Climate Adaptation Plan
Coleford

Final Submission

March 2024

Document Status

Issue date	05/03/2024
Issued to	Forest of Dean District Council
Revision	V4
Prepared by	Lauren Prouse BSc (Hons) MScR Assistant Environment and Sustainability Analyst Gabriel Pearson BA MSc Environment and Sustainability Analyst Thomas Bromley BA (Hons) MSc Project Manager, Environment and Sustainability Analyst
Reviewed by	Jenny Broomby BA (Hons) MSc MCWIEM C.WEM CEnv Chartered Senior Environment & Sustainability Analyst Murray Dale BSc MSc (Eng) FRMetS CMet Technical Director
Authorised by	Thomas Bromley BA (Hons) MSc Project Manager, Environment and Sustainability Analyst

Carbon Footprint

JBA is committed to championing sustainability and has made The Ten Principles of the UN Global Compact part of its culture and operations. We have a Group-wide objective to be a Net Zero carbon emissions business.

The format of this report is optimised for reading digitally in pdf format; duplex printing in B&W on 100% post-consumer recycled A4 will result in a carbon footprint of 247 grams of CO_2e. This will increase to 315 grams of CO_2e if primary-source paper is used. Please consider the environment before printing.

This report was issued to the Forest of Dean District Council; its contents do not necessarily reflect the position of the Council.

Contents

Abbreviations

CCC	Climate Change Committee
CCRA	Climate Change Risk Assessment
CCRA3	The Third UK Climate Change Risk Assessment
CTC	Coleford Town Council
DLUHC	Department for Levelling Up Housing and Communities
FoDDC	Forest of Dean District Council
FoDCAP	Forest of Dean Climate Action Partnership
FVAF	Forestry Voluntary Action Forum
GCC	Gloucestershire County Council
GWT	Gloucestershire Wildlife Trust
HWT	Herefordshire Wildlife Trust
INNS	Invasive Non-Native Species
LAG	Local Action Groups
LLFA	Lead Local Flood Authority
LRF	Local Resilience Forum
NDP	Neighbourhood Development Plan
NFM	Natural Flood Management
NPPF	National Planning Policy Framework
ONS	Office for National Statistics
PPS	Planning Policy Statement
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Urban Drainage
TCPA	Town and Country Planning Association
UKCP18	United Kingdom Climate Projections 2018
UKHSA	UK Health Security Agency
WWNP	Working With Natural Processes

Executive summary

This adaptation plan identifies a pipeline of fundable adaptation projects for Coleford. The projects focus on addressing local climate change impacts, which have been identified through the Climate Risk Summaries and stakeholder engagement with the Town Council.

The plan is laid out in a simple format to enable easy interpretation of the projects. The projects have been prioritised according to factors including cost, barriers, stakeholder engagement findings, and funding, to provide a balance of projects that are implementable and which address the most pertinent risks. Where appropriate the plan references other plans, policies and strategies of the Town Council, Forest of Dean District Council (FoDDC) or Gloucestershire County Council (GCC). Consideration is also given to relevant local actors who could assist in the delivery of projects. The climate risks addressed by each project and its benefits are clearly outlined with indicative costs and timescales.

The prioritised adaptation projects for Coleford are outlined in Table 1-1 below.

Table 1-1. Adaptation projects for Coleford.

Adaptation project	Risk addressed - 3.2	Timescale of actions - 3.3	Prioritisation - 3.4	Estimated cost and additional benefits - 3.5		Barriers for implementation - 3.6	Resources required and potential funding - 3.7
Local heat alerts	H1 - Risks to health and wellbeing from high temperatures	Less than 6 months	High	Low or no cost	Improved health Resilient Infrastructure and Communities Benefits local adaptive capacity	Ownership	Led by CTC (social media channels) Existing activity
Local climate knowledge	All risks	Less than 6 months	High	Low cost or no cost	Resilient Infrastructure and communities Low carbon behaviours Benefits local adaptive capacity	Councillor time	Bought in service or no-cost social enterprise service (such as Climate Vision CIC) Gloucestershire County Council Greener Gloucestershire Community Fund
Local resilience plan climate actions addition	All risks	Less than 6 months	High	Low cost	Resilient Infrastructure and communities Low carbon behaviours Benefits local adaptive capacity	Councillor time	Existing Alignment with local policy update period
Promotion of climate safe actions	All risks	Less than 6 months	High	Low cost or no cost	Low carbon behaviours Improved air quality Benefits local adaptive capacity	Communication channels	None required Flag pre-existing resources Gloucestershire County Council Greener Gloucestershire Community Fund
Urban Tree planting	H1 - Risks to health and wellbeing from high temperatures	Less than 2 years	High	Medium cost	Improved biodiversity and green spaces Flood regulation Improved air quality	Location Landowners Skills Responsibility	Funding required Feasibility and Land acquisition Stakeholder engagement
Tap water refill scheme	H1 - Risks to health and wellbeing from high temperatures	Less than 2 years	Medium	Low cost or no cost	Clean water Reduced waste	Local need Local traders	Scheme grant
Identify residents at highest risk of the impacts of climate change.	All risks	Less than a year	Medium	Medium cost	Resilient Infrastructure and communities Innovation and funding	Local need - overlap with government work (Defra, NHS)	Existing if completed in-house or with funding required if rely on bought-in service
Wildflower verges.	N1 – Risks to terrestrial species and habitats from changing climatic conditions and extreme events	Less than a year	Medium	Low or no cost	Improved Biodiversity and Green Spaces Low Carbon Behaviours	Ownership	Communications campaign, Councillor time

Adaptation project	Risk addressed - 3.2	Timescale of actions - 3.3	Prioritisation - 3.4	Estimated cost and additional benefits - 3.5		Barriers for implementation - 3.6	Resources required and potential funding - 3.7
INNS monitoring.	N2 – Risks to terrestrial species and habitats from pests, pathogens and invasive non-native species	Less than a year	Medium	Low or no cost	Clean water Improved Biodiversity and Green Spaces	Experience / technical ability	Manpower, no funding available but could be undertaken by volunteers
Facilitating community retrofit and providing advice on retrofit.	H1 - Risks to health and wellbeing from high temperatures	Less than a year	Medium	Medium cost	Green Economy Resilient Infrastructure and Communities Improves local adaptive capacity	Ownership / management / technical difficulty	Councillor time and some funding required, potential to tap into existing Government funding (Energy Company Obligation 4 & Homes Upgrade Grant 2). Climate Action Fund – National Lottery Fund Gloucestershire County Council Greener Gloucestershire Community Fund
Solar and/or green-heating scheme.	H6 - Risks and opportunities from summer and winter household energy demand	Less than 2 years	Low	Very high cost	Innovation and Funding Resilient Infrastructure and Communities Green Economy Co-benefits for decarbonisation, improved energy resilience	Cost / ownership / scale	Significant capital funding required, some funding available: AURORA project (FoDDC), Climate Action Fund - National Lottery Fund Gloucestershire County Council Greener Gloucestershire Community Fund

The table above outlines the identified priority adaptation projects for Coleford Town Council. More details on each project can be found in section 3, below.

1 Introduction

1.1 Organisation of this document

This plan presents proposed adaptation projects for the town of Coleford. Its purpose is to outline the anticipated locations, benefits, costs, timescales, and potential funding of the projects. Chapter 1 explains the background and context to this project, and its objectives. Chapter 2 provides an explanation of how projects are structured. Chapter 3 presents the individual projects. Finally, Chapter 4 gives an overview of the relevant plans, policies, and guidelines that have been considered.

Click here to go to an explanation of the adaptation projects structure

Click here to go to the Proposed Projects

Click here to go to the Relevant Plans, Policies & Guidelines

1.2 Background

The Forest of Dean District Council (FoDDC) has declared climate and ecological emergencies, signalling that immediate action is required. The adopted Climate Change Strategy and Action Plan[1] (2022-25) outlines how the Council needs to mitigate the magnitude of climate change impacts through carbon emissions reductions, while also preparing to address the impacts of 'locked in' climate change.

This adaptation plan for Coleford focuses on future climate change impacts in a local context. It identifies local measures that build resilience, as well as outlining how towns can support adaptation over the longer term for both humans and the natural environment.

This plan is primarily focused on adaptation to climate change, the process of adjustment to actual or expected climate and its effects, to moderate harm or exploit benefits. In effect, reacting to climate change to reduce risk. This plan does not primarily consider climate change mitigation (human interventions to reduce greenhouse gas emissions). However, opportunities to achieve mitigation co-benefits as the result of an adaptation project have been identified and highlighted where relevant.

[1] Forest of Dean District Council (2023), Climate Change Strategy and Action Plan The Forest of Dean Climate Change Strategy and Action Plan

1.3 Project Objectives

The objective of this plan is to provide a list of realistic, fundable projects that Coleford Town Council (CTC) can undertake, support, and develop.

Other objectives include:

- Indicating the location and scale of projects.
- Highlighting appropriate sequencing of projects.
- Identifying adaptation, mitigation, and other benefits.
- Outlining indicative costs and funding sources.
- Engaging with any other town plans currently held by the Town Council or local community groups and higher-level plans, county council or sectoral.

1.4 Policy

This climate change adaptation process is embedded within the policies, strategies and plans of the town and district councils. See Figure 1-1 for an overview of how these plans and policies overlap and interact.

