

Climate Adaptation In Warwickshire: What Is Coming, How Can We Prepare?

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Globally: where have we been / where are we now

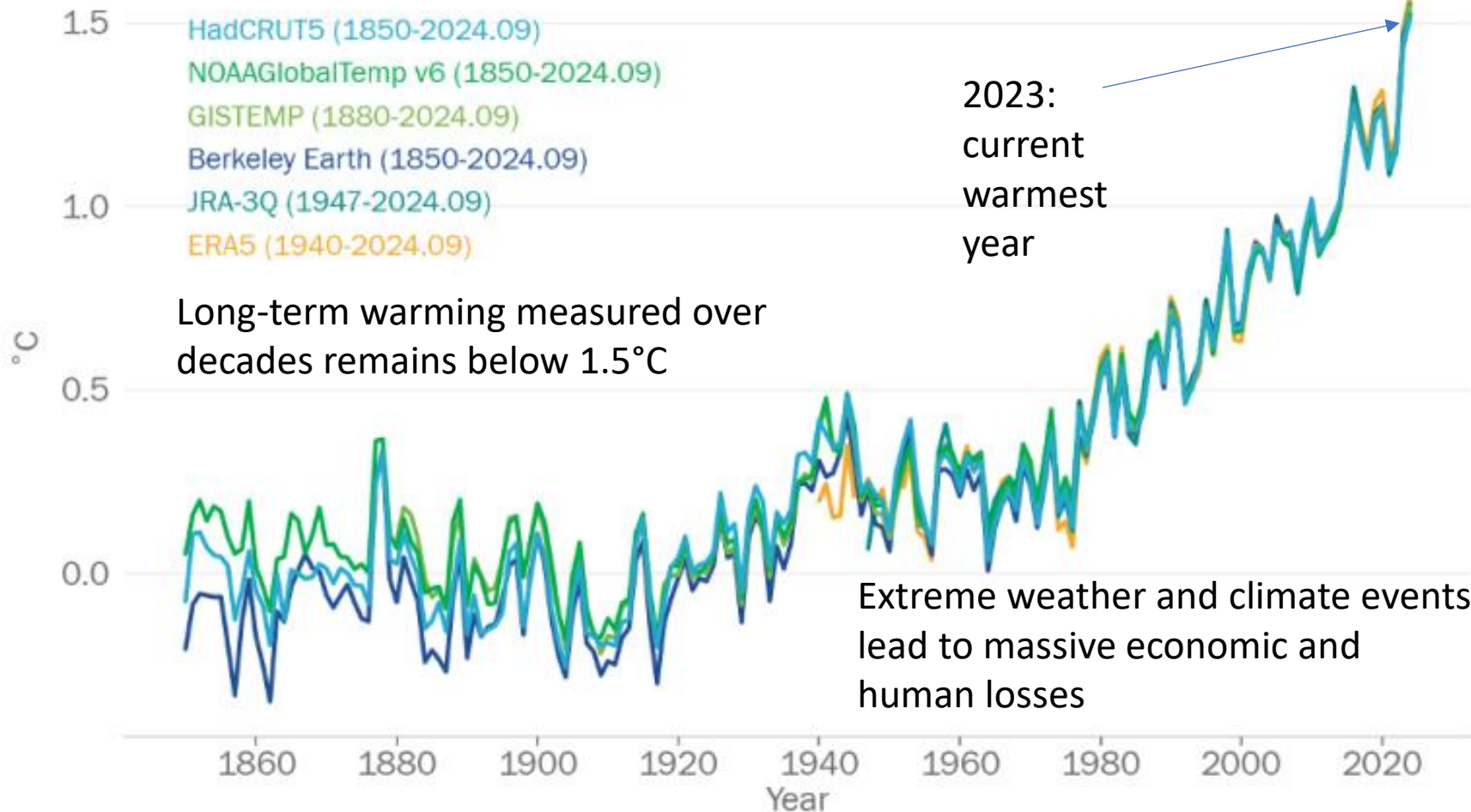
- Global average annual surface temperatures
- Averages indicate trends
- Was: 1981-2000 = +0.6C global vs 1850-1900 average
- Recent: 2001-2021 = +1.01C global
- Last decade suggests +1.1C (IPPC AR6)
- Peaks matter too

