

# Public bodies adaptation planning

Harper Robertson, Isabella Chalmers-Arnold, Susie Wright, Jonny Riggall  
**Aether Ltd**

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## 1 Executive summary

### 1.1 Introduction

Public bodies in Scotland are key players at the forefront of responding to climate change impacts in Scotland, given their roles as health, education, housing and social care providers, and emergency and risk management agencies. This study reviews the state of play of public body climate adaptation planning in Scotland. The report highlights approaches for delivering climate adaptation, common themes, similarities and differences between public bodies. It summarises available information on costs and benefits, to help inform a collective understanding among stakeholders and highlight knowledge gaps.

### 1.2 Summary of key findings

#### 1.2.1 Overview of public body adaptation plans

The adaptation planning landscape is complex. In many public bodies, there is no single, dedicated climate adaptation plan; more often, adaptation is integrated into one or more documents. Public body adaptation plans vary widely in their scope, content and levels of maturity. Because of this variability it is difficult to evaluate progress on a like-for-like basis.

Affirming previous findings by the Sustainable Scotland Network (Sustainable Scotland Network, 2023), this study found multiple examples of confusion between climate change adaptation (i.e. responding to the impacts of climate change) and climate change mitigation (i.e. reducing greenhouse gas emissions). Public Bodies Climate Change Duties Reports (PBCCDRs) also frequently signposted to documents such as flood risk assessments that they are required to produce but do not constitute dedicated climate adaptation plans. Therefore, public bodies' self-reported levels of adaptation planning is not always accurate.

**Local authorities** are not explicitly required by law to produce adaptation plans. We found that fewer than one-third of local authorities have a dedicated adaptation plan. The remainder have undertaken at least some planning relevant to climate adaptation, in line with their statutory duties on adaptation. Adaptation plans are generally area-wide in scope. These plans frequently made use of guidance, tools and resources made available

through the Adaptation Scotland programme. There are several regional plans that have been produced via consortia, which are supported by additional evidence and are comparatively more mature.

As of October 2024, all 22 **NHS Boards** (including the 14 regional NHS Boards and 8 special NHS boards) have produced a climate change risk assessment (CCRA) and 18 have produced an adaptation plan. There is a requirement for NHS Boards to produce these in a standard Excel-based format, which prompts them to list actions against each risk. These plans generally focused on the organisation's own operations, assets and supply chain.

The adaptation plans for **Historic Environment Scotland, Scottish Water and Transport Scotland** were sector-specific and took different approaches to adaptation planning overall. We observed some key differences between local authorities, NHS boards and the other organisations we reviewed, which likely reflect the different remits, the sectors and geographic areas they cover. Key differences include: the scope of their adaptation planning, the themes and content of their adaptation actions, whether they focused solely on the organisation or on the wider area, and whether they were underpinned by a CCRA.

### 1.2.2 Information on costs and benefits in adaptation plans

We found that the adaptation plans we reviewed contained minimal quantitative information on either costs or benefits. The latter are considered qualitatively in varying levels of detail.

For local authorities, the majority of quantitative information that is available comes from two regional economic impacts reports on climate risks produced by Paul Watkiss Associates. East Dunbartonshire Council was the only example we found of a local authority that had attempted to downscale this information to a local level. Otherwise, there was minimal cost information aside from a handful of local authorities who cited high-level costs, usually in relation to flood infrastructure or associated damage.

NHS boards are prompted to indicate the cost of adaptation measures in relation to each risk they identify. However, not all of them utilised this part of the form; some fields were left blank and it was not clear why. Where costs were indicated, it was not always clear what they referred to.

Of the other organisations reviewed, only Scottish Water cited costs in its adaptation plan, referring to the level of investment required in future years.

It is likely that more quantitative information on costs and benefits is held by public bodies but not necessarily incorporated into their adaptation plans.

## 1.3 Recommendations

Recommendations for policy are set out below. Further details are in Section 8.2

1. Engage with public bodies and undertake further research to understand the barriers they face to identify the specifics of the support they need for adaptation planning. Suggested topics for further study are provided in Section 8.2.

2. Require local authorities to produce climate change risk assessments that consider topics additional to flooding. Use these to develop climate change adaptation plans, in line with guidance from the Adaptation Scotland programme.
3. Provide public bodies with advice on how the regional economic impact assessments (see Section 6.2.2) and other national evidence relating to costs and benefits can be downscaled to support the case for local adaptation planning and investment.
4. Align the Sustainable Scotland Network's (SSN) system for rating the maturity of adaptation planning with the Adaptation Capability Framework. This would likely require organisations to assess and self-report their scores, which links to Recommendation 2. See Section 7.1 for more information.
5. Explore ways to support public bodies with limited resources to produce adaptation plans or CCRA's. This could involve signposting to information provided by the Adaptation Scotland programme on easy wins, low-regret actions, no- or low-cost actions and partnership arrangements to share skills, knowledge and budgets.
6. Clarify what information on adaptation should be reported within Public Bodies Climate Change Duties Reports and what information is unnecessary in terms of key performance indicators. See Section 7.4 for more information.
7. In future, where mitigation programmes are undertaken or funded by the Scottish Government and public bodies would be involved in their delivery, signpost links between mitigation and adaptation.

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## 2 Glossary / Abbreviations table

Adaptation	<p>In human systems: The process of adjustment to actual or expected climate and its effects, to moderate harm or exploit beneficial opportunities.</p> <p>In natural systems: The process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate and its effects. (IPCC)</p>
Mitigation	A human intervention to reduce emissions or enhance the sinks of greenhouse gases (IPCC).
CCC	Climate Change Committee
CCRA	Climate Change Risk Assessment
GHG	Greenhouse Gas
GCoM	Global Covenant of Mayors
GCR	Glasgow City Region
LA	Local Authority
LCLIP	Local Climate Impacts Profile
NHS	National Health Service
PBCCDR	Public Bodies Climate Change Duties Report
PSCAN	Public Sector Climate Adaptation Network
SECAP	Sustainable Energy and Climate Action Plan
SDaC	Sustainable Design and Construction Guide
SNAP	Scottish National Adaptation Plan
Sniffer	Scotland and Northern Ireland Foundation for Environmental Research
SSN	Sustainable Scotland Network

## 3 Introduction

### 3.1 Context

Public bodies are at the forefront of responding to climate change, given their roles as health, education, housing and social care providers, emergency and risk management agencies, and more. Under the Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015, public bodies in Scotland are required to produce annual reports on their compliance with their statutory climate change duties, covering mitigation, adaptation and sustainability. These are known as Public Bodies Climate Change Duties Reports (PBCCDRs).

Although public bodies are required to report how they are contributing to help deliver the national adaptation plan and whether they have their own climate adaptation plans, some organisations do not have them; it is not a statutory requirement. The plans that do exist demonstrate varying levels of maturity and detail.

The Scottish Government has identified that a particular gap exists regarding costs and benefits of adaptation measures. This presents a barrier to action in several ways, e.g. making it difficult to:

- Determine the required levels of resilience
- Identify the best use of public sector resources and which projects to prioritise
- Understand who will be affected and how, as well as who bears the cost, which is important in the context of a just transition
- Engage with stakeholders and generate buy-in
- Develop business cases and obtain funding

This research study reviews the current 'state of play' of adaptation planning in Scotland, highlighting common themes, similarities, and differences among public bodies. It summarises available information on costs and benefits, to help inform a collective understanding among stakeholders and highlight knowledge gaps.

### 3.2 Climate change terminology

#### 3.2.1 Adaptation vs. mitigation

This study focuses on climate change adaptation plans. Adaptation in this context refers to actions that are taken to manage and respond to the effects of climate change. This is distinct from climate change mitigation, which refers to actions that are intended to reduce greenhouse gas (GHG) emissions, and thereby limit how much climate change occurs in the future.

In some cases, adaptation actions help to mitigate emissions, and vice-versa. For example, planting trees can help to provide cooling and shade in a warming climate (adaptation) while also removing carbon dioxide from the atmosphere (mitigation). In other cases, actions may contradict or subvert each other.

This review found several examples of climate change plans that confused adaptation and mitigation (for more information, see Sections 5.5 and 5.6). It also found examples where the linkages were either ignored or not fully acknowledged. There is a particular risk of confusion because climate change adaptation actions may be described as ‘mitigating climate risks’ in the standard language of risk management. This is distinct to climate mitigation actions that mitigate greenhouse gas emissions.

### 3.2.2 Risks: The interaction between hazard, vulnerability and exposure

The IPCC defines risk as, ‘The potential for adverse consequences for human or ecological systems, recognising the diversity of values and objectives associated with such systems [...] In the context of climate change impacts, risks result from dynamic interactions between climate-related hazards with the exposure and vulnerability of the affected human or ecological system to the hazards.’ (IPCC, 2019)

Climate hazards include phenomena like heatwaves and floods, exposure refers to the presence of people, assets or services in places that could be affected by hazards and vulnerability is the predisposition to be adversely affected.

## 4 Methodology

### 4.1 Scope of the study

This study primarily focused on the climate change adaptation plans or strategies produced by Local Authorities and NHS Boards. This included consortium studies by three regional adaptation partnerships: Climate Ready Clyde, Climate Ready South East Scotland (SES) and Highland Adapts. At the request of the Scottish Government, the study was expanded to include Historic Environment Scotland, Scottish Water and Transport Scotland.

The study prioritised documents using a tiered approach:

- Tier 1: Climate change plans or strategies that focus on adaptation and include ‘adaptation’ in the title.
- Tier 2: Other climate change strategies or action plans with adaptation-related content (even if the primary focus is on mitigation)
- Tier 3: Supporting documents and other evidence, such as climate change risk assessments (CCRAs), which contain information relevant to adaptation planning within Tier 1 and 2 documents.

Unless otherwise specified, the study did not examine other plans, strategies and documents where climate change was not the primary topic. Examples would include Local Development Plans, Flood Risk Assessments and Corporate Strategies.

Adaptation is often incorporated into multiple documents, to varying levels of detail. For simplicity, this report refers to all Tier 1 and Tier 2 documents as ‘adaptation plans’; however, readers should be mindful that the term is being used in a broad sense. Note, this tier system has been developed solely for the purpose of this study, to differentiate between various types of documents that were reviewed.

## 4.2 Research approach

This study comprised a desk review of climate adaptation plans and related documents as described in the previous section. The review was carried out from July to December 2024.

The initial task was to create a data collection template, ensuring consistent information recording. PBCCDRs for relevant public bodies were identified through the SSN website. Documents that were not publicly available were requested from the relevant public bodies.

Each document was then reviewed and evidence collated within the data template. The templates were collated into summary sheets to enable thematic analysis. An overview of these data can be found in the accompanying [spreadsheet](#).

## 4.3 Limitations of the approach

This project is based on a desk review only. The results have not been informed by additional stakeholder consultation.

As stated previously, the scope of this review focused on dedicated climate adaptation plans/strategies. Climate adaptation measures that are integrated into other documents, such as Local Development Plans, may not be captured if they are not included in the organisation's main climate change plan(s).

Public bodies may hold additional information or evidence relevant to climate adaptation, including quantified costs and benefits, that was not captured by this review. For example, the costs of additional flood protection infrastructure may have been assessed as part of individual business cases.

If an organisation has carried out further work on climate adaptation since its 2023/24 PBCCDR was published, it may not be included in this review. The same applies to any ongoing work or documents that are not yet finalised.

It is possible, although unlikely, that this review omitted some Tier 1 and 2 documents that are available online. This might be the case if they are not included in PBCCDRs, cross-referenced in other documents, or clearly signposted on the relevant public body's website.

