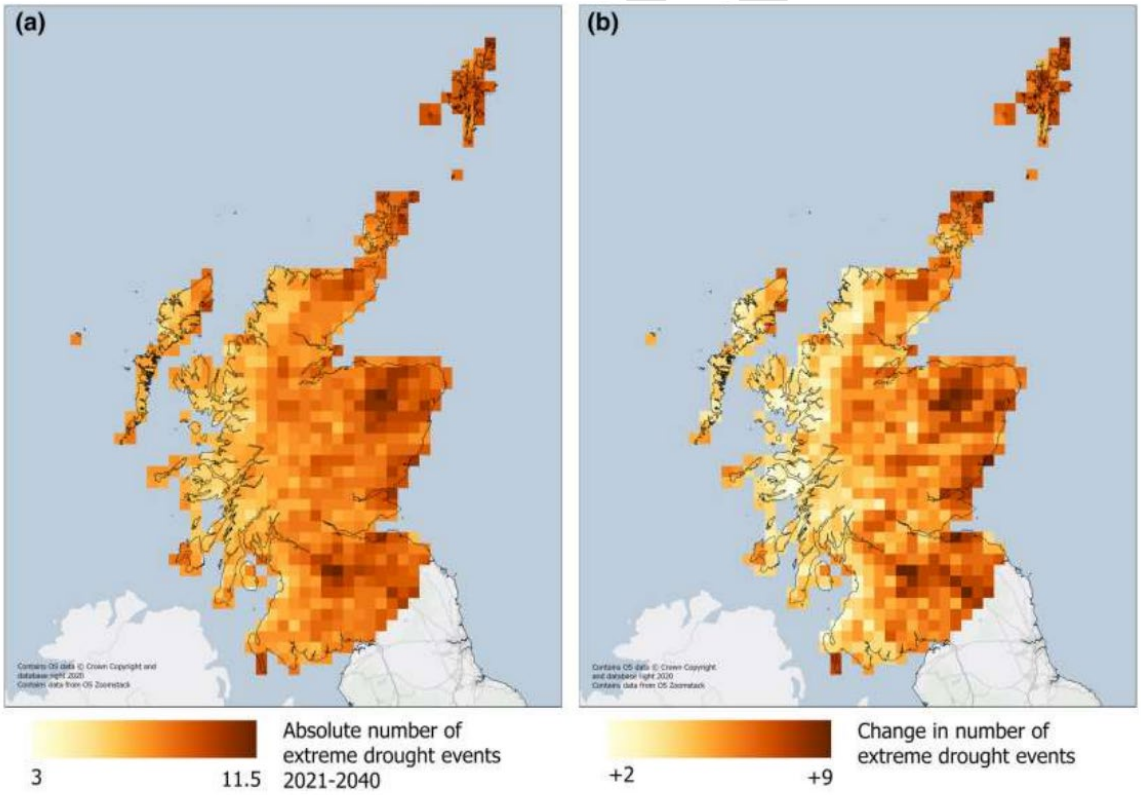
- More frequent and intense storms are causing:
  - Damage to buildings, roads, and utilities.
  - Power outages and service disruptions.
  - Risks to public safety and emergency services.

[Suggested Image]
Photo of storm damage to a key Highland road or community facility.
Caption: "Storm events increasingly impact transport and emergency response."

Wildfires and Drought

- Hotter, drier summers are increasing the risk of:
  - Wildfires threatening homes, habitats, and infrastructure.
  - Frequent and prolonged droughts, causing water shortages impacting communities, agriculture and food security.

[Suggested Infographic]
Bar chart showing increase in wildfire incidents or drought days per year.
Caption: "The number of days with high fire risk is rising."



Baird, Spray, Hall & Partridge (2023): https://besjournals.onlinelibrary.wiley.com/doi/full/10.1002/2688-8319.12256

- The likelihood of extreme drought events will increase from an average of 1-in-20 years to 1-in-3 years by 2040.

- Droughts are projected to be 2-3 months longer, with an average of 11 extra drought months per decade.

"The number of days with high fire risk is rising."

Impacts on Health and Wellbeing (*Appendix 6*)

Climate change is affecting health across the Highlands:

- Heat stress and related illnesses, particularly for vulnerable groups including older people, young children and those with a disability.
- Air quality issues during heatwaves and dry spells.
- Mental health impacts from extreme weather and community disruption.

[Suggested Image]
Photo of health services or community support groups in action.
Caption: "Heat stress and air quality pose growing risks to vulnerable residents."

Biodiversity and Nature

The Highlands' iconic landscapes and species are at risk from:

- Habitat loss and fragmentation.
- Species decline, with one in nine species at risk of extinction in Scotland.
- Negative impacts on our seas, peatlands, wetlands, and woodlands that support biodiversity, undermining their role in carbon storage and flood management.

[Suggested Infographic]
A simple graphic showing declining trends in key habitats or species.
Caption: "Biodiversity loss and climate change are interconnected crises."

"The World Economic Forum's Global Risk Report (2024) identifies biodiversity loss and ecosystem collapse as the third most significant threat humanity will face in the next ten years."

"The 2023 State of Nature Report identified significant declines in Scotland's biodiversity, with Scotland and the UK having some of the poorest biodiversity intactness ratings in the world."

Economic Impacts

- Annual flood-related damages are projected to double by the 2050s.
- Disruptions to tourism, agriculture, and supply chains.
- Threats to energy generation, distribution, and local jobs; undermining progress towards the region's net zero ambitions.

"The economic cost of inaction is rising - proactive adaptation is essential."

Economic Analysis of Climate Change Impacts on Highland

- Gross Domestic Product (GDP) losses of up to -1.5% annually by the 2050s, rising to -3.3% annually by the 2080s.
- Flood-related damages are estimated to double from £20m annually mid-century to £40m annually by the end of the century.
- The economic costs of wildfires, currently estimated at £0.3bn/year, could quadruple by mid-century.
- Significant risks to energy generation, distribution, and net zero delivery, with minor benefits from reduced wintertime heating.
- Increased climate risks to salmon and whisky production.
- Higher costs in the forestry and timber sector, due to high winds, drought, pests, disease, and wildfires.

Highland Adapts, September 2024

The cost of inaction is high. Climate impacts already cost our region millions each year - from damage to infrastructure to disruptions in transport and services. Without decisive action, these costs will continue to rise, placing increasing pressure on public budgets, communities, and the local economy.

Inequality and Vulnerability (***Appendix 6***)

- Low-income households, remote communities and those living in flood-prone housing often face the greatest risks.
- Vulnerable groups have fewer resources to recover from climate events.

[Suggested Image]
Community support networks or Council services supporting vulnerable people.
Caption: "Ensuring no one is left behind is central to Highland's adaptation strategy."

The Need for Action

The climate impacts described here are already happening and will intensify in the years ahead. Acting now is the most effective way to protect our communities, economy, and environment.

Chapter 3 – Policy Drivers

This Strategy is informed by a range of national and local policy commitments, which are detailed in this Chapter 1 and Appendix 7. These policies provide the legislative and strategic framework within which Highland Council delivers climate adaptation.

Climate Change legislation

The Climate Change (Scotland) Act 2009 places duties on relevant public bodies to:

- Reduce greenhouse gas emissions (mitigation).
- Contribute to delivery of the Scottish National Adaptation Plan (adaptation).
- Act in the most sustainable way.

These duties are known as the Public Bodies Climate Change Duties. To ensure transparency and accountability, all public bodies subject to these duties must report annually on how they are complying.

The UK Climate Change Committee advises that Scotland needs to adapt to 2°C of warming and to assess the risks up to 4°C.

Climate Change Adaptation Programme

The Scottish National Adaptation Plan 2024–2029 (SNAP3) is Scotland's third and most current national strategy for adapting to climate change. It outlines the actions that the Scottish Government and its partners - including local authorities - must take to manage both current and future climate impacts.

SNAP3 is structured around five interconnected Outcomes, which together provide a comprehensive framework for climate resilience and adaptation:

These outcomes are designed to work together, ensuring that adaptation is embedded across all sectors and levels of governance. For local authorities, SNAP3 provides a clear policy context and a set of priorities to align with.

Adaptation Scotland and the Adaptation Capability Framework

Adaptation Scotland plays a key role in supporting Scotland's public sector to prepare for and respond to the impacts of climate change. It provides practical guidance, tools, and resources to help organisations build resilience and embed adaptation into their operations and decision-making.

A central resource is the Adaptation Capability Framework, which is explicitly referenced in the Public Bodies Climate Change Duties (PBCCD). This framework is supported by a detailed Handbook, which outlines how public bodies can use the framework to accelerate and structure their adaptation efforts.

The Framework identifies four essential capabilities that every public organisation needs to develop to adapt effectively:

1. **Understanding the Challenge**
   Building a robust evidence base on climate risks and vulnerabilities to inform decision-making.

2. **Organisational Culture and Resources**
   Embedding adaptation into governance, leadership, and resource planning.

3. **Strategy, Implementation and Monitoring**
   Aligning adaptation with organisational objectives, developing strategies, and tracking progress.

4. **Working Together**
   Strengthening collaboration and partnerships to deliver shared adaptation outcomes.

Each capability is supported by a set of practical tasks, and progress is assessed across four maturity stages:

- Starting
- Intermediate
- Advanced
- Mature

This staged approach helps organisations understand where they are on their adaptation journey and identify clear next steps for improvement.

Highland Adapts

Highland Adapts is a collaborative regional initiative, governed by a partnership of nine organisations, including The Highland Council. The initiative plays a central role in delivering climate change adaptation across the Highlands, acting as both a policy driver and a delivery mechanism for the Council's adaptation ambitions.

The initiative supports the Council by:

- **Informing the development of the Council's Adaptation Strategy and Action Plan** through local evidence, engagement, and expertise.
- **Delivering place-based climate action** that reflects the unique needs and strengths of Highland communities **.**
- **Acting as a leading model for regional adaptation partnerships in Scotland,** supporting the local implementation of national climate policy.
- **Strengthening regional partnerships**, enabling shared learning and coordinated action across sectors.

Key Drivers to Climate Adaptation

The table below outlines the key strategies, plans and policies relating to climate adaptation at the local, regional and national level:

Table 1: Strategies, Policies & Plans Relevant to Climate Adaptation

The Highland Council	Regional	National
Net Zero strategy	North of Scotland Regional Resilience Partnership & Community Risk Register (SFRS)	Scottish Government Climate Ready Scotland
Corporate Risk Register	Local Fire & Rescue Plan for Highland (SFRS)	Scottish Government Scottish National Adaptation Plan 3 (SNAP3)
Public Bodies Climate Change Duties monitoring & reporting	Wildfire Strategy (SFRS)	Public Bodies Climate Change Duties (PBCCD)
Business Continuity Plans	Highland Nature Biodiversity Action Plan (NatureScot)	National Flood Resilience Strategy (Scottish Government)
Corporate Climate Risk & Opportunity Assessment	Flood Risk Management Plan – Highland & Argyll Local Plan District (SEPA)	Scottish Government Climate Change Plan
Corporate, Performance & Delivery Plans	Highland Adapts – Climate Risk & Opportunity Assessment; Economic Assessments	Adaptation Scotland – Capability Framework & Benchmarking Tool
Integrated Impact Assessments		National Planning Framework 4
Regional Coastal Change Adaptation Plan		Just Transition Plan (Scottish Government)
The Ecology Strategy & Action Plan		Good Food Nation Plan (Scottish Government)

Surface Water Management Plans		Learning for Sustainability (Scottish Government)
Highland & Argyll Flood Risk Management Plan (Policy)		Biodiversity Strategy (Scottish Government)
Highland Local Transport Strategy		UK Gov CCRA3
Highland Investment Plan and Capital Programme		
Growing Our Future – A Food Growing Strategy for Highland		
Sustainable Tourism Strategy		
The Highland Council General Emergency Plan		
Highland Local Development Plan (in development)		
Biodiversity Enhancement Planning Guidance		
Tree Management Strategy		
Local Place Plans		

The Interconnected Nature of Climate Adaptation

The range and breadth outlined above, highlights not only the complexity, but also the highly interrelated nature of climate adaptation across all business areas and service delivery. A coordinated and collaborative effort is essential to embed and deliver adaptation to meet the challenges of our changing climate.

Chapter 4 – Our Adaptation Approach

What Adaptation Means for Highland

Adaptation goes hand in hand with climate change mitigation – practical action to reduce greenhouse gas emissions. By reducing our greenhouse gas emissions, we can limit the extent of climate change and reduce the scale of adaptation required.

Adaptation will require us to make practical changes to reduce climate risks and strengthen resilience (***Appendix 10***). It means:

- Adjusting how we design, manage, and use our land, buildings, and services.
- Working together with communities and partners to understand local risks and build solutions.
- Recognising that adaptation is an ongoing journey, not a one-off project.

[Suggested Infographic or Key Definition Box]
*"Adaptation = Practical changes that reduce harm and seize opportunities as our climate changes."_

Why We Need a Clear Approach

Adaptation is not an optional extra. Regardless of how much we reduce emissions, we must adapt to the impacts of climate change already set in motion by historical 'locked' in emissions. While mitigation can limit the severity of future climate impacts, the greenhouse gases already in the atmosphere will continue to drive changes for decades to come.

Adaptation is essential to protect our communities, economy, and environment from climate change impacts. Our approach to adaptation is built on the understanding that we need to act now and act together in a just and inclusive transition.

[Suggested Infographic or Photo]
Image: Council staff and community partners working on a flood resilience project. Caption: "Adaptation is an ongoing process that requires partnership and collaboration."

Integration with Net Zero and Council Plans

Adaptation goes hand in hand with our work to reduce emissions, whilst ensuring that our services are ready for the impacts we cannot avoid. By aligning adaptation with the Net Zero Strategy, we will:

- Embed climate risk management in every decision, from planning to procurement.
- Ensure the Corporate Risk Register fully reflects climate-related risks and the need for adaptation.
- Use tools like Integrated Impact Assessments (IIAs) and Business Continuity Plans to ensure that adaptation is considered in all projects and services.
- Align with other key strategies and the Highland Investment Plan to maximise benefits.

[Suggested Diagram]
A simple flow chart showing how adaptation links with Net Zero and other Council strategies.
Caption: "Embedding adaptation across Council plans ensures a joined-up approach."

Working in Partnership

No one organisation can do this alone. The Highland Council is committed to:

- Contributing to the **Highland Adapts partnership**, bringing together communities, businesses, land managers, and agencies to create a climate-ready Highland.
- Collaborating with regional and national partners to align with the Scottish National Adaptation Plan (SNAP3).
- Sharing knowledge and best practice with other regions through networks like the Public Secor Climate Adaptation Network (PSCAN).

[Suggested Image]
Photo of a Highland Adapts meeting or community workshop.
Caption: "Highland Adapts brings partners together to deliver place-based adaptation."

Prioritising Actions with Co-Benefits including Mitigation

Integrating adaptation with mitigation, wherever possible, is essential. Delivering actions that provide co-benefits presents a significant opportunity to address multiple challenges simultaneously, which in turn will help to improve our services, communities and our environment (***Appendix 10***).

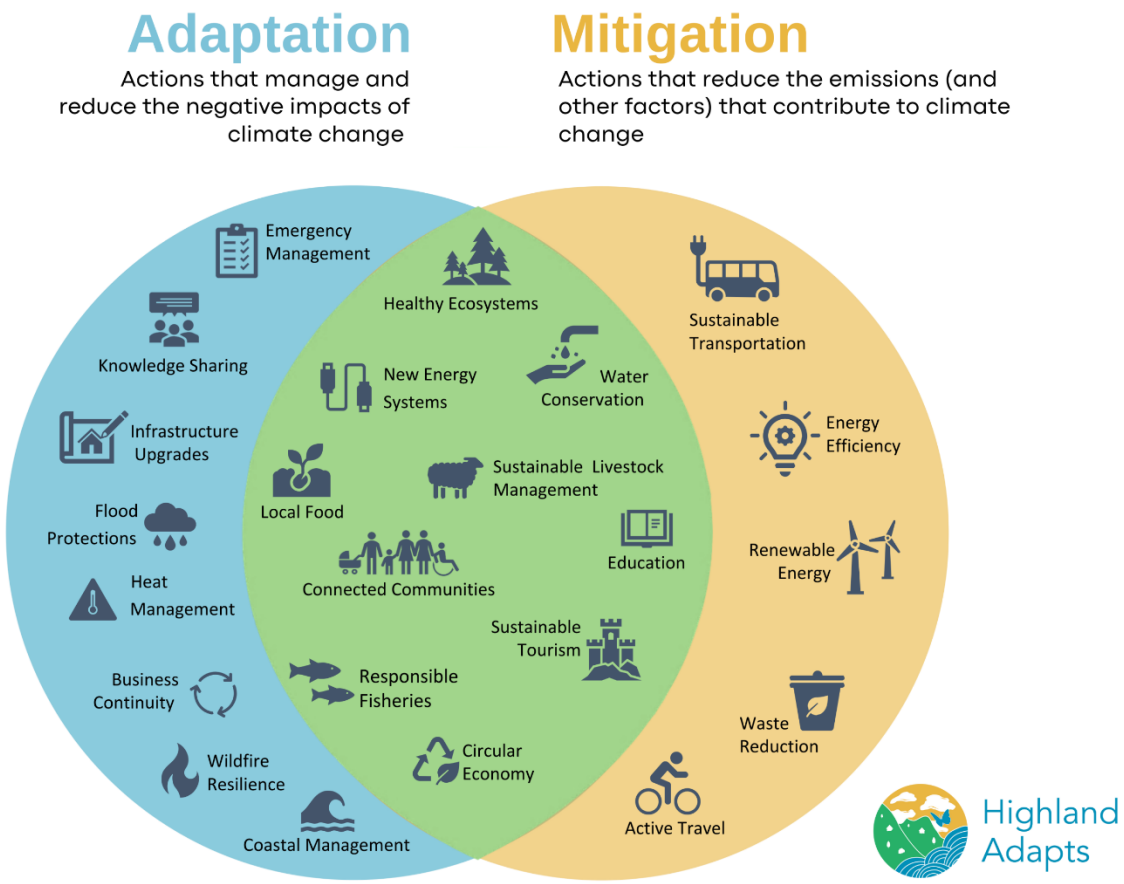
Climate-related challenges and associated actions are highly interconnected. A holistic approach enables us to identify the broadest range of solutions while ensuring the most effective use of resources and investment. This not only reduces risks but also strengthens long-term resilience.