All data: Met office 2024; IPCC, 2023

Global mean temperature 1850-2024

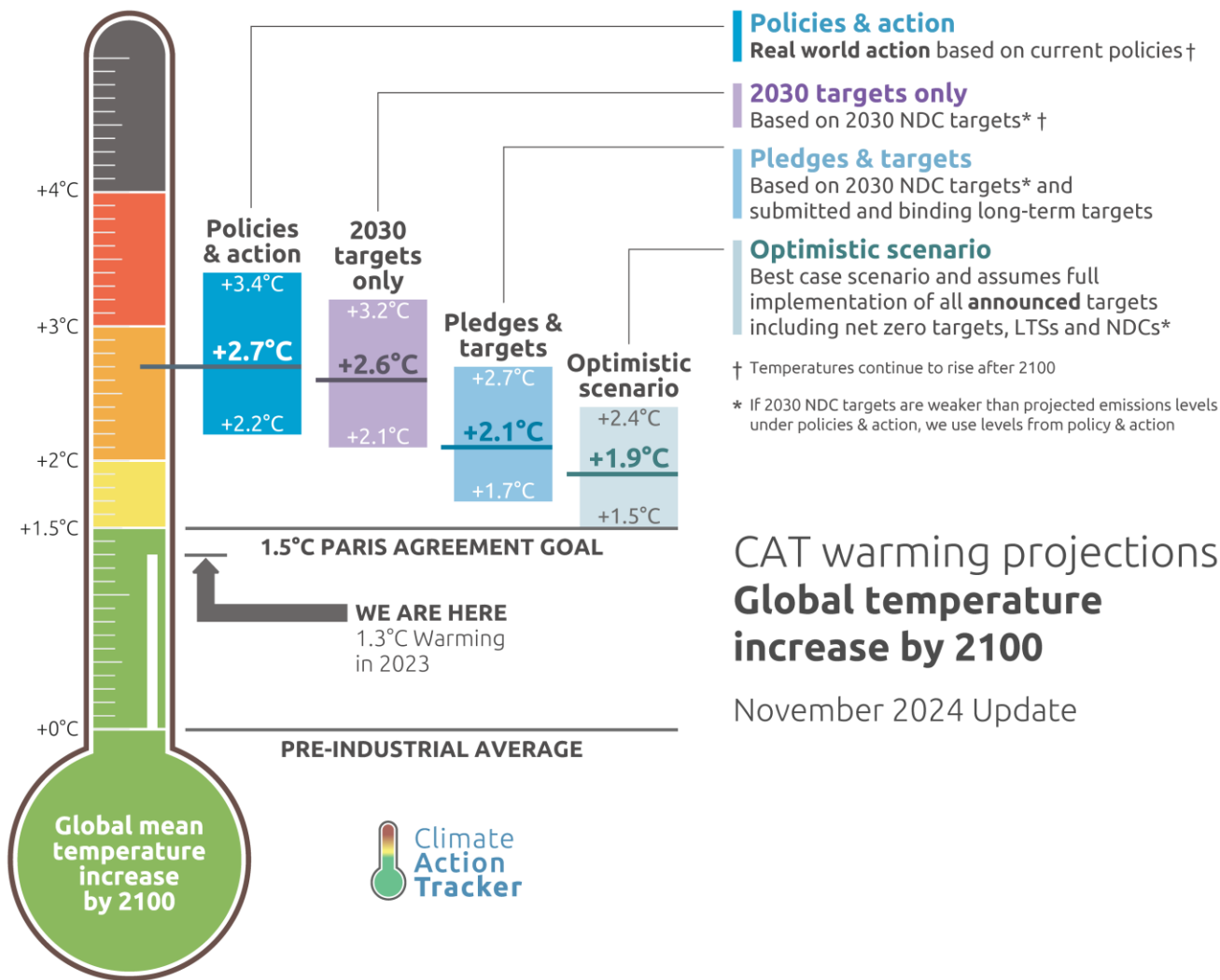
Difference from 1850-1900 average

Jan-Sept 2024 +1.54 (±0.13) °C



Annual global mean temperature anomalies from January – September 2024 (relative to the 1850-1900 average) from six international datasets.

Globally: Where could we be heading to?