# 5 Overview of public body adaptation plans

This section summarises the overall landscape in regard to climate adaptation planning, for the Scottish public bodies that were reviewed.

## 5.1 How many public bodies have climate adaptation plans?

As noted within Section 4.1, adaptation planning is often incorporated into a wide variety of plans, strategies and other documents. As a result, simple metrics - such as the number of adaptation plans or how many actions they contain - are difficult to calculate. They also do not convey the overall level of maturity of public bodies' climate adaptation planning.

To highlight the overall complexity of the landscape, consider the following example. West Dunbartonshire Council has produced a Climate Change Strategy that addresses both adaptation and mitigation but primarily focuses on the latter (West Dunbartonshire Council, 2021). The Strategy is supported by a Climate Change Action Plan. Both documents are



structured around nine themes, of which 'Climate Impacts, Risk and Adaptation' is one. The adaptation section contains three actions: (1) to deliver relevant actions set out in the Glasgow City Region (GCR) Climate Adaptation Strategy, (2) to undertake a local CCRA and (3) to use the Adaptation Capability Framework to identify areas for further improvement. The reference to Glasgow City Region acknowledges a separate piece of work, underpinned by a regional CCRA and economic impact assessment, that has been produced by Climate Ready Clyde (Climate Ready Clyde, 2021). This relationship is illustrated in Figure 1.

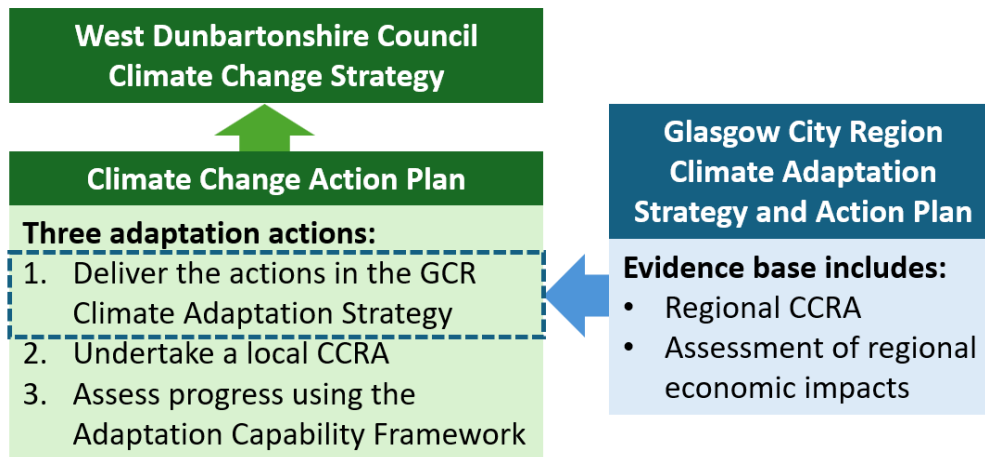


Figure 1. West Dunbartonshire's adaptation planning landscape

Based on this review, among the 32 Local Authorities that were assessed:

- Nearly all Local Authorities have either a Tier 1 and/or Tier 2 document, indicating that some level of climate adaptation planning has been carried out, either individually or as part of a regional consortium. Note that the level of maturity and detail varies widely, as will be discussed in various sections of this report.
- Approximately 2/3<sup>rd</sup>s of Local Authorities have access to a CCRA, either for their council area and/or as part of a regional consortium.
- Fewer than 1/3<sup>rd</sup> of Local Authorities have a specific, dedicated climate adaptation plan (a Tier 1 document as defined in Section 4.1).
- A small number of Local Authorities (up to 3) appear not to have undertaken any climate adaptation planning. It is acknowledged that adaptation might be addressed in wider documents and strategies which were excluded from this review.

Among the 14 regional NHS Boards and 8 special NHS boards:

- All 22 have undertaken a CCRA using a standard template.
- 18 of them have produced adaptation plans by listing actions against risks within their CCRA's. These combined CCRA/action plans have been counted as Tier 1 documents. Of those, 3 have also produced separate climate change strategies and/or action plans (Tier 2 documents).
- One NHS Board which does not have a Tier 1 adaptation plan has produced a separate climate change strategy (Tier 2) which discusses adaptation at a high level.

An additional challenge was understanding how the adaptation plans and related documents (such as wider climate change strategies) produced by each public body interrelate. The research found several instances of organisations that had produced a form of adaptation-related documentation that was not referenced in their PBCCDR. There were also examples where key documents, such as regional adaptation plans with supporting evidence bases, were mentioned in passing but not highlighted as being particularly significant within the wider context of the public body's adaptation planning or governance approach. These issues could indicate a lack of internal awareness of what planning has been undertaken and/or confusion about what to include in the PBCCDR. On the latter point, it may be useful to provide organisations with further clarity (see recommendations in Section 8.3).

## 5.2 Authorship of climate adaptation plans and other documents

Based on this review, the Tier 1 adaptation plans for most of the NHS boards, Scottish Water, Transport Scotland and HES appear to have been undertaken in-house, i.e. there are no other authors listed within the documents that were reviewed. However, correspondence with NHS NSS has confirmed that some NHS Boards had funding for external consultancy support to produce their combined CCRA/adaptation plans.

For Local Authorities, there are fewer Tier 1 climate adaptation plans. With the exception of the 2012 adaptation strategy by Highland Council, all of these appear to have either been produced in collaboration with other regional stakeholders or some other form of external support. The majority of Local Authority Tier 2 documents appear to be produced in-house, but as in the case of NHS Boards, some of these are known to have had input from external consultancies. Local Authority Tier 3 documents were more likely to have consultancy firms listed as the main authors, often being commissioned by a consortium. Although the sample size is small, the difference in authorship between Tier 1 and Tier 2 documents is notable. It might suggest that Local Authorities have higher in-house skills and capacity to develop mitigation plans compared with adaptation plans. It could also signify a preference for partnership working on adaptation. The two are not mutually exclusive.

Varying levels of additional support were provided by the Adaptation Scotland. Adaptation Scotland is a programme funded by the Scottish Government, which provides advice and support to businesses, communities and public sector organisations seeking to become more resilient to the effects of climate change. In this advisory capacity, Adaptation Scotland offer tools and guidance for public bodies undertaking adaptation reporting (see Table 1 below).

Joint plans have been developed at the regional scale to promote collaborative climate adaptation action, sharing guidance and resources between public bodies. These include Climate Ready Clyde (CRC), Climate Ready South East Scotland (SES) and Highland Adapts. Appendix A contains a list of the organisations that are involved in each of these consortia.

It is understood that Perth and Kinross, Angus and Dundee Councils are also currently exploring opportunities to create a Tayside Regional Adaptation Partnership. A list of regional and place-based adaptation partnerships is available on the Adaptation Scotland programme's website (Adaptation Scotland, n.d.).

### 5.3 What standards, guidance and tools do they use?

Public bodies use a range of guidance and tools to inform their adaptation planning.

- For **Local Authorities**, 14 of the 32 councils' PBCCDRs referred to the Adaptation Scotland programme, although not all have used these resources and the outputs show considerable variation.
- **NHS boards** are required to carry out CCRA in a standard format using templates provided by NHS National Services Scotland (NSS), and then use these to inform adaptation plans.
- **Historic Environment Scotland** and **Transport Scotland** also state in their PBCCDRs that they have used Adaptation Scotland's Capability Framework (Adaptation Scotland, 2019). **Scottish Water** is also understood to have utilised this framework although this is not specifically mentioned in the documents that were reviewed.

The table provides more information on the standards, guidance and tools that were referred to in the documents that our team reviewed.

Name	Description	Comments
Adaptation Scotland	<p>Adaptation Scotland is a programme funded by the Scottish Government and currently delivered by sustainability charity Sniffer. Adaptation Scotland provides a range of support and resources, including:</p> <ul style="list-style-type: none"> <li>• Adaptation Capability Framework</li> <li>• Adaptation Benchmarking Tool</li> <li>• Public Sector Climate Adaptation Network</li> <li>• Connecting climate risk and strategic priorities: Guide to strategic climate change risk assessments</li> </ul> <p>If following the Adaptation Capability Framework, public bodies are expected to undertake a self-assessment of their progress on adaptation planning using the Benchmarking Tool. For more information, see Appendix C.</p>	<p>17 of 32 Local Authorities specifically mentioned having engaged with one or more of these resources, as did Historic Environment Scotland and Transport Scotland. Out of 32 Local Authorities, 24 are members of the Public Sector Climate Adaptation Network (PSCAN).</p> <p>Based solely on a desk review, this study was unable to determine the extent to which NHS Boards have engaged with the Adaptation Scotland programme.</p>
NHS NSS tools	<p>NHS National Services Scotland (NSS) have collaborated with Health Facilities Scotland and JBA Consulting to provide a range of climate change resources for health boards in Scotland. These are intended to help assess climate change</p>	<p>Aether was provided with a summary of NHS adaptation plans (not publicly available). According to that review,</p>

Name	Description	Comments
	<p>risks and develop adaptation plans, focusing on assets and physical infrastructure. Tools include:</p> <ul style="list-style-type: none"> <li>• CCRA and Planning Tool</li> <li>• NHS Scotland Climate Change Mapping Tool</li> <li>• NHS Scotland Sustainability Assessment Tool</li> <li>• Sustainable Design and Construction Guide (SDaC)</li> </ul> <p>NHS Boards are required to carry out CCRAs using the template provided, and then use this to inform an adaptation plan.</p>	<p>22 NHS boards have completed CCRAs and 18 have produced adaptation plans using NHS NSS tools.</p> <p>Many of these also referred to the SDaC when discussing future planning for their buildings.</p>
LCLIP	<p>The Local Climate Impacts Profile (LCLIP) tool has been developed by the UK Climate Impacts Programme (UKCIP). The simple tool helps organisations assess their exposure and vulnerability to weather and climate. Note that UKCIP has been discontinued.</p>	<p>Three Local Authorities made reference to this tool in the documents we reviewed.</p>
SECAP	<p>Signatories to the Global Covenant of Mayors (GCoM) commit to producing a Sustainable Energy and Climate Action Plan (SECAP). This includes a climate risk and vulnerability assessment which are entered into in an Excel-based template, following GCoM's methodology.</p>	<p>At least three Local Authorities (Angus, Fife and Dundee Councils) have produced a SECAP.</p>

Table 1: Standards, guidance and tools referenced in public bodies' climate adaptation plans

It is likely that other standards, guidance and tools (particularly ones from the UK Climate Impacts Programme) have been used even if they were not captured by this review. This review did not record any specific references to the internationally-recognised ISO 14090:2019 standard, although it underpins the NHS NSS requirements.

Even among public bodies that referenced the same guidance, the outputs still varied in scope, content, themes, structure, and level of detail. This could be due, in part, to the fact that the Adaptation Scotland Capability Framework allows flexibility for organisations that are at different stages of maturity in planning for climate change adaptation, and the Adaptation Scotland website offers a wide range of tools and resources which public bodies can choose to adopt. The guidance is non-prescriptive and is designed to be tailored to the organisation's needs.

Tools were also used differently by different organisations. For example, not all NHS boards responded to all of the prompts in the CCRA template. These differences in overall scope and content are explored more in the next section.

## 5.4 Overall scope and content of adaptation plans

### 5.4.1 Local Authorities

Although some Local Authority's adaptation plans focus on risks to their own organisation's assets and services, most are area-wide and cross-sectoral in their approach. In other words, they address issues that the council can influence directly, as well as those that are relevant to the geographic area as a whole where the council may have indirect influence.

