



Climate Change Risk and Resilience Review and Assessment 2021 - Final Report

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Climate Change Risk and Resilience Assessment 2021 - Final Report

“The world’s temperature has reached an average exceeding 1.0°C above pre-industrial levels for the past two decades: the first time that a 20-year period has reached this threshold since records began in 1850.”

- Met Office, 31 Oct 2021

“Unfortunately, 2021 will probably be one of the 21st century’s coolest years.”

- The Economist, 24 July 2021

1. Executive summary

Leicestershire County Council faces increasing risks to its operations and assets from climate change and extreme weather events. This report presents an assessment of these risks and the council’s resilience to them and makes recommendations about how the Council should adapt in response.

The report covers the risks to Council services due to changes in the UK climate that have already happened, as well as projected changes up to the end of this century using the latest scientific projections for global and UK climate change.

The assessment focuses on service areas believed to face the highest climate change risks themselves, or to have a key role in managing those risks, and/or which manage key long-term assets (roads and buildings). The climate change risks for each service area were assessed through interviews with managers and examining key documents. Each assessment looked at risks to in-house and procured services, as well as the risks from impacts on other services / suppliers and vice-versa.

The corporate risk assessment framework was used to assess risks. Although this provides a consistent approach, it has limitations in dealing with potentially long-term risks like climate change.

The key findings of the assessment exercise were that:

1. Leicestershire is already experiencing extreme weather events.
2. Further climate change and changes in weather will happen.
3. Changes in weather are impacting the council and the county already.
4. Preparedness for short-term responses to weather events is satisfactory.
5. There is less evidence of planning for changes in the risk of acute events.

6. There are potential gaps in checking suppliers' business continuity plans.
7. There is good practice in management of longer-term flood risks.
8. That five service areas have a least one high risk which requires intervention under the Corporate Risk Management Framework.
9. That the Corporate Risk Management Policy & Strategy may not be suitable for assessing risks of a complex and long-term nature as that presented by climate change.
10. There are high risks of climate impacts on strategic highways and property assets.
11. It is difficult to consider the council independently from the county and its suppliers and partners.
12. That there have already been climate change costs to the council.

From these findings the following conclusion have been drawn:

1. That climate change is happening, and that Leicestershire and Leicestershire County Council is already seeing the effects of the changes in the weather. That further and potentially more severe changes in the weather will happen over the coming decades and that these will have a significant impact on the council and the county.
2. Overall, most council services that are at high risk from weather events appear to be managing the short-term risks satisfactorily.
3. Responding to certain acute weather risks in Leicestershire will gradually become more demanding in the future. With the partial exception of flood risk management, there is less evidence of planning for these future changes in acute weather events.
4. That longer-term risks to infrastructure, primarily Highways and Property assets, present a huge challenge and with the exception of flooding risks, there is less evidence that these are being managed in a systematic and comprehensive way.
5. There may be a need to review the suitability of using the Corporate Risk Management Policy & Strategy for assessing risks of a complex and long-term nature as that presented by climate change.
6. Due to the interconnected nature of how council services are provided and of the significant and wide scale impact of severe weather events it is vitally important that council service areas assess and have confidence in the

business continuity plans of suppliers and partners in relation to responding to the risks from climate change.

7. There will be a need to assess the complex interactive and cascading risks, which arise when impacts on other organisations or parts of supply chains indirectly impact the council or have knock-on impacts on its customers or on Leicestershire residents.
8. Services need to examine the high risks identified, and the more serious “medium” ones, and draw up service level action plans to reduce them.
9. Responding to climate change may be challenging for individual services, both in terms of understanding the precise risks and finding the resources to respond to them. However, in view of the costs already being experienced, and the much greater impacts and costs that are likely to arise in future, it is vital that services do respond.
10. Due to the current and expected changes in the weather and the increased likelihood of extreme weather events, it would be wise for the county council to budget both for the costs of dealing with the impacts of these weather events and for implementing measures to adapt and improve resilience to these changes in the weather caused by climate change.
11. Due to the complex and interconnected nature of climate change and how it will and could impact on the county council, and on Leicestershire as a whole, it would be beneficial to develop a co-ordinated approach to how the council and the county adapts to and increases its resilience to climate change.

The report sets out the following recommendations:

1. That it is acknowledged that climate change is already having impacts on council assets and operations and will do so increasingly in the coming years, both in the form of acute events and through gradual changes in average conditions.
2. That it is acknowledged there is a need to strengthen the way that changes in the risk of acute weather events are taken into account in business continuity and resilience planning, both for the council and the county.
3. That it is acknowledged there are high risks in the medium and long term from climate change, relating to the management of highways and property assets.
4. That individual high-risk service areas should be asked to draw up their own service level action plans, informed by feasibility studies where relevant and supported by the Environment Policy & Strategy team, to help reduce the identified risks.

5. That consideration be given to budgeting for the additional costs of dealing with the impacts of climate change and for adapting to and increasing the council's and the county's resilience to climate change.
6. That a review is carried out into the suitability of using the Corporate Risk Management Policy & Strategy for assessing risks of a complex and long-term nature as that presented by climate change.
7. That consideration be given to the development of a council and countywide climate change adaptation and resilience strategy/plan, that takes into account the recent independent assessment of UK climate risk (CCC, 2021) and the Government's forthcoming national climate change risk assessment (3UKCR).

2.Introduction

This report sets out the findings and recommendations of a comprehensive assessment of the risks to council services due to existing and predicted changes in the UK climate. The assessment commenced in 2019 with most of the work taking place during 2020 and 2021. The council first produced a Climate Change Risk Register in 2011 following the completion of a comprehensive risk assessment exercise carried out with support from Climate East Midlands. This formed part of the process of producing a Climate Change Resilience Action Plan for the council. Subsequently the Climate Change Risk Register and Action Plan have been updated or reviewed periodically.

Since 2011 there has been a significant improvement in the understanding of the impacts and implications of climate change because of substantial global research in this area due to the need to address this existential threat to the future of human society. There have also been new international and national assessments of the risks from climate change on society and the economy. As a result, it was felt necessary to revisit the comprehensive assessment of the risks to council services from climate change considering this new information and understanding.

The report first provides an overview of the latest scientific projections for global and UK climate change. It then looks in more detail at UK climate change projections and briefly at recent actual weather changes in these islands.

The report then discusses the risks arising from these changes, using this year's independent assessment of UK climate change risk by the government's Committee on Climate Change (2021).

The rest of the report describes the methodology, findings and conclusions of this assessment of climate risks for the county council, finishing with recommendations for action.