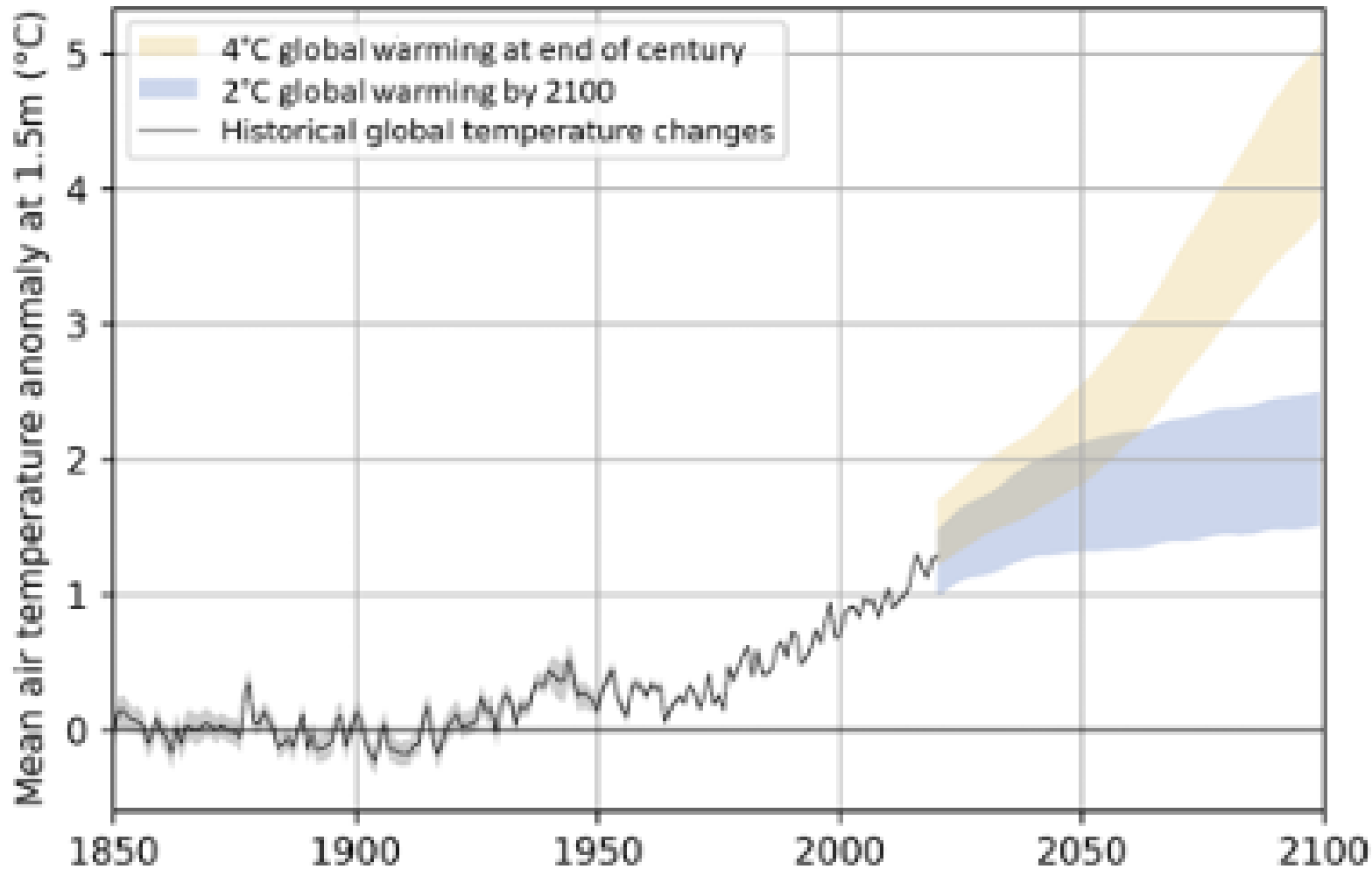
CAT warming projections
Global temperature increase by 2100

November 2024 Update



Globally: Where could we be heading to?

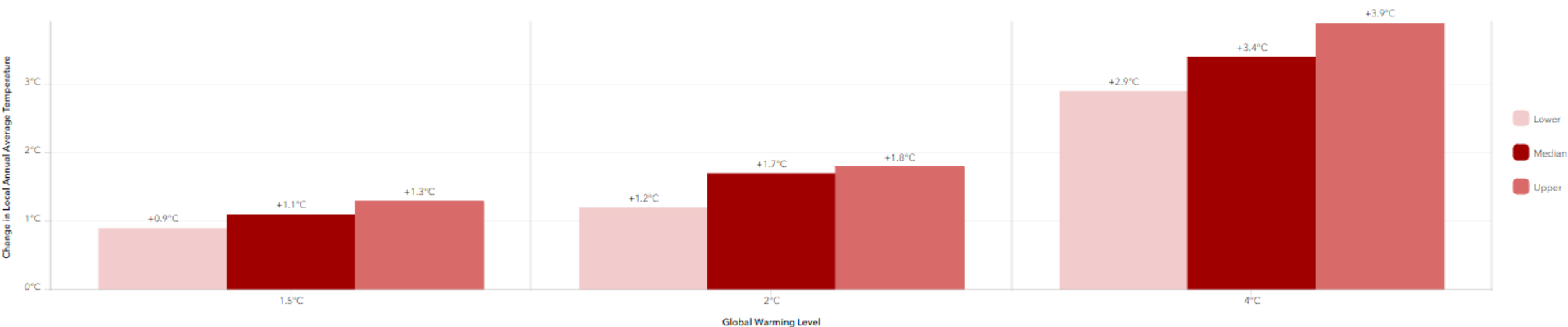
Future global warming pathways considered in CCRA3