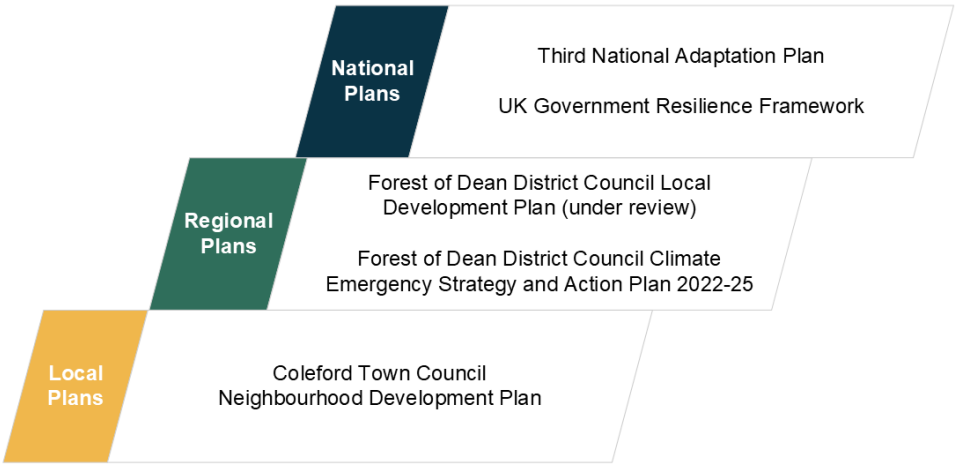

Figure 1-1. National, regional and local plans overview.

1.5 Context: Coleford

Coleford is a small town in the Forest of Dean, with a population of 10,848 (ONS, 2021)[2]. 25% of the population is over 65, higher than the UK average of 18.6%. The population primarily resides in suburban areas, and its economy centres on healthcare, construction, and retail. It has a low ranking in the Forest of Dean for social equity in comparison to other areas, which enhances vulnerabilities.

Coleford's natural topography is a bowl-shape, at the confluence of several minor watercourses.

Figure 1-2 Views over Coleford from Bells Field on the south-eastern side of the town

Coleford is situated between the Severn and Wye rivers and small local watercourses, such as Valley Brook, drain into the larger Wye catchment. Due to its geography and topography, during extreme weather events Coleford can be effectively cut off from the surrounding area due to snowfall, high winds and risks of falling trees and debris. Helicopters have previously flown in to provide supplies to the town.

1.5.1 Future Climate Impacts in Coleford

JBA has produced a Climate Risk Summary for Coleford which should be referred to for an understanding of how climate change is expected to impact Coleford. In recognition of Climate Leadership Gloucestershire's adoption of the Climate Change Committee's (CCC) principles for good adaptation policy sourced from the CCC's Independent Assessment of UK Climate Risk[3], we have referenced headline projections to help the Forest of Dean Adapt to 2°C and assess the risks up to 4°C of warming. A snapshot of the front page is provided below in Figure 1-3.

2 Office for National Statistics, (2021). 2021 Census Data.
3 Climate Change Committee, (2021). Independent Assessment of UK Climate Risk

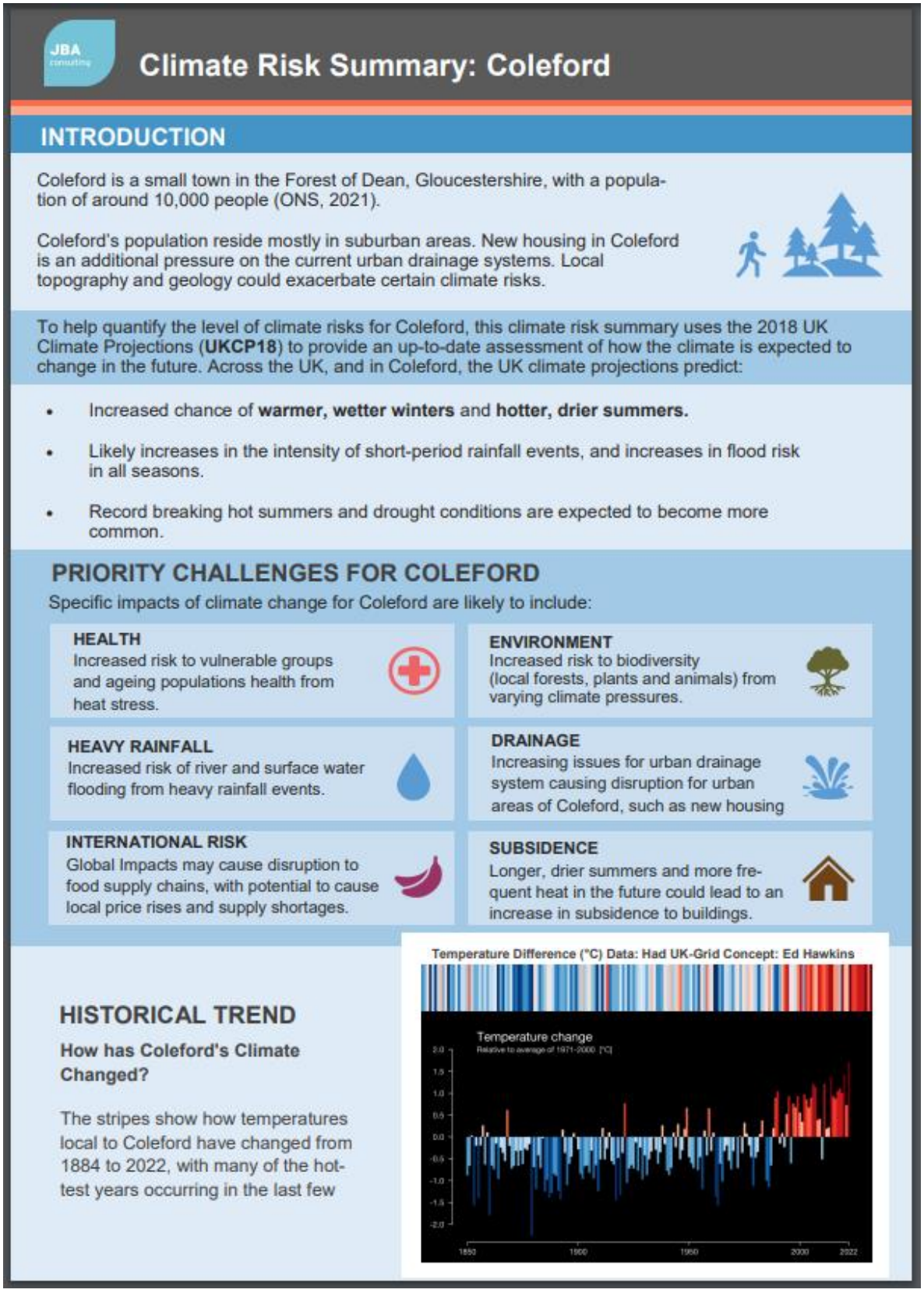

Figure 1-3. The front page of the Climate Risk Summary produced for Coleford

1.6 The prioritisation process

Our team have used the most recent, publicly available climate change information, along with local insights, to inform the adaptation plan process. Local insights and perspectives were gathered through an in-person stakeholder engagement event with Coleford Town Council (CTC) on the 8th of November 2023.

At this meeting the Council raised some of their key priorities for adaptation - these are detailed further in section 1.6.2.

1.6.1 Climate Change Risk Assessment Summary

The climate change risk assessment summary identifies the following priority risk areas for Coleford:

- Health - Increased risk to vulnerable groups and ageing populations health from heat stress.
- Flooding - Increased risk of river and surface water flooding from heavy rainfall events.
- Wind damage - Future increases in storminess are likely to increase the frequency and intensity of damaging wind gusts to people and property.
- Drainage disruption - Increasing pressures on the urban drainage system due to rainfall intensity increase causing disruption for urban areas of Coleford.
- Subsidence - Longer, drier summers and more frequent heat in the future could lead to an increase in subsidence to buildings.
- Energy demand - Increased energy demand for summer cooling which could raise energy bills during the hottest months of the year.
- Food supply chains - Global Impacts may disrupt food supply chains, with the potential to cause local price rises and supply shortages.

1.6.2 Stakeholder Engagement

These climate risk summaries were qualified against local understanding, including an understanding of historical, current, and potential future climate change risks during a series of semi-structured interview workshops.

CTC identified several key local challenges:

- Natural topography of town enhancing flood risk and accessibility during extreme weather events.
- Drainage infrastructure lacking capacity.
- Erosion of the town's 'green ring' due to development.
- Vulnerabilities of an ageing population.

The town council also noted several key priority adaptation themes:

- Reducing damage to the built environment and heritage by managing surface water through SuDS (Sustainable Urban Drainage Systems).
- Communications to increase community resilience to climate change.
- Creating a 'green' entrance to the town through active travel and tree planting.

2 Adaptation projects - structure

A summary of the adaptation projects identified in this plan can be found in the executive summary at the start of this document.

2.1 Primary risk addressed

For each adaptation project, a 'primary risk addressed' has been identified. The risks addressed relate to the 61 risks and opportunities identified in the third UK national climate change risk assessment (UK CCRA3), conducted by the CCC[4].

2.2 Additional benefits

For each adaptation project, a range of additional benefits have been identified. Additional benefits arise from enhancing adaptive capacity and/or addressing other challenges. They include:

- Flood Regulation
- Green Economy
- Resilient Infrastructure and Communities
- Improved Health and Wellbeing
- Improved Air Quality
- Innovation and Funding
- Low Carbon Behaviours
- Improved Biodiversity and Green Spaces
- Reduced Waste
- Clean Water.

2.3 Timing of adaptation projects

Table 2-1 below outlines the high-level timing of adaptation projects.