There is wide variation in the level of detail and complexity in adaptation planning for Local Authorities. For example, Edinburgh City Council produced an adaptation plan in 2016 (Edinburgh City Council, 2016) which has already been updated with a new one (Edinburgh City Council, 2024). Whereas, for some Local Authorities, adaptation planning includes only a brief reference to adaptation within a document that is primarily mitigation-focused.

Regarding the specific climate hazards that the plans consider, the most common are flooding and severe weather. Many of the plans also discuss the impacts of climate change on the natural environment, green spaces or green infrastructure, and biodiversity. Overheating is mentioned in some of the plans but overall is not a key focus. This may reflect the types of climate hazards that have historically been more common in Scotland (flooding) and those that are more visible (the natural environment and green spaces).

Unlike NHS board plans (see next section), not all of the Local Authority plans were supported by a CCRA. Those that had undertaken a CCRA tended to address climate hazards, but did not necessarily assess exposure or vulnerability (see definitions in Section 3.2).

There was not a clear link between the level of detail of the adaptation plans and whether or not the Local Authority had a CCRA as part of their evidence base. There were some that had access to regional CCRAs (e.g. via Climate Ready Clyde) but the extent to which those findings had been incorporated into locally-specific climate adaptation plans or strategies was unclear based on this desk review. In other cases, organisations may have undertaken a CCRA as a first step but not yet produced an adaptation plan. Those organisations might be expected to have more detailed adaptation plans but it is not yet possible to say.

In terms of other commonalities and themes, there did not appear to be a clear correlation between the level of adaptation planning a Local Authority had undertaken, and its budget or number of employees. This is linked to the fact that some local authorities have joined together to produce regional risk assessments or strategies (see Appendix A).

Similarly, to the extent that there were regional differences in overall levels of adaptation planning, these were related to whether or not organisations were part of those joint strategies.

### 5.4.2 NHS Boards

NHS boards' adaptation plans are targeted at the level of their own organisation, healthcare assets and services, and supply chains. Mostly, the focus is on physical assets. Based on information provided by the project steering group, it is understood that this focus was intentional, due to a need to narrow scope in line with budget and resourcing constraints.

As part of NHS NSS requirements, NHS boards are required to undertake a CCRA and develop adaptation plans using a standard Excel-based template. It includes the following headings, which are presented sequentially in the order that they appear.

- Risk type;
- Asset group;
- Relevant climate hazard;
- Assets at risk;
- Potential impact category;
- Risk exposure score;
- Existing [risk] mitigation measures;
- Recommended adaptation measures;
- Residual risk exposure score;
- Risk owner;
- Delivery partners;
- Timeline;
- Financial costs;
- Monitoring approach.

In general, there tends to be less variance in scope between NHS Boards plans, compared to Local Authority plans. Notably, although the template is framed as a risk assessment, many of the actions proposed in response to specific hazards are to undertake more detailed assessments of the risk. For more information on actions, see Section 5.6.

In addition, at least six NHS Boards have produced broader climate change strategies (or similarly titled documents) and most of these discuss adaptation at a high level.

NHS Boards plans are generally focused on hazards such as flooding, overheating, structural damage from severe weather, and general risks to the estate and services. For example, in the NHS Greater Glasgow and Clyde Climate Change and Sustainability Strategy, one adaptation action focuses on utilising the existing outdoor estate to retrofit green infrastructure and combat increased flooding (NHS Greater Glasgow and Clyde, 2023). NHS Greater Glasgow and Clyde was a stakeholder within the Climate Ready Clyde group until 2024, demonstrating that some NHS Bodies, like some Local Authorities, are benefitting from shared regional learnings.

### 5.4.3 Other organisations

Historic Environment Scotland's (HES) adaptation plan focuses on sector-specific climate risks (Historic Environment Scotland, 2020). The adaptation plan is accompanied by a detailed project methodology and results report, including results of the CCRA. A risk management strategy and severe weather policy has also been created to support the Climate Ready HES approach. The Adaptation Scotland Capability Framework was used to inform the organisation's action plan. The plan groups risks into 5 broad categories: physical climate risks to physical assets, natural capital, operations, people and transition risks. For more detail on transition risks, see Appendix D.

Transport Scotland's adaptation plan covers its area of operation, which covers all of Scotland (Transport Scotland, 2021). It outlines seven transport related climate risks and prioritises four high level strategic outcomes to help achieve the vision of a well-adapted

transport system in Scotland. Transport Scotland used resources from the Adaptation Scotland programme to develop its plans. The risks are evidenced using the UK CCRA and a separate CCRA has not been undertaken for the organisation. The strategic outcomes relate to trunk roads, rail network, aviation network and maritime network. Each strategic outcome includes sub-outcomes which provide a much narrower scope for action. For example, for the strategic outcome relating to trunk roads, one sub-outcome is to deliver a programme of proactive scour schemes across the network.

Like Transport Scotland, Scottish Water's adaptation plan is focused on its own assets and operations nationally (Scottish Water, 2024). The plan is embedded within their overall risk management process. It covers eight main themes, which include: impact on services, drought, deteriorating water quality, customer flooding and environmental pollution, waste water and environmental quality, asset flooding and coastal erosion, interdependent risks and enablers. Outcomes and outputs for each adaptation action are clearly defined along with timelines for adoption and enabling actions. The plan is based on a CCRA that contains two climate scenarios, in line with CCC recommendation to plan for a 2°C increase in global temperatures but assess for a 4°C increase.

## 5.5 Themes and structure of adaptation plans

Most of the adaptation plans reviewed in this study were structured around multiple thematic areas. However, there was little consistency in what these themes were and the scope of what they covered within different plans. This was true when comparing different types of organisation (e.g. NHS board vs. local authority) as well as when comparing across organisations of the same type (e.g. NHS board with NHS board). The thematic groupings used can be broadly categorised as:

1. **Broad sectoral themes such as buildings, infrastructure and biodiversity** – This is the most common way of defining themes. It is similar to the outcomes used to structure the third Scottish National Adaptation Plan (SNAP3). The thematic areas are not uniform across plans that use this approach and often different language is used to describe similar themes, for example 'property assets and housing' and 'buildings'. A theme relating to nature, the environment and/or biodiversity was common to almost all plans that used this approach, and the built environment was also a common theme. Of the outcomes in SNAP3, the 'economy, business and industry' theme was least prominent across plans.
2. **Sector-specific themes** – For non-local authority organisations, including NHS boards, an approach similar to the sectoral themes above may be used but with specific themes more closely aligned to their delivery functions. For example, the Transport Scotland plan is structured around themes including trunk roads, rail, aviation and maritime.
3. **Themes based on climate hazards** – Some of the adaptation plans are structured around themes such as 'flooding', 'heat', 'drought' and 'coastal adaptation'. This was most common among NHS Boards, as the CCRA template prompts the user to list actions against each risk (although some NHS Boards had also produced separate climate change strategies that addressed adaptation at a high level and did not follow the same structure). Overall, the plans generally have a stronger focus on flooding than other hazards, likely reflecting the current risk profile in Scotland.

4. **Enablers** – Many of the plans also contain at least one theme based around enablers for adaptation action, including governance, building understanding and knowledge, working in partnership and monitoring and evaluation.
5. **Climate adaptation as one theme in a wider strategy** – Some organisations have mitigation and adaptation combined into a single strategy document. Those tended to include a number of chapters of mitigation themes (transport, waste, land use etc.) and one or two additional chapters on adaptation and/or resilience. Having a single strategy could theoretically help with integrating adaptation and mitigation actions but in many cases this opportunity has been missed (see Section 5.6).

Some plans apply a mix of the above approaches, for example, using primarily sectoral themes with an additional chapter on a topic such as flooding or governance.

The wide variety of themes identified in the adaptation plans likely reflects the local and function specific nature of risk and adaptation to different organisations, as well as differing organisation priorities. However, this diversity of themes does make it difficult to compare plans and establish whether individual plans contain comprehensive coverage of the relevant risks and necessary actions.

Not all plans explicitly acknowledge interactions between themes. This creates a risk of siloed working and missed opportunities for join-up.

## 5.6 Inclusion of specific actions and policies in adaptation plans

Most of the plans include relatively high-level actions with a focus on planning and policy making rather than delivery and implementation. This suggests that the organisations may not yet be at a sufficiently mature stage of adaptation planning to have a delivery focus. For example, many plans include actions like ‘Set out a proactive approach to climate change adaptation within our Asset Management Plan’ and ‘Develop policies to strengthen the resilience of the transport network to the impacts of climate change’. In some cases, actions like ‘maximise partnership approaches’ are suggested, without outlining clear mechanisms for how partnerships will be built or who needs to be involved. As a result, implementation and monitoring progress against the action may be difficult (see Section 5.7 for further information).

Mirroring the diversity of themes within public bodies’ adaptation planning, a wide variety of adaptation policies and actions have been proposed. Some actions were common across many plans. For example, many included adaptation actions aiming to expand and protect green space and actions to improve governance such as incorporating climate risk into corporate risk registers; note, this is a specific capability and range of tasks within the ACF. Fewer plans included actions to reduce risks due to high temperatures. Actions aiming to address the higher exposure of rural and island communities were limited, even amongst local authorities with significant rural populations. In some cases, including the plans for Transport Scotland, Angus Council and Shetland Council, vulnerability due to the greater reliance of remote communities on specific transport links such as ferries and other infrastructure was acknowledged but specific, targeted actions to address this were not included or have not yet been developed. One exception was the Highland Council, which included an action to map vulnerable communities and sectors in their 2012 plan (Highland Council, 2012).



Overall, there is limited information on how actions have been prioritised, including a lack of direct use of information from risk assessments to ensure the most significant risks are acted upon. Historic Environment Scotland's plan was an exception in that a relatively detailed methodology document accompanies their adaptation plan.

In many cases, it was not clear from reviewing the documents in this study how many plans commit to new or strengthened actions, rather than reiterating actions that would take place anyway. For example, many actions relating to flooding may be covered under existing local flood risk management work. This is a challenge when it comes to costing adaptation specifically.

Adaptation and mitigation actions are sometimes mis-categorised. SSN found, in their analysis of PBCCDRs for the year 2022/23, that 10% of NHS boards and 6% of local authorities listed mitigation measures in response to questions on adaptation (Sustainable Scotland Network, 2023). Examples of this confusion have been found within a number of plans. For example, the resilience section of one Local Authority plan refers to 'milestones for our resilience journey to reduce GHG emissions'. There is an opportunity here for further training and knowledge dissemination.

Opportunities to join up adaptation and mitigation action, particularly where a single climate strategy covers both areas of work, have often been missed. For example, a number of plans contain actions to improve insulation of buildings to reduce emissions without explicitly considering the potential synergies with adaptation, such as the potential to reduce costs by retrofitting adaptation and mitigation measures to buildings at the same time, or the increased risks of overheating in insulated but poorly ventilated buildings. However, there are examples of plans that do acknowledge the synergies even if this is not a major focus. For example, NHS Greater Glasgow and Clyde have an action to 'Ensure energy models take account of future weather trends and models to be monitored in use with systems adjusted as required' (NHS Greater Glasgow and Clyde, 2023) and East Ayrshire acknowledges the benefits of green infrastructure for reducing flooding, improving biodiversity and sequestering carbon (East Ayrshire Council, 2021).

## 5.7 Approach to monitoring, evaluation and learning

Monitoring, evaluation and learning is a key part of the adaptation policy cycle which allows progress and performance to be understood and learned from to inform future policy development and implementation. It also allows decision makers flexibility to evolve their approaches as new information becomes available. At the national level, the Scottish Government have developed a monitoring and evaluation framework as part of SNAP3.