Our approach will prioritise actions that deliver multiple co-benefits for:

- **People:** Health, wellbeing, and community resilience. For example, heat resilience measures that also improve air quality and energy efficiency.

- **Nature:** Biodiversity, carbon storage, and flood management. For example, nature-based solutions that reduce flood risk while enhancing biodiversity.
- **Economy:** Green jobs, supply chain opportunities, and cost savings. For example, investment in green skills and sustainable jobs that support a just transition.

"Adaptation delivers benefits for people, nature, and the economy."



Adaptation actions (on the left) reduce the negative impacts of climate change. These include flood protections, coastal management, and infrastructure upgrades, as well as strengthening emergency planning, heat and wildfire resilience, and business and community continuity.

Mitigation actions (on the right) reduce the emissions that cause climate change. These include shifting to renewable energy, increasing energy efficiency, cutting waste, and encouraging sustainable travel-like public transport and active travel alternatives such as walking and cycling.

In the centre of the diagram is the **overlap - actions that support both adaptation and mitigation**. This is where some of the most powerful, long-term solutions lie. Supporting local food systems, building connected communities, protecting healthy ecosystems, conserving water, and promoting circular economy approaches can all reduce emissions

while also making communities more resilient to climate impacts. New energy systems, sustainable tourism and fisheries, and inclusive education also sit in this middle ground - where climate action becomes **co-beneficial**.

The shared space between adaptation and mitigation can ensure Highland is not only prepared for the changes to come, but is actively shaping a healthier, fairer, and more sustainable future. *(Highland Adapts)*

A Just and Inclusive Transition

We recognise that climate change impacts people differently. Our approach ensures that:

- Vulnerable and disadvantaged groups are supported and not left behind.
- Communities are engaged in local resilience plans that address relevant risks and reflect local needs and priorities.
- Adaptation helps to tackle inequalities and build social justice.

[Suggested Image]
Photo of community groups working together on local adaptation measures.
Caption: "Adaptation must be fair, inclusive, and empower communities."

Monitoring Progress and Continuous Improvement

Adaptation is not static. We will:

- Regularly review progress through the Public Bodies Climate Change Duties (PBCCD) reporting process.
- Use the Adaptation Scotland Capability Framework to build capacity and monitor progress.
- Update our risk assessments and action plans as new data and evidence emerge.
- Review and update our approach in response to Scottish Government policy and legislation.

[Suggested Callout Box]
"Adaptation is a journey - we must learn, adapt, and improve together."

Our Commitment to Action

The Highland Council is committed to embedding adaptation across all services and operations. By taking a proactive, collaborative, and inclusive approach, we can build a climate-ready Highland that is prepared for the challenges ahead.

Chapter 5 – Priority Themes for Action

Why Focus Matters

To build resilience across the Highlands, we must prioritise actions where climate risks are highest and the potential benefits are greatest. This chapter sets out the key areas where adaptation will be targeted to protect communities, assets, services, and the environment - ensuring we make the best use of resources and deliver meaningful change.

[Suggested Infographic or Photo]
Image: A Highland flood defence project, a nature restoration site, or a community workshop.
Caption: "Adaptation priorities address key climate risks and build opportunities for people, nature, and the economy."

1. Flood Defence and Coastal Protection

What's at Risk: Homes and properties, roads, critical infrastructure, and coastal communities are increasingly exposed to flooding and erosion.

Our Actions:

- Invest in resilient flood management and drainage solutions, including sustainable drainage systems (SuDS).
- Develop Local Coastal Change Adaptation Plans for vulnerable areas.
- Use nature-based solutions in practical flood management to slow water and enhance habitats.

[Suggested Infographic]
Map highlighting high-risk areas and flood defences.
Caption: "Flood risk is one of the biggest challenges facing the Highlands."

2. Nature-Based Solutions

What's at Risk: Biodiversity loss, habitat decline, and reduced ecosystem services.

Our Actions:

- Safeguard and restore our natural environment including our seas, peatlands, woodlands, and wetlands to build resilience, harness water and store carbon.
- Integrate nature-based solutions into planning and development.
- Partner with agencies, communities and landowners to deliver local projects.

[Suggested Image]
Photo of peatland restoration or community tree planting.
Caption: "Nature-based solutions protect both people and ecosystems."

3. Heat and Health Resilience

What's at Risk: Vulnerable residents (older people, young children and disabled people), health services, and urban environments.

Our Actions:

- Design buildings and streetscapes to stay cooler in summer.
- Provide cooling solutions and community-based spaces during heatwaves.
- Raise awareness and support health services to respond effectively.

[Suggested Infographic]
Icons showing key actions: cool buildings, shade, hydration.
Caption: "Hotter summers require communities and services to be heat-resilient."

4. Resilient Infrastructure and Services

What's at Risk: Roads, bridges, energy networks, and emergency services.

Our Actions:

- Embed climate risks into infrastructure planning and asset management.
- Strengthen business continuity plans for critical and essential services.
- Work with partners to protect transport, energy, and communications.

[Suggested Image]
Photo of Council staff inspecting infrastructure or emergency services planning.
Caption: "Keeping our infrastructure strong means fewer disruptions in extreme weather."

5. Community Preparedness and Inclusion

What's at Risk: Community wellbeing, social cohesion, and local decision-making.

Our Actions:

- Support communities to develop local resilience plans.
- Provide resources and training for community-led adaptation.
- Ensure vulnerable groups are included and supported.

[Suggested Callout Box]
"Adaptation must be inclusive - no one should be left behind."

6. Economic Opportunities in Adaptation

What's at Risk: Jobs, supply chains, and economic growth.

Our Actions:

- Invest in green skills and local jobs linked to adaptation.
- Support businesses to understand and manage climate risks.
- Encourage innovation and investment in adaptation-related infrastructure and services.
- Embed adaptation into local economic development plans.

[Suggested Image]
Photo of a renewable energy site, sustainable construction project, or local business adapting.
Caption: "Adaptation unlocks economic opportunities for a sustainable Highlands."

Making It Happen

These priorities will guide the development of the Council's Adaptation Action Plan. By focusing on actions with multiple co-benefits - for people, nature, and the economy - we will build a Highlands that is prepared and prosperous in a changing climate.

Chapter 6 – Delivering Adaptation

From Strategy to Action

Adaptation requires more than just good intentions - it needs strong governance, collaborative partnerships, and clear delivery mechanisms. This chapter outlines how The Highland Council will turn strategy into real-world action, building resilience across all services and communities.

[Suggested Infographic or Photo]
Image: Council staff working alongside communities to implement adaptation measures.
Caption: "Delivering adaptation means embedding climate resilience into everything we do."

Governance and Leadership

Effective adaptation depends on leadership and accountability:

- The **Climate Change Committee** will oversee adaptation progress, ensuring integration into Council plans and decisions.
- **Chief Officers** will be responsible for embedding adaptation within their service areas and reporting progress.
- The **Corporate Risk Register** and **Integrated Impact Assessments (IIAs)** will include climate risks to inform decision-making and resource allocation.

[Suggested Infographic]
A governance diagram showing how adaptation is integrated into Council structures (e.g. Committee, Service Managers, Community Partnerships).
Caption: "Governance structures keep adaptation on track and accountable."

Partnership Working

No single organisation can tackle climate risks alone. The Highland Council will:

- Work with the **Highland Adapts partnership** to support place-based adaptation, knowledge sharing, and community engagement.
- Collaborate with the Scottish Government, Adaptation Scotland, and regional agencies to align with national policies and targets (e.g. SNAP3).
- Share best practices with other local authorities and participate in national adaptation networks like PSCAN and SSN.

[Suggested Image]
Photo of a Highland Adapts workshop or community engagement session.
Caption: "Working together builds shared understanding and coordinated action."

Embedding Adaptation in Council Services

Adaptation will be mainstreamed into every part of the Council's work:

- **Planning and Development:** Integrate climate risk considerations into Local Development Plans, Regional Coastal Change Adaptation Plans, and infrastructure investment.
- **Asset Management:** Ensure all built assets and critical infrastructure are resilient to the impacts of climate change.
- **Business Continuity and Emergency Planning:** Ensure services can operate during and after extreme weather events.
- **Procurement and Capital Investment:** Include adaptation criteria in project design and investment decisions.
- **Health and Safety:** Ensure climate change impacts are risk assessed and appropriate action is taken to adapt/modify, such as responding to changes in temperature, PPE requirements, etc.

[Suggested Callout Box]
"Every decision counts - from capital projects to local service delivery."

Monitoring and Reporting

We will track progress and adapt our approach as needed:

- Report annually through the **Public Bodies Climate Change Duties (PBCCD)** process.
- Use the **Adaptation Scotland Capability Framework** to build organisational resilience and monitor progress.
- Review and update the **Climate Risk and Opportunity Assessment** to ensure priorities remain relevant.
- Climate risks and adaptation measures will be regularly reviewed and updated in the **Corporate Risk Register** and **Business Continuity Plans**.

[Suggested Infographic]
A progress tracker showing adaptation milestones: risk assessment, action plan, implementation, review.
Caption: "Adaptation is a journey - continuous learning and improvement are key."

Resourcing and Funding

Delivering adaptation requires investment:

- Integrate adaptation into existing budgets and capital programmes.
- Leverage national funds and grants (e.g. from SNAP3, Scottish Government, UK Adaptation Funds).
- Work with partners to develop collaborative projects and co-funding opportunities.

[Suggested Image]
Photo of a Council infrastructure project with adaptation elements, e.g. sustainable

drainage systems or flood defences.
Caption: "Smart investment today reduces risks and costs tomorrow."

Building Capacity and Skills

Adapting to climate change requires knowledge and confidence at all levels:

- Deliver training and guidance to staff on integrating adaptation into their work.
- Support communities with the resources and tools to develop local community resilience plans.
- Invest in green skills to build local expertise and drive sustainable economic opportunities.

Our Commitment to Delivery

The Highland Council is committed to making adaptation a core part of its business - from strategic plans to service delivery. By working together with partners, communities, and stakeholders, we will ensure that Highland is prepared for the challenges ahead.

Chapter 7 – Next Steps

Turning Strategy into Action

This strategy sets out a clear vision and framework for climate adaptation in the Highlands. The next step is to translate this into concrete, practical actions that protect our communities and services - now and for the future.

[Suggested Infographic or Photo]
Image: Council staff or community members collaborating on a flood risk or biodiversity project.
Caption: "Next steps focus on delivering real change for Highland communities."

1. Complete the Corporate Climate Risk and Opportunity Assessment

Why it matters:

- Identify and prioritise climate risks and vulnerabilities across Council services, assets, and communities.
- Align with national frameworks (SNAP3 and the Adaptation Scotland Capability Framework).

Action:

- Collaborate across Council services to complete the assessment.
- Use results to inform decision-making and resource allocation.

[Suggested Infographic]
Graphic showing risk assessment feeding into adaptation planning.
Caption: "Identifying risks is the foundation for action."

2. Develop and Implement the Climate Adaptation Action Plan

Why it matters:

- Translates strategy into time-bound, measurable actions.
- Assigns responsibilities and resources to drive delivery.

Action:

- Co-produce the action plan with Council services, communities, and partners.
- Align with SNAP3 and Net Zero Strategy to maximise co-benefits.

[Suggested Timeline Graphic]
Timeline showing key stages: Risk Assessment ➔ Action Plan ➔ Delivery ➔ Monitoring.
Caption: "From risk to action: the roadmap to delivery."

3. Embed Adaptation Across Council Services

Why it matters:

- Ensures climate resilience is built into every decision, policy, project, and plan.

Action:

- Incorporate adaptation into business continuity plans, capital programmes, and day-to-day operations.
- Provide staff training and guidance to build confidence and capacity.

[Suggested Image]
Photo of staff training or workshop.
Caption: "Embedding adaptation into Council services makes resilience part of business as usual."

4. Support Communities and Partners

Why it matters:

- Adaptation succeeds when communities are engaged, informed, and empowered.

Action:

- Work with Highland Adapts to support regional risk assessments, resilience planning, and community projects delivering practical adaptation solutions.
- Support community-led resilience planning and adaptation; providing relevant resources/ toolkits to help communities prepare for and respond to climate impacts.
- Collaborate with regional and national partners to align resilience efforts and share learning.

[Suggested Infographic or Photo]
Image: Community meeting or local adaptation project.
Caption: "Communities play a key role in building local resilience."

5. Monitor, Report, and Improve

Why it matters:

- Adaptation is a dynamic process - we need to learn and improve as we go.

Action:

- Report annually through the PBCCD process and SNAP3 frameworks.
- Update the risk assessment and action plan regularly to respond to new information and community needs.
- Share progress transparently with communities and stakeholders.

[Suggested Callout Box]
"Monitoring progress builds trust and ensures accountability."

Our Commitment

The Highland Council is committed to delivering on this strategy. By working together across services, partners, and communities, we will make the Highlands more resilient, sustainable, and ready for the challenges ahead.

Together, we can build a climate-ready Highland that protects our lives, land and livelihoods.

Chapter 8 – Conclusion

A Climate-Ready Highland

Climate change is not a future challenge - it is already reshaping our communities, our economy, and our environment. The Highland Council recognises the need to act decisively, working together with communities and partners to build resilience and unlock opportunities for a safer, healthier, and more sustainable region.

[Suggested Infographic or Photo]
Image: Smiling community members working on local adaptation projects.
Caption: "Building resilience is about protecting what matters most - together."

Our Adaptation Commitment

Throughout this strategy, we have set out:

- The climate trends already affecting the Highlands and those expected to intensify.
- The key risks and vulnerabilities across our people, places, and services.
- Our approach to embedding adaptation into Council decision-making and planning, ensuring inclusivity and a just transition.
- Priority actions that deliver co-benefits for health, nature, and the economy.
- How we will work in partnership and support communities in leading local adaptation.

[Suggested Infographic]
A summary diagram linking the strategy's chapters and themes.
Caption: "Our approach is joined up - from risk assessment to community action."

The Opportunity Ahead

Adaptation is not just about protecting ourselves from risks - it is about seizing opportunities to build a Highland that is healthier, more prosperous, and more connected. By investing in nature-based solutions, green skills, and inclusive partnerships, we can ensure that Highland is fit for the future.

[Suggested Image]
Photo of a renewable energy project or community nature restoration.
Caption: "Adaptation brings opportunities for jobs, wellbeing, and sustainability."

Together We Will Act

The challenges of climate change are shared - and so is the responsibility to act. The Highland Council is committed to leading by example, but we cannot do it alone. We need every community, business, and organisation to play their part.

[Suggested Callout Box]
"Together, we will build a climate-ready Highland."

A Final Call to Action

Let’s work together to:

- Deliver robust services.
- Build resilient communities.
- Protect our natural and built environment.
- Create opportunities for green skills and sustainable growth.
- Ensure that everyone is included in the journey to a climate-ready future.

[Suggested Infographic or Photo]
Photo of diverse community members (families, workers, young people) collaborating.
Caption: "A fair and resilient Highland is our shared goal."

Draft Climate Adaptation Strategy

Appendices

Appendix 1: Observed trends in Highland - climate data

Appendix 2: LCLIP for Highland

Appendix 3: Future climate projections - Met Office Climate Report for Highland

Appendix 4: Implications for the Highlands – LCAT hazards

Appendix 5: Climate Impacts – why it matters – Adaptation Scotland, LCAT & NZ strategy impacts

Appendix 6: Climate Impacts – why it matters – LCAT personal & social vulnerabilities

Appendix 7: Policy Drivers – strategic context

Appendix 8: Adaptation in Action at The Highland Council

Appendix 9: What Adaptation means for Highland – Adaptation in practice, Adaptation Scotland Climate Ready Places

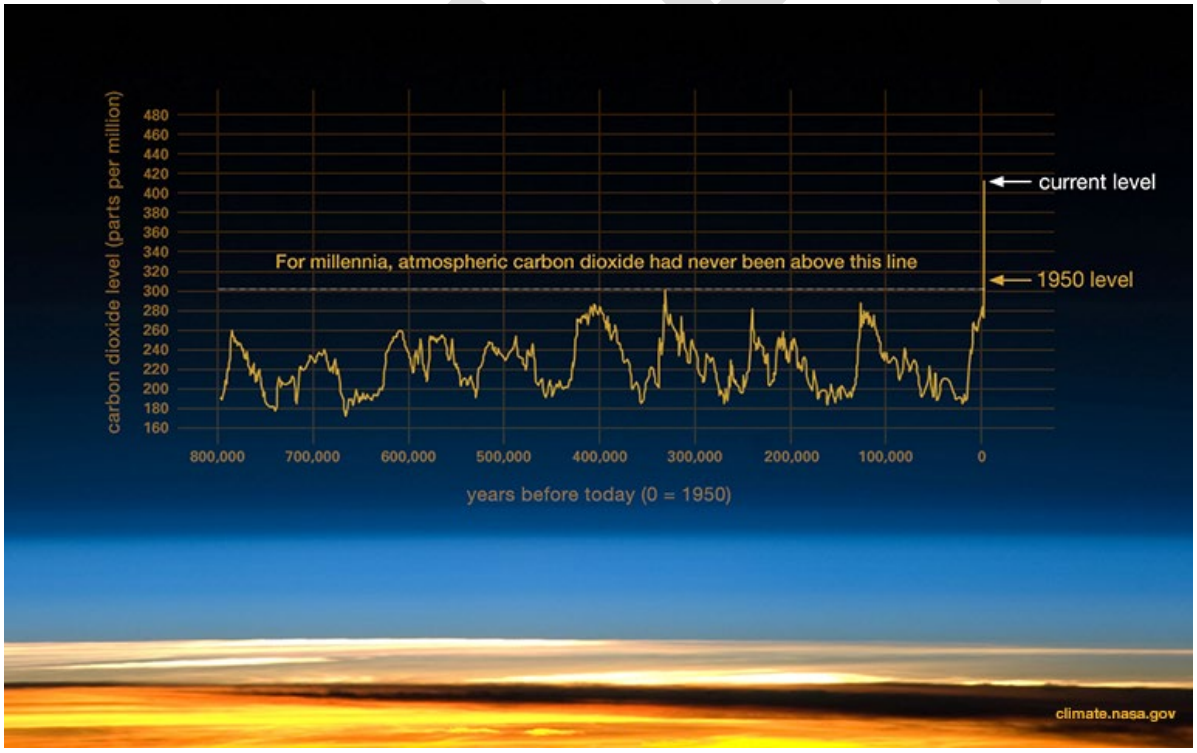
Appendix 10: Prioritising Actions with Co-Benefits – LCAT measures & solutions spreadsheet

Appendix 1: Observed trends in Highland - climate data

Climate Trends and Consequences

Climate is more than just the weather. Weather relates to our daily meteorological conditions throughout the year, whether it is raining, sunny, windy, etc. Climate however relates to weather conditions over longer periods of time – generally in terms of 30 years – tracking patterns and trends associated with given localities/ seasons, etc.