What can we expect in Warwickshire (temperature)

- 1981-2000: Warwickshire annual average 9.6C
- 2001 – 2020: Warwickshire annual average: 10.4C (+0.8C)
- 1.5C: 10.7C median; 10.5C (lower) to 10.9 (upper)
- 2.0C: 11.3C median; 10.8C to 11.4C
- 4.0C: 13.0C median; 12.5C to 13.5C

Local anomalies:



All data: Local authority climate explorer, Met office 2024.

What can we expect in Warwickshire (summer days)

Daily maximum temperature >25C

In Warwickshire

- 1981-2000: (+0.6C globally) = 14 days on average
- 2001 – 2020: (+1.0C globally) = 25 days on average

Central / low / high

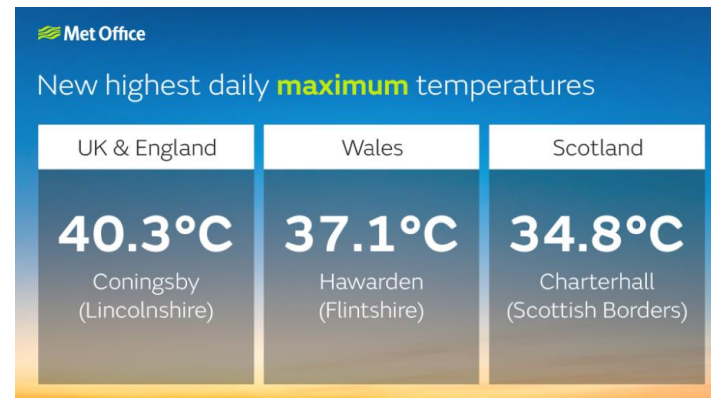
- 1.5C: 29 days (24-34)
- 2.0C: 35 days (30-43)
- 4.0C: 66 days (59-81)

All data: Local authority climate explorer, Met office 2024.



Extreme heat events

- Summer 2022 – 40°C recorded for the first time in UK
- Current chances of seeing days reaching 40°C is extremely low but under a high emissions scenario the UK could see 40°C days ever 3-4 years by 2100



Potential impacts:

- Health and mortality – over 3,000 excess deaths recorded in England and Wales during Summer 2022. Public Health Warwickshire issued guidance to help keep residents safe and well.
- Increased risk of accidents e.g. cooling off in rivers/lakes leading to difficulties/drowning
- Reduced air and water quality – worsened by heat, concentrations of pollutants, etc.
- Damage to habitats and impacts on wildlife e.g. fires, lack of water, loss of habitats, etc.
- Greater risk of wildfire – several fire services declared major incidents during summer 2022. Properties in Wennington, London, destroyed as grass fires spread
- Disruption to infrastructure (power supply, water supply, transport routes, etc.) – in summer 2022 train passengers were urged not to travel as rails threatened to buckle and winter gritters called to spread sand to stop roads melting
- Added pressure on the emergency services – fire related call outs doubled in Warwickshire in summer 2022, NHS kept very busy with heat stress illnesses
- Impacts on agriculture leading to potential issues with food supply
- Impacts on tourism – reduced opening hours, limits on visitor numbers, measures to keep staff and animals cool

What can we expect in Warwickshire (precipitation)

In Warwickshire

- 1981-2000: summer 1.75mm/day; winter 1.78mm/day
- 2001 – 2020: summer 1.73mm/day; winter 1.88mm/day

Central / low / high

- | | | | |
|----------------|----------------------|--------|---------------------|
| • 1.5C: Summer | ↓ -3% (-11 to +3); | winter | ↑ +3% (-7 to +8) |
| • 2.0C: Summer | ↓ -12% (-22 to -1); | winter | ↑ +6% (-1 to +17) |
| • 4.0C: Summer | ↓ -28% (-45 to -20); | winter | ↑ +19% (+14 to +29) |