3. Climate Change Scientific Evidence

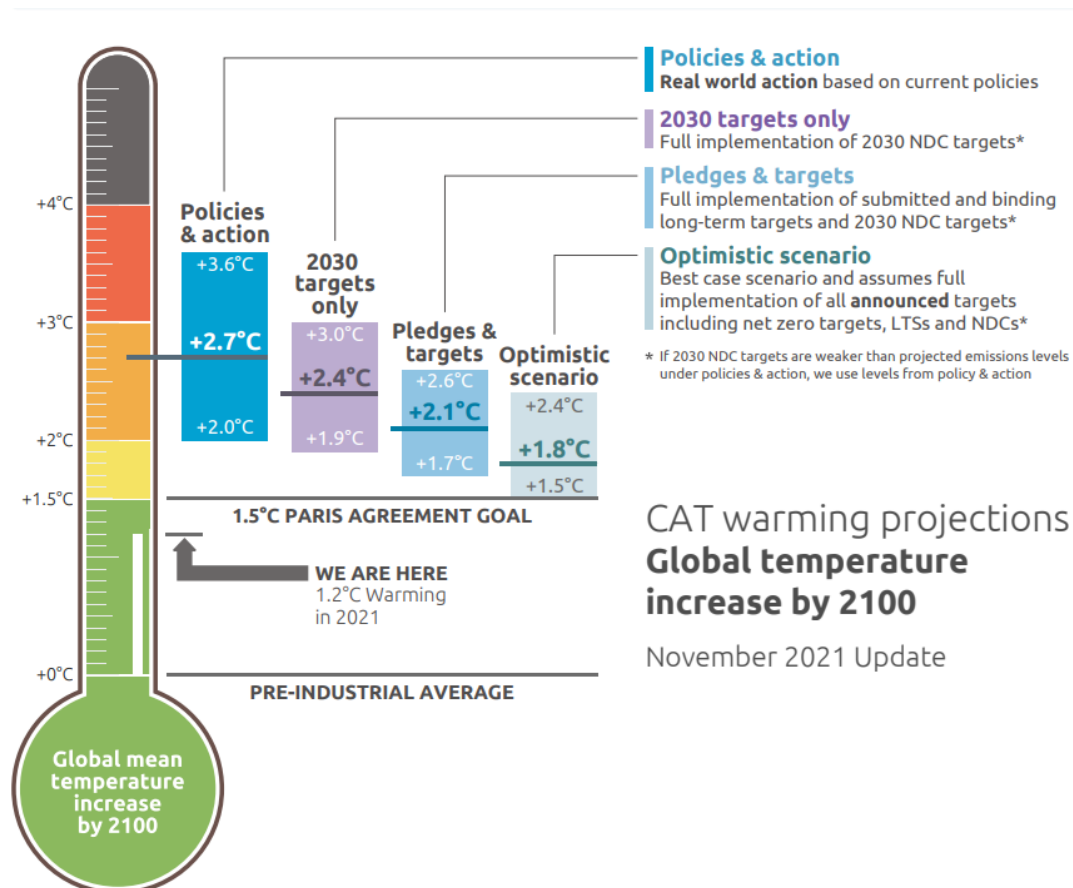
Global and UK overview

Even if the latest political commitments to reduce emissions are broadly successful, the impacts of climate change will continue to be felt (and almost certainly to increase) for the rest of this century, both globally and in the UK.

The average global temperature increase so far, compared to pre-industrial times, is about +1.2°C. There are many scenarios for what will happen in future, depending on the speed and scale of action taken to reduce global greenhouse gas emissions. The potential temperature increase by 2100 ranges from a minimum of 1.5°C to well over 5°C, with significant uncertainty bands in each case.

Much of the uncertainty relates to what actions societies as a whole will take. This is illustrated by the latest projections by Climate Action Tracker, based on commitments up to and including COP26, as shown in **Figure 1: Climate Action Tracker global temperature projections (Nov 2021)** below.

Figure 1: Climate Action Tracker global temperature projections (Nov 2021)



The advice of the government's specialist advisers, the UK Committee on Climate Change, is that for planning purposes, organisations should use **+2°C** by the end of the century (or 2080s) as a **minimum assumption**, and that risk registers should

also include the impacts of **+4°C**. This can be summarised as “**Plan for +2°C; Prepare for +4°C**”. These translate into total increases by mid-century of around 1.6 to 2°C.

The Committee on Climate Change’s report was issued in June 2021, towards the end of the present risk assessment process within the Council. The risk assessments described here assume climate change broadly equivalent to the Met Office “worst case” scenarios (more or less equivalent to +4°C). It should be noted that in the medium term (up to mid-century) all scenarios are similar.

More detailed climate projections for the UK are presented below.

Climate Projections for the UK ^{1,2,3}

The latest detailed forecasts of climate change in the UK were produced in 2018 by the Met Office (“UKCP18”).

The amount of change projected depends on the greenhouse gas emissions scenario, but for the purposes of risk assessment it currently makes sense to use the **highest scenario**⁴. This is closest to the actual situation around the world (even though many nations have committed to cut emissions in future).

Headline forecast for the UK

On average, for the UK as a whole, there is a greater chance of hotter, drier summers and warmer, wetter winters during the rest of this century (Met Office 2018).

Projections are often stated as the 10% to 90% probability ranges⁵.

The main projected effects are on temperature and rainfall, both average and maximum, and are very rapid in historical terms.

Weather extremes

As well as changes in averages (see Headline Forecast), certain **extremes** will become more likely²:

- **Hot summers**: a summer as hot as 2018 used to be rare (under 10% likelihood), but **by mid-century it could become common** (50% likelihood). **Hot spells** (with maximum daytime temperatures above 30°C for 2 consecutive days or more) could become about **16 times more frequent by the 2070s**³.

¹ [UKCP18 Key Results](#)

² [UK Climate Projections: Headline Findings](#), Sept 2019 and updated version [July 2021](#)

³ [UKCP18 Climate Change over Land](#) infographic

⁴ See “Background” section for details

⁵ The real value is most likely to be between the two figures, but there is a 10% chance that it will be below the lower figure, and 10% it will be above the upper figure.

- **Heavier summer downpours causing flooding:** although summers will become **drier** overall, there may also be increases in the intensity of **heavy summer rainfall events** and hence more frequent and severe **surface water flooding**.
- **Autumn rain:** The data also projects an increase in heavy hourly rainfall intensity in the autumn.
- **Local extremes:** Some changes could be **much greater than average in specific areas** – for example, the increase in winter rainfall in Central England.
- **No persistent snow:** Lying snow will almost completely disappear by the end of the 21st Century over much of the UK.

Storms and high winds

Despite a number of high-profile storms affecting the UK in recent years, the evidence for any link between **storminess** and climate change in the UK is **uncertain**. For example, the maximum power of wind gusts in the UK increased between 1960 and 1990 but has generally decreased since then. These changes may be driven more by large-scale natural climate variability than by human-induced change ⁶. The Committee on Climate Change noted that more research in this area is important due to the potential for storms to cause significant damage.

However, storms that do occur, even if “average” in strength, could potentially cause increased amounts of damage because of changes in other weather parameters. For example, autumn storms may cause more damage to trees if those trees have not lost their leaves due to milder conditions – or if they have been weakened by drought. High winds occurring alongside heavier rainfall could increase the damage from flooding and / or hamper response efforts.

The risk assessments carried out for this review gave most attention to changes in the extremes of rainfall and temperature rather than wind. However, some assessments did examine the risks from storms / high winds (a legacy from earlier versions of the template). In general, high winds were not found to be the most significant cause of weather risks in Leicestershire, except where combined with other factors.