Table 2-1 - Timing of adaptation projects

Timing	Description
Immediate	Less than 6 months
Short	Less than a year
Medium	Less than two years
Long	Less than five years.

4 Climate Change Committee (2022), The Third UK Climate Change Risk Assessment. UK CCRA3 - Technical Report.

This section will also note and consider potential synergies with any other policy action, neighbouring projects or processes which have been highlighted during the stakeholder engagement and desk-based review process.

2.4 Prioritised projects

For each project, the plan considers feasibility and the need for urgent short-term actions. The stakeholder engagement process has drawn out the key challenges and considerations for Coleford.

To aid in prioritisation, priority risks and urgent adaptation has been determined from assessment at a national level. 61 risks and opportunities were identified in CCRA3, all of which overlap with local authority service delivery, with eight priority risk areas identified as requiring the most urgent attention:

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

Adaptation projects that address and overlap with some of the above priority risk areas have been assigned a higher priority for the local area. Adaptation projects have also been classified according to Climate Change Committee (CCC) definitions for adaptation (behavioural, data and R&D, institutional, financial, engineered solutions, nature-based solutions, new or emerging technologies).

Adaptation projects were scored according to cost, benefits, barriers, funding, stakeholders, and qualitative information gathered. Once ranked, the two highest scoring priority adaptation projects for each of the defined adaptation typologies were taken forward as priority projects for the Town.

2.5 Estimated costs (and benefits)

Estimated adaptation project costs have been evaluated by JBA senior technical specialists, these values have been informed by research and our past experience for adaptation costs for town councils and other local authorities.

Table 2-2 - Estimated project costs key

Costs	
Extremely high	<£1M required for the project or approach
Very high	£100-250k required for the project or approach
High	Over £100k required for the project or approach
Medium	Between £25k and £100k required for the project or approach
Low	Under £25k required for the project or approach
Existing	To be met from existing and pre-identified resources

2.6 Barriers for the implementation of adaptation projects

Barriers to the projects are outlined here, these can reflect gaps in adaptive capacity, potential funding or understanding. They can also reflect barriers in the form of knowledge of climate change risk and adaptation. For example, knowledge of adaptation options, impacts, risks, evidence, and adaptation priorities. Where possible the plan references specific actions that councillors can take.

2.7 Resources required, potential funding and update period

This section of the table highlights the need for project owners, potential avenues of funding (4.1.2) and the timeframes in which the project should be reviewed and updated. For example, a project may be recommended to be updated every 5 years to ensure they reflect strategic and policy directions and can learn from the experiences of those delivering similar projects.

3 Proposed Climate Change Adaptation Projects for Coleford

3.1 Summary of projects

The following section provides further information on the climate change adaptation projects which have been prioritised and identified in Table 1-1 for Coleford. Click on a project in the list below to be taken to the relevant section.

- Local heat alerts
- Local climate knowledge
- Local resilience planning
- Urban tree planting
- Tap water refill
- Promotion of climate safe actions
- Identify residents at highest risk of the impacts of climate change
- Wildflower verges
- Invasive Non-Native Species (INNS) monitoring
- Advice on retrofit and facilitation of community retrofit
- Renewable energy or green heating projects

3.2 Project 1: Local heat alerts

Priority: High

As was highlighted in the climate risk summary compiled for Coleford, the town faces a future with increased risks to health and wellbeing from high temperatures. There were more than 4,500 heat-related deaths recorded in England during the summer heatwaves of 2022. There are also records of productivity loss, with some reports from the 2010 heatwaves estimating a productivity loss of £770 million.

A new system for heat health warnings to account for extreme heat has recently been issued by the National Severe Weather Warning Service. This Weather-Health Altering System was developed jointly between the Met Office and the UK Health Security Agency (UKHSA), with the aim of delivering the new dedicated platform available here. You can now sign up to receive alerts here.

An analysis undertaken for the CCC placed the average benefit to cost ratios for heat alerts and heatwave planning to be at 10.5:1 (benefit : cost). As such, we propose that the town council sets up a system to direct these alerts towards local health services and professionals, or provides the information to the relevant first responders so that they can sign up for the alerts directly. This early warning system should support first responders in coping with the increased service demand of extreme weather events. A plan for the alerts to be communicated to vulnerable groups within the local community, based on (for example) a register of elderly or immunocompromised people, would also increase wider community resilience as sharing the information would allow individuals and their carers to adjust behaviours. As the Weather-Health Alerting System includes both heat-health and cold-heath alerts, this single adaptation project would be beneficial in both summer and winter months.

Table 3-1 - Local heat alerts details

Category	Detail
Primary risk addressed	Aligns with the CCC's high priority areas for adaptation, as identified in CCRA3: H1 - Risks to health and wellbeing from high temperatures.
Additional benefits	• Improved health • Increased resilience of local health care systems • Benefits local adaptive capacity. Developing a system to communicate heat alerts to local health care services and professionals will provide the early warnings required to implement contingency plans. This will improve local health outcomes and the local resilience of the community's healthcare systems. This will benefit local adaptive capacity using existing channels.
Suitable locations	• Provided at a local scale, warnings would be issued through town council communications channels to vulnerable people living independently in the community as well as in care settings. • Engagement with the new local hospital management and care homes throughout the town might be beneficial for uptake. • Local alerts may be of interest to volunteers/the public to understand the potential impact on the local services (in some cases due to heat effects on workforces).
Timescale	Immediate - The town council should communicate the new weather-health alerting system and check integration into local resilience planning.
Cost	Low or no cost - this should be done through pre-existing channels and with pre-existing resources. Time for engagement will be required if the above is integrated into local resilience planning.
Assumptions, uncertainty and funding	Councillor time and ownership is a consideration. The Adverse weather health plan (UKHSA, 2023) 5 has implementation planning for 2024, the plan states that states that local organisations and partnerships should have up to date service delivery plans which cover preparedness, resilience, and response to adverse weather events. These should consider the latest cold, heat and flooding guidance and should be reviewed by October 2024.
Monitoring	Whilst heat alerts should be communicated on a rolling basis, awareness around local heat alerts should be monitored through surveyed uptake or recording the number of interested parties engaged on a yearly basis through communications channels. A range of UKHSA guidance and training resources for staff and

5 UK Health Security Agency, (2023). Adverse Weather and Health Plan.

Category	Detail
	the public are freely available. These are outlined in the Adverse Weather Health Plan (2023) under appendices 2, 3 and 4. These include guidance for care home managers/workers, teachers, H&SC professionals, event organisers, the general public, third sector workers and for local authorities.

3.2.1 Actions and responsibilities

Table 3-2. List of actions and responsible parties.

Action	Responsible party
Advertisement and engagement promoting heat (and cold) alerts (Weather-Health Alerting System)	Town Council (Communications role); Local resilience officer/volunteer
Assemble a list of vulnerable residents and investigate best methods of contact for extreme heat alerts.	CTC, Local resilience officer/volunteer
Engagement with LRF to ensure Weather-Health Alerting System is integrated where needed	Local Resilience Forum (LRF), Town Council

3.3 Project 2: Local climate knowledge

Priority: High

A high priority adaptation project for Coleford is to provide climate change adaptation training for councillors and develop the community's climate knowledge. This will support addressing all CCRA3 priority risks through enhancing local adaptive capacity to climate change, as the management of the climate risks identified in section 1.6 and their impacts will fall in part to the Coleford councillors.

This project will also enhance local adaptive capacity as a wider understanding of the consequences of climate change may generate more community support for other adaptation and mitigation measures that the Council proposes, and increased knowledge should allow Councillors to propose more appropriately targeted actions.

Broadening community climate knowledge will help everyone prepare for the reasonably foreseeable changes. Coleford can expect to see a range of climate impacts under both the medium and high emission scenarios, as outlined in more detail in Coleford's Climate Risk Summary.

We propose extending the scope of the project to include a specific focus on climate-resilient water management strategies. This addition would involve training councillors and the community in effective water conservation measures, such as metering, enhancing water efficiency, and promoting rainwater harvesting. By integrating this water management guidance into the broader climate change adaptation training, this would empower Coleford's residents with practical knowledge and strategies to mitigate water shortages resulting from climate variability.

Table 3-3. Local climate knowledge details

Category	Detail
Primary risk addressed	More than 60 risks and opportunities were identified in UK CCRA3, all of which have a touchpoint with improving local climate knowledge.
Benefits	With the upcoming revision of the Local Neighbourhood Development Plan (NDP), equipping the councillors with the knowledge and skills for adapting to climate change will facilitate the development of an adaptation theme throughout the NDP. The councillors can also share their learnings with the local community, building overall community resilience and local adaptive capacity. Additional Benefits • Resilient infrastructure and communities • Low carbon behaviours • Benefits local adaptive capacity. Enhancing local climate knowledge will help the local population to understand the potential impacts due to climate change that are projected for the future in their local area and ways of increasing resilience to manage the effects.
Suitable locations	Existing community hubs and communication channels should facilitate the sharing of climate change resources with the local community.
Timescale	Immediate - The project could be achieved within less than 6 months once the service contract is in place to provide the training and resources.
Cost	Low - There are likely to be initial costs associated with the procurement and delivery of the services. The services could be procured or provided by a no-cost social enterprise (such as Climate Vision CIC). Once the councillors are equipped with the knowledge and resources, information can be shared through existing communication channels.