Of the NHS boards and Local Authorities that have specific, dedicated adaptation plans, or broader climate strategies that include adaptation, just under two thirds explicitly mention some kind of monitoring and evaluation arrangements. A similar number have plans to review and update these, many on an annual timescale but all within the next five years.

The reason for some plans not including monitoring and evaluation plans is not known but could be due to a lack of resource or a lack of skills or knowledge. Some of those not including monitoring plans have used standards or guidance in the development of their plans, such as the Adaptation Scotland Capability Framework.

The mechanisms proposed for monitoring and evaluation vary across different organisations. In some cases, plans acknowledge the need for monitoring and evaluation but do not include designs of specific frameworks, relying instead upon reporting through the PBCCD or setting up a steering group to review on an ongoing basis.

For the most mature plans, more detailed frameworks of governance and internal reporting, including performance indicators for actions and themes, have been developed. However, indicators are not comparable across different plans, meaning comparison or aggregation across different organisations would not be straightforward. For example, both the Aberdeen City Council and Dundee Council action plans contain actions relating to raising awareness of the health impacts of climate change. Aberdeen suggest measuring progress as the number of people reached by the campaigns for raising awareness (Aberdeen City Council, 2022) whereas Dundee proposes indicators relating to the number of people affected by illness (Sustainable Dundee and the Dundee Partnership, 2019)

Variations in key performance indicators across the public sector is likely to make it harder to consistently track progress at a national level.

## 6 Information on costs and benefits in the public body adaptation plans

### 6.1 Introduction

#### 6.1.1 How have we defined costs and benefits?

This was interpreted broadly to include both monetary and non-monetised costs, as opposed to only costs associated with financial spend, and benefits associated with adaptation actions. To holistically appraise the costs and benefits of adaptation, three types of information need to be considered:

- The cost of inaction - costs incurred due to the impacts of climate change in the absence of further adaptation
- The cost of adaptation measures – the spend and investment required to implement adaptation measures
- Ancillary costs and benefits – the wider impacts of adaptation action on the economy, society and the environment that go beyond avoided losses. For example, adaptation actions that enhance green space could result in benefits to human health and wellbeing.

#### 6.1.2 The IPCC's view on cost-benefit analysis

In 'Economics of Adaptation', the IPCC acknowledges that conventional cost-benefit analysis may not be the most suitable approach when it comes to adaptation measures (IPCC, 2018). The report cites several reasons for this, such as the inherent uncertainty associated with different climate futures, and the difficulty of ascribing a monetary value to non-market impacts on public health, heritage, ecosystem services, etc.

According to the IPCC, 'A narrow focus on quantifiable costs and benefits can bias decisions against the poor and against ecosystems and those in the future whose values can be

excluded or are understated.’ On this basis, the IPCC suggests that, in some cases, it may be more appropriate to use multi-metric decision making techniques. These might better enable decision-makers to weigh competing objectives.

In the UK context, research has recently been conducted into the latest methods for valuing the costs and benefits of climate risk and adaptation policy (Cambridge Econometrics, 2023) and the economics of adaptation (Advisory Group on the Economics of Climate Change Risk and Adaptation, 2024) in preparation for the fourth UK Climate Change Risk Assessment (CCRA4). Other relevant recent work includes *The Costs of Adaptation*, and the *Economic Costs and Benefits of Adaptation in the UK* (Paul Watkiss Associates, 2022), *Barriers to financing adaptation actions in the UK* (Frontier Economics & Paul Watkiss Associates, 2022) and *Investment for a Well Adapted UK* (Climate Change Committee, 2023).

## 6.2 Local authorities

### 6.2.1 Overview

The majority of quantitative cost-benefit information comes from two regional economic impact assessments produced on behalf of Climate Ready Clyde and Highland Adapts. More information on these is provided in the next section.

Several Local Authorities described quantitative costs or benefits in a more light-touch way, making a small number of references to these without providing more detail. Usually this referred to flood damages or infrastructure. For example, the City of Edinburgh’s adaptation plan (Edinburgh City Council, 2016) refers to the cost of maintaining and repairing coastal defences between 2008-2011 (£740,000). Aberdeen City Council and Dundee City Council both describe the cost of damage due to unmitigated flooding. The cost of flooding to Aberdeen without intervention is estimated to be £12.5m (Aberdeen Adapts, 2022) and the cost to residents, businesses and infrastructure in Broughty Ferry in Dundee of a 1 in 200 year flood is estimated to be in the region of £97m. (Sustainable Dundee and the Dundee Partnership, 2019).

It is considered likely that Local Authorities have a more detailed understanding of the costs and benefits of flood prevention measures because they have statutory duties in relation to flooding. There may be other topic areas where the cost of interventions has been or could be estimated by different departments, even if it is not captured within their climate adaptation plans. An example might be the cost of repairing potholes, which could increase due to climate change because of increased temperatures, rainfall and freeze-thaw cycles.

Some adaptation plans referred to the cost of inaction. This was framed as part of the overall rationale for taking steps to address climate change, rather than being used as a counterfactual to support specific adaptation measures. For example, Aberdeen City Council refers to the Stern Review (Stern, 2006) when explaining that the benefits of early action outweigh the costs of action. It also mentions the potential impact on gross domestic product (GDP). Perth and Kinross state that, ‘In general, each £1 spent on resilience measures has been demonstrated to generate between £2-£10 pounds in savings’ although no citation was provided (Perth and Kinross Council, 2021).

Several Local Authorities acknowledge the lack of information on costs and benefits, e.g.:

- The LCLIP for Aberdeenshire (Aberdeenshire Council, 2019) recommends introducing a 'cost code to capture costs from all extreme weather events' and indicates that the Council may investigate setting up a central fund for climate adaptation.
- One of the City of Edinburgh's stated objectives in the draft Climate Ready Edinburgh Plan 202-2030 (Edinburgh City Council, 2023) is to 'Carry out further research to enable options appraisals and cost benefit analysis of different adaptation responses in Edinburgh to improve decision making.'

The regional economic impact assessments (see Section 6.2.2) demonstrate that Local Authorities have been working together to address this gap, and there is evidence that there is an appetite for further collaboration. It is understood that Climate Ready Clyde has been exploring options to develop an Adaptation Finance Lab to help 'support alternative financing models for adaptation action within Glasgow City Region' (Climate Ready Clyde, 2021).

### 6.2.2 Regional reports

Two regional economic assessments have been produced by Paul Watkiss Associates on behalf of Climate Ready Clyde and Highland Adapts. These reports consider the overall economic impacts of climate change on these regions and key sectors, providing a monetary valuation of 'relevant costs and benefits to Government and society'. Together, these reports provide an evidence base for nine out of 32 Local Authority areas.

It should be noted that the costs set out in these reports relate to climate risks, i.e. the potential cost of inaction, as opposed to adaptation actions.

The methodology of both reports is informed by guidance set out in the UK Government HM Treasury Green Book, which is the guidance the government provides for appraising, monitoring and evaluating programmes, projects and policies. This mirrors the approach taken to quantify costs as part of the first, second and third UK CCRA's (although CCRA4 is expected to use a different approach).

The data sources used in these analyses come from a range of studies, with estimates of future cost based on different socio-economic and climate change scenarios. Therefore, the authors acknowledge that they do not necessarily provide a like-for-like comparison across different risks. They also state that the values would need to be adjusted for use in a cost-benefit analysis.

For **Climate Ready Clyde**, the regional analysis (Paul Watkiss Associates, 2019) includes:

- Current economic costs of extreme weather events, based on four recent examples in the Glasgow City region (the report notes that these costs are likely to be significant underestimates due to data gaps):
  - December 2015 river floods (£4m - £10m)
  - July 2012 surface water floods (£1m - £2m)
  - October 2017 wind storm (>£20m)
  - 2013 warm and dry summer (£20m)

- Potential economic costs (and benefits) associated with all risks identified in the regional CCRA
- Total economic costs, expressed as indicative order of magnitude estimates for the 2020s, 2050s and 2080s.

For **Highland Adapts** (Paul Watkiss Associates, 2024), it includes:

- Economic costs of flooding and wildfires
- Potential health costs of higher temperatures
- Impacts of reduced heating degree days
- Macro-economic or economy-wide costs

As part of the Highland Adapts project, additional sector reports were provided for (1) Energy (2) Forestry and Timber (3) Food and Drink.

We found one example of an organisation that had attempted to downscale these costs to a more local level. East Dunbartonshire Council has produced an evidence report to inform its forthcoming climate adaptation plan and this contains indicative costs against each of the adaptation actions that are proposed (East Dunbartonshire Council, 2019). However, in general, it is not clear how a Local Authority would be expected to downscale these estimates to support a business case for a specific, local project. Therefore, in addition to this type of regional assessment, additional forms of evidence may be needed.

Reflecting on the quantitative information available to Local Authorities, at present the majority comes from these two reports by a single consultancy firm. While we do not suggest that there is any issue with the methodology, there would be higher confidence in the results if they could be validated using different approaches.

### 6.3 NHS boards

All NHS Boards are required to undertake a CCRA using a standard template. The intention is that the information is then turned into a climate adaptation plan. The form prompts the user to indicate the financial cost of responding to each of the hazards that are identified.

In the CCRA template, costs are represented as a range which users can select from a drop-down menu. It is possible that the responses are simply estimates based on the user's judgment rather than drawing from more detailed analysis.

This study reviewed CCRA for 20 out of 22 NHS Boards. Of those that were reviewed:

- Two only included a risk assessment, with no adaptation actions or cost information.
- Two included adaptation actions, but left the cost section blank.
- The remaining 16 provided costs for some or most of the adaptation actions.

However:

- In three cases, the same costs were listed in each row, which may indicate an error or oversight.

- In one case, the NHS Board only included costs for 3 out of 32 actions; however, rather than indicating a range using the drop-down menu, those costs appear to be specific quotes for building repair/upgrade work.

The guidance provided within the spreadsheet specifies that the financial costs relate to the cost to implement the proposed adaptation measure. However, it appears that some users have interpreted this in different ways, with some appearing to describe the cost of repairing damage, i.e. the cost of inaction.

Note the following:

- Aside from NHS Dumfries and Galloway, which included an extract of its risk assessment in its PBCCDR, none of the CCRA's are publicly available. This means that some of the cost information cannot be shared.
- Aether did not have access to any information about the methodology used to calculate the costs. Therefore, we cannot comment on the details of what the estimates include. For example, in several CCRA's, costs were indicated against a specific risk, but the proposed response was to undertake a further assessment of that risk. It is not clear whether the cost refers to the price of the assessment, or the potential cost of repairing damage.

## 6.4 Other organisations reviewed

The 2024 Adaptation Plan for Scottish Water (Scottish Water, 2024) describes the level of investment needed to respond to climate change impacts as being 'in the range of £2-5 billion over the next 25 years.' This was notable because it refers to costs as an 'investment', a term which acknowledges the long-term benefits and payback. However, the report does not explain how this figure was obtained. There are a few other similar costs cited, including £1.5bn having been invested in flooding/environmental projects in Glasgow, and £500m further investment needed for combined sewer overflows.

Transport Scotland's adaptation plan (Transport Scotland, 2021) does not contain any quantitative information on costs or benefits. However, it contains information which suggests that these will be considered separately. For instance, a Vulnerable Locations Group has been established, which is expected to 'deliver cost effective actions in the short term whilst developing a move to a long-term proactive approach, including a dedicated budget for climate adaptation.'

Historic Environment Scotland's adaptation plan (Historic Environment Scotland, 2020) references the 'triple dividend of adaptation, which is discussed qualitatively. This includes: (1) avoided losses (2) economic gains and (3) social, environmental and cultural benefits.