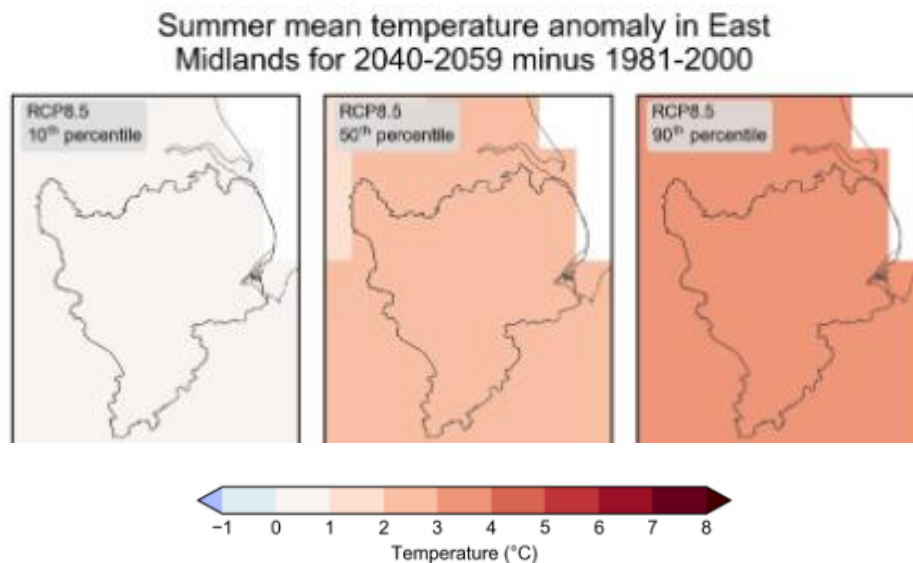
Projections for the East Midlands

The maps in figure 2 show UKCP18 [Land Projection Maps](#) for the East Midlands, for key climate variables in the period 2040-2059, under a scenario where CO₂

⁶ Slingo, J. (2021) Latest scientific evidence for observed and projected climate change. 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

concentrations in the atmosphere continue to rise with little restraint (known as the RCP 8.5 concentration scenario).

Figure 2: Met Office UKCP18 projections for the East Midlands



There is no single “climate forecast” for any area or time period, but a range of possible outcomes for a selected emissions scenario, including “plausible worst cases” represented by the 10th or 90th percentile outcomes. For example, using the RCP 8.5 scenario:

- By the 2050s there is a **50% chance** that Leicestershire will experience summers that are **on average over 2°C warmer** than the 1990s, with a hottest day that is **also** over 2°C warmer than the previous maximum;
- But there is a **10% risk** that Leicestershire will experience summers in the 2050s that are **on average 3°C warmer** than the 1990s, with a hottest day that is over **4°C warmer** than before;
- Winter rainfall in the county is **most** likely to increase by **less than 10%** by the 2050s, but there is a 10% chance that the increase could be **over 30%**;
- Policymakers need to consider both the most likely outcome, and the plausible worst-case outcomes, and how resilience can be built up to cater for both levels of risk.

Projections for Leicestershire

For the purposes of this report, projections for Leicestershire are assumed to be similar to those discussed above for the East Midlands as a whole.

It is worth noting that in principle, much more detailed local projections are available from the Met Office’s Climate Projections website for any part of the UK. This is a specialist resource, and using it is beyond the scope of the current project, but it could be accessed by consultants for more specific projections about future weather if required (for example, by engineers specifying the maximum wind resistance of a building or highways structure).

A more practical resource is the **Met Office's Climate Visualisation Tool** published in collaboration with the BBC. This shows weather changes for two scenarios (global average temperature rises of +2°C and +4°C) for the following weather parameters:

- Temperature of hottest day (summer or winter)
- Number of days over 25°C (summer)
- Rainy days (summer or winter)
- Wettest day (mm of rain) (summer or winter)

A temperature increase of about 2°C is broadly equivalent to the +1.5°C rise the world is going to experience by the 2040s (as discussed above). 4°C is roughly a worst-case scenario for the 2080s but can still be avoided by significant cuts in carbon emissions.

Figure 3: Extract from Met Office Climate Visualisation Tool for postcode LE3 8RA

Hottest day

Your local area

Use buttons to change season



The hottest summer day of the past 30 years near you was **35.4C**. If global average temperatures increase 2C above pre-industrial levels, the hottest summer day could be about **37.2C**. If global temperatures rise by 4C, it could be about **40.9C**.

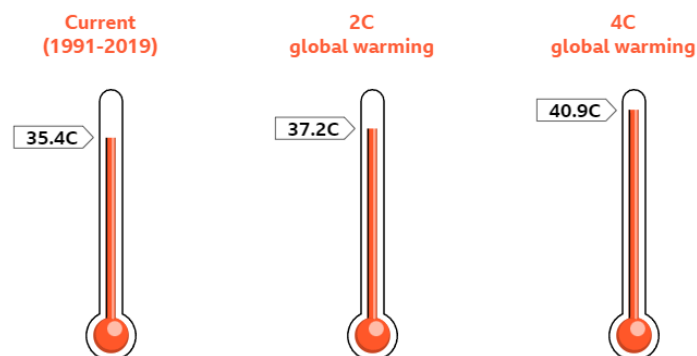


Table 1: Results for postcode LE3 8RA (County Hall, Glenfield)

Summer	Current (1991-2019)	2°C global warming	4°C global warming
Temperature, hottest day	35.4	37.2	40.9
Number of days per month over 25°C	3	7	15
Rainy days	9	8	7
Wettest day (mm of rain)	54	61	62

Winter	Current (1991-2019)	2°C global warming	4°C global warming
Temperature, hottest day	17.9	18.3	20
Rainy days	11	11	11
Wettest day (mm of rain)	30	34	40

According to this data, summertime in Leicestershire sees higher maximum temperatures, more hot days (especially at 4°C warming), more rainy days and a significant increase in maximum rainfall. In winter the maximum temperatures and rainfall also increase, especially at 4°C warming.

Actual climate changes in the UK

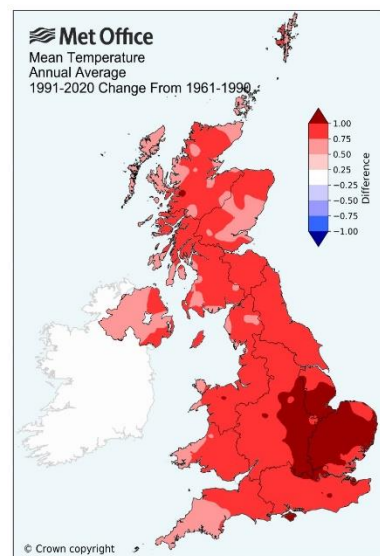
Recent scientific reports confirm that rapid climate change is still occurring in the UK, very much in line with forecasts. However, the tracking and analysis of actual climate change is also helping to refine scientists' understanding of the processes and improve projections.

According to the Royal Meteorological Society (2021), "the UK's climate has continued to warm, with 2020 the first year to have temperature, rain and sunshine rankings all in the top 10".

Not only were the last 30 years (1991-2020) 0.9°C warmer on average than previous 30 years (1961-1990), but the greatest warming was experienced across the East Midlands and East Anglia where average annual temperatures had increased by more than 1°C.

The UK was also on average **6% wetter** over the last 30 years than the 30 years before; and six of the ten wettest years for the UK (in 160 years of recording) have occurred since 1998.

By contrast, Spring 2020 was exceptionally **dry and sunny**. This shows that very different weather extremes can occur in close proximity to each other.