It is now unequivocally accepted that our global climate has changed and is changing due to the increasing concentrations of greenhouse gases - caused primarily by human activity - which kickstarted the acceleration from the time of the industrial revolution. The graph below illustrates robust CO_2 data from ice cores covering the last 800,000 years:



A Graphical History of Atmospheric CO_2 Levels Over Time, *by Owen Mulhern Aug 12th, 2020*

(A Graphical History of Atmospheric CO_2 Levels Over Time | Earth.Org)

Carbon and carbon dioxide emissions are the most widely expressed contributors to climate change. Whilst carbon dioxide is the highest emitting greenhouse gas, there are other gases including methane, nitrous oxide and fluorinated gases that contribute towards climate change.

Source in the atmosphere of other greenhouse gases

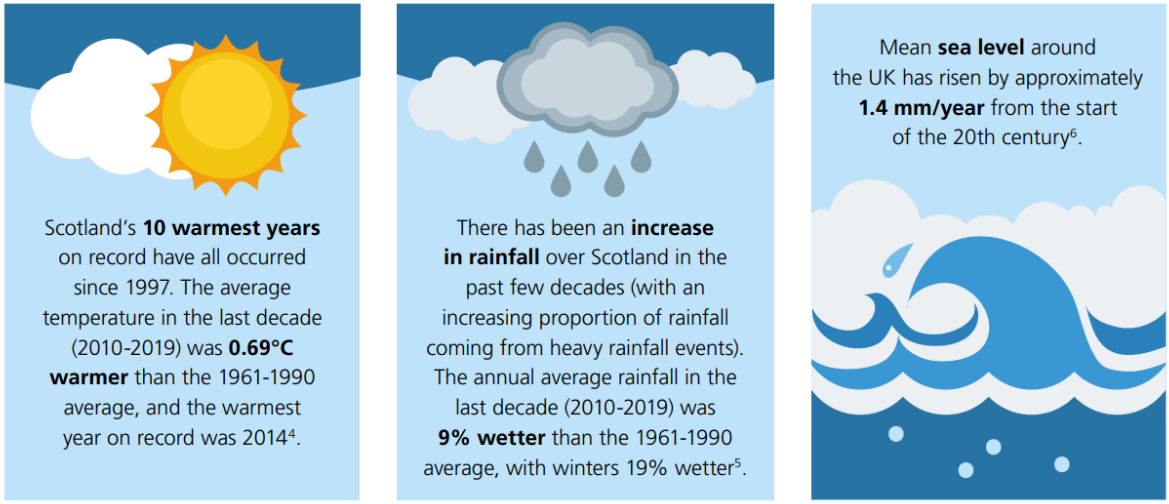
Greenhouse Gas	Source
CO_2 Carbon Dioxide	Primary GHG that mainly comes from burning organic materials such as fossil fuels: coal, oil, gas, wood, and solid waste.
CH_4 Methane	Mainly released from landfills, natural gas and petroleum industries and agriculture – most specifically digestive systems of grazing animals.
N_2O Nitrous Oxide	Mainly agriculture and livestock as well as burning fossil fuels.
Industrial Gases	Fluorinated gases that are used in refrigerants, solvents and in manufacturing. Unlike other GHGs, these gases have no natural sources and only come from human-related activities.

Table data sourced from NASA

(Net Zero Strategy, The Highland Council)

Over time these higher concentrations of gases build-up in our upper atmosphere trapping more heat from the sun causing our planet to warm up. The crude global trends of climate change across our planet include increased temperatures; hotter and drier summers; wetter and milder winters, and rising sea levels due to melting ice caps and the expansion of ocean water due to warming. The reality, however, is that our climate has become much more unpredictable; more volatile and more extreme.

Adaptation Scotland have produced a Climate Change Projections Summary for Scotland which provides an overview of the UK Climate Projections for Scotland. It is intended to help build common understanding of the changes to Scotland's climate – both in terms of what we have already experienced, and in terms of the climate projections that Scotland will experience in the future.



(*Climate change trends and projections - Adaptation Scotland, 2019*)

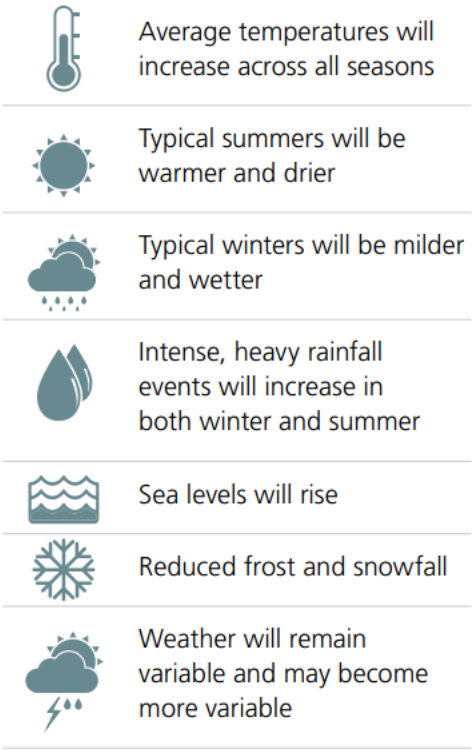
UPDATE: More recent observations of the impacts of climate change in Scotland have been provided by the Met Office than those contained in the Summary for Scotland resource below. The following information is correct as of March 2024.

Scotland's 10 warmest years on record have all occurred since 1997. The average temperature for the last decade (2014-2023) was 1.02°C warmer than the 1961-1990 average, and the warmest year on record was 2022.

There has been an increase in rainfall over Scotland in the past few decades. The annual average rainfall in the last decade (2014-2023) was 10% wetter than the 1961-1990 average, with winters 29% wetter.

Mean sea level around the UK has risen by approximately 18.5cm from the start of the 20th century and the rate of sea level rise has increased over the last 30 years.

These increases in temperature, rainfall and sea level rise in data just 4 years apart is stark; and reflects the speed and scale with which climate change is happening.



The diagram above from Adaptation Scotland highlights the future climate projections Scotland is due to experience. The changes in climate that we are already experiencing are projected to continue and intensify. The amount of change that occurs will depend on how successful we are in reducing greenhouse gas emissions globally.

The table below outlines both the observations and projections of key changes in Scotland's climate:

	Observations	**Projections**
Temperature	• The last decade was 0.69 °C warmer than 1961 – 1990 average. • Scotland's 10 warmest years on record have all occurred since 1997. The warmest year on record was 2022, 34.8°C	• Temperatures projected to increase in both summer and winter, warming is expected to be greatest in summer.
Rainfall	• Winters in the last decade were 19% wetter than 1961 – 1990 average.	• Winters projected to become wetter. Summers drier but with unpredictable downpour events • Rainfall increases will be largest in the west • Warmer air can hold more water, when snow occurs there is the possibility of greater extremes • Significant increase in the frequency and intensity of downpour events

		• Possibility that summers may get drier but the jet stream may complicate this
Sea level	• Globally seas have risen by 21-24cm since 1880 • Mean sea level around the UK has risen by approx. 1.4mm per year since the start of the 20th Century • The rate of sea level rise has trebled since the 1990s • Global average annual sea level rise is now 4.8mm	• Some parts of Scotland could experience up to 32cm sea level rise by 2050 • Seas could rise over 1m by 2100 • Sea level rise will keep on accelerating until temperatures stabilise • If major ice sheets are destabilised seas could rise for centuries • Increased impacts from storm surge and erosion

(Climate change trends and projections - Adaptation Scotland)

Appendix 2: LCLIP for Highland

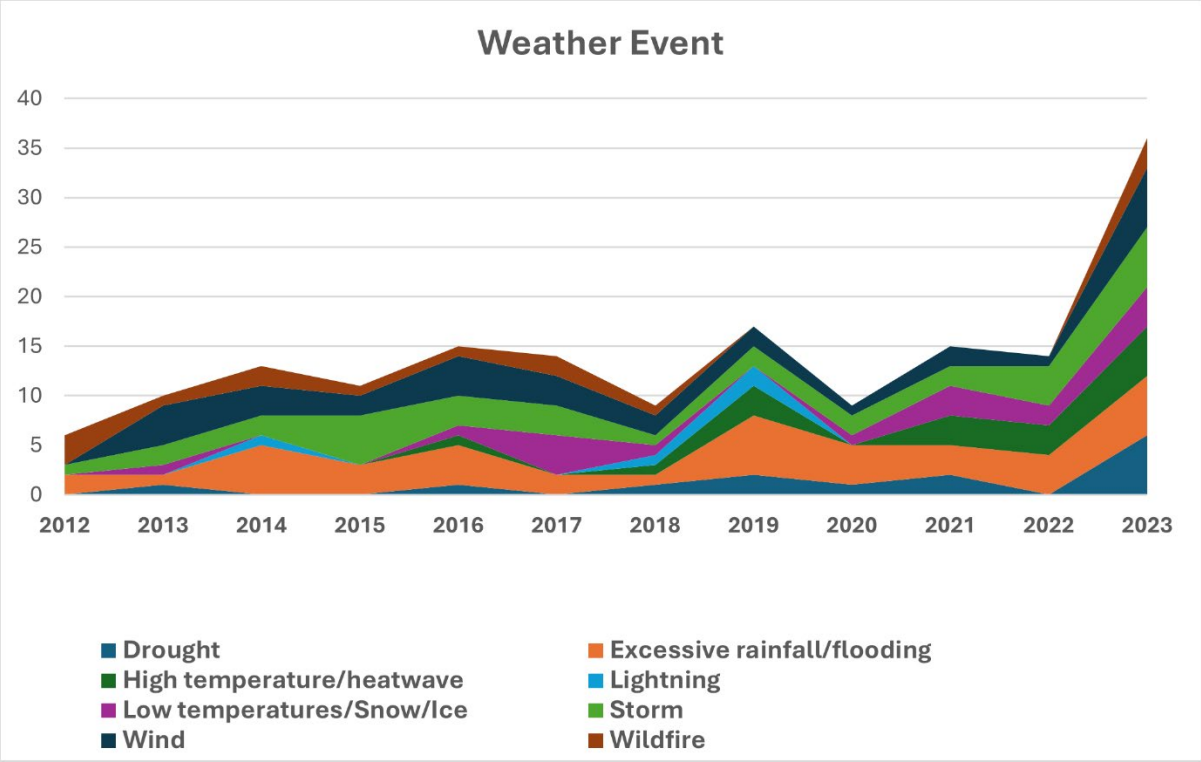
Local Climate Impact Profile for Highland

The Local Climate Impact Profile (LCLIP) is a tool designed to help organisations assess their exposure to the weather and shows how prepared an organisation is to deal with severe weather events. The Highland LCLIP exercise involved researching and gathering extreme weather events information including their associated impacts over a defined time period - from 2012 to 2023. This was undertaken via extensive media analysis of reported extreme weather events from local, regional and national sources, and cross referencing this research with robust data acquired from the Met Office over the same time period.

The media analysis exercise identified almost 150 individual reported news items relating to a range of weather events, each with associated recorded impacts across the Highland region.

The weather events and impacts results of the Highland LCLIP 2012-2023 are as follows:

Weather event	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Grand Total
Drought		1			1		1	2	1	2		6	14
Excessive rainfall/flooding	2	1	5	3	4	2	1	6	4	3	4	6	41
High temperature/heat wave					1		1	3		3	3	5	16
Lightning			1				1	2					4
Low temperatures/Snow/Ice		1			1	4	1		1	3	2	4	17
Storm	1	2	2	5	3	3	1	2	2	2	4	6	33
Wind		4	3	2	4	3	2	2	1	2	1	6	30
Wildfire	3	1	2	1	1	2	1					3	14
Total	6	10	13	11	15	14	9	17	9	15	14	36	169


Weather Event
40
35
30
25
20
15
10
5
0
2012
2013
2014
2015
2016
2017
2018
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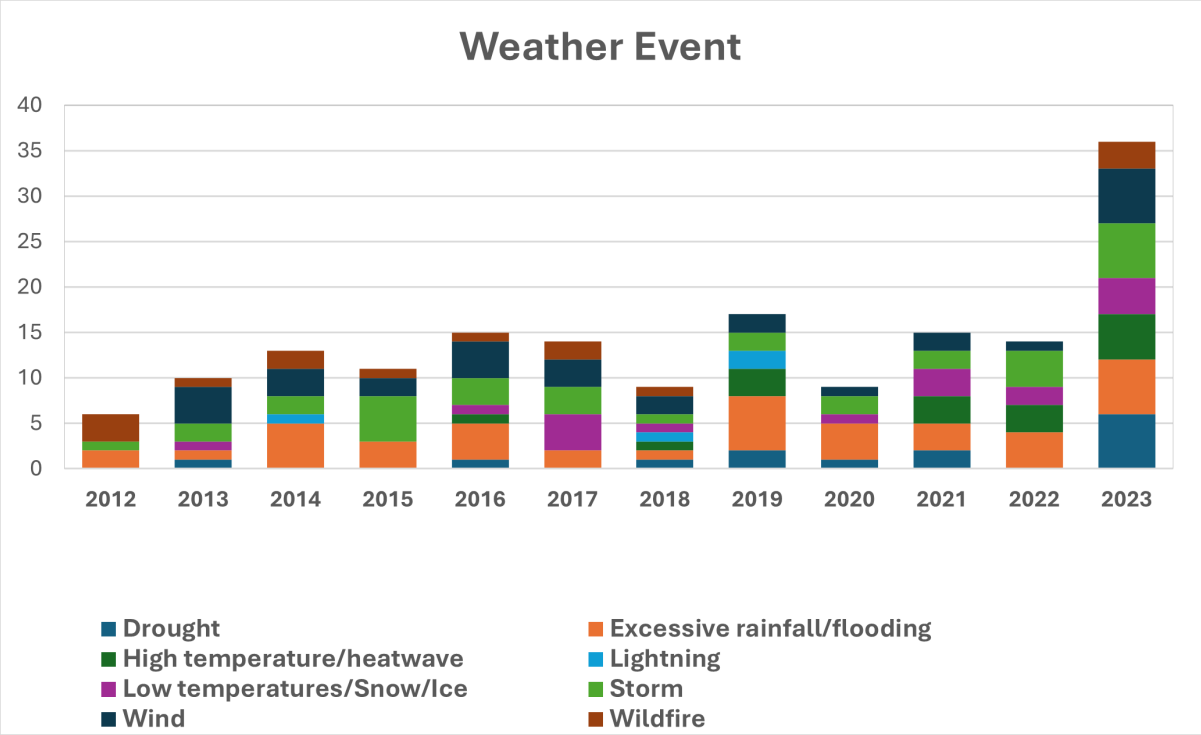
2022
2023
Drought
Excessive rainfall/flooding
High temperature/heatwave
Lightning
Low temperatures/Snow/Ice
Storm
Wind
Wildfire


Weather Event
40
35
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5
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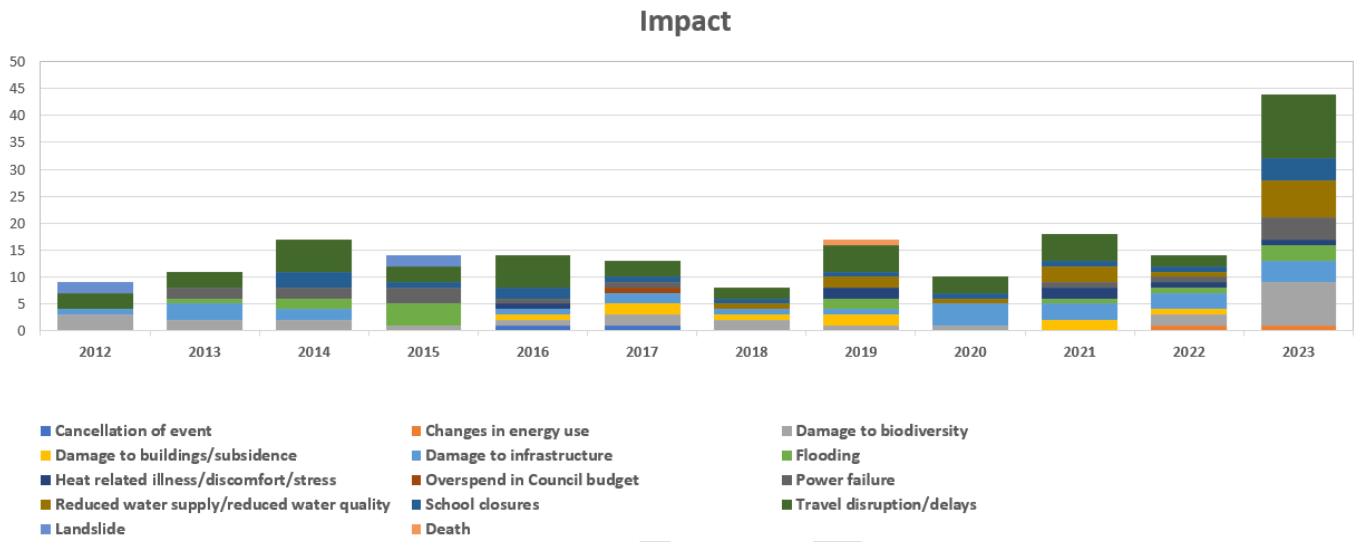
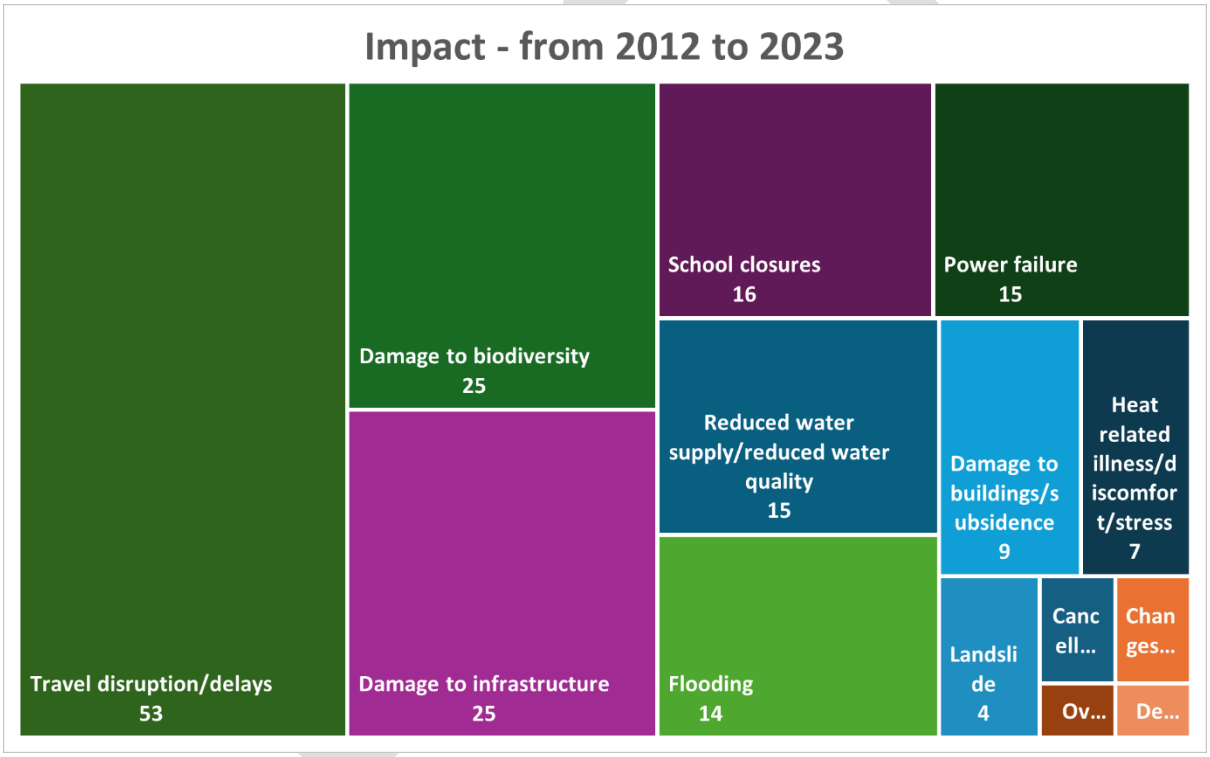
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
Drought
Excessive rainfall/flooding
High temperature/heatwave
Lightning
Low temperatures/Snow/Ice
Storm
Wind
Wildfire