Category	Detail
Assumptions, uncertainty and funding	Communications and sharing of climate change knowledge needs to be adapted to the different populations in the town. For example, younger people are known to be more aware of climate change so might be interested in learning about different aspects to those who are less aware and would benefit more from a broad understanding. Councillor time is key for the success of this adaptation project: a substantial amount of Councillor time will need to be set aside to both learn more about climate change and to disseminate climate knowledge throughout the community. Funding could be available for this project through Gloucestershire County Council's Greener Gloucestershire Community Fund. This fund is eligible for Town Councils and applicants can apply for £2000-£5000. The deadline for applications is Monday the 26th of February at 10AM.
Monitoring	A yearly review of climate related resources will ensure that the most up-to-date information is being provided. It will also be useful to review alongside any releases of updated climate datasets from the UK Met Office.

3.3.1 Actions and responsibilities

Table 3-4. List of actions and responsible parties

Action	Responsible party
Procurement of services	Town Council
Councillors undertake climate change adaptation training	Town Council and service provider
Development of climate change resources	Town Council (potentially assisted by the service provider, depending on the contract scope)
Communications of climate change knowledge	Town Council (assisted by FoDDC and other potential stakeholders if collaboratively approached)
Maintenance of resources	Town Council

3.4 Project 3: Local resilience planning

Priority: High

We recommend adding a consideration of climate change to the Coleford Community Resilience Plan to. Whilst local resilience forums (LRFs) will hold a key role for district-wide emergency response, and local authorities are responsible for risk management, local communities are encouraged to produce resilience plans by county and district councils and emergency services.

By adding to Coleford's existing Community Resilience Plan to improve the consideration climate change and adaptation to climate change, Coleford can help to ensure that they have prepared for the identified local climate change impacts, as per Coleford's Climate Risk Summary.

The Coleford Town Council Resilience Plan can serve as a useful starting point and template[6].

Table 3-5 - local resilience planning details

Category	Detail
Primary risk addressed	This project contributes someway to addressing the more than 60 risks and opportunities which were identified in CCRA3. All of the identified risks have a touchpoint with local community resilience.
Additional benefits	• Resilient infrastructure and communities Resilience plans are a key aspect of building the local competences that are associated with adaptive capacity. For example, providing clear identification and powers in relation to specific risks (these may not all be council owned e.g., surface water flooding) or assigning roles and responsibilities for certain risks will help facilitate organisational capabilities, a key pillar of local adaptive capacity.
Timescale	Short - Medium - The timescale for this is dependent on local resources and councillor time. This could be undertaken within a year. Co-development with other local councils could reduce the development time further.
Cost	Low to No Cost - Based on our consultancy experience, and from other plans, the town council should expect the cost of developing or appending to a pre-existing plan to be low. The main cost is likely to be Councillor time.
Assumptions, uncertainty	• The largest barrier to the production of the plan will be councillor time and sharing responsibilities.

6 Coleford Town Council, (2021). Community Resilience Plan

Category	Detail
and funding	• We would anticipate that the above actions should use pre-existing town council resources. • The Forest of Dean Adaptation toolkit will help facilitate the development and appending of current and future resilience plans.
Monitoring	Monitoring for future climate-related resilience planning should be carried out on a long-term basis. This will align with the updated national climate change risk assessment (CCRA), which will have more of a local focus, and will be updated on a 5 yearly basis with the next (4th) cycle (CCRA4) being issued in 2027.

3.4.1 Actions and responsibilities

Table 3-6. List of actions and responsible parties.

Action	Responsible party
Work with Local Resilience Forums (LRFs) to identify opportunities, integrate regional resilience policy and influence local adaptation action.	Town Council
Integrate relevant national adaptation priorities into local resilience and emergency planning	Town Council
Integrate a climate change adaptation-risk register within resilience plans to list potential risks to council services from future climate change	Town Council

3.5 Project 4: Urban tree planting

Priority: High

We propose that Coleford undertake an urban (or peri-urban) tree planting initiative to address heat risks to health (CCRA3 Risk H1) through the provision of shade and the creation of 'cool islands'. CCRA3 noted that climate change is likely to increase heat-related mortality. There are additional benefits of increased urban tree planting, as it presents an opportunity to support biodiversity recovery as well as carbon sequestration.

Coleford can expect an average summer temperature rise of 1.7°C by 2050 under a medium emissions scenario, with an average summer temperature rise of up to 2.6°C by 2050 under a high emissions scenario. The frequency of extreme heatwave events is projected to rise to 2.4 events a year by 2050 under a medium emissions scenario, rising up to 3.5 events a year for the same period under a high emissions scenario. Further details on the impacts of climate change can be found in Coleford's Climate Risk Summary. These impacts emphasise the need for the local area to be ready for average and extreme events as soon as 2050.

Heatwaves are included within the Coleford Resilience Plan[7], and councillors have noted a lack of shade and mature trees, alongside consistent evidence of issues for vulnerable populations in terms of accessibility to shade.

In instances where urban tree planting is not possible, urban shading can be provided through other means such as shade canopies, shelters and sails.

In some instances, it may be appropriate to remove existing hard landscaping to facilitate tree planting. This should be conducted in collaboration with FoDDC and GCC, as appropriate. Pre-existing tree planting locations should be adequately protected, and retained when future-proofing developments so that new trees may be planted.

For peri-urban tree planting, there may be opportunity to engage with the ongoing Severn Treescapes project, led by several partnered wildlife trusts (including GWT). It supports land managers, farmers and communities to access funding to plant, grow and manage woodlands and trees across these landscapes.

7 Coleford Town Council (2021), Coleford Resilience Plan Coleford Town Council Resilience Plan

Table 3-7 Urban tree planting details

Category	Detail
Primary risk addressed	Contributes to addressing H1 - Risks to health and wellbeing from high temperatures.
Additional benefits	• Improved biodiversity and green spaces • Flood regulation • Improved air quality, Urban greenspace, such as woodland, parks and gardens, can create a 'cool island' effect to counteract urban heat islands, reducing surrounding local air temperatures by between 1.5 and 3.5°C[8]. There are associated, well-researched benefits to air quality, biodiversity, and mental health.
Suitable locations	• Feasibility studies, aligned with the latest research from Forest Research[9], performed by a qualified arboricultural consultant would be required to assess the best locations for urban tree planting, taking account of local design codes. • Revisiting Neighbourhood Development Plan (NDP) policies to promote urban tree planting in suitable locations. • Bells Field has already been identified as a suitable location for urban tree planting due to shade requirements. • Planting could be facilitated in other locations in Coleford using tree planters, for example on suitably wide pavements. This would require permission and approval from the appropriate bodies such as FoDDC and Gloucestershire County Council.
Timescale	Short to Medium - It is worth noting that there is a time lag between planting and realising the benefits of tree planting as trees take time to grow and mature, and this in turn is dependent on appropriate maintenance. The Urban Tree Challenge Fund is open for applications. If CTC want to plant trees in 2024 to 2025, an application needs to be submitted no later than 11:59pm on 30 June 2024.
Cost	Medium - Tree planting schemes can be very expensive. There

8 Public Health England (2020), Improving access to greenspace a new review for 2020.
Improving access to greenspace a new review for 2020

9 Forest Research (2021), Trees, greenspace and urban cooling.
Trees, greenspace and urban cooling

Category	Detail
	are a range of costs including the trees, labour for planting, subsequent maintenance, assessment of suitable locations by a suitably qualified individual and the potentially significant cost of purchasing land if there is not already available land.
Assumptions, uncertainty and funding	• The scope of this adaptation project and cost of the adaptation is limited to available land, action ownership and cost. • Tree planting is not a panacea solution, planting regimes themselves will be affected by climate change. If done incorrectly, planting can cause biosecurity issues. • Planting will help aid urban heat risk but is not a substitute for public health activities, such as those that encourage behavioural change for high-risk groups and give information to caregivers of vulnerable individuals. • It is important the preventative action is taken to try to ensure that urban heat risk is minimised in the future. This should align with changes to planning requirements for any new developments. • The government Urban Tree Challenge Fund (https://www.gov.uk/guidance/urban-tree-challenge-fund) or another tree planting grant scheme (of which there are others e.g., Urban Tree planting at: http://www.treesforcities.org/). • Funding could also be drawn from sources such as developer contributions (section 106) as tree planting could be undertaken to support clean air objectives (e.g., reducing local pollution).
Monitoring	The town council can monitor the success of urban tree planting by keeping a record of planting and installations. Establishing a tree monitoring programme following planting would help determine tree establishment and potential issues which can then be managed. There may be monitoring opportunities through encouraging public reporting, or through engaging with local groups.

3.5.1 Actions and responsibilities

Table 3-8. List of actions and responsible parties.

Action	Responsible party
Identify verges and/or strips of acquirable land	CTC, Chris Jones Studio
Engage with GWT contact to discuss opportunities around tree planter rainwater harvesting/SUDS	CTC, GWT (Gloucestershire Wildlife Trust)
Urban Tree Planting Feasibility Study	CTC (stakeholder consideration likely required from FoDDC, Highways England and Forestry England).
Funding application	CTC
Delivery	CTC (assisted by FoDDC and other potential stakeholders if collaboratively approached)
Tree Maintenance	CTC & local volunteers

3.6 Project 5: Tap water refill scheme

Priority: Medium

A medium-tier priority for Coleford is the installation of a tap water refill scheme. This would engage with the Coleford community to encourage people to carry reusable water bottles, supporting people finding and using refill stations. Promotion and engagement are central to the success of community refill schemes, and the Council would need to identify organisations within the community who would support their efforts and provide refill locations. These organisations can be cafés, restaurants, zero waste shops, other businesses, or any community buildings willing to provide refills to the local community.