## 6.5 Key points regarding quantitative costs and benefits

**Local Authorities:** Overall, there is very little quantitative information on costs and benefits within Local Authority adaptation plans. Costs and benefits are addressed qualitatively to varying levels of detail. Two regional economic impact assessments have been produced, for Climate Ready Clyde and Highland Adapts, which together cover nine out of 32 Local Authorities. A small number of other adaptation plans cite costs for specific measures, mostly linked to flood damage and flood infrastructure.

**NHS Boards:** Those that undertake a CCRA using the standard template are prompted to record costs against individual risks, but not all have done so. In many cases it is not clear what the costs refer to. The costs primarily relate to the cost of upgrading infrastructure or repairing damage to assets (e.g. due to flooding).

**Other organisations:** Scottish Water referred to total investment costs at a high level in its adaptation plan. Transport Scotland and Climate Ready HES both address costs and benefits from a qualitative standpoint.

## 7 Reflections on the adaptation planning landscape

### 7.1 Maturity of adaptation plans

This section describes the overall maturity of adaptation plans, which can be assessed in different ways.

SSN measures the extent of adaptation action reported by organisations in their PBCCDs on a scale from ‘none’ to ‘advanced’, where advanced is defined as a ‘strategy or adaptation pathway with targets to assess progress on risk management and actions to address shortfalls.’

The Adaptation Scotland Capability Framework (Adaptation Scotland, 2019) rates organisations’ adaptive capacity as starting, intermediate, advanced or mature along four different axes relating to culture and resources, understanding, planning and implementation and working together. A benchmarking tool is provided for organisations to assess their own maturity. As there is no overall rating, an organisation can be ‘mature’ in one of the capabilities, but ‘starting’ in another. For more information, see Appendix C.

Within this report we have not formally defined a scale for how the maturity of an adaptation plan should be assessed. However, we have looked beyond reported action in the PBCCDRs to consider dimensions that influence the maturity of specific, dedicated climate adaptation plans where they exist. Dimensions that contribute to a mature plan, that have been discussed throughout this report, include:

- Clear objectives and a vision for adaptation are defined.
- A range of hazards and future scenarios are considered in a risk assessment that provides an evidence-based plan.
- Individual actions are specific, have ownership, timescales, resourcing and relevance.
- Monitoring and evaluation is in place.
- The plan has been co-developed with stakeholders.
- Synergies with mitigation actions are understood and exploited but adaptation and mitigation are not conflated.

SSN’s most recent summary analysis of PBCCDRs (Sustainable Scotland Network, 2023) assessed the extent of adaptation action reported, finding that 28% of local authorities and 65% of NHS boards reported limited adaptation planning, with 15% of NHS boards reporting no action at all.

There are some examples of more mature plans adhering to the principles outlined above, particularly amongst local authorities and the ‘other’ organisations reviewed here. For

example, the City of Edinburgh Council updated its previous adaptation plan this year and the new plan contains numerous features of a more mature approach, including undergoing a consultation process during its development, setting out a high-level vision for adaptation and including timescales and ownership of specific actions. Conversely, there are also local authorities without consolidated adaptation planning and those that have confused adaptation and mitigation, so overall there is a wide range of capacity and maturity of planning in Scotland.

Unlike Local Authorities, all of the NHS plans were underpinned by a CCRA. They could be considered more mature than Local Authority plans by that metric. However, they generally focused on a narrower range of risks. It is therefore difficult to compare their maturity on a like-for-like basis.

This range of maturity and understanding across public bodies should be taken into account as further adaptation guidance is developed. Further work to understand the barriers for organisations to reach a greater level of maturity would be useful. It is acknowledged that organisations such as Sniffer may already have explored this topic and that Adaptation Scotland's PSCAN offers an opportunity for organisations with less mature planning learn from those at a more advanced stage.

Finally, although this study did not specifically seek to compare adaptation plans against mitigation plans, it appears that adaptation plans are less mature overall.

## 7.2 Gaps and omissions in the adaptation plans reviewed

When taking a broad view of the documents that have been reviewed as part of this study, there are several notable gaps and omissions. The missing information may be recorded by public bodies in another form, or answers may be known internally by the organisation. Nevertheless, these gaps and omissions may have policy implications and could be investigated further to identify barriers to effective public body adaptation planning. These are presented in no particular order.

- With the exception of flooding, the implications for emergency planning and risk management were generally omitted from Local Authorities' plans. For example, the potential need to revise major incident plans to reflect more severe weather events.
- Few organisations made an explicit link between adaptation and mitigation actions. Some of them mentioned potential co-benefits or the risk of unintended consequences. However, our team found various instances where there were linkages that had not been explored. This was not limited to mitigation but also applies to policies on health, biodiversity/nature, etc.
- Some public bodies provided evidence of engaging with stakeholders such as business groups or utility companies. However, the adaptation plans that were reviewed in this study contained relatively limited information about how the public bodies engaged with, and sought input from, affected communities. A few (e.g. Shetland, Aberdeen) did refer to having held public events. It is acknowledged that various forms of community engagement have been undertaken (examples include, but are not limited to, the Highland Adapts/Outer Hebrides Climate Story Maps and



work undertaken as part of Climate Ready Clyde) which may not be referenced in published adaptation plans.

- Where organisations had produced their own adaptation plans, these generally did not appear to be coordinated with other public bodies operating in the same area except where regional partnerships exist. Several plans mentioned the need to consult with stakeholders, or cross-referenced regional studies that have been carried out. There was one example of an NHS board acknowledging that its adaptation response would rely in part on action taken by the Local Authority. However, that Council has not yet produced an adaptation plan so this desk review was unable to determine the extent to which collaborative working may be taking place.
- Where climate risk assessments were carried out, hazards were usually considered, but vulnerability and exposure were frequently not addressed. It is therefore difficult to state whether organisations have targeted their adaptation actions appropriately.
- NHS boards that followed the CCRA template generally assessed the impacts of climate change on particular assets (e.g. flooding to car parks). They generally did not consider how climate change would affect the types of services they provide (e.g. having to treat different diseases).

### 7.3 Potential barriers

The scope of this study did not include an assessment of what barriers public bodies face when trying to develop more mature adaptation plans. However, our team identified a variety of potential contributing factors that could be explored in future:

- Adaptation might be considered a lower priority than other issues, given that public bodies face competing demands on their resources.
- For Local Authorities, the lack of dedicated climate adaptation plans may simply reflect the fact that they are not explicitly required to produce them.
- Public bodies may have insufficient in-house capacity to develop more detailed plans. This could be due to a lack of time and/or budget to produce a plan or (where necessary) upskill personnel to complete them. Where there is insufficient in-house capacity, the bodies may also lack the financial resources to commission the work externally. If public bodies have received training or guidance, factors such as staff turnover could prevent this knowledge from becoming part of the institutional memory.
- Although there is a variety of guidance available for public bodies to use for adaptation planning in general, some may be unaware of it, unsure how to access it, or not understand how to use it in the context of all the guidance that is available.
- As discussed in Section 6.1, it may be challenging to apply conventional cost-benefit analysis to adaptation measures. Although methodologies for doing this do exist, they may not be accessible for public bodies to use.
- Some organisations provide a wider range of services than others, or operate within a larger/more diverse geographic area. One reason their adaptation plans might contain less detail could be because they have to ensure that actions are relevant

across all of their operations. A public body with a narrower remit might find it easier to develop specific adaptation actions.

It is important to gain a better understanding of what barriers public bodies face, because they may require different support and interventions.

## 7.4 Potential modifications to PBCCDRs

This review found that the responses to PBCCDRs that were intended to address climate change adaptation often included information that was not directly relevant. As a result, it was difficult to interpret the public bodies' overall level of adaptation planning based on their PBCCDRs.

Below is a list of clarifications and questions that could be incorporated into the PBCCDR form or practical guidance to help address this issue. These are intended solely as examples for consideration.

- At the start of the adaptation tab, add wording to the effect of: 'This section requests information about your organisation's climate change adaptation plans. Adaptation in this context refers to actions that are taken to manage and respond to the effects of climate change. This is distinct from climate change mitigation, which refers to actions that are intended to reduce greenhouse gas (GHG) emissions, and thereby limit how much climate change occurs.'
- On Question 4a, clarify that a comprehensive CCRA would consider a range of topics, not just flooding. Alternatively, state that Local Authorities do not have to describe their Flood Risk Assessments unless these have been incorporated into wider climate adaptation planning or CCRAs.
- Add a new question or adjust Question 4b to ask, 'Does your organisation have a dedicated climate change strategy and/or action plan that specifically addresses climate change adaptation?'
- 'Have you assessed your progress against the ACF? If so, please provide your scores.'
- [Local Authorities only] 'If providing information about your Local Development Plan, please focus on specific ways that climate adaptation has been considered. If the plan only addresses climate adaptation as an overarching theme, without requiring any specific assessments or actions to be taken, this information can be excluded.'

## 8 Conclusion

This work has provided an overview of the adaptation planning landscape among Scottish public bodies, focusing on local authorities and NHS boards. It has described the information on costs and benefits of adaptation that is contained in public bodies' climate adaptation plans. It has also presented reflections on the overall maturity and level of progress among different types of organisations. In doing so, it will help inform a collective understanding among stakeholders and identify knowledge gaps.

Key findings, topics for further study and recommendations are provided below.

## 8.1 Summary of key findings

The study reviewed a wide range of plans, strategies and other documents that are relevant to adaptation planning. It was clear that many organisations have utilised guidance, tools and resources made available through Adaptation Scotland. Nonetheless, we have identified that public body adaptation plans vary widely in their scope, content and levels of maturity.

There were some key differences observed between local authorities, NHS boards and other organisations (Scottish Water, Historic Environment Scotland and Transport Scotland), which likely reflect these organisations' different remits, sectors and the geographic areas that they cover. Notably, NHS boards are required to produce CCRA and adaptation plans in a standard format whereas local authorities are not.

Affirming earlier findings by SSN, this study found multiple examples of confusion between climate change adaptation and mitigation. Therefore, public bodies' self-reported levels of adaptation planning is not always accurate.

The adaptation plans reviewed in this study were found to contain minimal quantitative information on costs and benefits.

For **local authorities**, the majority of quantitative information that is available relates to the regional economic impacts of climate risks (i.e. the cost of inaction). This is set out in two reports, both undertaken by Paul Watkiss Associates. We found one example of a local authority that had attempted to downscale this information in order to indicate costs against local adaptation measures. Overall, however, the regional assessments may not be suitable for the purpose of developing a business case.

**NHS boards**, when carrying out CCRA, are prompted to indicate the cost of adaptation measures in relation to each risk that they identify. However, in most cases these sections were left blank. Where costs were indicated, it was not always clear what they referred to. Our team did not have any information on the methodology used to estimate those costs.

Flooding is the one topic area where organisations clearly showed a more mature understanding of the risks, historic impacts/damages, and the costs and benefits of adaptation measures.

Some adaptation plans specifically acknowledge the lack of information on costs and benefits, citing this as an area where further study is needed. There is evidence that public bodies have an appetite for collaborative working to address these gaps, as demonstrated by the existing partnerships such as Climate Ready Clyde and Climate Ready SES.

Although not the focus of this study, our team has proposed some potential barriers to adaptation planning that merit further exploration. In our view, gaining a better understanding of those barriers is a prerequisite to identifying a suitable policy response.

## 8.2 Topics for further study

There were several questions that arose from this review which could be considered for further study:

- **Barriers:** Given the resources available to local authorities, what is preventing them from producing more detailed plans? A list of initial suggestions is in Section 7.3.