Impact	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	Grand Total
Cancellation of event					1	1							2
Changes in energy use											1	1	2
Damage to biodiversity	3	2	2	1	1	2	2	1	1		2	8	25
Damage to buildings/subsidence					1	2	1	2		2	1		9
Damage to infrastructure	1	3	2		1	2	1	1	4	3	3	4	25
Flooding		1	2	4				2		1	1	3	14
Heat related illness/discomfort/stress					1			2		2	1	1	7
Overspend in Council budget						1							1
Power failure		2	2	3	1	1				1	1	4	15
Reduced water supply/reduced water quality							1	2	1	3	1	7	15
School closures			3	1	2	1	1	1	1	1	1	4	16
Travel disruption/delays	3	3	6	3	6	3	2	5	3	5	2	12	53
Landslide	2			2									4
Death								1					1
Total	9	11	17	14	14	13	8	17	10	18	14	44	189





The key findings and highlights relating to the Highland LCLIP are as follows:

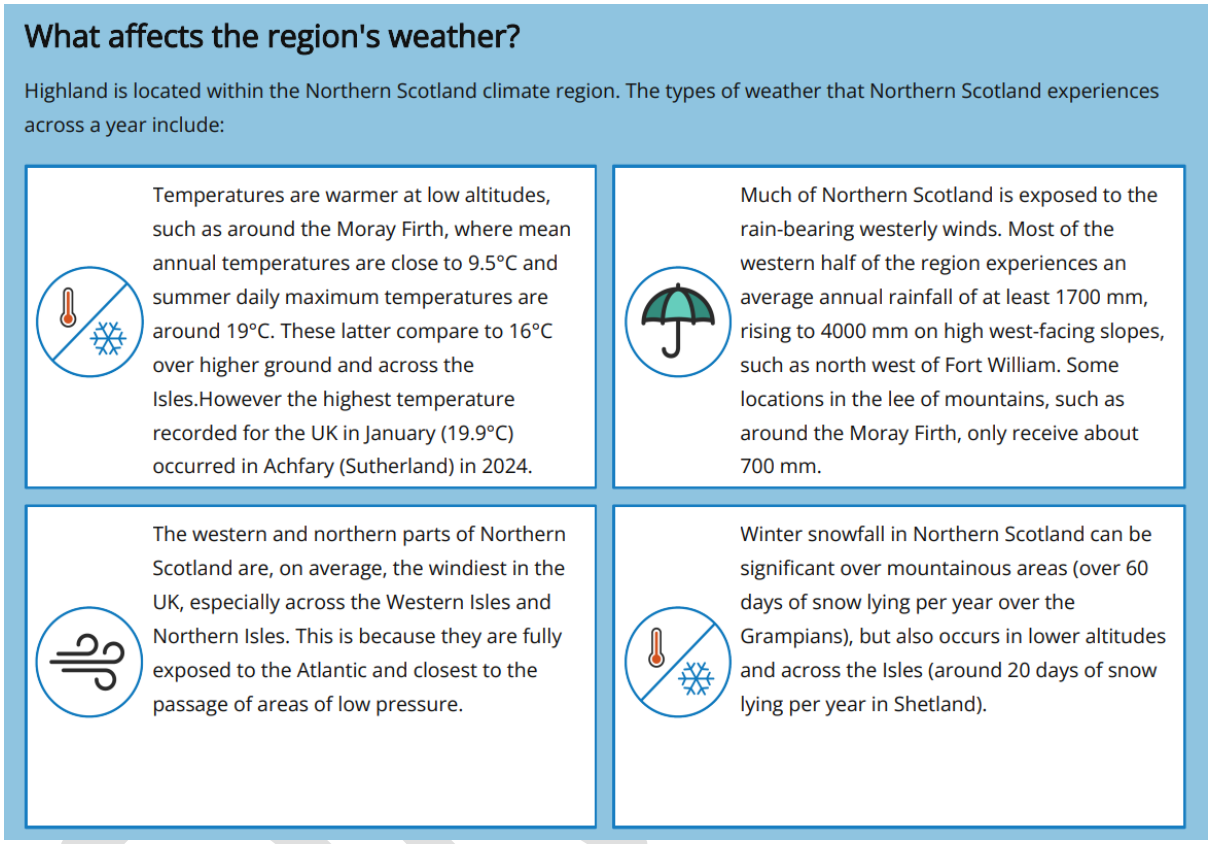
- There has been a growing number of adverse weather events felt across Highland over the time period, with 6 weather events identified in 2012 compared to 36 in 2023 – this equates to a six-fold increase in adverse weather events over 12 years.
- The most frequently recorded weather events from 2012 to 2023 was excessive rainfall flooding – with 41 news articles; followed by storms with 33 articles.
- The weather event with the greatest change in frequency from 2012 to 2023 is drought, closely followed by high temperatures.

- These findings are consistent with the data relating to climate change trends and consequences.
- In terms of impacts, these have also increased in number - as expected - in line with the increase in adverse weather events. The lowest recorded impacts were in 2012 and 2018, at just 9 and 8 impacts recorded respectively. In 2023, 44 impacts were detailed – with travel disruption; reduced water supply; and damage to biodiversity being the highest recorded number of impacts.
- The impact with the highest number over 2012 to 2023 is travel disruption/ delays; followed by damage to biodiversity and damage to infrastructure each receiving an equal number of news articles.
- The impact with the greatest change over the LCLIP time period is reduced water supply/ water quality from no recordings throughout 2012 to 2017. In 2018 one news article was noted, and in 2023, 7 news pieces were identified relating to this impact.

The LCLIP findings are useful in providing local indicators and a rough guide to adverse weather events and their associated impacts across Highland.

Appendix 3: Future climate projections - Met Office Climate Report for Highland

A Climate Report for Highland has been produced by the MET Office using high-level, non-technical summaries of climate change projections for the local authority area. It uses scientific research to provide robust climate information to help decision makers plan for the future, enabling local authorities to become more resilient to climate change. The findings of the Report conclude the following:



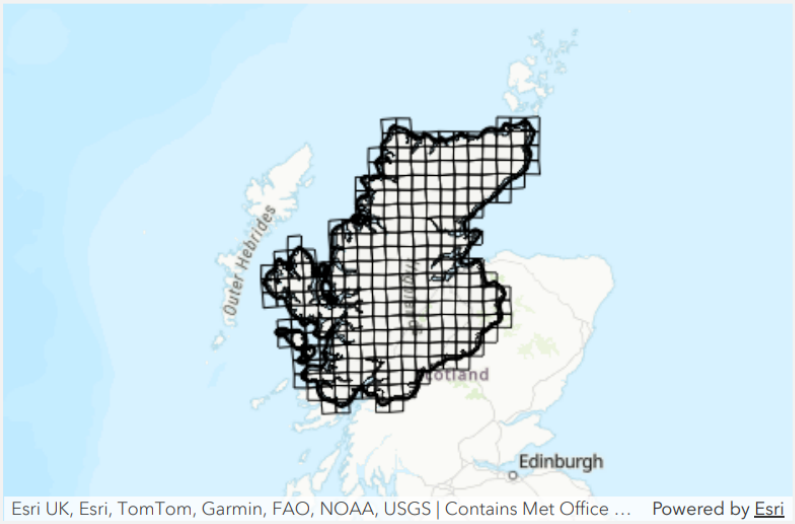
Met Office Climate Report for Highland

Department for Environment Food & Rural Affairs

Local climate changes

The table shows projected **changes in climate** for the Local Authority area for a number of Global Warming Levels (GWLs). In each case there is a central projection (the Median) and an uncertainty range (the Lower and Upper values are the 10th and 90th percentiles). Changes are relative to 1981-2000.

The underlying science is explained in the Scientific Detail (QR Code).



The map shows the Local Authority area. The overlaid grid shows the 12km grid boxes from the climate model used for these projections.

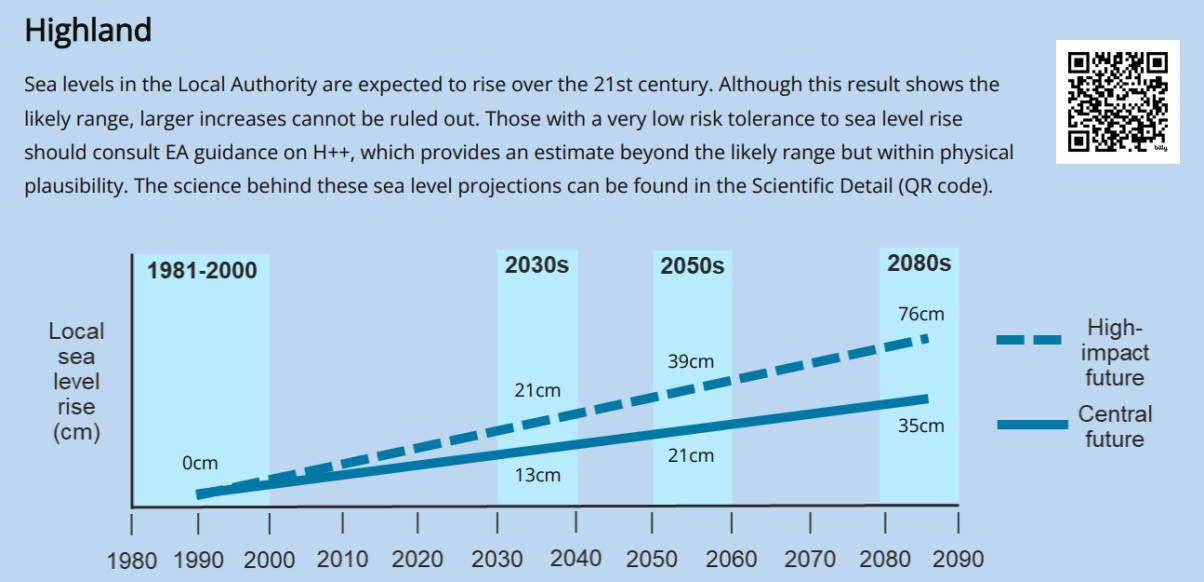
		0.6°C GWL Baseline 1981-2000	1.0°C GWL Recent Past 2001-2020	1.5°C GWL Paris Agreement	2°C GWL Guidance: Prepare	4°C GWL Guidance: Assess risks
	TEMPERATURE	°C	°C	°C change	°C change	°C change
	Summer Maximum Temperature	24.4 24.2 to 24.7	25.7 25.2 to 26.4	+1.7 +0.6 to +2.4	+2.3 +1.1 to +3.6	+4.4 +3.4 to +6.3
	Summer Average Temperature	11.9 11.9 to 11.9	12.7 12.5 to 13.0	+1.2 +0.7 to +1.5	+1.6 +1.1 to +2.1	+3.3 +2.8 to +3.7
	Winter Average Temperature	2.3 2.3 to 2.3	2.9 2.7 to 3.5	+1.2 +0.5 to +1.3	+1.5 +0.7 to +1.8	+2.7 +2.0 to +3.3
	Winter Minimum Temperature	-9.9 -10.0 to -9.6	-8.1 -8.8 to -7.4	+2.4 +1.3 to +3.6	+3.6 +2.2 to +4.5	+7.1 +5.5 to +7.7
	Annual Average Temperature	6.8 6.8 to 6.8	7.5 7.3 to 7.7	+1.0 +0.8 to +1.2	+1.4 +1.1 to +1.6	+2.9 +2.6 to +3.3
	PRECIPITATION	mm/day	mm/day	% change	% change	% change
	Summer Precipitation Rate	3.44 3.44 to 3.46	3.40 3.23 to 3.67	0 -8 to +7	0 -9 to +5	-9 -16 to +2
	Winter Precipitation Rate	6.76 6.75 to 6.77	7.15 6.68 to 7.65	+5 -4 to +10	+3 -15 to +12	+2 -5 to +15

In the north of Scotland our seasons are shifting; merging into one another with some years a barely discernible distinction between them. While there are accepted trends to climate change, we cannot depend upon their reliability nor predictability. We are seeing more

storms each year as well as extreme rainfall events, which are increasing in both frequency and severity. These bring with them flooding of both properties and essential transport connectivity across road and rail; property and infrastructure damage; affecting fields and agriculture, as well as essential service delivery. In addition to more storms and extreme rainfall events; we are also experiencing drier periods leading to droughts and water shortage concerns, which in turn create the conditions for wildfires which are also increasing in frequency throughout the world as well as here in Highland.

Sea level rise is another impact of climate change which Highland is particularly vulnerable and exposed to. This is not a risk, it is a reality - and it is only due to worsen over the immediate decades and beyond until global greenhouse gas emissions reduce and climate change is stabilised. During that time, a number of coastal communities, infrastructure and properties are at serious risk of coastal erosion and increased flooding episodes – especially during storm surge events. The first Regional Coastal Change Adaptation Plan (CCAP) for Highland was approved by the Council in May 2025 – further information regarding the CCAP is outlined in Appendix 8.

According to the MET Office Climate Report for Highland, the graph below illustrates the projected future sea level rise we are likely to experience under different scenarios:



Appendix 4: Implications for the Highlands – LCAT hazards

Local Climate Adaptation Tool

The Local Climate Adaptation Tool (LCAT) is an evidence-based online tool which supports local decision-makers across the UK to plan and adapt to climate change. The online tool can be used to search specific regions and areas, even down to local ward level. The LCAT includes:

- How local climates will change;
- What health and community impacts may occur as a result;
- Who will be most vulnerable and why; and also,
- Which adaptations to consider.

The results of this tool are important in identifying the climate change impacts on society in Highland and the corresponding adaptation solutions/actions available to address these. With regard to the climate change hazards for Highland, the LCAT revealed the following:

Heatwaves

Our climate is warming, with the warmest years on record having occurred in the last 10 years as highlighted previously. One consequence of this is an increase in **frequency** and **intensity** of heatwaves.

As warming continues in the future, summers are predicted to become hotter and drier on average. As a result, heatwaves will become:

- More severe.
- More frequent.
- Longer.

Urban environments, such as the city, are likely to experience even greater heatwave intensity due to the **urban heat island effect**. Urban heat island effect describes urban areas being a lot warmer than the rural areas around them because of denser populations and infrastructure.

Wildfires

Across the world – including here in Highland - hotter, drier weather has increased the frequency, intensity, and scale of wildfires.

Climate change increases the risk of wildfires through a combination of factors including:

- Low humidity and low rainfall making it drier.
- **Higher temperatures.**
- Higher wind speeds.

Air Quality

Indoor and outdoor air quality are affected by climate change.

Indoor air quality is dependent on:

- Individual **building performance.**
- **Damp and mould.**
- External air quality.

Outdoor air quality is impacted by:

- **Higher temperatures** which can exacerbate the build-up of **air pollution.**
- Drought can increase the amount of dust particles.
- **Wildfire smoke.**
- Thunderstorms and windstorms can increase allergens like pollen and fungal spores.

Flooding

Highland has become wetter over the recent decades, with an increase in frequency and intensity of rainfall and flooding. Flooding is affected by:

- The landscape.
- **Flood management practices.**
- Local soil type.
- River flow rates.
- **Building in flood risk locations.**
- Urban development and its impact on natural drainage.

Warmer and wetter winters are projected in the future, with increased potential for flooding. Highland is expected to experience drier summers, although the rain that does fall is also likely to be more intense, also impacting flood risk.

Appendix 5: Climate Impacts – why it matters

Climate Change Impacts

The science is clear. The changes in our climate, both now and in the future have been modelled and projected. But what does it all mean in reality - for our lives, our land and our society?

Without doubt, the impacts of climate change are already being felt by many around the world – including in our local communities across Highland. These impacts have already been devasting for many, through the impact of flooded homes and properties; storms causing power outages and damage to homes and personal effects, infrastructure and service delivery. Wildfires, temperature increases, sea level rise and coastal erosion all bring with them significant and potentially catastrophic impacts on people, nature, property and society. However, not all impacts are felt equally by all. Those most vulnerable are more likely to be at higher risk of suffering the greatest impacts from climate change.