4. Climate Change Impacts and Risks

Overview

The Met Office diagram below (Figure 4) illustrates the relationship between the key drivers of climate change, the climate system, and natural and socio-economic impacts:

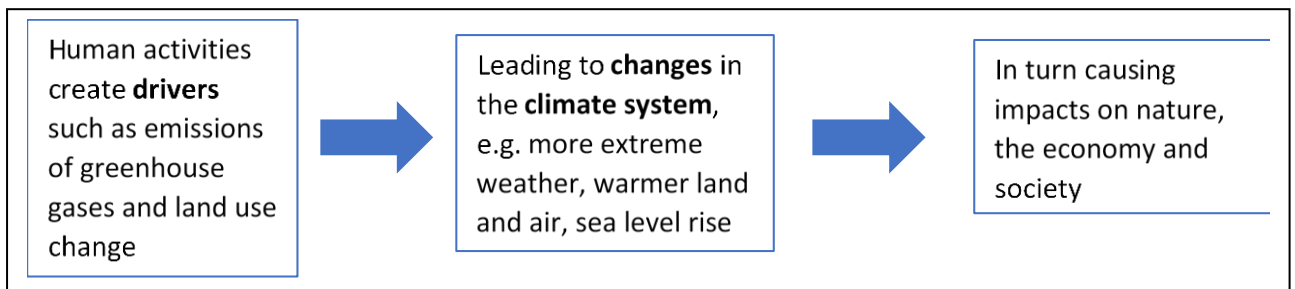
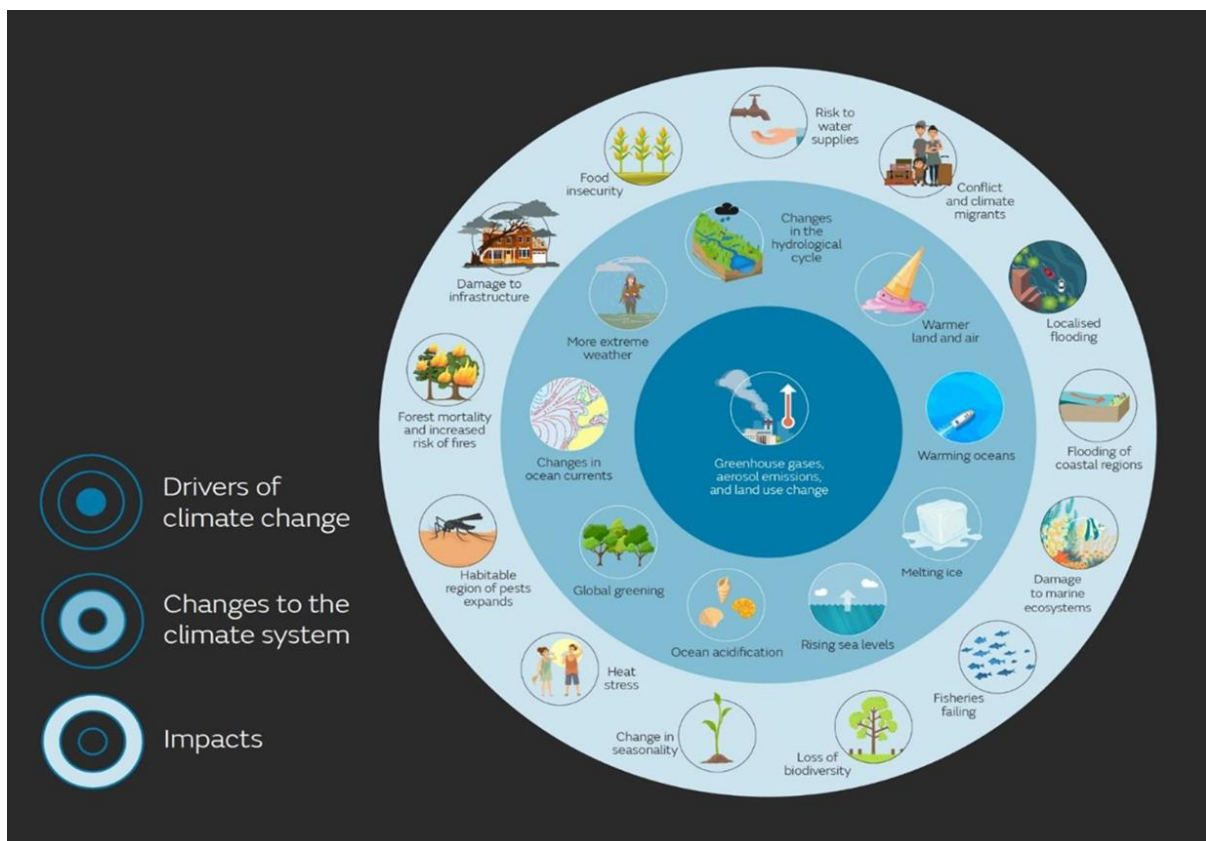


Figure 4: Impacts of Climate Change in the UK (Met Office)



We are already seeing many of these impacts across the world, within the UK and locally within Leicestershire. Such as localised flooding, wildfires, heat stress, water shortages, damage to infrastructure, and the spreading of pests and diseases. These and other impacts are set to get worse and to become more frequent.

Independent Assessment of UK Climate Risk

The Committee on Climate Change published its third Independent Assessment of UK Climate Risk (3UKCR) in June 2021. This assessed 61 risks including risks to biodiversity / habitats, infrastructure and key services. Impacts were assessed on a scale from low to high risk and over a time horizon from now to 2100. They were also assessed in terms of opportunities.

The report concluded that:

- Climate Change is here, already dangerous and will get worse;
- The UK needs to prepare for the coming changes in order to protect people, economy and the environment;
- Currently 26% of risks are “high”, increasing to 64% or 79% by 2080s (under +2°C and +4°C scenarios respectively);
- 8 risks need urgent attention by Government within next 2 years (see Figure 5).

Most of the eight “Highest priority” risks have some relevance to the County Council, as indicated in the table below.

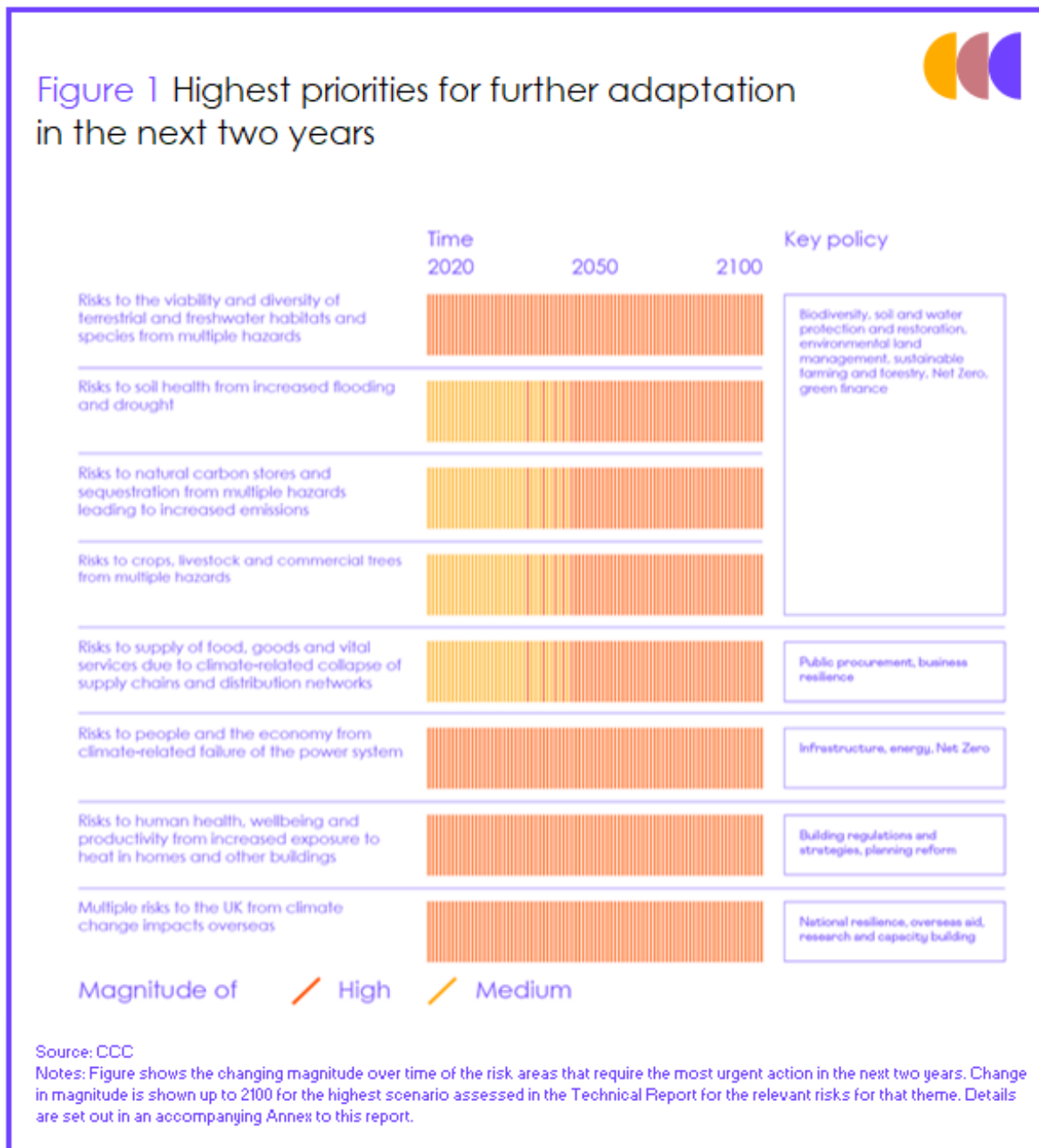
Table 2: 3UKCR “Highest Priority” Risks - Key potential impacts on County Council