The CCRA3 noted that climate change is likely to increase heat-related mortality. Increasing access to freely available drinking water helps to reduce heat stress, while providing additional benefits in terms of reducing waste and therefore carbon emissions, and potentially also leading to increased footfall in town centres and therefore increased economic activity. As such, this adaptation project helps address those increased heat risks to health (CCRA3 Risk H1), while also providing co-benefits for the environment and local economy.

Table 3-9 Tap water refill details

Category	Detail
Primary risk addressed	Contributes to addressing H1 - Risks to health and wellbeing from high temperatures.
Additional benefits	• Clean water • Reduced waste. There are benefits for human health from the provision of freely available public drinking water in urban areas. These benefits will be especially apparent during heatwave events. There are also associated benefits for mitigation, including a reduction in waste and therefore carbon emissions. There are also potential benefits for the local economy as refill schemes can lead to increased footfall in town centres and can encourage interactions with local businesses[10].
Suitable locations	Refill stations can be shops, cafés, businesses, community buildings, public water fountains, libraries and other local businesses and publicly owned buildings. So long as the location

10 Refill, Refill Stations How to Guide

Category	Detail
	has a publicly accessible water point where the public can enter and refill with tap water, either directly or by having the bottle refilled by a member of staff, then that location can be registered as a publicly accessible water point. Given the number of businesses in the centre of Coleford there a range of potentially suitable locations. A refill scheme can be started in any area where one does not already exist. Refill schemes engage with the local community and sign post them to the Refill app to help them locate refill stations so that they can work to access freely available drinking water. There are refill schemes across the UK and the world, operating at a range of scales.
Timescale	Medium - However, an ambitious approach could see this action completed quicker than this. The time taken to get a scheme up and running will depend upon both the local need for the scheme, local buy-in (businesses, residents and visitors) and the number of suitable locations.
Cost	Low to No Cost - A refill scheme could be free to set up so long as there are sufficient refill stations within the surrounding area. Installations of public water fountains may be relatively costly (<£5,000) and would likely require consultation with FoDDC at a minimum.
Assumptions, uncertainty and funding	The scope and cost of this adaptation project is dependent on local need, local buy-in and the ability to find and identify suitable locations. Funding pots for this project may be tied to other initiatives such as local regeneration and town planning. It is important the preventative action is taken to try to ensure that urban heat risk is minimised in the future. This could be achieved through changes to planning requirements for any new developments.
Monitoring	Monitoring of the tap water refill scheme is relatively straightforward. Adding local refill stations to the Refill app can assist the monitoring of this project. Feedback from the local businesses that host a refill station can also provide data on the number of people engaged with the scheme.

3.6.1 Actions and responsibilities

Table 3-10 List of actions and responsible parties

Action	Responsible party
Identify suitable local businesses and locations	CTC
Engaging with the community and signing up suitable locations to act as refill stations	CTC, local businesses and volunteers
Funding application	CTC
Delivery	CTC (assisted by willing local businesses and residents)
Maintenance	CTC, local business owners & volunteers

3.7 Project 6: Promotion of climate safe actions

Priority: High

We recommend that CTC promote climate safe actions throughout the town. This project will help to address the priority risks identified in CCRA3, as relevant actions can be identified for each risk, helping to build local adaptive capacity to the impacts of climate change.

Efficiencies can also be achieved by using the knowledge and resources from Project: Local climate knowledge, and by using existing communication networks to share information. The project could also draw on Gloucestershire Wildlife Trust's (GWT) Do One Thing[11] campaign for inspiration and guidance.

Councillors highlighted that there have been incidences of low vegetation in the local area catching alight due to disposable barbecues being left on the ground, emphasising the importance of promoting climate safe actions. In addition, holding discussions with stakeholders, such as local hospitals (e.g. Great Oaks Hospice) and pharmacies, community groups, schools, Parish Councils and the Forest of Dean District Council around useful and relevant climate safe actions will also help to identify relevant and useful climate safe actions across a range of themes. Example themes to centred should include health, wildfires, flooding, and transport.

11 Gloucestershire Wildlife Trust, Do One Thing

Table 3-11 - Promotion of climate safe actions

Category	Detail
Primary risk addressed	This project will help to address the priority risks identified in CCRA3, as relevant actions can be identified for each risk. It will also provide benefits for local adaptive capacity.
Additional benefits	• Low carbon behaviours • Improved air quality • Benefits local adaptive capacity Low carbon behaviours can also be encouraged through this action, and local air quality could be improved by encouraging a reduction in driving of internal combustion engine vehicles.
Suitable locations	Promotional materials can be shared across the town, in-person through schools and colleges and community groups, and online through existing digital communication channels, such as newsletters.
Timescale	Short - Using existing communication networks will make this adaptation action achievable in less than 6 months.
Cost	Low to No Costs - Pre-existing resources and communication networks can minimise costs. The main cost is Councillor time.
Assumptions, uncertainty and funding	• There are existing communication channels, but this need to be reviewed and developed to be accessible for the whole town. • This adaptation project will be reliant on councillor time. • There are pre-existing resources which can be drawn upon for the development of promotional resources, such as tips for preventing wildfire from the British Red Cross.
Monitoring	To monitor the effectiveness of the promotional material, regularly updated records for each climate safe action could be maintained and reviewed. For example, the number of local wildfires thought to be started by people could be recorded and yearly reviews will highlight whether there has been any changes in the numbers. Similarly, the local hospital could provide information on heat-related admissions. Promotional material will also need reviewing on a yearly basis to ensure it is current and up-to-date.

3.7.1 Actions and responsibilities

Table 3-12. List of actions and responsible parties.

Action	Responsible party
Identify key stakeholders who can contribute to the identification of climate safe actions.	CTC with support from FoDDC
Develop a database of climate safe actions across a range of themes.	CTC in collaboration with stakeholders
Identify and map how, when and where the promotional materials/information can be shared.	CTC in collaboration with stakeholders
Delivery and sharing of climate safe actions	Led by CTC in collaboration with stakeholders.
Monitoring behavioural changes	CTC in collaboration with stakeholders

3.8 Project 7: Identify residents at highest risk of the impacts of climate change

Priority: Medium

We recommend CTC facilitate climate change vulnerability mapping. This project will help to identify elements of the community most vulnerable from the effects of climate change. Vulnerability mapping should include identifying certain demographic vulnerabilities (such as age and deprivation), geographic concerns (such as topography and proximity to potential hazards) and would allow for more complete mapping of climate change risk. This project will also enable more targeted support and adaptation actions for the most vulnerable areas.

This adaptation action would help to address all relevant national climate change risks (CCRA3).

Table 3-13 - Vulnerability mapping details

Category	Detail
Primary risk addressed	This project will help to address all relevant national climate change risks identified in CCRA3 at the local level. Undertaking the vulnerability assessment is an innovative action which will provide the information and evidence needed to tailor resilience plans and policies to the needs of the community. This will build community resilience to climate change, and highlight where support needs to be focused
Additional benefits	• Innovation and funding • Resilient communities and infrastructure This would also support the concept of just transition 'tackling the distributional consequences of climate change and adaptation actions' (CCC, 2022)[12].
Timescale	Short - Once the service has been procured, or a project plan devised in-house, the vulnerability assessment could be completed within a year.
Cost	Medium - There is a potential requirement for procurement of bought-in services to complete the assessment.
Assumptions, uncertainty and funding	• Coleford's ageing population reflects the need for a vulnerability assessment to be completed. • The assessment could overlap with Government work through Defra and the NHS.

12 Climate Change Committee, (2022). The Just Transition and Climate Change Adaptation.

Category	Detail
	• The work could be completed in-house, or funding will be required if relying upon a bought-in service. • The work could be based upon successful previous mapping projects, such as ClimateJust[13]. The free mapping tool could be used as an alternative, highlighting areas for action.
Monitoring	Yearly reviews of the assessment using Town Council data will be key to ensure the assessment is up-to-date with any population changes. This can be completed in-house.

3.8.1 Actions and responsibilities

Table 3-14. List of actions and responsible parties.

Action	Responsible party
Identify key requirements for mapping	CTC with support from FoDDC
Develop a Request for Proposals (RFP), Issue the RFP and manage queries, evaluate proposals and select vendor(s). Contract award	CTC with support from FoDDC
Monitoring and compliance, data sharing and cooperation (e.g., engagement)	CTC in collaboration with stakeholders
Provide necessary resources and support following findings	CTC in collaboration with stakeholders

13 https://www.climatejust.org.uk/

3.9 Project 8: Wildflower Verges

Priority: Medium

We recommend CTC implement wildflower verges and areas throughout the town. As per the Wildlife Trust's website[14], road verges provide habitats for a wide range of plants of animals, particularly in spring and summer with the growth of wildflowers. Some verges on roads and junctions do need to be cut back for driver and pedestrian safety. However, some can be left to grow and remain uncut until late summer when seeds have set, and insects have benefitted from the nectar and pollen. With the expected warmer temperatures and wetter winters in the town, creating and enhancing habitats for species will protect the local biodiversity and encourage a broader diversity of species.

A comparable project is currently being undertaken in Shropshire, supported by Severn Trent Water. The 'Restoring Shropshire's Verges Project' aims to restore wildflower-rich verges on the sides of roads in the area, as well as small pockets of communal land[15]. There is an opportunity for collaboration with Dŵr Cymru Welsh Water or Severn Trent Water to implement wildflower verges or sustainable urban drainage (SuDs) as work is completed on drainage pipes.

Extensive efforts have been made locally to create bee-friendly food corridors. Councillors have advertised, for free, packets of native wild flower seeds for planting to local homeowners.