Adaptation Scotland notes that the experience of recent years has shown that climate change and extreme weather events are already impacting many aspects of our natural environment and our society, including buildings and property, health, agriculture, forestry, transport, water resources and energy demand.

They identify 15 key climate change impacts already observed in Scotland, which are expected to become more prevalent in the coming years:


The productivity of our agriculture and forests

The occurrence of pests and disease


The quality of our soils


The health of our natural environment


The availability and quality of water


The security of our food supply


The increased risk of flooding


The change at our coast


The health of our marine environment

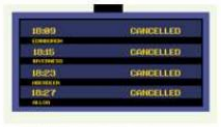

The resilience of our businesses


The health and wellbeing of our people


The security and efficiency of our energy supply


The performance of our buildings

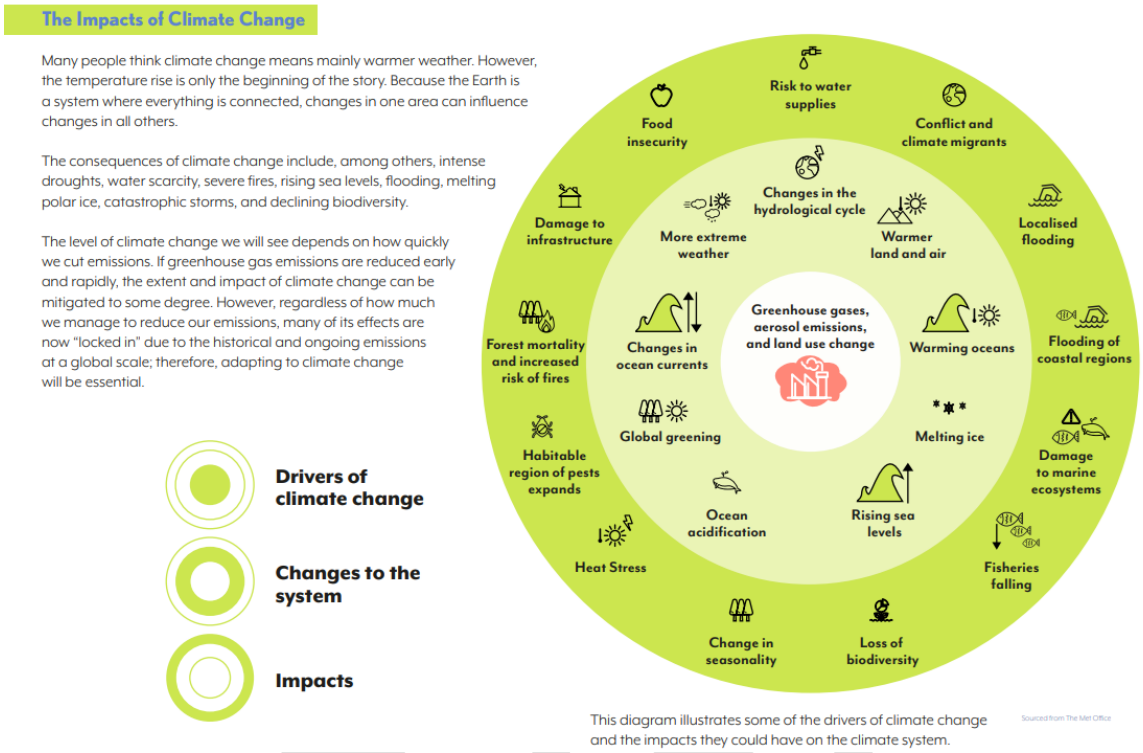

Our cultural heritage and identity



Infrastructure – network connectivity and interdependencies

(Adaptation Scotland15-key-consequences.pdf)

The Council's Net Zero Strategy highlighted the following with regards to climate change impacts:



The Local Climate Adaptation Tool (LCAT) for Highland details the climate change impacts on health and the community through the following pathways:

- Extreme storms
- Flooding and drought
- Food and personal security
- Temperature

Climate change will have an overall negative impact on health, including mental health disorders, wellbeing, and chronic health conditions.

Climate change will have a negative impact on essential community infrastructures and services like systems failures of hospitals, transport, water, and energy.

These impacts across each pathway can be categorised as follows:

	Health Impacts	**Community Impacts**
Extreme storms	• Respiratory diseases • Injury • Infections caused by bacteria, viruses, fungi, and worms	Damage or loss of possessions and/or home •Damage or loss of coastal defences •Damage or loss of the built and natural environment

	• Illness or injury caused by exposure to chemicals, heavy metals, and microplastics	•People requiring care to maintain wellbeing
Flooding and drought	• Respiratory diseases • Infections caused by bacteria, viruses, fungi, and worms • Illness or injury caused by exposure to chemicals, heavy metals, and microplastics • Drowning or flood-related accidents	•Reduction in water availability and quality •Transport disruption •Building and structural damage •Biodiversity and ecological balance disruption
Food and personal security	• Respiratory diseases • Infections caused by bacteria, viruses, fungi, and worms • Vector-borne diseases • Adverse health outcomes and malnutrition associated with an unhealthy diet	•Reduction in water availability and quality •Food security •Negative impacts on agricultural and livestock production •Negative impacts on the fishing industry
Temperature	• Respiratory diseases • Injury • Infections caused by bacteria, viruses, fungi, and worms • Vector-borne diseases • Cardiovascular diseases	•Public transport disruption •Urban Heat Island effect •Building performance •Outdoor air quality

Appendix 6: Climate Impacts – why it matters – LCAT personal & social vulnerabilities

Personal and social vulnerabilities (LCAT)

While everyone will be exposed to the impacts of climate change and extreme weather events, not everyone will be affected equally.

Some individuals or communities will be more exposed to hazards. Some may be more vulnerable because of personal, social, or economic circumstances. These factors influence a person's or community's ability to cope with, adapt to, and recover from climate-related events and extreme weather. People experiencing multiple vulnerabilities are at greater risk from climate impacts. Recognising and addressing these inequalities is essential to ensure that adaptation efforts are inclusive, fair, and effective.

Older people

Who? Older people over 65, but particularly over 75

Why are they vulnerable?

- Physical sensitivity:
- Older people are often more biophysically sensitive to climate impacts such as finding it harder to regulate temperatures during extreme heat, particularly if they have other health conditions such as chronic cardiovascular disease.
- Older people are more likely to have other physical vulnerabilities such as poor health or low mobility. This means that some older people are unable to respond or adapt to a changing climate or weather event due to being bed-bound, reliant on caregivers or living with degenerative illnesses such as dementia.

- Compounding vulnerabilities:
- Older people (over 65 and especially over 75) are the age group associated with multiple compounding vulnerabilities such as social isolation and living in certain types of housing that might increase their overall vulnerability.

Under 5s

Who? Very young children & babies (under 5s)

Why are they vulnerable?

- Physical sensitivity:
- Under 5s are less able to regulate their own temperatures in high heats.
- Under 5s are reliant on their care givers to support them to adapt to hazards or temperature changes, for example.
- Under 5s are more susceptible to mental health issues caused by the trauma of extreme events such as flooding.

People with health conditions

Who? People with health conditions/in poor health/with existing physical and mental illness

Why are they vulnerable?

Health conditions and disabilities are diverse, and the impacts of climate change will vary depending on the nature and severity of each condition. As such, there are multiple reasons as to why people with health conditions can be more vulnerable including, but not limited to:

- Health conditions being exacerbated or worsened by climate change.
- Physical limitations and/or limited mobility impacting people's ability to adapt, prepare or respond to changing climate and weather events.
- Mental health conditions affecting people's ability to adapt or cope.
- Particular medications reducing people's physical ability to cope.
- Being reliant on carers to help them adapt, respond and recover.
- Extreme events, such as flooding, limiting people's access to vital healthcare, carers or medication.
- Compounding vulnerabilities associated with poor health / disability such as being socially isolated, on a low income, or being at a vulnerable age.

People on low incomes

Who? People on low incomes

Why are they vulnerable?

- Less financial means by which to prepare for, respond to and recover from a changing climate and extreme weather events such as being able to afford adaptations to their home or take out affordable home insurance.
- Poverty is associated with multiple other vulnerabilities such as being in ill-health or having a disability which means those on low incomes are a particularly high-risk group.
- More likely to be renting a property meaning they don't have the power to make changes or adaptations to that home.
- More likely to live in properties that are less resilient to flooding (such as caravans) and more exposed to extreme heat (such as poorly ventilated and insulated social housing blocks).
- Transport to get to work and school can be more disrupted during an extreme weather event as those on low incomes are more likely to rely on public transport.
- Less likely to seek help or be involved in political processes giving them a voice.

Tenants in private or social housing

Who? Tenants in private or social housing

Why are they vulnerable?

- More likely to be on a low income. This compounds their vulnerability but also means being less able to pay for adaptations or fix/replace goods damaged by an extreme weather event and;
- Less likely to have taken out contents insurance to cover loss and damage during a flood.
- They are reliant on a landlord to have taken out buildings insurance and to make adaptations to the building and are often restricted as to modifications or changes they are allowed to make to a rental property themselves.

- Private tenancy can be associated with shorter residency in an area, meaning less local knowledge to support them to understand local risk and then access support networks/systems in times of extreme weather events.
- More likely to live in "purpose-built" flats which can be more vulnerable to extreme heat.
- More likely to live in overcrowded homes impacting ventilation and rising internal temperatures during times of high/extreme heat.

People living in area for a short time

Who? People who have lived in an area for a short time/areas with highly transient populations

Why are they vulnerable?

- Lack local knowledge about:
  - Localised risks (e.g. flood risk)
  - Local support structure and services
  - How to take action during an extreme weather event

- Lack of social networks and support structures.

- Areas with high rates of population transience are often associated with compounding vulnerability factors such as poor-quality housing, insecure, low-paid work and physical and social isolation.

- For people who have come from other countries, low or no English proficiency may impact people's understanding of, and access to, local information on climate impacts.

People who are socially isolated

Who? People who are socially isolated

This can include, but is not limited to:

- Single pensioner households.
- People with pre-school age children.
- Transient populations with little access to friends and family.

Why are they vulnerable?

- Lack of support networks to alert them to an extreme event, support them to respond and support them to recover.
- More likely to be unknown by community and local services making them hard to identify and help.
- Less likely to know about, and access, community support.
- Social isolation is associated with compounding vulnerabilities raising overall risk. These can include old age, poverty and poor health. Social isolation is particularly high for single pensioner households and those isolated with dependent children face practical difficulties in responding to an extreme weather event due to lack of support networks.
- Social isolation, coupled with rural/coastal isolation, can exacerbate vulnerability.

People with low personal mobility

Who? Those with low personal mobility & low access to services

Why are they vulnerable?

- Low personal mobility:
  - May not be able to respond quickly during an extreme weather event.
  - More reliant on care givers or support network to help them. This support network could be reduced during extreme weather events.
  - Services, support and equipment that usually support people may be affected or even stopped during extreme weather events.
  - May have associated vulnerabilities which makes them more vulnerable overall such as those related to poor health or age.

- Low access to services:
  - Some rural and coastal areas lack access to services needed during an extreme weather event, making getting help even harder, particularly if that infrastructure is disrupted by the weather event.
  - Some rural and coastal areas have higher proportions of communities facing multiple vulnerabilities such as those on a low income, those reliant on seasonal and low-paid work, older communities and transient communities increasing overall vulnerability.
  - Extreme weather events can reduce people's mobility by cutting off or disrupting transport infrastructure making it harder for communities affected to get help and help themselves.

Appendix 7: Policy Drivers – strategic context

Climate Adaptation – The Strategic Context

The Highland Council Climate Change Adaptation Strategy is informed and underpinned by a number of domestic statutory directives and policy drivers from both Scottish and UK Government, as well as regionally through a wide range of Highland Council plans and strategies including via partnerships with other public agencies and third sector organisations.

UK-wide

- **UK Gov CCRA3**

UK Climate Change Risk Assessment 2022 - GOV.UK (www.gov.uk)

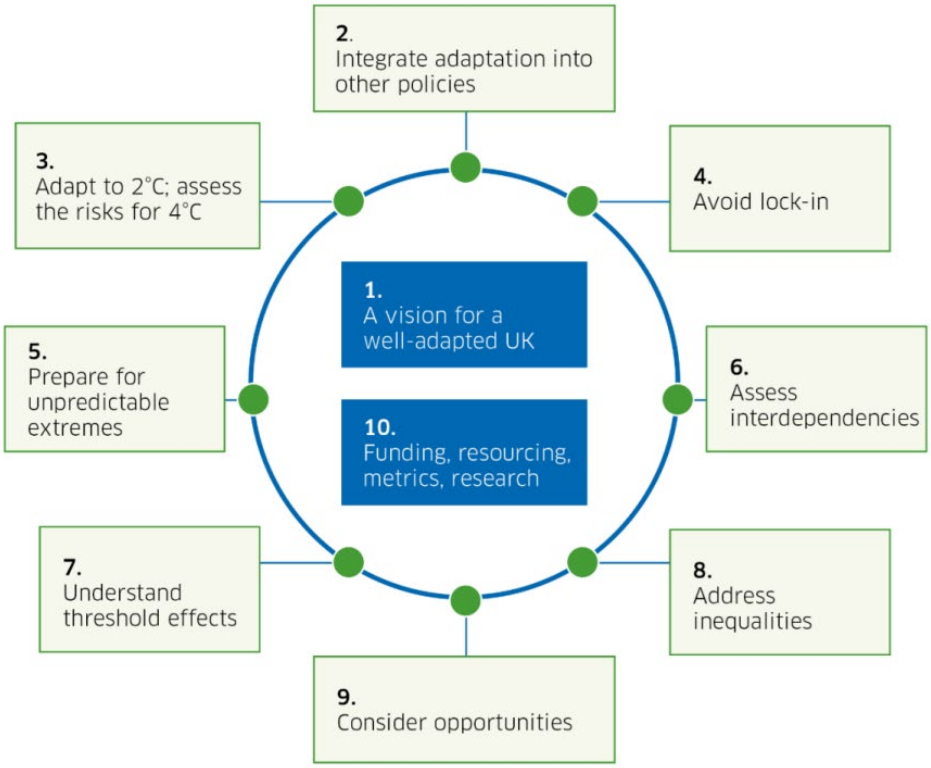
As required under the Climate Change Act 2008, the UK government has undertaken the third five-year assessment of the risks of climate change on the UK. This is based on the Independent Assessment of UK Climate Risk, the statutory advice provided by the Climate Change Committee (CCC), commissioned by the UK Government and devolved administrations.

The UK Climate Change Committee advises that Scotland needs to adapt to 2°C of warming and to assess the risks up to 4°C.

The risk assessment considers sixty-one UK-wide climate risks and opportunities cutting across multiple sectors of the economy and prioritises the following eight risk areas for action in the next two years:

- risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards
- risks to soil health from increased flooding and drought
- risks to natural carbon stores and sequestration from multiple hazards
- risks to crops, livestock and commercial trees from multiple climate hazards
- risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks
- risks to people and the economy from climate-related failure of the power system
- risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings
- multiple risks to the UK from climate change impacts overseas

The Climate Change Committee also set out ten principles for effective adaptation as part of the third Independent Assessment of UK Climate Risk (CCRA3). These can be useful in adaptation planning or decision making to ensure adaptation aims are taken into account. The following figure illustrates these ten principles:



Ten principles for effective adaptation (CCRA3)

A Call for Evidence is in preparation for the fourth UK Climate Change Risk Assessment. These are being reviewed with an updated CCRA4 in development due to be laid in Parliament by the UK Government in January 2027.

National

- **Scot Gov SNAP3 – 2024-29**

The Scottish National Adaptation Plan 2024-2029 (SNAP3), sets out actions that the Government and partners must take to manage the current and future impacts of climate change in Scotland. The increasing frequency of extreme weather such as storms, flooding, and heat will have impacts across society, ranging from agricultural production to critical supply chains for vital foods, goods and services.

This is the third and most current Scottish Climate Change Adaptation Plan, which sets out over 200 actions through a number of objectives to ensure that Scotland adapts to the challenges that we will face as our climate continues to change in the decades ahead. The Plan is a requirement of the Climate Change (Scotland) Act 2009 and addresses the risks set out in the UK Climate Change Risk Assessment (UK CCRA) 2017, published under section 56 of the UK Climate Change Act 2008.

The Plan takes an outcomes-based approach, derived from both the UN Sustainable Development Goals and Scotland's National Performance Framework. This cross-cutting

approach promotes co-benefits, and integrates adaptation into wider Scottish Government policy development and service delivery.

SNAP3 also outlines the potential economic opportunities for Scotland, such as the development of new, innovative products and services which support Scotland's resilience to climate change. Examples include battery storage, new insurance products and expertise in areas such as heritage restoration.

Climate adaptation is a complex picture of risks, opportunities and dependencies between policies. To break down this complexity, the Adaptation Plan is structured around five Outcomes, setting out the case for adaptation action. These are listed below:

1. **Nature Connects:** This outcome focuses on ensuring ecological connectivity across land, settlements, coasts, and seas. It emphasises the importance of a healthy natural environment for climate resilience and adaptation.
2. **Communities:** This outcome aims to create climate-resilient, healthy, and equitable communities. It involves community action, resilience, and health initiatives.
3. **Public Services and Infrastructure:** This outcome focuses on public services collaborating effectively in adaptation action and strengthening infrastructure resilience. It includes developing adaptation plans with all health boards, improving flood warning, and enhancing regional coordination.
4. **Economy, Business and Industry:** This outcome aims to support economic growth while ensuring that industries adapt to climate change and seize opportunities in the just transition. It involves adapting economies and industries, realizing opportunities in the just transition.
5. **International Action:** This outcome highlights Scotland's role in supporting climate justice and enhancing global action on climate adaptation. It involves collaborating with international partners and contributing to global efforts.

These outcomes are interconnected and aim to ensure a comprehensive approach to climate change adaptation in Scotland. They provide a framework for identifying objectives and policies to address specific climate risks and opportunities.

Each outcome is grounded in a 'big idea' for how to deliver adaptation action differently in Scotland. For example, the Nature Connects outcome is centred on the view that – for climate adaptation – ensuring connectivity with and within the natural environment is the crucial factor for how communities and the natural environment can build climate resilience.