Risk description	Areas of vulnerability for LCC
<ul style="list-style-type: none"> • Risks to viability and diversity of terrestrial and freshwater habitats and species 	<ul style="list-style-type: none"> • Country Parks, biodiversity goals, tree planting
<ul style="list-style-type: none"> • Risks to crops, livestock and commercial trees from multiple hazards 	<ul style="list-style-type: none"> • County farms (tenancy/viability), Forestry team, Ash Dieback Action Plan, Tree Management Strategy. Highways
<ul style="list-style-type: none"> • Supplies of food, goods and vital services 	<ul style="list-style-type: none"> • School food service, council catering operations, residential accommodation, vulnerable residents
<ul style="list-style-type: none"> • Power system failures due to storms, flooding, lightning 	<ul style="list-style-type: none"> • All building operations, street lighting, electric vehicles, fuel supply (pumps) – potentially very widespread impact if prolonged / major
<ul style="list-style-type: none"> • Health and productivity impacts from overheating in buildings 	<ul style="list-style-type: none"> • Building operations, working from home

3UKCR is accompanied by detailed technical chapters on many specific areas, such as Infrastructure and Health, which may be useful for individual services in assessing their own risks.

In response to 3UKCR, the Government will publish its third National Adaptation Programme (NAP) in 2022.

Figure 5: Highest priority climate risks for UK Government action (CCC, 2021)



5. Assessment of County Council's Climate Change Risks

Method

The following section sets out the methodology used to undertake the assessment of the climate change risks to the County Council.

1. Selection of services

Three groups of services were identified, based on their key functions in relation to climate and weather-related risks:

Critical services: services that either (a) provide direct support to the community (and are vulnerable to severe weather), **and/or** (b) are critical to other services' ability to operate during severe weather:

	(a) Support to community	(b) Support to Services
Customer Service Centre	✓	✓
Property Helpdesk		✓
ICT Support Services	✓	✓
School Food Support Service	✓	
Communications	✓	✓
Passenger Transport	✓	
Waste Management	✓	
Public Health	✓	
Adults and Communities	✓	
Operational Property Services (see also asset management)		✓

Resilience assurance: Services that exist for the purpose of ensuring the resilience of other council services and/or the community, including resilience to the risks of climate change:

- Planning Service
- Business Continuity (background interview only)
- Flood risk management team (background interview only)

Infrastructure asset management: Services that are (directly) vulnerable to extreme weather events, and which need to plan for the long term, because they employ long term infrastructure assets.

- Highways
- Operational Property Services
- Strategic Property Services

2. Engagement with Officers

Interviews were held with a range of officers to identify, review and assess risks. In the more complex areas, notably Highways, multiple interviews were held over a significant period of time (2 years).

In addition, the main policy documents in key areas were reviewed, including the Flood Risk Management Strategy, Local Transport Plan and Adults & Communities Cold / Hot Weather Plans.

The final individual service risk registers have been shared with the lead officers interviewed in each case.

3. Risk Assessment method

Risks were assessed and evaluated in line with the Corporate Risk Management framework (see Appendix 1). The tool used was a climate change risk register (CCRR). Two types of CCRR were developed: generic and custom.

The **generic** risk assessment looked at just three questions, namely the risks of climate change for in-house services, procured (outsourced) services, and knock-on or interactive effects for the given service. The latter was sometimes sub-divided to make four questions in total. This model was used for services expected to present lower or less complex climate change risks, based on previous assessments.

Custom risk assessments were used for the small number of services managing more complex climate change risks, namely Highways, Operational Property Services and Strategic Property Services. These assessments were much more detailed and heavily customised to the area involved.

6. Key findings

1. Leicestershire is already experiencing extreme weather events

Based on media monitoring by the Environment Policy & Strategy team, **significant weather events experienced** in Leicestershire since 2013, (a period of 8 years) include:

- 19 major excessive rainfall / flooding events (notably from March - Nov 2016 and again in 2019);
- 13 storms, hurricanes or tornadoes;
- 6 high temperature weather events in 2013 and between 2016-2019;
- a wildfire in Bradgate Park (April 2017);
- a handful of frost / ice / snow events, including minor property damage from hail showers.

While we have insufficient data to demonstrate clear trends within the county, we know from the UK climate projections discussed earlier that the likelihood of all these types of events is increasing.

2. Further climate change and changes in weather will happen

As discussed earlier, even in the most optimistic scenarios, further climate change is inevitable in the coming decades. Met Office projections suggest that the major features of climate change in Leicestershire will be:

- Average conditions:
 - rise in average temperatures;
 - wetter winters;
 - drier summers.
- Increase in frequency and intensity of weather extremes:
 - extreme rainfall / flooding;
 - number and severity of heatwaves.

3. Changes in weather are impacting the council and the county

Weather events of the above types are already having impacts on **council services** and on the county's **communities and infrastructure**, ranging from road closures and property damage as a result of heavy rain and flooding, to road damage and health risks arising from heatwaves.

Specific impacts experienced by individual services include:

- Adult Social Care - heat alerts leading to activation of hot weather plan;
- Communities & Wellbeing - minor flooding of Museums stores at Barrow-on-Soar and Measham;
- Customer Service Centre - during flood event on 1 October 2019, maximum call handling capacity exceeded (300 extra calls received) leading to lost calls;

- Flood Risk Management - 33 investigations of flooding incidents (that meet certain criteria) since 2013;
- Highways - road closures and damage to assets due to flooding and high winds.

It is difficult to quantify the number and costs of these impacts very precisely, but certain costs are known, (see key finding 11) and some services are starting to track and report relevant data, for example Highways Operations using Tableau software.

Although the most obvious changes relate to extremes, changes in **average conditions** are also having an impact:

- Longer grass maintenance season;
- Increase in plant pathogens;
- Some benefits e.g. lower heating demand, opportunity to grow different crops (e.g. vines);
- Increase in total rainfall leading to ground saturation;
- Some areas are experiencing seasonal droughts in summer.

4. Preparedness for short-term responses to weather events is satisfactory

In general, services appear relatively **well prepared for short-term, acute weather events**. They are aware that acute weather events pose a risk in the short term and see their response to these events chiefly in terms of **business continuity planning**.