- **Guidance:** There is already a broad range of public sector and international standards that define the approach to adaptation planning. Would more targeted guidance on how to utilise available resources be useful, e.g. more clarity on how to fill out the PBCCDR and NHS CCRA templates to help standardise the outcomes? Should there be sectoral or regional guidance, e.g. targeted at island communities? Or is guidance not one of the key barriers that public bodies face? Note, any new guidance should consider opportunities to address the gaps described in Section 7.2.
- **Missing information:** Potentially, there could be more evidence on costs and benefits that is not reflected in the action plans or PBCCDRs.
- **Governance:** To what extent have organisations actually embedded adaptation into their other plans, strategies and operations? From the PBCCDRs, it was not always clear whether the public bodies were carrying out dedicated adaptation planning or simply reiterating work that would happen anyway e.g. flood risk assessments.

### 8.3 Recommendations

The table below presents recommendations for policy, based on this review.

Ref.	Recommendation	Rationale
1	Engage with public bodies and undertake further research to understand the barriers they face to identify the specifics of the support they need for adaptation planning. Suggested topics for further study are provided in Section 8.2.	Establishing the details and actions on the support that is needed will allow budgeting for targeting resources effectively.
2	Require local authorities to produce climate change risk assessments that consider topics additional to flooding, and use these to develop climate change adaptation plans, in line with guidance from the Adaptation Scotland Programme.	Local authorities are not currently required to produce adaptation plans. New statutory guidance is being developed. This could be used to encourage public bodies to have an adequate level of adaptation planning in place, with recognition of scope, remit and budget differences.
3	Provide public bodies with advice on how the regional economic impact assessments (see Section 6.2.2) and other national evidence relating to costs and benefits can be downscaled to support the case for local adaptation planning and investment.	This would make use of the existing evidence base. The authors of the regional reports acknowledge that the information would need to be adapted for use in a cost-benefit analysis as part of an outline business case.
4	Align SSN's system for rating the maturity of adaptation planning with the Adaptation Capability Framework. This would likely require organisations to assess and self-report their	Currently these do not align, which makes it difficult to track progress.

Ref.	Recommendation	Rationale
	scores, which links to Recommendation 2. See Section 7.1 for more information.	
5	Explore ways to support public bodies with limited resources to produce adaptation plans or CCRAAs. This could involve signposting to information provided by the Adaptation Scotland programme on easy wins, low-regret actions, no- or low-cost actions and partnership arrangements to share skills, knowledge and budgets.	All local authorities could benefit from this information. For some, there may be instances where it would be better to focus on a small number of key actions instead of using limited resources to produce an adaptation plan that lacks detail or substance.
6	Clarify what information on adaptation should be reported within PBCCDRs and what information is unnecessary in terms of key performance indicators. In particular, PBCCDR guidance should include clarity on the difference between mitigation and adaptation. See Section 7.4 for more information.	Responses were inconsistent and often appeared to signpost to workstreams or documents that would have happened anyway.  Some responses signposted to information that relates to mitigation, not adaptation. This has also been observed by SSN.
8	In future, where mitigation programmes are undertaken or funded by the Scottish Government and public bodies would be involved in their delivery, signpost links between mitigation and adaptation.	Considering mitigation and adaptation in parallel is important to maximise co-benefits and avoid unintended consequences.

Table 2: List of recommendations and description of the rationale

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## 10 Appendices

### Appendix A – Organisations involved in joint adaptation plans

The table below sets out a list of organisations that have joined together to produce climate adaptation plans or evidence base documents. This is based on our team’s understanding at the time of writing (October 2024) and may not be an exhaustive list.

Name	Organisations involved
Climate Ready Clyde	<p><b>Members:</b>            North Lanarkshire            Inverclyde Council            Glasgow City Council            East Renfrewshire Council            East Dunbartonshire Council            West Dunbartonshire Council            Renfrewshire Council            South Lanarkshire Council            University of Strathclyde            Scottish Government            Strathclyde Partnership for Transport            University of Glasgow            Scottish Environment Protection Agency</p>
Climate Ready South East Scotland	<p><b>Members:</b>            City of Edinburgh            East Lothian            Fife            Midlothian            Scottish Borders            West Lothian</p> <p><b>Other collaborators:</b> 6 community climate action hubs, CAG Consultants, Paul Watkiss Associates</p>
Highland Adapts	<p><b>Members:</b>            NatureScot            ChangeWorks            Sniffer            Highlands &amp; Islands Climate Hub            Zero Waste Scotland            NHS Highland            Forestry and Land Scotland            The Highland Council            Highlands and Islands Enterprise</p>

Table 3: Organisations involved in joint adaptation plans

## Appendix B – Recent and upcoming work

There are several recent and upcoming developments that will provide further evidence relating to adaptation in Scotland generally, and costs and benefits in particular. These include, but are not limited to, the following:

- SNAP3, which was published in September 2024. This will influence adaptation planning among public bodies because they have a duty to help deliver against its objectives.
- A Local Authority Climate Service, recently launched by the Met Office. This should make it easier for Local Authorities to access relevant data on climate projections.
- Updated versions of the Adaptation Scotland Public Sector Adaptation Capability Framework, Further Guidance, Starter Pack, and Benchmarking Tool will be published in early-2025.
- The fourth UK climate change risk assessment (CCRA4). The independent evidence base supporting this will be published in 2026.
- A regional CCRA is being commissioned by Climate Ready South East Scotland. It is expected to be released in 2025.
- Perth and Kinross, Angus and Dundee Councils are currently exploring opportunities to create a Tayside Regional Adaptation Partnership and have released a tender to commission a regional analysis of the combined climate risk and opportunity assessments of the three member organisations .
- NHS NSS has carried out a review of NHS boards' adaptation plans and CCRA's. At the time of writing (October 2024) this is not publicly available, but it is understood that the work will provide a more detailed look at the content of those plans.

All of these programmes could help contribute to a better understanding of adaptation among Scottish public bodies, and facilitate planning.

## Appendix C – Adaptation Scotland Capability Framework

The Capability-Maturity Approach identifies four capabilities to be developed in the context of adaptation and recommends tasks to support progress. These capabilities are: (1) organisational culture and resources (2) understanding the challenge (3) planning and implementation and (4) working together.

### MATURITY STAGE: STARTING

Your organisation is able to communicate why adaptation matters by linking it to your strategic objectives. You have considered where adaptation fits in your organisation and identified key opportunities to begin your adaptation work – as well as what resources are available to support it.

**OC1A Consider how adaptation fits with your organisation and its objectives**

Identify how adaptation supports delivery of your organisation's strategic objectives. Use this to communicate why adaptation matters. You will need to consider where adaptation is best placed in your organisation and start to identify relevant groups and decision making processes.



**OC1B Identify resources available for adaptation**

Adaptation is a long-term process that will see you undertake many tasks requiring a range of different resources – human, physical, financial, information and intellectual. It is useful to survey resources that already exist within your organisation that will enable you to plan and deliver future work.



### MATURITY STAGE: INTERMEDIATE

Your organisation is now prepared to work on adaptation. Leadership has put in place governance arrangements and committed suitable resources to progress with your initial adaptation plans. There is an emerging set of people in your organisation who can see opportunities to deliver adaptation – and may become adaptation 'champions'.

**OC2A Secure resources to plan and deliver adaptation**

Your organisation will need committed resources – human, physical, financial, information and intellectual – to progress with adaptation. You need to secure those needed for short-term activities, but also look ahead at likely future needs. Consider both internal and external sources.

**OC2B Engage with colleagues to identify adaptation opportunities and potential 'champions'**

Your organisation will (or could) be delivering adaptation through many of its functions. By actively engaging colleagues across your organisation you can identify opportunities to include adaptation in planned work – as well as key people who could become adaptation 'champions'.

**OC2C Establish governance arrangements for adaptation**

Setting up governance arrangements for adaptation is essential to enable effective decision-making and collaborative delivery across your organisation. Seek approval for an option that works for your organisation – and is able to deliver your adaptation objectives.




Figure 2. Infographic showing two stages in the Adaptation Scotland Capability Framework

To benchmark, the public body scores themselves against the criteria for each capability using a score between 0 and 3, in relation to how accurately the description describes the organisation. The public body must record evidence to justify the current activity against each task.

As the criteria are open to interpretation, this allows public bodies to apply the guidance based on their understanding, priorities and strategic outcomes. This has led to very diverse outputs across the Local Authority adaptation plan landscape.

For the capability, organisational culture and resources; the 'starting' and 'intermediate' steps focus on resource availability and allocation, whereas the 'advanced' and 'mature' steps focus on identifying internal plans, policies and procedures to include adaptation within.

## Appendix D - Case studies

There are many examples of public bodies whose work on adaptation shows unique features and demonstrates good practice. A selection of case studies is below.

These have been selected to illustrate nuances in public bodies' approaches to adaptation planning. These nuances may not be captured in the database summary, and can be used to contextualise recommendations in the report.

Note, inclusion in this list does not suggest that the case study is the best or only example of a given approach.

### 10.1.1 Considering the impacts of risks on different cross-cutting themes: Highland Council

In its 2012 climate adaptation report (Highland Council, 2012), the Highland Council employed a multi-criteria assessment approach to evaluate risks in relation to cross-cutting themes, rather than looking at them in isolation. Whilst this example is more than a decade old, and will be superseded by the forthcoming risk assessment produced by Highland Adapts, this is an example of holistic thinking. An excerpt is shown below.

THREATS	CROSS-CUTTING THEMES											
1: WATER RESOURCE MANAGEMENT	Water Resource Management	Forests and Forestry	Agriculture	Spatial Planning and Land Use	Biodiversity and Ecosystem Resilience	Transport	The Built Environment	Energy	Business and Industry	Marine and Fisheries	Health and Wellbeing	Emergency and Rescue Services
Drought could lead to mandatory water conservation measures being enforced.	X		X						X	X	X	X
There could be an increase in the prevalence of water-borne disease contamination particularly following flooding.	X		X						X		X	X
Flooding events could be more local and short term with the exception of coastal flooding which may increase as a result of climate change.	X		X	X		X	X	X	X		X	X
Flash flooding could lead to rapid run-off in localised areas which are hard to predict putting pressures on drainage systems, transport links, emergency services and creating a risk to public safety.	X			X		X					X	X
An increase in coastal flooding could be experienced due to a combination of storm surges, increased wave height and sea level rise. Those areas most at risk from coastal flooding in Highland are also the most populated (Moray Firth).	X			X			X				X	X
Low flows in water courses during the spring and summer could have a negative impact on water quality affecting fish stocks, farming and drinking supply.	X		X							X	X	
Drier conditions could see an increased demand for agricultural irrigation and there could be competing demands for the water resource.	X	X	X		X							
Toxic algal blooms could threaten public health particularly if they occur at a time when there is increased water sports.	X		X								X	

Figure 3. Excerpt from the Highland Council's assessment of climate risks in relation to cross-cutting themes

To assess the risk posed by identified threats such as severe weather events, a multi-criteria analysis approach was adopted. Each threat was assessed in relation to cross-cutting themes, drawing out potential further threats, and opportunities, following the framework of 12 sectors set out by the Scottish Government. For example, for the threat to water resource management, a risk is identified that 'drought could lead to mandatory water conservation measures being enforced'.

This approach would have helped Highland Council consider its wider remit and identify opportunities to maximise co-benefits and optimise use of resources in adaptation action planning.

### 10.1.2 Linking climate change impacts to other corporate priorities: Comhairle nan Eilean Siar Council

As part of its Climate Rationale (Comhairle nan Eilean Siar Council, 2022), Comhairle nan Eilean Siar Council undertook an exercise to map climate change impacts against priority areas within its Local Outcome Improvement Plan (LOIP). It acknowledges that, 'To respond to the climate challenge and realise the LOIP vision, climate adaptation and resilience must be linked to societal issues, moving beyond sectoral responses and acknowledging the environment as the support network underpinning everything, to enable a safer, healthier and more prosperous Outer Hebrides.'