Flooding and drought

- Significant flood events in Warwickshire in Easter 1998, Summer 2007 and to a lesser extent in 2016
- Drought declared across parts of the country in summer 2022, first time since 1935

Potential impacts:

- Health and mortality – danger to life, physical injury, water and vector borne diseases, contaminated drinking water, etc.
- Damage and disruption to infrastructure (power supply, water supply, transport routes, etc.)
- Damage to property from flooding, subsidence as ground dries, etc.
- Greater risk of wildfire during times of drought
- Damage to the natural environment (e.g. fires, lack of water, loss of habitats, riverbank erosion, water pollution, etc.)
- Reduced water quality/water pollution – sewage overflows during peak rainfall and flooding incidents
- Added pressure on the emergency services – responding to major flood incidents, wildfire, etc.
- Impacts on agriculture leading to potential issues with food supply
- Impacts of businesses – property damage, increased insurance premiums, loss of business, etc.
- Impacts on tourism – damage to cultural and heritage assets, etc.

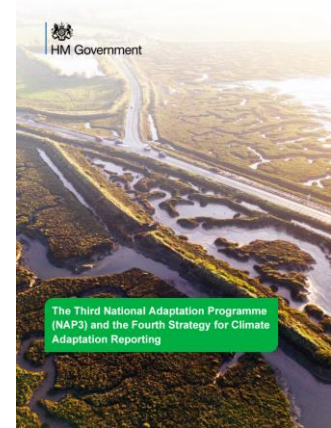


National Climate Change Risk Assessment and Planning

- National Climate Change Risk Assessment (CCRA)
- Cyclical reporting (5 years)
- Feeds into the National Adaptation Plan (NAP)
- 3rd round completed (NAP3 2023).

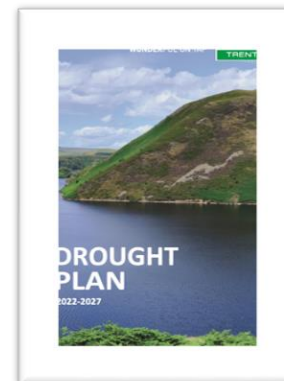
- Informed by Adaptation Reporting Power (ARP)
- 4th round underway.
- Reporting opened Nov 2023. Will close Dec 2024.

- Some bodies are mandated.
- Pilot for LA's to feed into ARP4



The system for national and local government resilience

- Utility company planning
- Flood Guidance Statement
- Flood Alert system
- Lead Local Flood Authority
- UKHSA National Adverse Weather and Health Plan
- CSW Adverse Weather Plan
- Heat and Cold health alerting system
 - Green (Prepare)
 - Yellow (Response)
 - Amber (Enhanced Response)
 - Red (Emergency)
- Warwickshire Local Resilience Forum



Local adaptation planning

Mainstreaming resilience into council operations

- Mainstreaming climate change resilience into policy development
- Mainstreaming climate change resilience into project planning and prioritisation processes
- Embedding climate change risks into our risk assessment processes across council operations
- Creating a climate change adaptation responsibility in the Council to:
 - Develop and communicate knowledge resources and data around climate change risks and resilience to both internal and external stakeholders
 - Take a strategic lead in climate change adaptation across Warwickshire
 - Review, monitor, update, coordinate and supporting delivery of this Plan.