All the officers interviewed showed a high awareness of business continuity planning, in terms of both their own services' plans and those of suppliers. It was beyond the scope of this investigation to look directly at individual business continuity plans, but it was confirmed that in the most critical areas (such as Adult Social Care and ICT) these plans are regularly reviewed and / or actively used (e.g. during heatwaves by Adult Social Care). It is clear that the Business Continuity and Resilience team provides a high level of support and leadership to this process.

The Business Continuity and Resilience team also supports wider resilience in terms of the emergency response by the local resilience forum, known as Leicester, Leicestershire and Rutland (LLR) Prepared. Although the latter was beyond the remit of this study, it appears to be an active body which is capable of ensuring an effective response to disasters including severe weather events.

5. There is less evidence of planning for changes in the risk of acute events

Business continuity and emergency response planning is largely focussed on planning the response to individual events (including complex ones). However, climate change presents a new kind of challenge, where the risk is slowly increasing in a broadly predictable way. Limited evidence was found that information about the gradual changes in climate risks is being integrated into business continuity planning in an ongoing way, for example by utilising the regular (five-yearly) national climate change risk assessments and national adaptation programme. A partial exception is flood risk management, where there is a strong awareness of climate change risks.

However, it is not clear that this feeds into the planning for acute events, as opposed to the assessment of development proposals.

The same problem arises in relation to managing slowly increasing risks that affect council services, such as the potential for overheating in buildings.

6. Potential gaps in checking suppliers' business continuity plans

One of the main risks identified in the preparedness for acute events was that in many cases, **external provider's business continuity plans are not adequately checked** during procurement processes. One or two services including ICT appear to be exceptions, with more robust checks in place, but overall, this creates a potential exposure to severe weather risks.

7. Good practice in management of longer-term flood risks

In relation to **longer term climate risks**, there is **good practice in flood risk management**, reflecting the Council's statutory role and the relatively effective national management regime. This area stands out for its explicit handling of climate change risk.

There has also been good co-operation between Flood Risk Management and Highways on mapping small drainage. Nevertheless, the remaining "unknown" small drainage network is rated as a **high risk** for flooding (see next section).

In addition, the county would benefit from a more detailed **flood risk map** and an updated **strategic risk assessment**.

Finally, despite being the statutory lead local flood authority, the county council can only provide **advice** to planning authorities.

8. Specific risks to services

The risk assessments of individual services are summarised in **Appendices 2 and 3**. Appendix 2 shows the number of risks identified at different levels and a brief indication of the nature of those risks. Appendix 3 goes into more detail on the risks identified.

In summary, the following services have **at least one high risk**, which requires **intervention** under the Corporate Risk Management Framework:

- Business Continuity
- Flood Risk Management
- Highways
- Operational Property Services
- Strategic Property Services

In the case of some other services, no immediate high residual risk was identified, but the inherent risks are high, so it is worth keeping these risks under **active review** and potentially **reassessing them in more detail**, including:

- Adults and Communities (vulnerability of clients to warm weather/ flooding)

- ICT Services (massive potential impact on LCC services)
- Passenger Transport (vulnerability to warm weather/ flooding)
- Public Health (central role in any health emergency arising from climate change)
- Waste Management (exposure of infrastructure to extreme weather).

9. Suitability of Corporate Risk Management Policy & Strategy

The risk assessment exercise raised questions as to the suitability of the Corporate Risk Management Policy & Strategy for assessing risks of a complex and long-term nature as that presented when assessing the risks from climate change.

10. Risk of climate impacts on strategic highways and property assets

The Flood Risk team has a good understanding of climate change, and the Local Transport Plan 3 also contains a very good discussion of this topic.

However, with those exceptions, there is a **lack of explicit planning** for climate change within Highways, or of **procedures** to take climate change into account in designs. The 3CAP/ MHA+ climate change action plans from 2009-2015 are out of date, and Highways maintenance policies and asset management plans do not appear to take predicted climate change into account in any detail.

The other service(s) with responsibility for strategic assets – Strategic and Operational Property Services – also **lack an overall plan** for climate change, and specific risks were identified around the potential for overheating and / or flooding of some sites.

As a result, several **high** or **medium-high risks** have been identified in these two services, which will need to be addressed over the next 2-3 years.

11. It is difficult to consider the council independently from the county and its suppliers and partners

In carrying out the risk assessments, it was often difficult to distinguish risks affecting the County Council from risks to the community or county of Leicestershire. For example, the council has a statutory duty to carry out strategic management of flood risks to the whole county, so climate impacts on the whole county are relevant to whether it is able to meet this duty.

The assessment process also attempted to look “upstream” at risks to the council from impacts on other providers, and “downstream” at risks to other individuals or services from weather impacts on the council. However, this also proved quite difficult without a wider assessment of whole chains of potential impact.

12. Incurred costs of climate change to the council

While it has been difficult to obtain comprehensive information about the costs of weather events and climate change to Leicestershire County Council it is clear that the council is already seeing costs arise due to climate change. Some indicative details have been identified and are set out below.

In 2010 the Local Climate Impacts Profile project was carried out with help from the East Midlands Regional Assembly. This found that the cost to the County Council of weather-related incidents (mainly high winds and excessive rainfall) **between 2000 and 2010** totalled **£5 million (i.e. £500K per year)**.

More recently, the indicative costs of weather events to Highways Maintenance (excluding Winter Maintenance team) in 2020-21 were over £110,000.

The Flood Risk Management team have received an extra £550,000 for 2021 for the following categories of work:

- £150,000 for a camera van for drainage related issues
- £150,000 for drainage work
- £250,000 for Section 19 flood investigations work

Highways received additional one-off funding of £200,000 in 2020/21 to deal with overhanging trees on the highway due to a longer growing season.

Capital budgets are difficult to assess since it is possible that adjustments are made to designs because of climate change, which are not easily identified as a cost.

However, some costs that were clearly weather-related include:

- Flood alleviation schemes (2020-21): £250,000
- Repair of road surfaces damaged by heat:
 - 2018/19 +£1m*
 - 2019/20 +£2m*

(*Note: this £3m was subsequently recovered from the 2020/21 budget)

7. Conclusions

1. That climate change is happening, and that Leicestershire and Leicestershire County Council is already seeing the effects of the changes in the weather. That further and potentially more severe changes in the weather will happen over the coming decades and that these will have a significant impact on the council and the county.
2. Overall, most council services that are at high risk from weather events appear to be **managing the short-term risks satisfactorily** through business continuity and severe weather plans, with support from the Business Continuity and Resilience Planning teams.
3. Despite this satisfactory level of preparedness, responding to certain acute weather risks in Leicestershire will gradually become more demanding in future. **With the partial exception of flood risk management, there is less evidence of planning for these future changes in acute weather events.**
4. In addition, **longer-term risks to infrastructure**, primarily Highways and Property assets, presents a huge challenge and with the exception of flooding risks, there is less evidence that these are being managed in a systematic and comprehensive way.
5. There may be a need to **review** the suitability of using the **Corporate Risk Management Policy & Strategy** for assessing risks of a complex and long-term nature as that presented by climate change.
6. Due to the interconnected nature of how council services are provided and of the significant and wide scale impact of severe weather events it is vitally important that council service areas **assess and have confidence in the business continuity plans of suppliers and partners** in relation to responding to the risks from climate change.
7. There will be a need to assess the complex **interactive and cascading risks**, which arise when impacts on other organisations or parts of supply chains indirectly impact the council or have knock-on impacts on its customers or on Leicestershire residents.
8. Detailed assessments have been made of the risks to key services. **Services need to examine the high risks** identified, and the more serious “medium” ones, and draw up service level **action plans** to reduce them.
9. It is acknowledged that responding to climate change **may be challenging** for individual services, both in terms of understanding the precise risks and finding the resources to respond to them. However, in view of the costs already being experienced, and the much greater impacts and costs that are likely to arise in future, it is **vital that services do respond.**
10. Due to the current and expected changes in the weather and the increased likelihood of extreme weather events it would be wise for the county council to **budget**, both for the costs of dealing with the impacts of these weather events

and for implementing measures to adapt and improve resilience to these changes in the weather caused by climate change.