To ensure that big ideas give way to action, each outcome has its own set of objectives. There are 23 objectives altogether which define how to deliver adaptation action.

Five adaptation outcomes; 23 objectives	
Nature Connects	
Nature connects across our lands, settlements, coasts and seas.	
NC1: Nature-based solutions	NC2: Landscape scale solutions
NC3: Development planning	NC4: Nature networks
NC5: Marine, coastal and the blue economy	NC6: Natural carbon stores and sinks
Communities	
Communities are creating climate-resilient, healthy and equitable place.	
C1: Regional and place-based collaborations	C2: Locally-led adaptation
C3: Community resilience	C4: New and existing buildings
C5: Culture and historic environment	C6: Coastal communities
Public Services & Infrastructure	
Public services are collaborating in effective and inclusive adaptation action.	
PS1: Public body duties and capacity	PS2: Public service and infrastructure resilience
PS3: Scotland's water resources	PS4: Transport system
Economy, Business & Industry	
Economies and industries are adapting and realising opportunities in Scotland's Just Transition.	
B1: Business understanding of climate risk	B2: Support for farming, forestry, fishing and aquaculture sectors
B3: Innovation opportunities	B4: Economic development and supply chains
International Action	
Scotland's international role supports climate justice and enhanced global action.	
IA1: Supporting vulnerable communities globally	IA2: International Advocacy
IA3: Knowledge advocacy	

They also provide the structure around which the Adaptation Monitoring Framework is being built. To achieve each objective, there are a series of proposed policies. When taken as a whole, it is intended that this structure will allow clear, transparent and accountable reporting on adaptation action.

- **Public Bodies Climate Change Duties (PBCCD)**

The Climate Change (Scotland) Act 2009 ('the 2009 Act') places duties on relevant public bodies to reduce greenhouse gas emissions, contribute to delivery of the Scottish National Adaptation Plan, and to act in the most sustainable way.

These duties are known as the climate change duties, or the public bodies climate change duties. Under the 2009 Act, Scottish Ministers are required to provide the public bodies with guidance, to support them in putting their climate change duties into practice. By law, public bodies subject to the climate change duties are required to have regard to the statutory guidance.

With regard to adaptation, the PBCCD states:

Under section 44 of the 2009 Act, relevant public bodies have a duty, in exercising their functions, to act in the way best calculated to help deliver the Scottish National Adaptation Plan (SNAP).

All public bodies must identify the national adaptation objectives from SNAP relevant to their functions and act in a way that supports the delivery of these objectives.

Organisations will have varying degrees of influence in relation to adaptation in Scotland depending on their particular role, functions and responsibilities, but all public bodies need to be resilient to the future climate and to plan for business continuity in relation to delivery of their functions and the services they deliver to the wider community.

The PBCCD sets out a strategic whole systems approach to adaptation. The guidance is holistic and comprehensive in detailing the policies, processes and methodology to adaptation planning and to adaptation in practice for public bodies. The Highland Council reports annually on progress and performance on all climate change activity including adaptation.

To help demonstrate compliance with this duty, public bodies should:

- undertake a climate related risk assessment or assessments
- develop and implement an adaptation plan or plans with, as best practice, regard to just transition principles
- ensure that appropriate climate risks are included on corporate risk registers
- where applicable, note the specific adaptation actions assigned to them in the SNAP and align their work with these
- actively seek to work in partnership with other organisations to develop and implement wider placed based adaptation plans
- undertake the above giving due consideration to their physical assets including buildings, land and fleet; their staff and service users; the services they deliver; and the functions they exercise.

Key outcomes will be that public bodies:

- have a sound understanding of why adaptation is important for their organisation and what the impacts of climate change could mean, and will have identified and assessed their risks, vulnerabilities and any potential opportunities
- have identified and assessed the adaptation options, and have measures in place to implement their chosen strategies so that their physical assets, daily operations and service delivery are adapted to the changing climate and are resilient to its impacts
- monitor and evaluate implemented measures to ensure that adaptation efforts remain sufficient and responsive to changing conditions

- where applicable, contribute to the achievement of the specific adaptation outcomes assigned to them in the SNAP, and are able to track and report on delivery
- contribute to the effective adaptation of the places in which their sites, operations and services are located and delivered.

The original statutory guidance published in 2011, is currently undergoing an update. A public consultation on the draft revised guidance was undertaken in May 2025, inviting views from stakeholders and the public. Once consultation responses have been analysed, the updated guidance will be published, replacing the original 2011 version.

- **Adaptation Scotland – Capability Framework and Benchmarking**

Adaptation Scotland provides advice and support to help Scotland be prepared and resilient to the effects of climate change. Their work supports the public sector, businesses and communities in understanding what climate change will mean across Scotland and identifying the best way to plan for and respond to its impacts. The Adaptation Capability Framework and Handbook are key resources referenced within the PBCCD. The Highland Council is an active member of the Public Sector Climate Adaptation Network (PSCAN), coordinated by Adaptation Scotland. Through this network, the Council is closely involved in the activities and support provided regarding climate adaptation.

The Handbook, produced by Adaptation Scotland, is an introduction to climate change adaptation for Scotland's public sector. It provides an overview of how the Adaptation Capability Framework can be used by any public sector organisation to accelerate adaptation action:

PSG_Handbook_FINAL_V1.1.pdf (adaptationscotland.org.uk)

The Adaptation Capability Framework identifies four capabilities that every public organisation needs to develop to adapt effectively to climate change:

1. **Understanding the challenge** develops the robust evidence-base on risk and vulnerability to inform decision-making
2. **Organisational culture and resources** is focussed on organisational priorities, governance structures and resource availability
3. **Strategy, implementation and monitoring** aligns adaptation with objectives, options appraisal, adaptation strategy development and delivery
4. **Working together** fosters networking and collaboration for joint adaptation action to achieve shared adaptation outcomes.

Each capability is supported by a set of tasks, 42 in total, designed to guide organisations through their adaptation journey. These tasks are structured across four stages of maturity:

- Starting
- Intermediate
- Advanced
- Mature

This staged approach recognises that adaptation requires sustained, long-term commitment, and that organisations will be at different points in their journey.

The Highland Council is currently using the Capability Framework to support its adaptation planning and strategic development process.

Regional

- **Highland Adapts**

Highland Adapts is a place-based partnership bringing together communities, businesses, land managers, and the public sector to create a climate-ready Highland. Established in 2021, the partnership is governed by nine founding organisations: The Highland Council, Highlands and Islands Enterprise, Zero Waste Scotland, Verture (formerly Sniffer), NatureScot, Forestry and Land Scotland, The Highlands and Islands Climate Hub, Changeworks, and NHS Highland. Its broader network spans Scotland, and beyond.

Since its inception, Highland Adapts has achieved a number of important outcomes, including:

Economic Analysis of Climate Change Impacts on Highland

In September 2024, Highland Adapts published the region's first economic assessment of climate change impacts. This included regional and sector specific reports on energy, food and drink, and forestry and timber. Key findings include:

- Gross Domestic Product (GDP) losses of up to -1.5% annually by the 2050s, rising up to -3.3% annually by the 2080s.
- Flood-related damages are estimated to double from £20m annually mid-century to £40m annually by the end of the century.
- The economic costs of wildfires, currently estimated at £0.3bn/year, could quadruple by mid-century.
- Significant risks to energy generation, distribution, and net zero delivery, with minor benefits from reduced wintertime heating.
- Increased climate risks to salmon and whisky production.
- Higher costs in the forestry and timber sector, due to high winds, drought, pests, disease, and wildfires.

The findings highlight the urgent need for climate adaptation strategies. Highland Adapts will support priority actions emerging from this analysis during its next phase.

Highland Adapts has also promoted knowledge exchange on climate resilience, and climate risks and opportunities. This has included:

- Public Sector Adaptation Gatherings – Regular events for sharing experiences, learnings, and challenges relating to adaptation.
- Highland Weather & Climate Story Map – An online resource collecting experiences of weather and climate impacts on the Highland region.

- Community Climate Advocates - A regional network ensuring adaptation is embedded in community action and authors of the first Highland Climate Charter.
- The Highland Charter for Climate, Nature, and Health – Relaunched in 2024 with an expanded focus, this pledge integrates climate and nature with wellbeing goals.

The Programme of Activity 2025-26 includes:

- Highland Adapts will focus on completing key outputs, strengthening its structure, and launching community resilience projects:
    - The First Highland Climate Risk and Opportunity Assessment: The full regional assessment will be completed by December 2025.
    - Highland Community Planning Partnership: Ongoing assistance to integrate climate risk into local plans and processes.

- National Leadership: Place-based collaboration is a key objective of Scottish National Adaptation Plan 2024-2029 (SNAP3). Highland Adapts has been nationally recognised as a leading model for regional adaptation partnerships in Scotland. This recognition reinforces the partnership's role in supporting local implementation of national climate policy and offers opportunities to share learning with other regions.

- Partnership Development: A business plan and funding strategy will be produced to ensure sustainability, alongside research into best practices and success indicators.

- Circular Economy Research: Analysis on the role of circular economy principles in climate adaptation, with a focus on future supply chain risks in the Highlands. The research concentrates on the food and drink sector.

- Phase 2: A restructured model will be launched in Q2, with Highland Adapts moving, in Q4, towards supporting action directly within Highland communities. This phase will include identifying and catalysing the first round of priority community-focused projects.

The Highland Council is a founding and core group member of the Highland Adapts Board and will continue to support and work closely with the regional partnership on climate adaptation.

- **Additional strategies and plans relevant to adaptation**

Climate change and adaptation are exceptionally interrelated with a huge range of strategies and plans that operate at local, regional, and national levels. These include:

- **Local:**

The Highland Council:

- Net Zero Strategy;
- Corporate Risk Register;
- Business Continuity Plans;
- Corporate, Performance & Delivery Plans;
- Integrated Impact Assessments;

- Regional Coastal Change Adaptation Plan;
- The Ecology Strategy & Action Plan;
- Surface Water Management Plans;
- Highland & Argyll Flood Risk Management Plan (Policy);
- Highland Local Transport Strategy;
- Highland Investment Plan and Capital Programme;
- Growing Our Future – A Food Growing Strategy for Highland;
- Sustainable Tourism Strategy;
- The Highland Council General Emergency Plan;
- Highland Local Development Plan (in development);
- Biodiversity Enhancement Planning Guidance;
- Tree Management Strategy;

- **Regional:**

- North of Scotland Regional Resilience Partnership and Community Risk Register (SFRS)
- Local Fire & Rescue Plan for Highland (SFRS)
- Wildfire Strategy (SFRS)
- Highland Nature Biodiversity Action Plan (NatureScot)
- Flood Risk Management Plan – Highland & Argyll Local Plan District (SEPA)
- Highland Adapts – Climate Risk & Opportunity Assessment; Economic Assessments

- **National:**

- Scot Gov Climate Ready Scotland
- Scot Gov Scottish National Adaptation Plan 3 (SNAP3)
- National Flood Resilience Strategy (Scot Gov)
- Adaptation Scotland – Capability Framework & Benchmarking Tool
- National Planning Framework 4
- Climate Change Plan (Scot Gov)
- Good Food Nation Plan (Scot Gov)
- Learning for Sustainability (Scot Gov)
- Biodiversity Strategy (Scot Gov)
- Just Transition Plan (Scot Gov)
- UK Gov CCRA3

Appendix 8: Adaptation in Action at The Highland Council

As previously stated, adaptation is an iterative process. This means that planning and action must be continuously monitored, reviewed, and refined. There is no defined end point to adaptation, as scientific data, internal processes, strategies, and external conditions are constantly evolving.

To determine the most appropriate adaptation actions, it is essential to:

- Reflect on existing activity at both corporate and operational levels within the Council.
- Identify gaps, where risks and opportunities have not yet been addressed or where further action is needed.
- Prioritise adaptive actions based on evidence, vulnerability, and potential co-benefits.

What is the Council already doing to address adaptation?

Current activities include:

- Corporate Risk Register
- PBCCD monitoring & reporting;
- Business continuity plans;
- Integrated Impact Assessments;
- Highland Adapts Partnership;
- Corporate Climate Risk & Opportunity Assessment (preliminary stage);
- North of Scotland Regional Resilience Partnership (RRP), Community Risk Register and Community Resilience Plans;
- Key strategies/ plans – Net Zero Strategy; The Ecology Strategy; the Regional Coastal Change Adaptation Plan; Highland and Argyll Local Flood Risk Management Plan (2022 – 2028); the Surface Water Management Plan (in development); NPF4 & Local Highland Development Plan; Local Place Plans; Biodiversity Enhancement Planning Guidance; the Corporate Plan, Performance Plan and Delivery Plan; Highland Investment Plan; Capital programme

Additional context is outlined below regarding the corporate and operation activity currently being undertaken by the Council:

- **PBCCD**

The PBCCD monitoring and reporting process is a key mechanism for tracking climate adaptation activity and progress.

- **Highland Adapts**

The Council's active role in the Highland Adapts partnership further strengthens its capacity to collaborate across sectors and scale up adaptation efforts.

- **Corporate Risk Register**

As part of its overall risk management process, the Council maintains a Corporate Risk Register. This register identifies the Council's key strategic risks, including those related to climate change, and outlines the mitigation actions being taken.

The register is regularly reviewed with the relevant Risk Owners and is presented at each meeting of the Audit Committee for scrutiny and oversight.

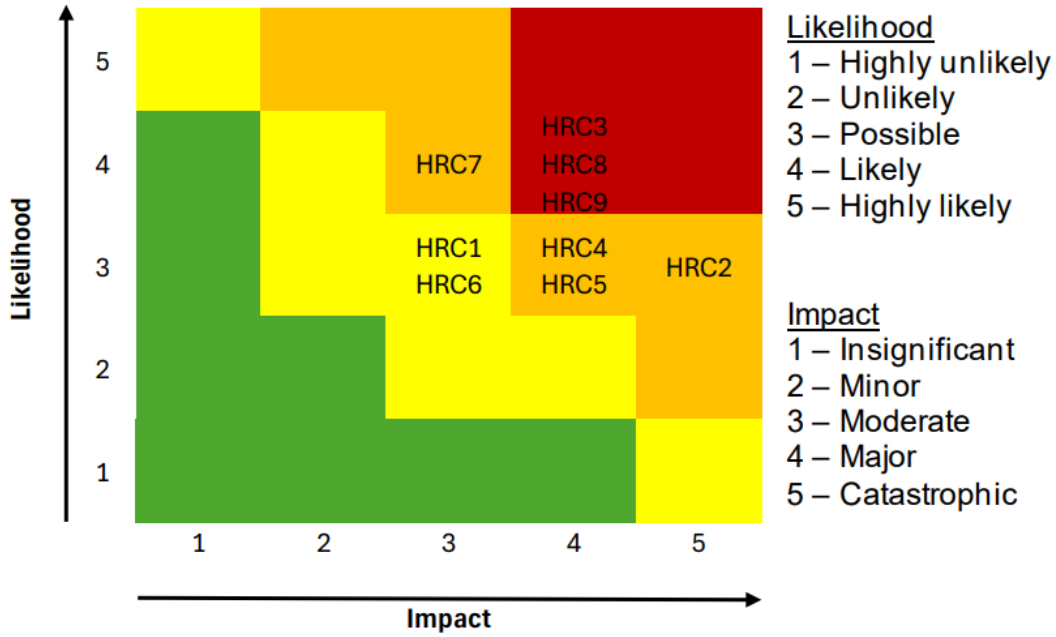
The table below details the Corporate risks agreed by the Highland Council as of May 2025:

Risk No.	Risk Name
HCR1	Financial Sustainability
HCR2	Safe and Effective Property
HCR3	Sustainability of the Workforce
HCR4	Civil Contingencies – Cyber Attack
HCR5	Civil Contingencies – National Power Outage
HCR6	Civil Contingencies – Flooding
HCR7	Civil Contingencies – Severe Weather
HCR8	Civil Contingencies – Pandemic Diseases
HCR9	Net Zero Targets

In addition to HCR9, the following corporate risks reference climate change and climate adaptation:

HCR2 Safe and Effective Property
HCR5 Civil Contingencies – National Power Outage
HCR6 Civil Contingencies – Flooding
HCR7 Civil Contingencies – Severe Weather
HCR8 Civil Contingencies – Pandemic Diseases

The Corporate Risk profile is currently as follows:



- **Business continuity plans**

The Highland Council is committed to maintaining critical services even in the face of unexpected events and disruptions. The Council's Business Continuity Management Policy, last reviewed in September 2023, outlines how the organisation plans and prepares for such disruptions.

What is Business Continuity?	Business Continuity refers to our ability to continue delivering essential services at acceptable levels following an incident. This could include anything from a power outage to a cyber attack or interruption of a critical supplier.
Why is it important?	Having a robust Business Continuity Plan ensures: • Minimal disruption to critical services: We can continue to provide services like social care, waste collection, and emergency response during disruptions. • Efficient recovery: We can resume normal operations as quickly and smoothly as possible. • Compliance with legal requirements: We meet our legal obligations to maintain service continuity during emergencies.
What Does the Policy say?	The updated policy outlines the roles and responsibilities of staff at all levels, including:

	• Chief Executive: Ensures adequate resources are available for business continuity planning and provides overall leadership during emergencies. • Chief Officers: Develop and maintain Business Continuity Plans for their respective service areas. • All Staff: Are aware of the policy and their role in maintaining business continuity. The policy also emphasises the importance of: • Regularly reviewing and exercising Business Continuity Plans. • Identifying critical functions and services. • Providing training and support to staff.

Business Continuity Plans are expected to be completed across all service areas by the end of 2025.

- **Integrated Impact Assessments**

In line with legislative duties, the Council applies the Integrated Impact Assessment (IIA) process to the development of all new or revised policies, practices, and strategic decisions relating to service delivery.

Impact assessments must be embedded from the outset. The process is intended to inform decision-making. All proposals subject to impact assessment should be kept under review and updated as necessary.

To strengthen this process, the Council adopted a new committee report format requiring the findings of impact assessments to be clearly articulated. Reports will not proceed unless the relevant assessments have been completed.

The Council has moved to an integrated approach which captures information and evidence (where available) across the following impact areas:

Subject Matter Area
Children's Rights and Wellbeing Impact Assessment
Climate Change Impact Assessment (CCIA)
Data Protection Impact Assessment (DPIA)

Equalities, Poverty, and Human Rights Impact Assessment
Island and Mainland Rural Communities Impact Assessment

The IIA process consists of two stages:

- Stage 1 - IIA Screening: Covers all impact areas listed above
- Stage 2 - Full Impact Assessment: Undertaken if required based on Stage 1 outcomes

Both stages must be reviewed by the relevant service manager responsible for leading and implementing the proposed policy, strategy, or service change. Depending on the screening outcome, one or more full assessments may be required.