Water, land and biodiversity

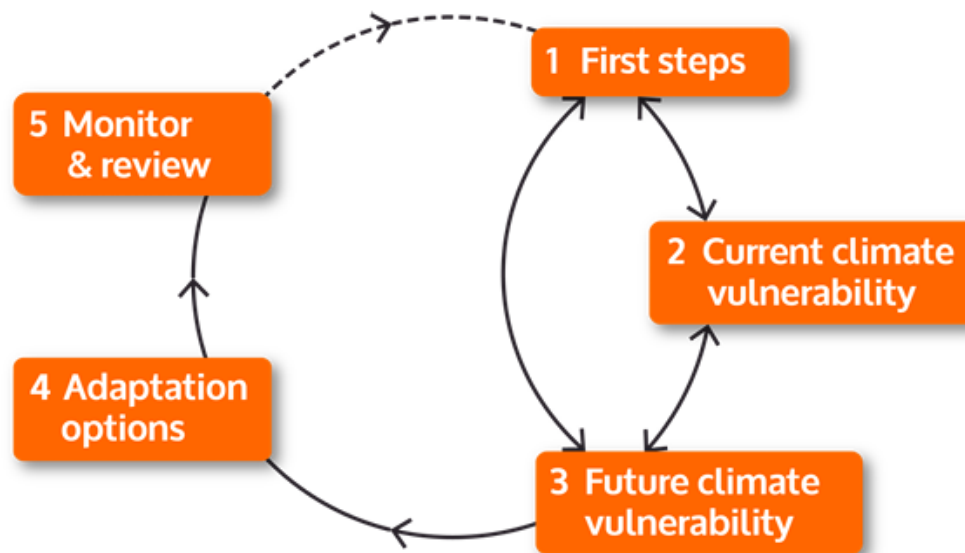
- Strategically integrate adaptation into WCCs biodiversity program
- Develop a flood risk management program which supports adaptive water systems
- Support development of resilient agricultural systems which provide benefits across climate impacts
- Use WCCs land assets to pioneer systems based adaptive approaches through partnerships

Infrastructure, places and people

- Adapt transport system to support a resilient economy and adaptive and inclusive service provision across waste, fire and rescue and health
- Support development of a resilient energy and water supply and distribution networks
- Lead on placemaking for urban climate adaptation
- Support development of adaptable work environments, buildings, and a public health system that can cope with extreme weather

Mainstreaming climate change into emergency planning and response

- Knowledge of climate change integrated into emergency planning and risk assessment for extreme weather and other climate related risks
- Improved communication of weather warnings and forecasts
- Support community-based emergency planning and adaptation



4.2 Public Health Service risks and adaptation options

Risk description	Likelihood	Impact	Risk
Increase in heat waves	4	4	16
Increase in heat stress	4	4	16
Cold weather alerts	3	4	12
Introduction of vector-borne disease	2	3	6
Change in outdoor air quality	3	2	6
Change in Indoor air quality	2	2	4
Increase in outdoor swimming	2	2	4

Warwick District Council Adaptation Action Plan

- Uses findings from the West Midlands and Warwickshire Adaptation Plans, the national Climate Change Risk Assessment (CCRA3) and National Adaptation Programme (NAP3).
- Primarily a document for Warwick District Council to use, focusing on actions within the Council's areas of influence and those it has direct control over.
- Actions fall under 4 themes:
 1. Mainstreaming climate resilience into Council operations/services
 2. Natural environment
 3. Health, communities and the built environment
 4. Supporting the local economy

Work so far...

- Introducing a climate and biodiversity impact assessment into project planning and approval process.
- Supporting public awareness and preparation for extreme weather events using our communication channels.
- Ensuring existing and new Sustainable Urban Drainage systems (SuDs) are subject to regular monitoring and maintenance procedures to ensure continued, long-term effectiveness.
- Wildfire mitigation – signage and guidance at Council sites most prone to wildfire and an informal ban on BBQs and fires in our parks and open spaces.
- Changes to our grounds maintenance practices to support flood risk reduction, soil health, drought resilience, water conservation, etc.
- Biodiversity Action Programme – interlinked with climate change adaptation
- South Warwickshire Local Plan

Biodiversity Action Programme

- Vision - To make Warwick District a place that is rich in nature, delivering multiple benefits for wildlife and people.
- Developed in response to the climate and biodiversity emergencies.
- Recognises the startling declines in nature since 1970s and the additional risks posed from climate change.
- Looks at the actions we can take to protect and enhance biodiversity and support nature's resilience to climate change.
- Three Theme's which correlate with the aims of the plan:
 - Theme 1 – Nature Recovery and Management
 - Theme 2 – People and Partnerships
 - Theme 3 – Legal, Planning, Policy, and Funding Commitments

Please sign up to receive our quarterly biodiversity newsletter –
www.warwickdc.gov.uk/biodiversitynewsletter

South Warwickshire Local Plan

- Currently being developed with next round of consultation (Preferred Options stage) due in January 2025.
- Vision – to meet South Warwickshire’s sustainable development needs to 2050, while responding to the climate emergency.
- Overarching principles include ‘A climate resilient and net zero carbon South Warwickshire’ and ‘A biodiverse and environmentally resilient South Warwickshire’
- Climate change adaptation related policies include:
 - Requirements for climate resilient building design
 - Enhanced water efficiency standards beyond Building Regulation standards
 - Flood risk reduction – prioritising development in lowest flood risk areas, conducting flood risk assessments, creating space for water, accounting for climate change and projected rainfall changes, use of multi-functional SuDs, etc.
 - Protecting and enhancing land with a positive carbon sequestration role
 - Green and Blue Infrastructure requirements – providing nature-based solutions to tackle the climate emergency and help provide resilience in a changing climate
 - Supporting local food production – provision of allotments, planting fruit trees, etc.