11. Due to the complex and interconnected nature of climate change and how it will and could impact on the county council, and on Leicestershire as a whole, it would be beneficial to develop a **co-ordinated approach** to how the **council and the county adapts to and increases its resilience to climate change.**

8. Recommendations

1. That it is acknowledged that climate change is already having impacts on council assets and operations and will do so increasingly in the coming years, both in the form of acute events and through gradual changes in average conditions.
2. That it is acknowledged there is a need to strengthen the way that changes in the risk of acute weather events are taken into account in business continuity and resilience planning, both for the council and the county.
3. That it is acknowledged there are high risks in the medium and long term from climate change, relating to the management of highways and property assets.
4. That individual high-risk service areas should be asked to draw up their own service level action plans, informed by feasibility studies where relevant and supported by the Environment Policy & Strategy team, to help reduce the identified risks.
5. That consideration be given to developing a process to budget for and quantify the additional costs of dealing with the impacts of climate change and for adapting to and increasing the council's and the county's resilience to climate change.
6. That a review is carried out into the suitability of using the Corporate Risk Management Policy & Strategy for assessing risks of a complex and long-term nature as that presented by climate change.
7. That consideration be given to the development of a council and countywide climate change adaptation and resilience strategy/plan, that takes into account the recent independent assessment of UK climate risk (CCC, 2021) and the Government's forthcoming national climate change risk assessment (3UKCR).

Appendix 1: Corporate Risk Assessment Matrix

Extract from: Leicestershire County Council Risk Management Guidance v1.0, Jan 2020 (p9)

Risk Scoring/Ranking – risk matrix

Having determined the probability and impact scores they can be plotted on the following table to determine the combined risk score (or **risk ranking**). Through this process we are able to compare our risks so that we can concentrate our efforts on addressing those that are most important.

Risk Scoring Matrix

Impact

5 Very High/Critical	5	10	15	20	25
4 Major	4	8	12	16	20
3 Moderate	3	6	9	12	15
2 Minor	2	4	6	8	10
1 Negligible	1	2	3	4	5
	1	2	3	4	5
	Very Rare / Unlikely	Unlikely	Possible / Likely	Probable / Likely	Almost certain
					Likelihood

Appendix 2: Summary of service risk assessments

Team Name	Type of assessment	No. of risks assessed	No. Risks scoring 8 to 12	No. Risks scoring 15 or over	High risks and other comments
Adults and Communities	Generic	7	5	0	Keep under review - potential high impact
Business Continuity	Specific	4	1	1	Ensuring supplier resilience
Children and Family Services	Specific	3	0	0	
Communications	Generic	5	1	0	
Customer Services	Generic	3	3	0	
Flood Risk Management	Specific	10	6	1	Update of flood risk strategy & mapping
Highways	Specific	16	12	3	Increasing number of assets; small drainage structures; knock-on impacts
ICT Services	Generic	3	0	0	Keep under review - potential high impact
Operational Property Services	Specific	27	12	1	Flooding of Pennine House M&E services
OPS Customer Services	Generic	3	3	0	
Passenger Transport	Generic	4	1	0	Needs more detailed assessment
Planning Service	Specific	4	3	0	
Public Health	Specific	3	2	0	Needs more detailed assessment
School Food Support	Generic	3	0	0	
Strategic Property Services	Specific	11	7	2	Strategies / policies and building specifications
Waste Management	Generic	3	0	0	Needs more detailed assessment
Total		109	56	8	

Appendix 3: Detailed summary of service risk assessments

Adults and Communities

Residual risk: 7 assessed; 5 medium, 0 high.

Adults and Communities covers two areas with very different climate risk profiles: (a) Social Care and (b) Communities & Wellbeing. Thanks to active management of these risks, no high residual risk was found, but several medium risks need ongoing vigilance.

Social Care faces **three medium risks**. The largest arises from **dependencies** on other non-procured services, notably Highways Operations (Resilient Network and Passenger Transport) (which could be highly affected by weather) and IT and financial systems (residual risk = 10).

Failure of procured services (social care providers) due to extreme weather is a slightly lower risk (8) because of the active protocols and system in place to manage such risks, including liaison, inspection, provider business continuity plans, and contingency plans. However, widespread impacts on several homes at once could be a problem.

In addition, the risk of **heatwaves** has increased and is expected to increase further. A&C have good plans in place to manage the acute aspect of this risk, but there is an open question about how well equipped buildings used for social services (especially residential buildings) are to provide tolerable conditions for occupants during extreme hot weather. This needs to be addressed together with Strategic Property (residual risk = 9).

Communities and Wellbeing faces **two medium** risks to its museum collections, mainly from **flooding** at specific sites, notably at Riverside Court, Measham and the Museums store at Barrow-on-Soar. In addition, access to the Bosworth Battlefield site is subject to flooding. Measures have been taken at Barrow to reduce the risk (residual risk at Barrow/Bosworth = 8), but this is harder at Measham (residual risk = 12). Some Adult Learning sites could become vulnerable in future.

Resilience and Business Continuity Team

Residual risks: 4 assessed; 1 medium, 1 high.

The Resilience and Business Continuity (RBC) team provides two services: (a) ensuring that LCC can continue to function following any disruption (Business Continuity); (b) supporting overall emergency planning for Leicester, Leicestershire and Rutland (and other relevant areas into which the county falls, such as the River Trent catchment).

One **high** risk (15) was identified. Although the council requires its contractors to confirm that they have business continuity plans in place, the RBC team is concerned that there is a lack of checks on the existence and quality of these plans during procurement. This leaves the council open to supply risks from severe weather events and other causes.

One **medium** risk (10) was identified: that the residents of Leicestershire do not know how to increase their resilience to the impacts of severe weather and climate change. The RBC team believes that it is a priority to increase community resilience (a community's ability to respond appropriately to disruption by helping itself), in the context of increasing climate risks and finite emergency services resources. Although some information on preparing for emergencies is provided on the LLR Prepared website and (for flooding) on the LCC website, this could be better tailored to members of the public and businesses respectively.

Children and Family Services

Residual risk: 3 assessed; 0 medium/ high.

The Children and Family Services (CFS) department was not found to face directly any medium or high risks as a result of climate change. This reflects in part the fact that many services including residential accommodation are provided by outside contractors.

In light of the questions around the monitoring of providers' business continuity plans raised by the Resilience and Business Continuity (RBC) team, it is recommended that CFS considers reviewing the potential climate change risks faced by its **providers** in more detail in future.

Communications

Residual risks: 5 assessed; 1 medium, 0 high.

As demonstrated clearly during the Covid-19 pandemic, Communications teams play a key role in the management of risks, both in terms of providing information and advice during acute events, and in terms of increasing community preparedness in a longer-term sense. Both of these are also relevant to climate change.