This is a good example of an organisation firstly acknowledging that their wider corporate priorities are dependent on climate change action, and then seeking to align the two. In principle, this would help to achieve a more integrated response to both issues. It could also help to generate stakeholder buy-in by highlighting how climate adaptation planning is crucial for achieving success against a range of other metrics, whether those are social or economic.

Impacts & Relation to LOIP Priority #				
People LOIP 1,2,3	Basic Needs (shelter, health, food, water, power, comms) LOIP 1,2,3	Economic activities LOIP 2	Environment & Ecosystems LOIP 3	Transport / Infrastructure LOIP 1,2,3
<b>Hazard: Increased frequency of storm events, heavy rainfall, high winds, fog and lightning</b> Increased frequency of storms and heavy rainfall has or may...				
<p><b>Cause impacts to day to day living and potential loss of life</b></p> <ul style="list-style-type: none"> <li>• Cause people to leave very exposed islands resulting in population decrease, especially in the least populated islands.</li> <li>• Limit population growth potential, making islands less attractive to families / young people.</li> </ul>	<p><b>Cause flooding and damage to houses and property</b></p> <ul style="list-style-type: none"> <li>• Flooding of homes in low lying areas</li> </ul> <p><b>Impact local food production and supply lines</b></p> <ul style="list-style-type: none"> <li>• Impact on local food production and water-based trade reduce food security, with risk of panic buying and stockpiling</li> <li>• Supply lines for goods and food disrupted.</li> </ul> <p><b>Impact physical and mental health and wellbeing and exacerbating inequalities</b></p> <ul style="list-style-type: none"> <li>• Impact on health and wellbeing through damage to active travel pathways resulting in reduced access</li> <li>• Impact access for emergency and essential and non-essential services</li> <li>• Increase social isolation, anxiety, exacerbating inequalities</li> <li>• Increase demand for and potential risk to performance of health care and emergency services</li> <li>• Increase vector and waterborne disease</li> </ul> <p><b>Disrupt demand, functioning and access to public services, schools, emergency and non-emergency health care as well as work and care</b></p>	<p><b>Disrupt economic activities, livelihoods (including tourism, fishing and crofting) and the natural resources, transport and supply chains they depend upon</b></p> <ul style="list-style-type: none"> <li>• Impact business productivity due to disruption to employees, travel, and ill health,</li> <li>• Disruption of supply chain and distribution impacting business operations and productivity</li> <li>• Impact on commercial fished stocks as a result of environmental damage and loss</li> <li>• Impact tourism</li> </ul>	<p><b>Cause ecosystem damage and loss of species and habitats, including naturally dynamic coastal habitats which are important natural coastal defences</b></p> <ul style="list-style-type: none"> <li>• Landslides in elevated areas and increased sedimentation of reservoirs from run-off and erosion, impacting reservoirs and resulting in reduced water quality</li> <li>• Impact soils, agricultural productivity, crops and livestock, woodlands and forestry as a result of extreme events and flooding</li> <li>• Impact ecosystems: peatlands, freshwater and geo-heritage sites and natural data stores (isotopic materials and loss)</li> <li>• Change the dune systems: some areas have eroded as much as 2 metres in major storms, leaving community facilities and infrastructure exposed. Coastal habitats are naturally dynamic and are important as natural coastal defences</li> <li>• Loss of species and habitats: marine and terrestrial with impact on commercially fished stocks</li> </ul> <p><b>Damage, degrade and cause loss of cultural and historic environment heritage sites</b></p>	<p><b>Disrupt and damage transportation systems, infrastructure and island connectivity</b></p> <ul style="list-style-type: none"> <li>• Impact transportation routes through risk of coastal road and airport flooding and potential damage</li> <li>• Risk to inter-island connectivity through closure, flooding and damage to causeways, bridges, piers, harbour and ports, ferry cancellations, causeway closures</li> <li>• Impact inland roads as a result of flooding and landslides, slope and embankment failure, road closures.</li> <li>• Impact water-based transportation and freights.</li> <li>• causeways eroded for example in Lochport, affecting access for vulnerable households, carers, property and animals.</li> </ul> <p><b>Disrupt and damage water supply, drainage and sewerage infrastructure and systems</b></p> <ul style="list-style-type: none"> <li>• Impact drainage infrastructure, exceeding capacity and failing to manage resulting floods</li> </ul> <p><b>Disrupt and damage communications and energy systems, power generation, supply and associated infrastructure</b></p>

Figure 4. Excerpt from the Comhairle nan Eilean Siar Council's Climate Rationale, showing how climate hazards relate to policy priority areas

### 10.1.3 Using stakeholder engagement to inform adaptation plans: Aberdeen City Council

This is an example of a public body that has used extensive stakeholder engagement to inform its adaptation plans. Aberdeen City Council, as part of their Aberdeen Adapts programme, set up 5 stakeholder workshops, in which 41 local organisations participated. These workshops looked at: the impacts of climate change for Aberdeen; collected ideas for vision and strategy; shared information about actions that are already underway or are

planned to support adaptation, and examined opportunities for increasing resilience. The arts were used in these engagement activities, and young people were also included.

In the consultation summary report (Aberdeen City Council, 2019), for each theme or question discussed, the report details the number of respondents, the percentage who agreed, disagreed or were unsure and key comments. An example is shown below.

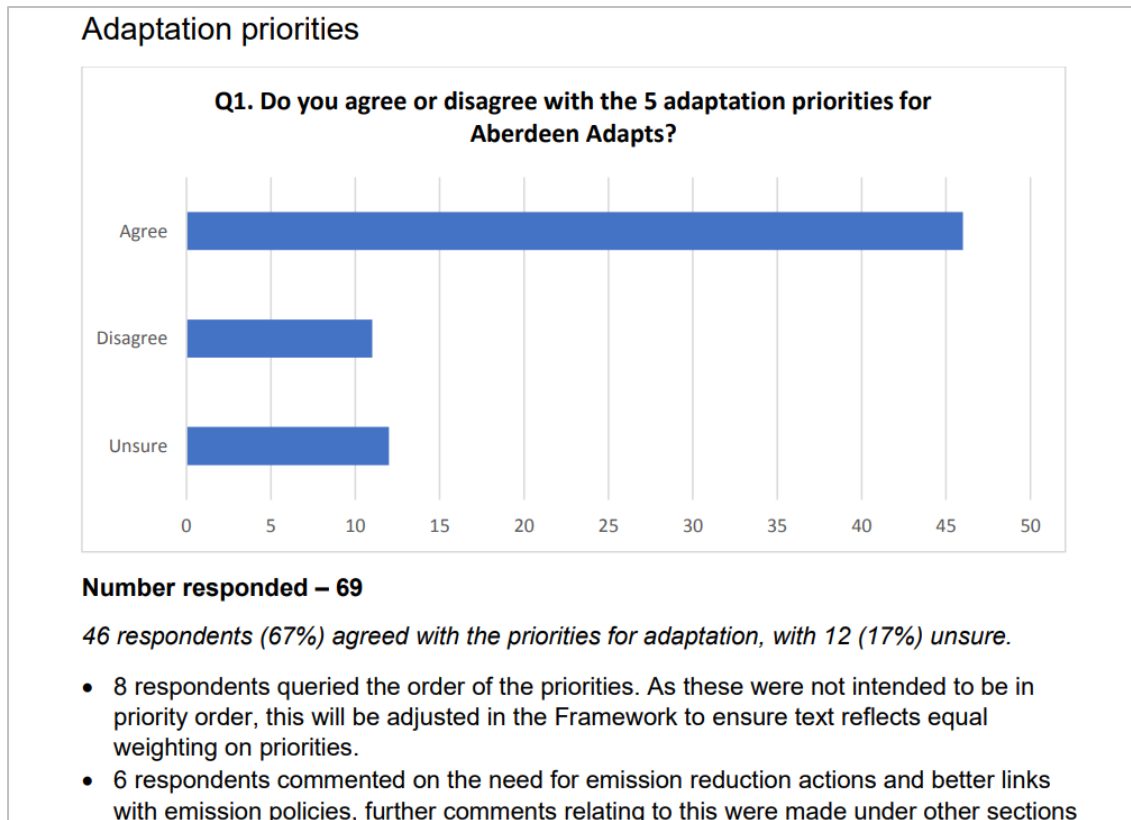


Figure 5. Excerpt from Aberdeen City Council’s consultation summary report, showing the responses received in relation to a question about adaptation priorities

Notably, a need for stronger links between emission reduction actions and policies and plans was identified by stakeholders. This focus appears to have translated into the adaptation strategy that was subsequently produced (Aberdeen Adapts, 2022), which makes a point of highlighting the need to align with actions on decarbonisation.

#### **10.1.4 Acknowledging different types of benefits and risks: Historic Environment Scotland**

In Historic Environment Scotland’s Climate Action Plan (Historic Environment Scotland, 2020), a distinction is made between the ‘internal benefit’ and ‘wider benefit’ of adaptation actions. This encourages the adaptation planning team to consider types of benefits, and where benefits might be multiple or could be enhanced. For identifying co-benefits, this aids the process of decision-making in terms of financing initiatives and actions, as public bodies could contextualise financial costs for adaptation actions in relation to costs that may be saved, internally, and in terms of other sectors or competing priorities.

Climate Impacts and Adaptation			
Action	Internal Benefit	Wider Benefit	Core Strands
Undertake and support ground-breaking research to better increase knowledge and understanding of the physical, social and economic impacts of climate change on the historic environment; including PhD level research in collaboration with various UK and international research institutions and universities	Better-informed decision-making and prioritisation for management of our sites and collections	Dissemination of research results to benefit the wider heritage and museums sectors	<div style="background-color: #008080; color: white; padding: 2px; text-align: center;">Innovation</div> <div style="background-color: #008080; color: white; padding: 2px; text-align: center;">Training</div> <div style="background-color: #008080; color: white; padding: 2px; text-align: center;">Partnerships</div> <div style="background-color: #008080; color: white; padding: 2px; text-align: center;">People</div>

Figure 6. Example of some of the internal and external benefits associated with adaptation actions, as identified within Historic Environment Scotland's Climate Action Plan

Historic Environment Scotland's Climate Action Plan was also the only adaptation plan identified in this study which included transition climate risks for their organisation. Transition climate risks are the risks introduced when regulators, legislators, consumers and companies start to take action on climate change, and transition to a low-carbon economy.

By identifying transition risks, public bodies can gain a better understanding of the potential unintended consequences of taking action on climate change, and seek to address these. Additionally, considering transition risks may help strengthen the business case for more funding or resourcing, if they can identify upfront multiple risks that could be compounded due to inaction.

Transition Risks					
TR01	TR02	TR03	TR04	TR05	TR06
Enhanced climate action expectations on public sector bodies and misalignment of our own policy and strategy with Scottish Government climate change targets	Dependence on carbon intensive sectors to generate revenue increasing the risk of reputational damage and impact on income	Rapidly changing customer and stakeholder expectations for climate action not met resulting in reputational damage and impact on income	Rapidly evolving knowledge of action needed to address the climate crisis misaligned with the advice and guidance we publish leading to misinformation / reputational damage	Changing government priorities leading to risk of reduced funding in future	Maintenance deficit in wider historic environment, combined with a changing climate, leading to increased demand for HES Grants

Figure 7. Examples of transition risks, as identified within Historic Environment Scotland's Climate Action Plan

### 10.1.5 Assessing local vulnerability to climate impacts: Climate Ready Clyde

Many of the adaptation plans reviewed in this study consider the hazards that may arise due to climate change, but not many address how vulnerable key receptors are to those hazards. As part of the Climate Ready Clyde project, an interactive map (Climate Ready Clyde, n.d.) has been produced, which shows different neighbourhoods' comparative level



of vulnerability to both flooding and overheating – see an excerpt in Figure 8. This is focused on social and community vulnerability and is based on the Scottish Index of Multiple Deprivation. It also shows contextual information such as woodland coverage and areas of vacant or derelict land.