Homeowners should continue to be encouraged to participate in this practice. Plantlife run an annual campaign called No Mow May[16], encouraging homeowners to let wildflowers grow in their gardens. Gloucestershire Wildlife Trust (GWT) have expressed willingness to collaborate on this project and so should be approached by CTC for assistance and advice.

14 Managing road verges for wildlife | The Wildlife Trusts

15 Boost for biodiversity as Severn Trent helps plant wildflower-rich road verge (shropshirelive.com)

16 Plantlife's No Mow May Movement

Table 3-15. Wildflower verges details.

Category	Detail
Primary risk addressed	A priority risk this project addresses is highlighted by CCRA3 is N1: Risks to terrestrial species and habitats from changing climatic conditions and extreme events.
Additional benefits	• Improved Biodiversity and Green Spaces • Low Carbon Behaviours Allocating spaces for wildflower verges and promoting the practices of campaigns like No Mow May will improve biodiversity and green spaces in the town. In addition, low carbon behaviours are encouraged through this action and soils where wildflowers grow can sequester carbon.
Suitable locations	The Town Council will need to map and identify where wildflower verges could develop and would not be a health and safety risk for pedestrians and motorists. Verges alongside roads in the town are potential locations for a wildflower verge, alongside pockets of council owned land. For example, the existing wildflower area in Bells Field could be expanded. The Town Council could consult with landowners to determine whether they can introduce any wildflower verges or areas onto their land.
Timescale	Short - The promotion and allocation of spaces for wildflower verges can be completed in less than a year. The associated monitoring and maintenance will be on-going beyond the one-year timeframe.
Cost	Low - This project can utilise existing space and communication channels for promotion. Should the Town Council wish to acquire further land from landowners, there will be costs associated with this.
Assumptions, uncertainty and funding	• A barrier for implementation is ownership of the land and who is responsible for maintenance. This will need to be decided prior to promoting this action in the community. • A communications campaign will be required using existing communication channels e.g. Town Council newsletter and local community groups. • Town Councillor time is likely to be relied upon for the implementation of this action.
Monitoring	Monitoring for the first year following the implementation of this action will be key to ensure plants are growing as expected. Regular monitoring and maintenance on a six-monthly basis through the change of seasons will help with the site's management and identification of the correct time to cut back the plants for re-growth the following year.

3.9.1 Actions and responsibilities

Table 3-16. List of actions and responsible parties.

Action	Responsible party
Identification of suitable areas for wildflower verges/areas	CTC with support from FoDDC, Gloucestershire Wildlife Trust and Chris Jones Studio
Compilation of learning resources and promotional materials	CTC/Gloucestershire Wildlife Trust
Sourcing of funding	CTC with support from FoDDC
Implementation of wildflower verges	CTC/FoDDC/Chris Jones Studio/Gloucestershire Wildlife Trust with support from stakeholders such as water companies and community groups
Maintenance and monitoring	CTC, local community groups

3.10 Project 9: Invasive Non-Native Species (INNS) monitoring

Priority: Medium

INNS monitoring is an adaptation project with links to local risks in the natural environment (Ash tree dieback). According to Berry & Brown (2022)[17] the combined risk elements for INNS (climate and non-climate) suggest that the magnitude of this risk is increasing across the UK. There is a need locally to improve preparedness, surveillance of INNS and to address risks, especially for forestry.

The council should lead the formation of a local action group, aligning with other groups in the Non-Native Species Secretariat (NNSS).
This project should work alongside the needs, expertise, and guidance of other relevant stakeholders, such as Gloucestershire Wildlife Trust (GWT), Herefordshire Wildlife Trust (HWT) and the Forest Voluntary Action Forum (FVAF).

The council should coordinate willing volunteers to undertake training for tree-surveys, such as those done by Observatree (under guidance from the Woodland Trust). Following engagement, the council should scope potential actions for this project, if resources are limited, awareness and communication of the risks of INNS could be a good starting point.

Table 3-17. INNS monitoring details.

Category	Detail
Primary risk addressed	N2 - Risks to terrestrial species and habitats from pests, pathogens and invasive non-native species.
Additional benefits	• Clean water • Improved biodiversity and green spaces Local community interest might help leverage other opportunities and adaptation projects. Mitigation performed locally could reduce INNS risks across the Forest of Dean. Local interest might help leverage other opportunities and adaptation projects.
Timescale	Medium - The expected lead in time for volunteering activities could be up to two years. Engagement could be integrated into this timescale.
Cost	Low or No Cost - Funding likely to be available (as listed by the GB Non-Native Species Secretariat (NNSS)). Although would likely incorporate volunteering network arrangement.

17 Berry and Brown, (2021). Natural Environment and Assets. In: The Third UK Climate Change Risk Assessment Technical Report [Betts, R.A., Haward, A.B. and Pearson, K.V. (eds.)]. Prepared for the Climate Change Committee, London

Category	Detail
Assumptions, uncertainty and funding	• The formation of a local action group might require a large time commitment from willing volunteers, links with GWT should be explored to try to mitigate this. • Other volunteering arrangements, such as through Observatree, might be more accessible, though could require a lead in time (~1 year) and would be respective of the desired surveying arrangement of the Woodland Trust. • The non native species secretariat outlines many sources of funding for local action groups (LAGs), this can be found within their LAG toolkit here: https://www.nonnativespecies.org/local-action-groups-lags/toolkit/
Monitoring	Following the engagement process, councillors could monitor the number of volunteers, volunteering activities and frequency of local interventions to determine success. This should be completed on a yearly basis.

3.10.1 Actions and responsibilities

Table 3-18. List of actions and responsible parties.

Action	Responsible party
General awareness of INNS	CTC
Engagement with GWT to determine ongoing work, potential for volunteering and the potential of a NNSS aligned new Local Action Groups (LAGs).	CTC, Volunteers, Gloucester Wildlife Trust
Engagement with the FVAF	CTC, Forest Voluntary Action Forum
Awareness of other volunteering programmes (e.g., Observatree)	CTC

3.11 Project 10: Advice on retrofit and facilitation of community retrofit

Priority: Medium

Facilitating community retrofit and providing advice on retrofit has been identified as a medium priority adaptation project for Coleford. We recommend that CTC disseminate information and advice on suitable retrofit measures to the residents of Coleford.

Retrofit of homes focuses on improving the thermal efficiency (heat retention) of housing stock through a range of potential measures to properties. Measures include insulation (loft, cavity, internal and external wall insulation), switching to decarbonised heating supplies (air source and ground source heat pumps, for example), and reducing energy usage (smart heating controls, using more energy efficient lighting and appliances). Notably, age of property has been demonstrated by the ONS to be the single biggest factor associated with energy efficiency[18]. Insulation helps control the transfer of heat. Well-insulated homes take longer to heat up from the effects of the sun on its walls and roof in the summer.

To compound this, research has demonstrated that the UK has the oldest housing stock in Europe, if not the world[19]. Retrofit will therefore be an essential adaptation in helping to address heat risks to health (CCRA3 risk H1), whilst also providing co-benefits for decarbonisation (climate change mitigation) and the local economy.

Retrofit can be publicly or privately funded and financed, and there are a range of pots of funding which are currently available. There could be opportunities for CTC to assist in the dissemination of information regarding these pots of funding.

Table 3-19. Advice on retrofit and facilitation of community retrofit - details.

Category	Detail
Primary risk addressed	This project contributes to addressing the priority risk H1 - Risks to health and wellbeing from high temperatures.
Additional benefits	• Green economy • Resilient infrastructure and communities Retrofit also delivers mitigation co-benefits, as homes that are insulated require less energy for heating and therefore produce less carbon emissions.
Suitable locations	Currently, there is funding is available for a range of measures through different publicly available sources. Funding for properties in the Forest of Dean is administered and managed

18 Office for National Statistics, (2022). Age of the property is the biggest single factor in energy efficiency of homes.

19 BRE Trust, (2017). The Housing Stock of the United Kingdom

Category	Detail
	through the Warm and Well scheme which is managed by Severn Wye Energy Agency on behalf of the seven Local Authorities in South Gloucestershire and Gloucestershire. Given the complexity of the funding requirements and the fact that the eligibility criteria for funding is constantly changing, it is advised residents who want to explore the possibility of retrofit for the property they live in should contact Warm and Well.
Timescale	Short to Medium - The engagement element could be achieved within a year, as existing communication networks can be utilised to engage with the community on retrofit once the suitable areas have been identified. Installing retrofit measures may take longer than a year, due to the funding process and delivery of the measures by suitable contractors.
Cost	Low to No Cost - Whilst retrofit itself can range in cost from <£1000 - >£25,000 per property, depending on the retrofit measures, age of the property and complexity of the installation. Provision of advice on retrofit and helping to facilitate retrofit in the community has been categorised as a "Low or no cost" project, as apart from Councillor time there are no identified costs.
Assumptions, uncertainty and funding	• This adaptation project assumes that CTC would be able to engage with and support the Warm and Well scheme administered by Severn Wye Energy Agency. • This project assumes that CTC will not be funding or administering retrofit, instead, they will be providing advice on retrofit and directing residents to suitable pots of funding and more information. • Funding for retrofit has varied greatly in the past decade in England. It is possible that funding pots may go offline quickly and that publicly available funding may be withdrawn.
Monitoring	CTC could monitor this project by recording the number of properties they have engaged with and whether engagement has led to the installation of retrofit measures.