The **Climate Change Impact Assessment (CCIA)** assesses proposals against a range of climate-related criteria. This enables informed evaluation of potential measures relating to:

- Mitigation
- Adaptation
- Resilience

This process ensures that climate considerations are integrated early and meaningfully into decision-making.

The Highland Council has fully embedded the IIA system into operational practices, supporting the identification and capture of both climate change and adaptation activities. However, there is scope to strengthen this further by applying a more robust adaptation lens to proposal reviews, which is recommended within the Climate Adaptation Action Plan.

- **North of Scotland Regional Resilience Partnership (RRP) and Community Risk Register**

The North of Scotland Community Risk Register is a key document produced by the North of Scotland Regional Resilience Partnership (RRP), of which the Council is a member. It is designed to communicate with the public about the most significant risks facing the region.

The key functions and aims of the Community Risk Register include:

- Identifies and Communicates Risks:
    - Highlights specific risks, including natural disasters, pandemics, and other emergencies, that pose the greatest threat to the region.

- Provides Information and Resources:
    - Offers details about the potential consequences of these risks and provides links to resources for further information, such as government websites and local organisations.

- Encourages Preparedness:

  - Encourages individuals, businesses, and communities to take steps to be better prepared for potential disruptions, including developing emergency plans and staying informed.

- Serves as a Communication Tool:
  - Acts as the core public warning and informing document for the RRP, ensuring the public is aware of the risks and what they can do to stay safe.

This register plays a vital role in enhancing community resilience by promoting awareness and preparedness for potential disruptions across the North of Scotland.

The **Council's Resilience Team** provides support to communities by:

- Providing advice and guidance on the preparation of **community emergency and resilience plans**.
- Coordinating reception centres and transport for individuals evacuated from their homes
- Providing ongoing support during emergency incidents and throughout the recovery period.

- **Key Council Strategies and Plans involving Climate Adaptation**

There are numerous Council strategies and plans that involve climate adaptation, either explicitly or implicitly. The most notable of these are outlined below:

- **Net Zero Strategy**

The Net Zero Strategy sets out the Council's approach to addressing the climate emergency by reducing emissions and preparing for the unavoidable impacts of climate change. As a public body, The Highland Council is legally bound to contribute to Scotland's Net Zero target by 2045.

The Net Zero Strategy for Highland includes a Route Map to Net Zero by 2045, with key interim targets to reduce emissions by at least 75% by 2030 and at least 90% by 2040.

The Strategy highlights the following priority actions relating to adaptation:

Outcomes	Priorities will include:
Develop business continuity plans to account for climate change	• Undertake a Council-wide Climate Risk and Opportunity Assessment.
A Resilient Highland Council which is prepared for the impacts of climate change and exploits any opportunities	• Develop and implement a Climate Change Adaptation Strategy and Action Plan.

The Ecology Strategy

The Council approved its first Ecology Strategy and Action Plan in November 2024. This draws together existing Council biodiversity actions, policies and projects and sets out an action plan to deliver future targets. The Ecology Strategy demonstrates the Council's commitment to tackling the ecological emergency and to reverse biodiversity loss for the benefit of our environment, the economy, our communities and visitors.

The Strategy outlines the steps that will be taken to respond to this complex and multifaceted issue. The Strategy also sets out a suite of actions that details how we will manage the Council estate more effectively for biodiversity; including influencing others through the implementation of policy and guidance; and working with our communities, regional and national partners and stakeholders to engage in collective action to tackle the ecological emergency.

The Ecology Strategy identifies goals along with corresponding actions. These include:

Goal 1: Leadership & actions

- The Council will lead by example by incorporating and embedding biodiversity and nature recovery within our capital programme and development projects and within our estate management operations
- The Council will continue to work in partnership with our stakeholders across the public, private, community and third sectors on existing projects and will look for opportunities to develop and input into new initiatives
- The Council will lobby Scottish Government to provide regulation, legislation, policy and guidance that will enable local authorities to tackle the ecological emergency with the right tools and urgency required

Goal 2: Making Space for Nature & actions

Goal 3: Planning & actions

Effective planning plays a vital role in safeguarding biodiversity and ensuring the resilience of natural ecosystems across the Highlands. Through considerate land use and development management, the Council can protect and enhance the ecological networks that species depend on for survival.

Goal 4: Pollution and Chemical Use & actions

Pollution is a key driver of the ecological emergency. The Council will continue to work in cooperation and collaboration with organisations that seek to prevent pollution, including in the marine environment. The main actions the Council will take in reducing its own impact in relation to pollution, air quality and waste – some of the major drivers of biodiversity loss – are detailed in the Council's Net Zero Strategy.

Goal 5: Communication, Training and Education & actions

Goal 6: Data Management & actions

Data management is an increasing challenge in both the public and private sectors. Data that is accessible, up-to-date and inclusive is essential if we are to have a clear

understanding of the current state of biodiversity across Highland and in the marine environment, define a baseline and measure progress.

- **The Regional Coastal Change Adaptation Plan**

The Regional Coastal Change Adaptation Plan (Regional CCAP) was adopted in May 2025, and provides an overview of the risks across the Highland Council area, identifying communities and assets that are least resilient to climate change, rising sea levels, coastal erosion and flooding. The Regional CCAP provides a framework and flexible adaptive pathway approach to address these risks over time, enabling the Highland Council and coastal communities to be more resilient to climate change, coastal erosion and flood risk now and in the future. The Plan also recognises that the Highland Council is not responsible for all assets, and will require a collaborative approach with other asset owners and neighbouring Local Authorities, where appropriate.

The Regional CCAP will help the Highland Council meet a number of legislative and policy requirements relating to climate mitigation, sustainability and adaptation including the National Planning Framework 4 (NPF4), The Climate Change (Scotland) Act 2009, The Flood Risk Management (Scotland) Act 2009 and Scottish National Adaptation Plan (SNAP) 2024-2029; Local Biodiversity Action Plan and the Highland Council Net Zero Strategy. The Regional CCAP will complement a number of policies in relation to the climate and nature emergency and will support colleagues across the Council, as well as external Stakeholders and communities in delivering a more adaptive and sustainable coastal environment.

The Regional CCAP has identified 29 high-risk locations for further investigation and development of Local Change Adaptation Plans (Local CCAPs). This will allow the Highland Council to communicate the risk and involve the community in the development of Local Coastal Change Adaptation Plans (Local CCAPs), when funding becomes available. By following the pathway approach it will help develop coastal communities that are adaptive and resilient to change over time.

The Regional CCAP adopts an iterative and flexible approach to managing the impacts of climate change around our coastline. It recognises that not all future risks need to be addressed immediately, and that responses may evolve as new information and understanding emerge. In the short-term, targeted actions can be undertaken to manage current risks, whilst simultaneously developing long-term, sustainable options for our coastal communities, enabling them to adapt and become more resilient over time.

The plan will require to be reviewed and updated going forward to ensure the most appropriate and effective pathway is followed, ensuring the Highland Council's coastal locations remain adaptive and resilient to future change.

- **Highland and Argyll Local Flood Risk Management Plan (2022 – 2028)**

The Local Flood Risk Management Plan (the 'Local Plan') has been developed to set out Actions to reduce the impact of flooding in the Highland and Argyll Local Plan District. The Plan supplements the Flood Risk Management Plan (the 'SEPA Plan' developed and published by SEPA), which sets out Objectives and Actions to reduce flood risk from

rivers, the sea and surface water. The SEPA Plan identifies where the risk of flooding and benefit of investment is greatest.

The Local Plan sets out how and when prioritised Actions will be delivered with this investment. Local Plans will be delivered over a six-year cycle with the current cycle between 2022 and 2028. The Local Plan is a requirement under the Flood Risk Management (Scotland) Act 2009.

The Local Plan provides information to help individuals and communities to become more resilient to flooding. Everyone can take action with the confidence of what others are doing and with the clear knowledge when they are doing it.

The contents of the Local Plan have been agreed with the lead authority and every other responsible authority which has flood risk related functions exercisable in or in relation to the Local Plan District and SEPA. The Local Plan is published by The Highland Council, lead authority for the Highland and Argyll Local Plan District, in agreement with:

• Argyll and Bute Council
• Scottish Water
• SEPA
• Scottish Forestry
• Loch Lomond and Trossachs National Park Authority
• Cairngorms National Park Authority.
• Transport Scotland

The Plan states that currently it is estimated that there are 22,000 people and 15,000 homes and businesses at risk from flooding across the Highland and Argyll District. This is estimated to increase to 34,000 people and 23,000 homes and businesses by the 2080s due to climate change. The annual cost of flooding is approximately £26 million. There is a significant risk of flooding to transport infrastructure in rural areas. This could leave communities isolated for long periods of time or result in long diversions. SEPA lead development of the flood risk management plans for Scotland and delivery of flood warning services. Local flood risk management planning is led by The Highland Council who is the lead authority.

SEPA and responsible authorities carry out actions in all areas of the Local Plan District which help to manage current and future flooding. These actions help to ensure that key aspects of flood risk management are taken forward in all locations. They ensure that for example new housing developments occur in the right places, and that critical flood risk information is developed and updated for all areas. The following actions are due to take place between 2022 and 2028, with most of these actions carried out on an ongoing basis:

- Awareness Raising
- Data to Support Climate Resilience
- Emergency Plans
- Flood Forecasting
- Flood Warning Development Framework
- Future Flood Risk Management Planning
- Guidance Development

- Hazard Mapping Updates
- Land Use Planning
- Maintenance
- Natural Flood Management Mapping
- National Flood Risk Assessment
- National Surface Water Mapping
- Reservoirs
- Scottish Flood Defence Asset Database
- Self Help

Potentially vulnerable areas were designated in 2018 based on the potential current or future risk from all sources of flooding. There are 30 potentially vulnerable areas in this Local Plan District.

- **Surface Water Management Plan**

The Highland Council is developing a Surface Water Management Plan (SWMP) to address surface water flooding, with a focus on priority areas such as Inverness and other vulnerable communities. The plan focuses on managing both small watercourses (less than 3km^2) and surface water runoff, including overland flows across roads and fields, to reduce flood risk.

The SWMP outlines actions to alleviate flooding by addressing surface water flooding, including watercourse inspections, assessments, gully maintenance, and other specific measures.

This work is being carried out as part of the Local Flood Risk Management Plan for the Highland and Argyll area, which also includes actions to manage river and coastal flooding. The Council will continue to develop the SWMP throughout the second cycle (2022-2028).

- **National Planning Framework (NPF4) and the Highland Local Development Plan**

National Planning Framework 4 (NPF4) was adopted and published on 13 February 2023, when it became part of the Development Plan (replacing NPF3 and Scottish Planning Policy).

The National Planning Framework (NPF) is a long-term plan for Scotland. NPF sets out where national developments and infrastructure is needed to support sustainable and inclusive growth. For the first time, spatial and thematic national planning policies are addressed in one place and NPF4 has the status of the development plan for planning purposes. NPF4 will play a key part in supporting economic recovery from the Coronavirus pandemic and addressing the climate and ecological emergency.

The Council is currently preparing a new local development plan for Highland. Local development plans show how local places can change in the future, including where development should and should not happen. Evidence is being gathered that is relevant and necessary to write the Highland Local Development Plan (HLDP).

The national context for the new HLDP is set out in NPF4. As required by NPF4, we are aiming for the HLDP to be:

- place-based, so that it is relevant, accessible, and useful to people with an interest in their place
- developed in collaboration with a wide range of stakeholders
- based on robust evidence, so that it is deliverable.

- **Local Place Plans**

A Local Place Plan is a community-led document that aims to easily convey a community's proposals for the development or use of land and buildings in their local area.

Introduced by the Planning (Scotland) Act 2019, Local Place Plans are a way for community councils or community-controlled bodies to engage with their local community, to think about how to make their place better, to agree priorities, and to take action (often working with others).

Local Place Plans can play a role in shaping the Local Development Plan for a region. They are intended to supplement, not replace, existing forms of community engagement.

Local Place Plans can be submitted at any time. However, to ensure they are fully considered in the preparation of the HLDP, the Scottish Government has required that a deadline for registering Local Place Plans be established. While registered Local Place Plans will not form part of the LDP, they will inform its preparation.

- **What more does the Council need to do?**

While the Council has already implemented a range of processes, strategies, and activities to support climate adaptation, significant work remains to address the full extent of vulnerabilities across Council assets, infrastructure, and service delivery in all service clusters.

To build a climate-resilient organisation, the Council must:

- Identify and address climate risks to its operations and infrastructure
- Integrate adaptation planning into all service areas and decision-making processes
- Monitor and evaluate progress to adapt actions as new information emerges

Achieving this will be essential to meeting the expectations set out in Scotland's National Adaptation Plan 3 and delivering on the Council's own Net Zero Strategy. Strengthening internal resilience will also support wider community adaptation and long-term sustainability across the Highlands.

Further context is outlined below regarding a Corporate Risk & Opportunity Assessment:

Climate risk & opportunity assessment

The Council is progressing work on a Corporate Climate Risk & Opportunity Assessment (CR&OA) to meet both corporate and statutory requirements. This assessment will be reported through the PBCCD reporting framework.

The UK Climate Change Committee advises that Scotland needs to adapt to 2ºC of warming and to assess the risks up to 4ºC.

The Council's CR&OA draws on a range of sources to ensure a consistent and aligned approach, including:

- Highland Adapts Highland Climate Risk and Opportunity Assessment
- UK Climate Change Risk Assessment 3 (CCRA3)
- Climate Ready Clyde CR&OA

These risks and opportunities have been mapped to the SNAP3 outcomes and aligned with Council service clusters, enabling clear identification of lead responsibilities and supporting effective monitoring and reporting.

The Council's CR&OA will be developed collaboratively with officers from the Risk & Resilience Group and relevant services across the Council.

The following headings will guide the process:

- **RISK ASSESSMENT**: assessing the Likelihood and Impact to establish a SCORE
- **Specific Risk**: Specific risks for the service area, relevant to the authority
- **Proposed Risk Treatment**: Proposed actions to mitigate/ adapt to the risk, relevant to the authority
- **Risk Owner**: Who has overall accountability for this risk? Is it within the authority, or external?
- **Type of decision**: Financial, commercial etc?
- **Longevity of decision**: Consider the permanence of the response or decision - can it be undone?
- **Decision makers**: Who needs to sign off on this action?

A priority action from the Climate Adaptation Strategy is to complete the corporate climate risk & opportunity assessment. Once finalised, it will:

- Identify key vulnerabilities across the organisation
- Inform the development of a targeted Adaptation Action Plan
- Ensure full alignment with SNAP3 and integration across all Council services

This approach will support a holistic and coordinated response to climate risks, strengthening the Council's resilience and capacity to climate impacts.

Appendix 9: What Adaptation means for Highland – Adaptation in practice, Adaptation Scotland Climate Ready Places

- **What does adaptation mean in practice?**

The concept of climate change adaptation can often feel abstract – especially in light of absolute certainty about this change and its associated impacts. The need to consider and implement adaptation measures at every juncture of our lives can be incredibly daunting and overwhelming in terms of where to start and what to do.

Adaptation Scotland has developed a series of Climate Ready Places to showcase realistic place-based scenarios that illustrate what climate resilience could look like in different settings. These examples can help us to:

- Visualise practical solutions to climate risks
- Understand opportunities for positive change
- Inspire action at local and regional levels

Adaption Scotland's Climate Ready Places offer valuable suggestions and insights into how we can adapt as a Council, as a region and as a society within both a national and global context.

By imagining what adapted places could look like, we can better plan for and manage the impacts of climate change, ensuring that our communities, environment, and essential services not only endure but thrive in a changing climate.

Adaptation Scotland's Climate Ready Places include both unadapted and adapting scenarios for the following:

- City
- Suburbs
- Industrial
- Coast
- Lowlands
- Uplands

The full descriptions for each scenario along with the adaptation measures for each adapting Climate Ready Place are included here.

The ‘City’ represents the urban city and town centres, which include a varied mix of historic and new buildings displaying a distinctly Scottish character. They are a focus of commercial

activity, both offices and shopping, they host important transport hubs and are home to much of the population.

Our urban centres are already impacted by severe weather, especially flooding and storms – and increasingly from overheating. Disruption here often has consequences far beyond the local area. We can build climate resilience through increasing greenspace, improving flood management, retrofitting and maintaining our buildings, and securing our infrastructure.

Adaptation highlights for the 'City' include:

- Maintain buildings
- In-street rain gardens
- Local growing
- Replace carparking
- Retrofit buildings
- Healthcare providers
- Green carparks
- Resilient transport
- Floodplain park
- Redevelop derelict sites
- Public space
- Drainage network
- Green streets

Adaptation Scotland

Suburbs

Unadapted

Adaptation Scotland

Suburbs

Adapting

The ‘Suburbs’ represents the residential neighbourhoods of our towns and cities, home to the majority of people living in Scotland. These areas include our schools and local shopping, and our playing fields and parks.

Our neighbourhoods are already impacted by severe weather, especially flooding and storms. These risks will increase as the climate changes and some – like overheating – will become more important than they are today. We can become more climate resilient through increasing greenspace, retrofitting and maintaining our buildings, and improving flood management.

Adaptation highlights for the ‘Suburbs’ include:

- Permeable neighbourhoods
- All-weather sports
- Retrofitted schools
- Quality greenspace
- Retrofitted apartments
- Open watercourses
- Safe homes
- Re-naturalising watercourse
- Community hub
- Protect critical services
- Permeable surfaces
- Climate ready homes
- Climate classrooms
- Community growing
- Remove culvert

The ‘Industrial’ place represents many of the industries, infrastructure and services that our urban areas are built around, and which our society and services relies on. These are the

motorways, ports and bridges that connect us, the powerlines that provide our electricity and ICT solutions, and the treatment plants that manage our waste and water.

It is essential that infrastructure, services and networks are climate resilient and able to cope with an increase in disruptive weather events. This means securing existing assets, as well as developing new infrastructure that can service a climate ready, low carbon future.