Register to receive updates and alerts as the new local plan progresses –
www.southwarwickshire.org.uk/swlp

Resilience in the community

- Town and Parish Council Emergency Plans (to cover a range of emergencies) – template and support available from local Emergency Planning Teams.
- Community Flood Action Plans – template and support available from Warwickshire County Council Flood Risk Management Team and local Emergency Planning Teams.
- Warwickshire Local Resilience Forum website – lots of useful guidance on a range of emergencies.
- Town and Parish Council Local Nature Action Plans – template and guidance to create biodiverse and resilient neighbourhoods is available from the Local Nature Partnership at <https://wcslnp.wixsite.com/localnature/lnap>.
- Nature Action Groups – take practical action to protect nature and help build resilience.
- Local communication channels and alert systems e.g. street or neighbourhood WhatsApp groups, social media channels, etc.

Resilience at home

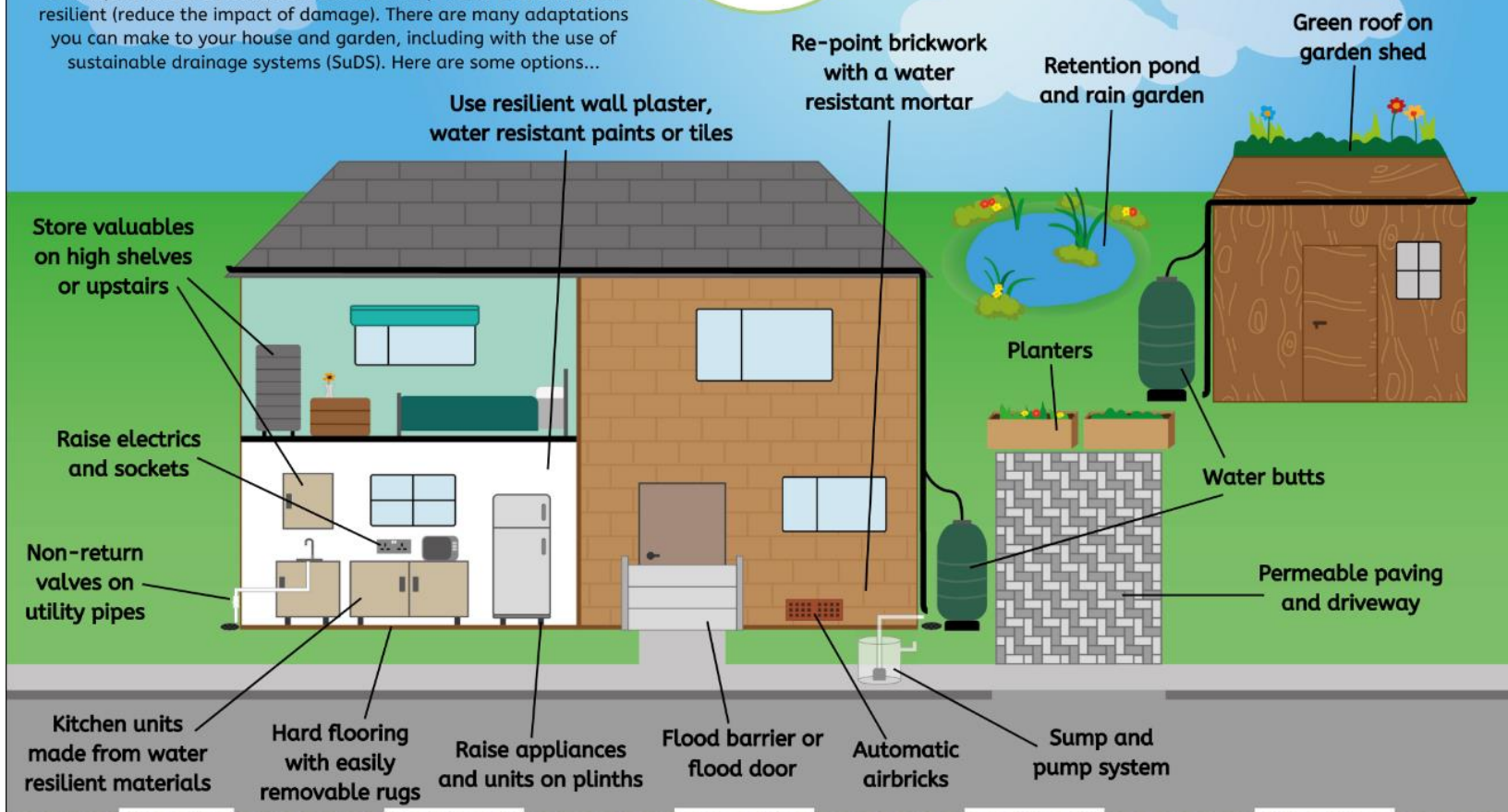
- Check if you're at risk of flooding and sign up to flood alerts at GOV.UK (includes river, surface water, reservoir and groundwater flooding)
- Sign up for Met Office weather warnings – provides early warning of potential impacts of severe weather e.g. damage to property, travel delays, power cuts, danger to life, etc.
- Sign up for Weather-Health alerts at GOV.UK – provides early warning of adverse weather affecting health and wellbeing
- Look out for those most at risk e.g. the elderly, young children, those with underlying health conditions, vulnerable neighbours, etc.