3.11.1 Actions and responsibilities

Action	Responsible party
Identify suitable local areas for retrofit	CTC, in collaboration with FoDDC
Engaging with the members of the community and acting as a source of knowledge on retrofit	CTC, in collaboration with FoDDC and local landowners and the community
Funding application	Warm and Well
Delivery	Suitably qualified contractors.
Maintenance of the retrofit measure	Homeowner

3.12 Project 11: Renewable energy or green heating projects

Priority: Low

During the formation of the adaptation plans, it was recognised that future actions could also benefit local decarbonisation efforts. Adaptation and mitigation should go hand in hand[20]. Therefore, we recommend that this project centres around upgrading town council buildings, through renewables, decarbonised heating, or energy efficiency actions. It has been categorised as a low priority action.

Within the district, the Forest of Dean District Council is facilitating a community energy project in the area through the Centre for Sustainable Energy.

The AURORA project, a Forest Energy Community Initiative is funded by the European 'Green Deal' initiative[21]. The initiative is aimed at promoting citizen led, bottom-up energy projects, such as a community solar energy project.

There are further opportunities, from other funding schemes dedicated towards the public sector which would also be accessed by Coleford, this includes programmes that could deliver energy efficiency and heat decarbonisation projects within their non-domestic buildings.

20 Local Government Association - Accelerating Adaptation
21 AURORA, Forest Energy Community Initiative

Table 3-20. Renewable energy / green heating details

Category	Detail
Primary risk addressed	H6 - Risks and opportunities from summer and winter household energy demand.
Additional benefits	• Innovation and funding • Resilient infrastructure and communities • Green economy Undertaking a decarbonisation project will help facilitate the transition to net zero locally (and to meet government targets). There are other additional benefits to this project, including building capacity for innovation and funding locally, improving the resilience of community infrastructure and supporting the Gloucestershire green economy.
Suitable locations	• Currently, for Coleford, there are many Solar PV panels fitted to council properties. However, there is ambition locally for a community energy project. • Heat decarbonisation projects have not been explored in the area, but there are potential non-domestic buildings, such as recently taken on community buildings (acquired with UK Shared Prosperity Funds).
Timescale	Medium to Long - Depending on the scale of the project, it could take one year to five years to undertake the above actions to completion.
Cost	High - The associated costs of energy schemes regardless of funding arrangements are likely to be high - although final capital expenditure will be project scale dependent. Projects would experience challenges around costs, ownership and planning.

Category	Detail
Assumptions, uncertainty and funding	• Engagement with the AURORA Project/Forest Community Energy (FCE) would help to provide a useful template for how a scheme could be undertaken in Coleford. • Alternatively, funding or net zero and renewable energy projects might be best accessed through the South West Net Zero Hub, which details funding and financing opportunities. This funding usually includes costing for feasibility studies. • Local heat decarbonisation of public buildings could be facilitated through several different funds, a similar example of a local funded scheme (at a Parish Council level) in Gloucestershire was facilitated by the South West Energy Hub, which awarded Oaksey Parish Council a £14,000 Rural Community Energy Fund grant to assess feasibility and to install a ground source heat pump. • Any project(s) developed through CEF funding should be designed to be at least 50% community owned. • Longer term ambitions around community energy (e.g., onshore wind) could take longer and would be dependent on addressing planning impacts identified by the affected local community and general community support. • FoDDC Rural England Prosperity Funding, covering themes such as the climate crisis, or the Gloucestershire County Council Climate Change Community Fund (in development) might be a feasible avenue for funding this project.
Monitoring	Monitoring and evaluation of this project should be undertaken to check progress against planned milestones, to understand how well various schemes are developing and delivering on their objectives, and to analyse how the scheme has performed against its intended impacts. This includes added capacity (for renewable schemes) or energy efficiency gains (for heat decarbonisation).

3.12.1 Actions and responsibilities

Table 3-21. List of actions and responsible parties.

Action	Responsible party
Continued engagement with the AURORA Project/Forest Community Energy (FCE) scheme to determine community owned possibilities for Coleford	CTC, Forest of Dean District Council and local interested groups.
Evaluate avenues for heat decarbonisation of council owned buildings.	CTC
Set up a working group with representatives from the local community to assess the practicalities of community ownership.	CTC, Community groups.
Application for funding, such as future rounds of the Public Sector Decarbonisation Scheme (Salix) or the Community Energy Fund (CEF) through the South West Net Zero Hub	CTC

4 Adaptive Capacity: Coleford

4.1.1 Adaptive capacity

Coleford's adaptive capacity includes the current capacity of the Town Council, the community and any others who may be expected to support the implementation of adaptation actions. It considers human, technical, financial, informational resources, and other capabilities.

The adaptive capacity characteristics in the table below have been informed by the ISO14091/2021 standard, Adaptation to climate change - Guidelines on vulnerability, impacts and assessment.

Table 4-1 below provides a high-level indication of the current adaptive capacity of Coleford, informed by stakeholder engagement with CTC. The projects detailed in section 3 have considered the capacity characteristics and should lead to improvements in local adaptive capacity in the future.

The adaptive capacity characteristics should also be considered when monitoring the projects detailed within this plan and used as a framework to inform the development of new projects in the future.

Table 4-1: Adaptive capacity characteristics and current adaptive capacity

Adaptive Capacity Characteristics	Current Adaptive Capacity
Leadership and commitment for climate change adaptation	There is no current lead for climate change adaptation, although there is awareness and consideration under the environment committee. There are democratic recommendations made within the Council, and links between committees.
Ability to identify risks	There is recognition that the elderly population are vulnerable to climate change, and that the town is at risk of flooding due to its topography.
Capability to act	Town Councils are somewhat restricted in their ability to act in that Town Councils only have limited authorities and powers. Being a Town Councillor is an unpaid position and some Town Councillors manage working alongside their responsibilities as a Councillor.
Influence on decision making	There is a consideration of emergency planning and an understanding of resilience, demonstrated by the CTC's Local Resilience Plan.
Accessible expertise	The Council have seen a reduced number of volunteers associated with their resilience plan. However, there are opportunities for the Town Council to draw on the expertise of outside experts through ongoing projects, such as Coleford Community Regeneration Plan.

Adaptive Capacity Characteristics	Current Adaptive Capacity
Engagement with local groups	The Council have set up multiple clubs across the community and regularly engage with local health organisations, such as the Great Oaks hospice.
Collaboration with other councils and interested parties	Coleford Town Council engage with other councils and a range of interested parties through: • The community energy project AURORA across the Forest of Dean; • The Forest of Dean Climate Action Partnership (FoDCAP); • Forest Climate Network; • Working with University of West England and their masters students; • UKSPF and Chris Jones Studio on their community regeneration plan.
Learning and recording - improving decisions over time	The 2017-2026 Neighbourhood Development Plan is currently under review, with yearly statistical monitoring being published each October using data from the Forest of Dean District Council.
Financial resources	Budget arrangements for the next financial year are beginning, however, there are already calls on the money for immediate use, for example, the Council building needs to be moved, and the Clock Tower rain ingress project.

4.1.2 Funding

The Society of Local Council Clerks have compiled a list of potential funding sources available for climate and environmental action and adaptation. These vary from Section 106 and 137 agreements and the Community Infrastructure Levy, to grants and the National Lottery Fund. The grants have been categorised, and some relevant examples are detailed below in the table below.

Table 4-2. List of funding sources and typologies.

Categorisation of funding type	Funding source
Broader climate change	Climateworks Foundation, Lush Charity Pot Funding
Energy use, storage and creation	Thrive Renewables Collective Capital for Community Energy Groups VCSE (voluntary, community and social enterprise organisations) Energy Efficiency Scheme
Energy advice	Energy Saving Trust Energy Redress Scheme, E.O.N Next Fund
Environmental justice, campaigning and grassroots action	Friends of the Earth Climate Action Fund
Nature and land use	Ernest Cook Trust, Postcode Local Trust
Biodiversity Net Gain	BNG credits

This is not an exhaustive list. For more information, please see this document. The Council could also seek advice from Forest Climate Network who work locally to bring together expert advice on local change, community-based regeneration and climate action.

5 Relevant plans, policies, and guidelines

This section outlines the local, district and county level plans, polices and strategies that have been identified as relevant and pertinent to the projects included within this plan.

5.1 Coleford Neighbourhood Development Plan (2017 - 2026)[22]

5.1.1 Policy CNE3 - Green Infrastructure

Development proposals should safeguard protected species and habitats. Subject to other development plan policies development proposals will be supported where they safeguard protected species and habitats. Development proposals should:

- Demonstrate how the design has taken into account its potential impact on local habitats and species.
- Ensure that appropriate measures are put in place to protect wildlife and enhance biodiversity and important habitats.
- Appropriate measures may include for instance use of swift bricks, bat and owl boxes, and ensuring that new and converted buildings provide nesting and roosting spaces for bats and birds.
- A mixture of native species typical of this locality should be incorporated in landscaping schemes including: Coast Redwood; Douglas Fir; Beech; Yew; Hazel; Ash; Oak; European Larch; Silver Fir; Birch; Scots Pine; Sweet Chestnut.

Incorporate features such as green/living roofs. Re-naturalising water courses, planting of native woodland and use of sustainable drainage (SUDS) will be encouraged, especially for public buildings.

Any new development will also have to be compatible with other NDP policies (NB design policies, open areas, local green spaces, key views as in Map 13, green area protected by the NDP and on sites allocated for other purposes).

Opportunities for developer contributions will be sought.