Adaptation highlights for the ‘Industrial place’ include:

- Connected transport
- Replace carparks
- Redevelop derelict sites
- Ferry connections
- Offshore renewables
- Green bridge
- Restored ecosystems
- Smart travel
- Data centre
- Waste water treatment
- Coastal defences
- Strengthened structures
- Resilient harbours

The ‘Coast’ represents Scotland’s extensive and varied coastline. Sea level rise will increase flooding and accelerate erosion at our coasts. Warming seas and acidification will impact on

marine ecosystems. This will have significant impact on coastal communities, infrastructure and industries. Long-term planning will need to take account of a changing coast.

Adaptation highlights for the ‘Coast’ include:

- Coastal change
- Relocate infrastructure
- Community hubs
- Agricultural productivity
- Buildings at the coast
- Managed re-alignment
- Coastal heritage
- Slope stability
- Waterfront buildings
- Re-establishing coastal processes
- Dune systems
- Resilient harbour
- Aquaculture
- Fisheries

The ‘Lowlands’ represents areas of productive agriculture and smaller towns and villages, many with a heritage of mining, farming and industry. A warming climate could improve growing conditions and agricultural productivity. Making the most of this opportunity will

depend on carefully managing changes to water, soils, pests and disease. As extreme storms become more frequent, flood management measures will become even more important to help protect people and assets locally, as well as settlements downstream.

Adaptation highlights for the ‘Lowlands’ include:

- Soil management
- Crops
- Re-naturalising watercourses
- Archaeological sites
- Changing crops
- Reconnecting floodplain
- Livestock management
- Creating habitat
- Lowland raised bog
- Protect infrastructure
- Improved livestock buildings
- Surface water
- Flood protection
- Historic sites
- Active travel

The ‘Uplands’ represents largely rural areas with forests, open moorlands, and hills rising to our towering mountains. These are iconic Scottish landscapes of both the Highlands and Southern Uplands.

The impacts of climate change will be widely felt here – with warmer temperatures and increasingly seasonal rainfall affecting habitats and wildlife. By improving the quality and connectivity of habitats we can build resilience, helping to build a vibrant and sustainable rural economy in the future.

Adaptation highlights for the 'Uplands' include:

- Connected habitats
- Mixed-species forest
- Deer
- Fish
- Resilient buildings
- Distillery
- Farming
- Shelter
- Reservoir management
- Local energy
- Roadside swales
- Restore peat bogs
- Breeding habitats
- Sustainable tourism
- Diversify grouse moors
- Seasonal tourism
- Landslides
- Restore wet woodlands

Appendix 10: Prioritising Actions with Co-Benefits – LCAT measures & solutions spreadsheet

Identify appropriate adaptation measures & solutions

As outlined in Appendix 8, the Corporate Climate Risk and Opportunity Assessment will identify key vulnerabilities across Council services. These will form the basis for prioritising actions within the Climate Adaptation Action Plan.

Once these risks and priorities are identified, it is essential to understand the adaptation measures and solutions available that can be implemented. A range of tools and resources are available to support this process, helping local authorities and organisations identify suitable and appropriate adaptation measures and solutions.

The LCAT tool, outlined in previous appendices, provides a comprehensive set of adaptation measures, categorised under specific climate impact pathways, that can help to inform meaningful and practical adaptation action at the Highland Council.

The LCAT identifies a total of 195 individual adaptations actions. Many of these actions are relevant to multiple climate impact pathways, demonstrating their co-benefit potential, where a single action addresses multiple risks or delivers multiple outcomes.

The actions are grouped under the following climate impact pathways:

- **Temperature** (63 climate adaptations)
- **Extreme storms** (38 climate adaptations)
- **Flooding & drought** (57 climate adaptations)
- **Food & personal security** (76 climate adaptations)
- **Coastal security** (48 climate adaptations)
- **Marine health hazards** (53 climate adaptations)

Further information regarding each climate impact pathway is outlined below:

- **Temperature** (63 climate adaptations)
    - Incorporate a congestion charging zone within the clean air zone
    - Use air pollution warning systems
    - Make railway tracks more resilient to heat
    - Develop warm spaces for local population use
    - Use speed limits and average speed technology on the roadside
    - Mediation of heat risk in care settings
    - Introduce driver training to reduce emissions
    - Introduce clean air zones
    - Antimicrobial resistance planning
    - Consider including air quality monitoring and measures to reduce road-traffic-related emissions
    - Passive cooling
    - Installation of permeable pavements
    - Manage development to mitigate road-traffic-related air pollution
    - Take precautions for cyclists at busy roads
    - Relevant retrofit of existing buildings
    - Do not building sites (such as schools, nurseries and care homes) in areas where pollution levels will be high

- Expand health education and risk communication associated with drought
- Include information in the plan about how structures such as buildings and other physical barriers will affect the distribution of air pollutants
- Assess the impact of any proposed charges on vulnerable groups
- Include air pollution in planning
- Installation of reflective surfaces
- Provide a choice of cycle routes
- Specify emission standards for private hire and other licensed vehicles
- Promote uptake of electric vehicles
- Use real-time information to tell drivers what the current optimum driving speed is
- Monitor outside the clean air zone
- Action to minimise congestion caused by delivery schedules
- Provide charging points for electric vehicles
- Use a fleet recognition scheme
- Address emissions from public sector transport activities
- Encourage public and private sector organisations to use zero or low emission vehicles for deliveries
- Site and design new buildings, facilities and estates to reduce the need for motorised travel
- Installation of cool pavements
- Introduce bylaws and other action to support 'no vehicle idling' areas
- Provision of cooling shelters
- Maintain railway tracks
- Encourage active travel
- Cold weather plans
- Support car sharing schemes or car clubs
- Sign up for the UKHSA Weather-Health Alerting System
- Introduce actions to smooth traffic flow
- Measures to increase air quality
- Avoid restricting ventilation in streets
- Use signs that display a driver's current speed to reduce unnecessary accelerations
- Use pollen count public warning systems
- Use heatwave warning systems
- Encourage drivers to maintain a reduced, steady pace where physical speed reduction measures are used
- Develop local parking plans
- Introduce 20 mph limits without physical measures to reduce speeds in urban areas where average speeds are already low
- Development of green and blue infrastructure
- Site living accommodation away from roadsides
- Provide support for active travel
- Avoid the creation of street canyons
- Installation of external shading and shutters
- Improvement of ventilation
- Identify which classes of vehicles to restrict or charge in a clean air zone
- Installation of internal blinds or curtains
- Communicate heat health action plans
- Mechanical cooling
- Develop integrated public transport networks based on low-emission vehicles
- Access to international surveillance systems for vector-borne diseases

  - Work across local authority boundaries to address regional air pollution
  - Installation of cool and green roofs

- **Extreme storms** (38 climate adaptations)
  - Enhance community support
  - Accessible and affordable flood insurance provision
  - Effective monitoring, regulation, use and disposal of industrial and agricultural chemicals and biocides
  - Make transport infrastructure more resilient
  - Improve housing quality and resilience measures considered in new developments
  - Increase adaptation and resilience of healthcare services to climate change
  - Improve resilience of private water supplies
  - Develop warm spaces for local population use
  - Identify and monitor areas at risk of flooding
  - Property flood resilience measures
  - Antimicrobial resistance planning
  - Natural flood management strategies
  - Use traditional building materials for flood recovery
  - Installation of permeable pavements
  - Relevant retrofit of existing buildings
  - Expand health education and risk communication associated with drought
  - Combine “no active intervention” with soft-engineering responses to allow for sustainable coastlines
  - Managed realignment and habitat creation objectives
  - Access to rehabilitation services
  - Restore rivers, wetlands and floodplains
  - Nature-based carbon storage
  - Indoor mould prevention
  - Cold weather plans
  - Sign up for the UKHSA Weather-Health Alerting System
  - Government schemes for energy costs
  - Ensure adequate mental health service provision
  - Use pollen count public warning systems
  - Rapid disease risk assessment
  - Development of green and blue infrastructure
  - Develop sustainable drainage systems
  - Improvement of ventilation
  - Multi-Hazard Early Warning System
  - Increase tree and woodland cover in viable locations
  - Community-focused adaptation strategies
  - Promote risk identification
  - Energy efficient household heating interventions
  - Emergency planning and response to extreme flood events
  - Access to international surveillance systems for vector-borne diseases

- **Flooding & drought** (57 climate adaptations)
  - Expand health education and risk communication associated with floods
  - Maintain, monitor and adapt energy infrastructure to improve efficiency
  - Use air pollution warning systems
  - Accessible and affordable flood insurance provision

- Soil monitoring and restoration
- Effective monitoring, regulation, use and disposal of industrial and agricultural chemicals and biocides
- Make transport infrastructure more resilient
- Promote efficient use of water
- Increase adaptation and resilience of healthcare services to climate change
- Make space for water within urban environments
- Make railway tracks more resilient to flooding and subsidence
- Early flood warning systems
- Increase access to green and blue spaces
- Improve drainage for energy infrastructure in areas prone to flooding
- Identify and monitor areas at risk of flooding
- Property flood resilience measures
- Antimicrobial resistance planning
- Natural flood management strategies
- Use traditional building materials for flood recovery
- Installation of permeable pavements
- Access to international surveillance of zoonotic diseases
- Modify bridges vulnerable to flood damage and energy infrastructure contained within
- Expand education and provide advice to reduce exposure to low air quality
- Restore rivers, wetlands and floodplains
- Restore Peatlands
- Expand education on vector-borne diseases
- Increase water-source storage capacity
- Improve wastewater management systems
- Expand health education and risk communication associated with drought
- Management and surveillance of invasive non-native species
- Encourage active travel
- Plant suitable street trees in viable urban locations
- Conventional flood defence systems
- Indoor mould prevention
- Increase biodiversity
- Measures to increase air quality
- Ensure adequate mental health service provision
- Use pollen count public warning systems
- Rapid establishment and provision of healthcare services during and after floods
- Wildfire prevention and management strategies
- Development of green and blue infrastructure
- Improve water quality monitoring
- Reintroduce beavers into viable sites
- Encourage outdoor recreational activities and time spent within green and blue spaces
- Enhance drought monitoring and early warning systems
- Develop sustainable drainage systems
- Improvement of ventilation
- Surveillance of flood-related health impacts
- Increase tree and woodland cover in viable locations
- Community-focused adaptation strategies
- Increase efficiency of treated water systems
- Plan adaptation work to protect electricity substations and infrastructure

- Emergency planning and response to extreme flood events
- Access to international surveillance systems for vector-borne diseases
- Avoid the development of buildings in flood risk areas
- Installation of cool and green roofs
- Conserve and maintain existing green and blue spaces

- **Food & personal security** (76 climate adaptations)
  - Expand health education and risk communication associated with floods
  - Plant saltwater resilient crops in areas prone to seawater intrusion and coastal flooding
  - Development and effective management of hedgerows and arable field margins
  - Use air pollution warning systems
  - Expand education on food preparation, handling and safety
  - Soil monitoring and restoration
  - Effective monitoring, regulation, use and disposal of industrial and agricultural chemicals and biocides
  - Make transport infrastructure more resilient
  - Adapt fishing industry to climatic change and ocean acidification
  - Ensure livestock are effectively managed to prevent and limit the spread of parasites, vectors and diseases
  - Increase adaptation and resilience of healthcare services to climate change
  - Routine monitoring of UK food security
  - Make railway tracks more resilient to flooding and subsidence
  - Early flood warning systems
  - Sustainable fishing practices and improved fisheries management
  - Increase access to green and blue spaces
  - Encourage a reduction in the proportion of unhealthy processed food in people's diets
  - Increase the proportion of fruit, vegetables and plant-based food sources in people's diets
  - Property flood resilience measures
  - Increase regulation and transparency in food labelling
  - Increase strategies and interventions to reduce food waste
  - Antimicrobial resistance planning
  - Natural flood management strategies
  - Assess the resilience and robustness of land in relation to land use and changing water availability
  - Access to international surveillance of zoonotic diseases
  - Modify bridges vulnerable to flood damage and energy infrastructure contained within
  - Expand health education and risk communication associated with drought
  - Managed realignment and habitat creation objectives
  - Ensure livestock are provided with sufficient shade, ventilation and water
  - Restore rivers, wetlands and floodplains
  - Conserve and restore marine and coastal ecosystems
  - Increase the efficiency of land use and management
  - Restore Peatlands
  - Increase water-source storage capacity
  - Improve wastewater management systems
  - Expand health education and risk communication associated with drought
  - Increase availability and accessibility to alternative protein sources

- Adapt agriculture and livestock production to a changing climate
- Management and surveillance of invasive non-native species
- Expand education on healthy and sustainable food choices
- Invest in and support the transition towards increasing renewable energy sources
- Nature-based carbon storage
- Transition toward sustainable livestock feed options
- Encourage active travel
- Undertake further research and increase collaboration and knowledge exchange
- Plant suitable street trees in viable urban locations
- Promote and implement sustainable food consumption and dietary change strategies
- Ensure legislation and policy is designed to meet food, health and sustainability goals
- Increase biodiversity
- Measures to increase air quality
- Increase the resilience and transparency of food supply chains
- Ensure adequate mental health service provision
- Use pollen count public warning systems
- Increase the efficiency of agricultural management and production strategies
- Use heatwave warning systems
- Wildfire prevention and management strategies
- Fungal and plant disease resistant crop management
- Development of green and blue infrastructure
- Encourage a reduction in meat consumption
- Improve water quality monitoring
- Encourage outdoor recreational activities and time spent within green and blue spaces
- Resilience monitoring and horizon-scanning to identify likely and potential climate change threats and impacts
- Enhance drought monitoring and early warning systems
- Develop sustainable drainage systems
- Multi-Hazard Early Warning System
- Increase tree and woodland cover in viable locations
- Community-focused adaptation strategies
- Promote healthy food consumption
- Improve food storage strategies to reduce spoilage
- Improve regulation on the marketing of unsustainable and unhealthy food products
- Ensure access to affordable healthy food
- Energy efficient household heating interventions
- Emergency planning and response to extreme flood events
- Increase the resilience of UK food systems
- Access to international surveillance systems for vector-borne diseases
- Conserve and maintain existing green and blue spaces

- **Coastal security** (48 climate adaptations)
  - Seawalls
  - New or improved coastal defences
  - Enhance community support
  - Artificial sand dunes and dune rehabilitation
  - Accessible and affordable flood insurance provision

- Make transport infrastructure more resilient
- Adapt fishing industry to climatic change and ocean acidification
- Enhance community engagement
- Improve housing quality and resilience measures considered in new developments
- Coastal setback
- Increase adaptation and resilience of healthcare services to climate change
- Community Relocation
- Accommodation approaches
- Identify and monitor areas at risk of flooding
- Property flood resilience measures
- Optimise coastal adaptations according to local landscapes
- Natural flood management strategies
- Ocean-based climate interventions
- Expand health education and risk communication associated with drought
- Combine “no active intervention” with soft-engineering responses to allow for sustainable coastlines
- Managed realignment and habitat creation objectives
- Restore rivers, wetlands and floodplains
- Conserve and restore marine and coastal ecosystems
- Land use planning
- Improve wastewater management systems
- Management and surveillance of invasive non-native species
- Dynamic Coast Project
- Coastal alert system
- Nature-based carbon storage
- Protection approaches
- Beach nourishment
- Flood-proofing
- Reconsider hold the line and hard coastal defences
- Increase biodiversity
- Shoreline management plans
- Ensure adequate mental health service provision
- Sea dikes
- Development of green and blue infrastructure
- Retreat approaches
- Advance the line
- Enhance knowledge and capacity building for adaptation techniques
- Develop sustainable drainage systems
- Utilise adaptation pathways, thresholds, and tipping points in adaptation planning
- Multi-Hazard Early Warning System
- Increase tree and woodland cover in viable locations
- Community-focused adaptation strategies
- Storm surge barriers
- Emergency planning and response to extreme flood events

- **Marine health hazards** (53 climate adaptations)
  - Development and effective management of hedgerows and arable field margins
  - Expand education on food preparation, handling and safety
  - Artificial sand dunes and dune rehabilitation
  - Soil monitoring and restoration

- Adapt water quality monitoring techniques to encompass a wide range of pathogenic organisms
- Effective monitoring, regulation, use and disposal of industrial and agricultural chemicals and biocides
- Organise beach cleans and implement methods for removing plastics and pollution sources from marine environments
- Adapt fishing industry to climatic change and ocean acidification
- Ensure livestock are effectively managed to prevent and limit the spread of parasites, vectors and diseases
- Increase adaptation and resilience of healthcare services to climate change
- Improve legislation to control the production and disposal of plastic and plastic waste
- Routine monitoring and treatment of seafood
- Antimicrobial resistance planning
- Natural flood management strategies
- Installation of permeable pavements
- Ocean-based climate interventions
- Access to international surveillance of zoonotic diseases
- Restore rivers, wetlands and floodplains
- Conserve and restore marine and coastal ecosystems
- Increase knowledge and understanding of health outcomes associated with pathogenic marine microorganisms
- Temporary restriction of beach access
- Restore Peatlands
- Improve wastewater management systems
- Adapt agriculture and livestock production to a changing climate
- Management and surveillance of invasive non-native species
- Nature-based carbon storage
- Undertake further research and increase collaboration and knowledge exchange
- Plant suitable street trees in viable urban locations
- Beach nourishment
- Promote sustainable production and consumption of goods
- Increase awareness and knowledge of antimicrobial resistance
- Access to international surveillance of pathogenic marine microorganisms
- Use methods to limit pathogens in sewage and agricultural and urban runoff from entering the environment and coastal waters
- Identify alternatives to plastic products
- Early warning systems to inform the public of marine pathogens
- Increase the efficiency of agricultural management and production strategies
- Improve disposal and recycling of plastic waste
- Development of green and blue infrastructure
- Improve water quality monitoring
- Contingency planning for risks associated with emerging and novel pathogens
- Reintroduce beavers into viable sites
- Encourage outdoor recreational activities and time spent within green and blue spaces
- Resilience monitoring and horizon-scanning to identify likely and potential climate change threats and impacts
- Poor water quality warning systems and pollution alerts
- Increase sanitation and infection control measures
- Multi-Hazard Early Warning System

- Increase tree and woodland cover in viable locations
- Community-focused adaptation strategies
- Promote healthy food consumption
- Use constructed wetlands for water pollution control
- Increase awareness of hygiene methods to reduce infection during and after seawater exposure
- Installation of cool and green roofs
- Conserve and maintain existing green and blue spaces