The information could be used to target different stakeholder engagement approaches and/or adaptation actions at a postcode level, although the map authors acknowledge that a specific household or individual's vulnerability will differ within any given area.

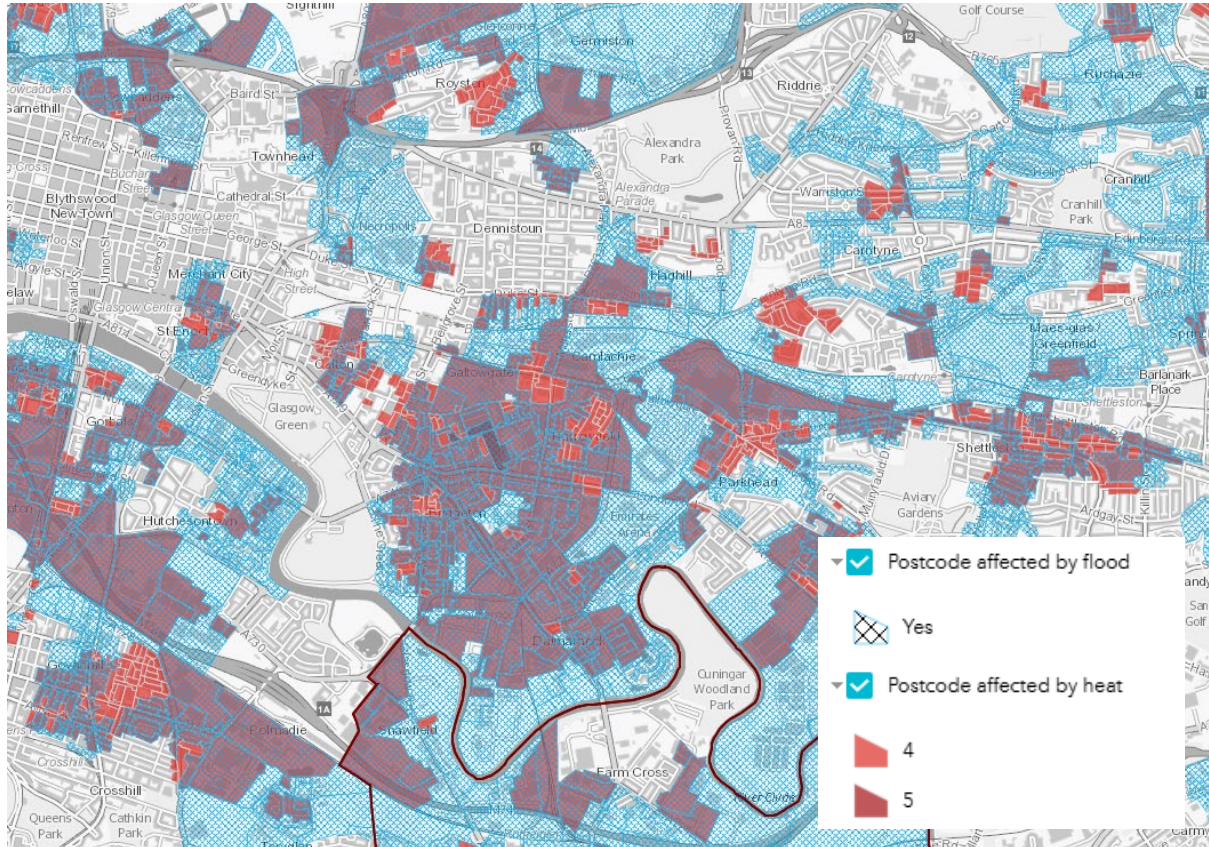


Figure 8. Excerpt from the Climate Ready Clyde map of neighbourhood-level climate change vulnerability

### 10.1.6 Using regional information to support local action: East Dunbartonshire Council

As explained previously, for Local Authorities, the majority of quantitative information that is available comes from two regional economic impacts reports on climate risks. This review found one example of a Local Authority (East Dunbartonshire) that had attempted to downscale information from the Climate Ready Clyde (CRC) Economic and Financial Assessment (Climate Ready Clyde, 2019), along with some other sources, to a local level within its adaptation options report (East Dunbartonshire Council, 2019).

This appears to have been done in a few different ways, depending on the action:

- Citing overall costs for the Glasgow City Region
- Referring to the cost-benefit ratio set out in, or derived from, the CRC Economic and Financial Assessment

- Providing an indicative range of costs specific to East Dunbartonshire, some of which appear to be based on internal advice from Roads & Environment or other Council departments

The cost-benefit ratio was one of the most common metrics cited, which suggests that this was considered useful for the purpose of developing a case for local action.

### 10.1.7 Developing indicators and targets for adaptation: Dundee City Council

This example highlights an instance where proposed performance indicators and targets were given for adaptation actions. In the Dundee Climate Action plan (Sustainable Dundee and the Dundee Partnership, 2019), for some actions, detail is given to help make monitoring and tracking of progress against the suggested actions, feasible and achievable. By labelling them as proposed indicators, the plan leaves space for discussion and refinement, making sure the most appropriate indicators are decided upon. Along with detail on the lead responsible agency for the actions, they support accountability for achieving the actions.

The image below shows an extract from Annex 1 of the Dundee Action Plan.

	Action	Lead Agency	Partners	Proposed Performance Indicators (where applicable)	Targets (where applicable)	Type of Action	Link to SDG's	Funding in Place
R.1	Design a Dundee Surface Water Management Plan/ Tayside Integrated Catchment Study that considers measures to reduce flood risk and protect buildings, infrastructure and people from flooding and includes blue-green infrastructure across the city and/or retrofitting SUDS to store and manage surface water runoff. Ecological solutions will be used where possible e.g. dune replenishment as part of Dundee Coastal Flood Protection Scheme.	Dundee City Council	SEPA, Scottish Water, Scottish Natural Heritage	<ul style="list-style-type: none"> <li>• Number of flood events.</li> <li>• Number of buildings impacted by flood events.</li> <li>• Number of people affected by flood events.</li> <li>• Infrastructure impacted by flood events.</li> </ul>	–	Delivery	6, 9, 11, 13, 14, 15	Yes

Figure 9: Presentation of the actions within the Dundee climate action plan, including performance indicators and targets where applicable

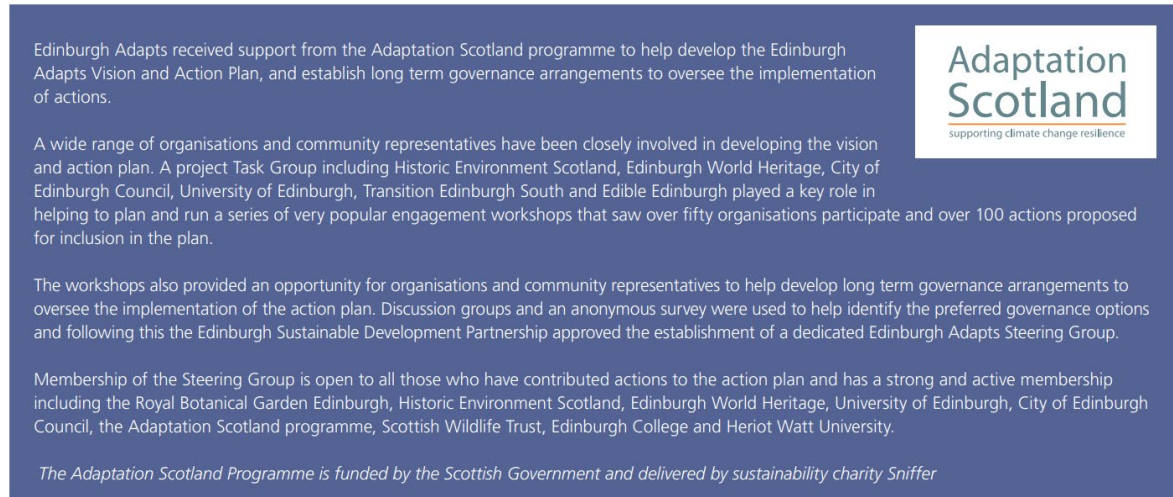
### 10.1.8 Undertaking site-based risk assessments: NHS Lanarkshire

In addition to the overarching CCRA that it is required to produce, NHS Lanarkshire has undertaken site-based CCRA's for its major sites. This recognises that its assets are diverse and therefore may require different adaptation responses. Although the documents are not publicly available, according to the Adaptation Scotland website (Adaptation Scotland, n.d.), the risk assessments also contain information on the costs that NHS Lanarkshire has incurred as a result of extreme weather events.

Although not necessarily feasible for all public bodies, this approach would allow more tailored actions to be taken for specific properties.

### 10.1.9 Transparency regarding stakeholder input to the adaptation plan: Edinburgh Adapts

The Edinburgh Adapts: Climate Change Adaptation Action Plan 2016-2020 (Edinburgh City Council, 2016) clearly describes what input was sought from different stakeholders when developing the adaptation plan. This addresses input from local business and communities as well as the support received from the Adaptation Scotland programme. It also sets out what stakeholders will have responsibility for long-term governance arrangements. It is also clear about the overall guidance that was followed. This is important from a transparency perspective.



Edinburgh Adapts received support from the Adaptation Scotland programme to help develop the Edinburgh Adapts Vision and Action Plan, and establish long term governance arrangements to oversee the implementation of actions.

A wide range of organisations and community representatives have been closely involved in developing the vision and action plan. A project Task Group including Historic Environment Scotland, Edinburgh World Heritage, City of Edinburgh Council, University of Edinburgh, Transition Edinburgh South and Edible Edinburgh played a key role in helping to plan and run a series of very popular engagement workshops that saw over fifty organisations participate and over 100 actions proposed for inclusion in the plan.

The workshops also provided an opportunity for organisations and community representatives to help develop long term governance arrangements to oversee the implementation of the action plan. Discussion groups and an anonymous survey were used to help identify the preferred governance options and following this the Edinburgh Sustainable Development Partnership approved the establishment of a dedicated Edinburgh Adapts Steering Group.

Membership of the Steering Group is open to all those who have contributed actions to the action plan and has a strong and active membership including the Royal Botanical Garden Edinburgh, Historic Environment Scotland, Edinburgh World Heritage, University of Edinburgh, City of Edinburgh Council, the Adaptation Scotland programme, Scottish Wildlife Trust, Edinburgh College and Heriot Watt University.

*The Adaptation Scotland Programme is funded by the Scottish Government and delivered by sustainability charity Sniffer*

Figure 10. Description of stakeholder input within the Edinburgh Adapts Climate Change Action Plan

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ClimateXChange  
Edinburgh Climate Change Institute  
High School Yards  
Edinburgh EH1 1LZ  
+44 (0) 131 651 4783

[info@climatexchange.org.uk](mailto:info@climatexchange.org.uk)  
[www.climatexchange.org.uk](http://www.climatexchange.org.uk)

**If you require the report in an alternative format such as a Word document, please contact [info@climatexchange.org.uk](mailto:info@climatexchange.org.uk) or 0131 651 4783.**

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