5.2 Forest of Dean Core Strategy (2012)[23]

5.2.1 Coleford Settlement Policies (7.35 - 7.45)

Sustainable development

22 Coleford-neighbourhood-development-plan.pdf (fdean.gov.uk)
23 Core Strategy Adopted Version (fdean.gov.uk)

- Promote sustainable development in Coleford and to retain its role as one of the four towns serving the Forest of Dean, with an emphasis on service provision.
- Ensure new development uses resources efficiently, by following the guiding principles set out in the Core Strategy

Housing and affordability

- Deliver new housing on a variety of sites to suit the local needs. These will be based on the present Local Plan allocations. The constraint on development in Coleford previously imposed by the lack of foul drainage capacity has now been removed. This constraint limited development until its removal in June/ July 2011 but did not prevent one of the major allocated housing sites (Angel Farm) from being commenced. The Core Strategy will support housing on previously developed land and on sites close to the town centre. Affordable housing will be expected as a 40% share of all eligible sites.

Town centre

- Improve the range and offer in the town centre, through the development of land identified in the Local Plan and to provide for the continuing needs of the community as changes take place (including the redevelopment of the former community centre).
- Retain and enhance the character of the town centre, especially the Conservation Area

Transport and access

- Provide better road, pedestrian and cycle access both to, and within, Coleford.
- Make improvements to public transport where they can be made.

Policy 7.45

- The present drainage constraints mean that for Coleford town itself major change depends on further investigation and action by the utility company.

5.2.2 Policy CSP .14

The Core Strategy will in Coleford:

- Provide for about 650 new dwellings over the period to 2026, On eligible sites (over 10 dwellings/ 0.3ha, a 40% share of affordable housing will be sought), whilst maximising the use of previously developed land.
- Enable 6.8ha of employment generation uses to be developed, including service provision and continue to support the development of tourism facilities or accommodation.
- Support the continued redevelopment of the town centre including areas for mixed uses and further retailing (up to approximately 1200m^2 convenience and about 1300m^2 for comparison goods).

5.3 Coleford Community Resilience Plan

Coleford's Community Resilience Plan is regularly reviewed, the last review being in May 2021. It details how the town responds to a range of events, including:

- Details around the key roles in the community, possible emergencies and activation of the plan. Possible emergencies include flash flooding, forest fire, snow and ice and power cuts.
- Use of communications to spread key information
- The Butty system - a buddy system for people who may need it. The system is reliant on volunteers.
- A summary of resources available for responding to an event.
- Details of welfare resources, including places of safety which are not publicly listed on this document.

5.4 Gloucestershire County Council (GCC) documents

Gloucestershire County Council (GCC) are the Lead Local Flood Authority for the county. The responsibilities for local flood risk management are detailed in Figure 5-1.

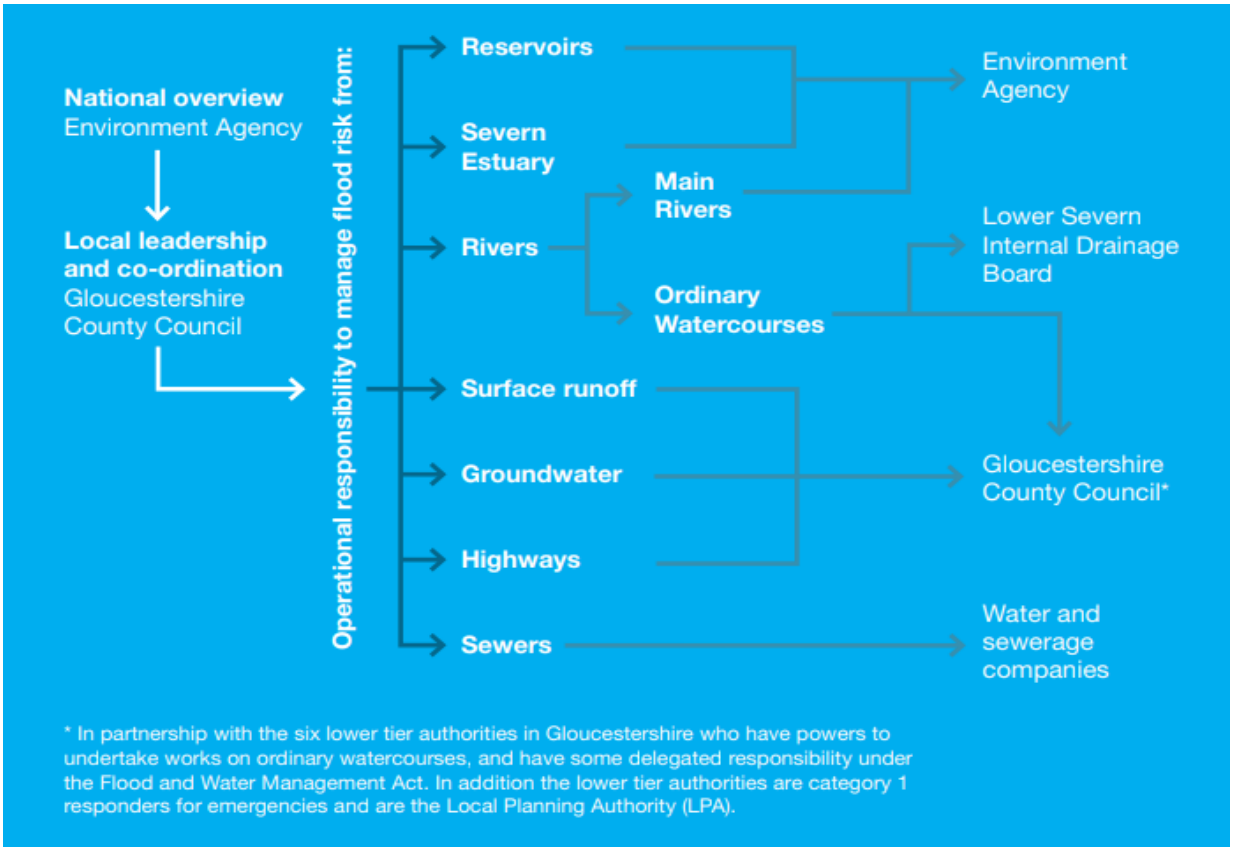

Figure 5-1. Responsibilities for flood risk management

5.4.1 Local Flood Risk Management Strategy[24]

GCC has a leadership and coordinating role in flood risk management across the County, in their role as Lead Local Flood Authority. The strategy was adopted in 2014, and has a 10-year period.

The six key strategic objectives for the Local Strategy are:

- improve our understanding of local flood risk;
- put in place plans to manage these risks;
- avoid inappropriate development and ensure new development does not increase flooding elsewhere;
- increase public awareness of flooding and encourage local communities to take action;
- ensure close partnership working and co-ordination with other risk management authorities in Gloucestershire, and;
- support response to, and recovery from, flooding incidents.

Within the 2022-23 and 2023-24 implementation plan[25], it is detailed that more than 100 properties in Coleford are at a high risk of surface water flooding (1 in 30 year). The calculated risk remains high, and a scheme is in progress. The proposed method of alleviation was to develop flood storage areas on the Thurstans and Sluts Brooks, and town centre drainage improvements. The estimated number of properties at risk is to be confirmed. The estimated scheme cost is £350,000. The modelling has been completed and an options appraisal is underway. There have been critical drainage and conveyance issues identified, which are under investigation.

5.4.2 Strategic Flood Risk Assessment[26]

The SFRA has been prepared to support the application of the Sequential Test (by the Councils) outlined in Planning Policy Statement 25: Development and Flood Risk (PPS25), and to provide information and advice in relation to land allocations and development control. Where it is found that some sites can only be placed in 'medium' or 'high' risk areas, a Level 2 SFRA is required which carries out the 'Exception Test' as set out in PPS 25. The 'Exception Test' is only appropriate for use when there are large areas in flood zones 2 and 3, where the sequential test alone cannot deliver acceptable sites and where some continuing development is necessary for wider sustainable development reasons.

5.4.3 Sustainable Drainage: A Design and Adoption Guide[27]

24 Key documents | Gloucestershire County Council
25 Glos comms strategy (gloucestershire.gov.uk)
26 Strategic Flood Risk Assessment
27 Sustainable Drainage - A Design and Adoption Guide (gloucester.gov.uk)

This Design and Adoption Guide sets out the requirements and design process for SUDS using examples that show how SUDS features can enhance the landscape. The guidance considers the Design and Adoption of SUDS as follows:

- The Principles of Sustainable Drainage describes the main ideas and concepts that must be understood to deliver high quality SUDS.
- The Design of SUDS explains how natural drainage informs SUDS design and provides a Design Process that integrates SUDS concepts and SUDS Design Standards into the development sequence set out in The SUDS Manual.
- SUDS Components are the features used to control runoff as it flows through development towards an outfall and are described in detail to clarify requirements for attractive and easily maintained SUDS.

Landscape Design complements the appearance and management aspects of SUDS and must be integrated at every planning stage highlighting the multidisciplinary character of SUDS design.

Offices at

Bristol
Coleshill
Doncaster
Dublin
Edinburgh
Exeter
Glasgow
Haywards Heath
Leeds
Limerick
Newcastle upon Tyne
Newport
Peterborough
Portsmouth
Saltaire
Skipton
Tadcaster
Thirsk
Wallingford
Warrington

Registered Office
1 Broughton Park
Old Lane North
Broughton
SKIPTON
North Yorkshire
BD23 3FD
United Kingdom

+44(0)1756 799919
info@jbaconsulting.com
www.jbaconsulting.com
Follow us:

Jeremy Benn Associates Limited

Registered in England 3246693

JBA Group Ltd is certified to:
ISO 9001:2015
ISO 14001:2015
ISO 27001:2013
ISO 45001:2018