Protect your property from flooding

Flood Resilient House



When protecting a property from flooding, it is effective to use techniques that are both flood resistant (keep water out) and flood resilient (reduce the impact of damage). There are many adaptations you can make to your house and garden, including with the use of sustainable drainage systems (SuDS). Here are some options...



This resource has been produced by Newground who work in partnership with the Environment Agency

Last reviewed: February 2021
 For more information visit:
www.thefloodhub.co.uk
 @TheFloodHub

Flooding – preparation, response and recovery

- Prepare
 - Check insurance cover and defend your property with flood protection measures
 - Grab bag of essential items (follow guidance on CSW Resilience website)
 - Household emergency plan (follow guidance on CSW Resilience website)
 - Supply of food and bottled water
- Respond
 - Move valuable items upstairs and secure outside items
 - Turn off utilities to parts of the property and don't drink from mains water supply
 - Tune into local media for updates and follow advice of emergency services
 - Don't walk or drive through flood water
- Recover
 - Assume floodwater is contaminated with sewage and avoid contact wherever possible
 - Follow electric and gas advice before switching utilities back on – use torches, not candles.
 - Report to insurer and get guidance on next steps
 - Report flooding to the appropriate organisation

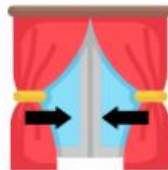
Keep well in extreme heat:



Look out for those who are most at risk: the elderly, young children, babies and those with underlying health conditions - help them to keep themselves cool and hydrated.



Stay cool indoors - Learn how to keep your home cool, see gov.uk.



Close curtains in rooms that face the sun to keep indoor spaces cooler. Remember, it may be cooler outdoors than indoors.



If going outdoors, use cool spaces considerably.



Drink plenty of fluids and avoid excess alcohol. If you are leaving the house, take a bottle of water.



Never leave anyone or any animal in a closed, parked vehicle.



Try to keep out of the sun during the hottest part of the day - 11 in the morning to 3 in the afternoon.



Walk in the shade, apply sunscreen regularly, wear a wide-brimmed hat and light, loose-fitting clothing if you go out in the heat.



Avoid exercising during the hottest parts of the day. Try and exercise before 11am or after 3pm if you can.



If you are going into open water (rivers, lakes and the sea) to cool down, take care and follow local safety advice.

Nature-based solutions are key!

Nature-based solutions - actions that use the power of nature to address societal challenges and provide benefits for people and the environment.

Examples:

- Green spaces in urban areas to mitigate urban heat island effect, improve air quality and provide recreation opportunities e.g. parks, urban forests, green roofs and walls, etc.
- Tree planting to mitigate heat, absorb carbon and improve air quality.
- Natural water storage solutions to help prevent droughts and floods and support biodiversity e.g. SuDs, scrapes, swales, rain gardens, etc.
- Wetland restoration to provide natural buffer against floods, improve water quality through filtration and support biodiversity.

Nature-based solutions at home

Things you can do in your garden to create a more climate resilient landscape:

- Rain gardens and swales
- Native plants and drought-tolerant species
- Wildlife corridors
- Habitat creation and wilder areas
- Tree planting
- Rainwater storage
- Composting and mulching
- Permeable surfaces
- Grow your own

Thanks for listening

Your thoughts?

Questions?