Although the residual risks were generally well managed and low thanks to business continuity plans, one area of medium risk (8) was identified. This related to the risk of the Communications team not being sufficiently aware of climate change adaptation to "spread the word" effectively to individuals and the community. This can be addressed through effective training for members of the team (for example Carbon Literacy training).

Customer Service Centre

Residual risks: 3 medium, 0 high (3 assessed).

The Customer Service Centre (CSC) has one medium risk (12) to its in-house services, relating to its **call handling capacity**. In October 2019 the call volume relating to a flooding event significantly exceeded this capacity.

The CSC relies crucially on procured telephony and software services. These are obliged to have business continuity plans, but these are **not seen or checked** by the CSC (an issue highlighted more generally by the Resilience and Business Continuity team, above), resulting in a risk score of 8.

Loss of the CSC service could have serious implications for supporting the community to respond to critical events (risk = 10). However, this is ameliorated by the existence of other services, which people can call (e.g. emergency services, Property Helpdesk).

Flood Risk Management

Residual risks: 10 assessed; 6 medium, 1 high.

The Flood Risk Management team provides a county leadership role as well as an in-house service to other teams and departments. Climate risks in both roles were examined, as well as from procured services, knock-on effects and dependencies. Because flooding is generally one of the highest climate risks facing the county, several of these risks were assessed as medium or (in one case) high.

The high risk score (15) is for the update of the Flood Risk Management Strategy (FRMS) and (in particular) production of a new flood risk map for the county, for which funding is still being sought, and which, unlike currently available national flood maps, will take climate change into account. This map will form a very important resource for developers, planners, service managers and potentially householders throughout the county. The FRMS also needs updating in light of Scrutiny recommendations. The risk score reflects the potential impact of not having these resources.

Other medium risks related to the team's leadership role are:

- a) carrying out sufficient preventive (regulation) activity (residual risk = 8);
- b) updating/improving partnership arrangements for responding to flooding in light of Scrutiny recommendations (residual risk = 10);
- c) updating the flood investigation process through the new FRMS (residual risk = 8);

The new FRM Strategy will address all of these, and the risk scores have the potential to be reduced once it is in place.

There is one medium risk associated with in-house services, regarding the management of flooding data (residual risk = 12). Although detailed reports are published on individual flooding incidents meeting certain criteria, no summary data on flooding frequency, locations or impacts is published or made readily available to other services. Making such data available could help other services to better assess and manage these key risks.

Finally, there is a medium risk from weather impacts on other services, which might affect the FRM team. For example, flooding on highways could prevent inspections being carried out. However, as the FRM team does not provide acute services (is not a Category 1 responder), this risk is given a score of 8 (medium-low).

Highways

Residual risks: 16 assessed; 12 medium, 3 high.

Highways (like Property Services) is one of the county council services with a major responsibility for long term assets. A specific risk assessment was therefore developed for this service, covering a total of 16 risks. Of these, 12 were assessed as medium and 3 as high risks, reflecting the fact that highways assets and operations are highly exposed to climate impacts. These will be examined in a few groups.

Cross-cutting risks

First, there were **cross-cutting risks**, relating to departmental policies, action plans, standards and procedures, and resources. Most of these were assessed as medium-high (with one high risk relating to resources). Although some good policies and plans do exist (e.g. LTP3 has a very good discussion of climate change impacts), recent documents do not pick up this theme in any detail. In particular, the 3CAP/MHA climate change action plan has not been updated since 2014 and is largely defunct.

It is therefore recommended that **progress on past plans is reviewed** and/or they are **replaced with a new climate change action plan** in conjunction with the development of LTP4 and/or in collaboration with MHA+. The discussion of climate change risk in the Asset Management policy documents could also be strengthened. There should ultimately be a “golden thread” from these policies through to procedures and standards, e.g. the Leicestershire Design Guide.

The highest cross-cutting risk (residual risk = 16) was that **available resources for adaptation do not keep pace with increases in traffic levels and the size of the highway asset** for which the Highways Authority is responsible. Every year the council takes on new assets arising from housing developments and new roads. Despite some mitigation (e.g. sustainable urban drainage systems), every new asset ultimately means greater exposure and maintenance responsibilities. This must be raised with funding bodies while also looking for efficient solutions on the ground.

Specific risks

Turning to **specific risks**, most of the issues examined were assessed as “medium” risk, and in many cases are being successfully managed to keep the risk scores relatively low at 8 or 9. The latter include the overall potential for network disruption, which appears well managed but might benefit from more explicitly consideration of climate change.

However, three specific issues were assessed as having a higher “medium” residual risk (12): damage to river retaining walls (often historical and not fully documented), damage to roads from high temperatures, and damage to green infrastructure.

In addition, one specific issue was assessed as a high risk (16): the potential for **damage to small drainage structures (under 1.5m diameter) and roads due to heavy rainfall/flooding**. Unlike larger structures, small drainage structures such as minor culverts are often historic, poorly recorded if at all, and difficult to inspect. This

creates significant uncertainty about how extreme rainfall may affect roads. Efforts are being made to tackle this. The Flood Risk Management Team recently mapped all culverts on A/B/C roads, plus a further 800-900 on the unclassified road network, and is now analysing this data. However, there is still a potentially large risk of damage to roads because of incomplete knowledge, so there is an ongoing need for work to map and inspect these assets.

Interactive risks

Finally, the assessment looked at **interactive risks**. The highest risk (16) was that the Highways service is impacted by **knock-on effects from weather impacts on other services**. This risk was highlighted in the recent national CCRA3, which classed “**cascading**” events as a high risk for infrastructure (including roads) across the country. Examples include interruptions to telecoms networks, fuel or power supplies and emergency services, or even flooding arising from changes in the use of land not under LCC control. To mitigate these risks, Business Continuity plans need to consider a broad scope of failures and whether more than one might happen simultaneously. Preventive work should be done where possible, e.g. through procurement (such as checking BC plans), encouraging flood prevention measures by other landowners, etc.

Finally, severe weather impacts on Highways can clearly have significant **knock-on** impacts on other services and society in general. The Network Management Plan (NMP) and designation of a Resilient Network (RN) mitigate this to some extent, but there are some single points of failure such as the Soar Valley Way/ Narborough Road area, creating a residual risk score of 12. A review of the NMP and RN in the light of climate change is recommended.

ICT Services

Residual risks: 4 assessed; no medium, no high.

ICT Services were assessed using a generic risk assessment. Although the inherent risks of climate impacts on ICT services are seen as high (due to their potentially large impact), existing precautions such as active Business Continuity planning, regular recovery testing, more than one power supply and overcapacity in air conditioning systems are assessed to reduce these risks to a low level. This includes the risks from the failure of procured services, since providers of business-critical systems must provide details of BC and disaster recovery plans.

However, since the assessment was originally carried out (2019), the UK national Climate Change Risk Assessment (CCRA3, June 2021) has been published. This contains relevant assessments of risks to infrastructure, including the impacts of overheating. It is therefore recommended that ICT managers **consider the relevant parts of CCRA3**, and this this local risk assessment is **updated** in 2022.

Operational Property Services

Residual risks: 27 assessed; 12 medium, 1 high.

Because property operations are both complex (being subject to many different potential weather impacts) and central to all the council's operations, the risks for Operational Property Services were assessed in more detail than other services, as follows:

- Like most other assessments, it was first divided into risks from **In-House Service, Procured Services and Interactive Effects**;
- In-house service risks were then broken down into **Building Operations, Building Fabric and Mechanical and Electrical Systems**;
- For each area of In-House Services and Procured Services, the potential impacts of various key **weather changes** were examined systematically. In most cases, the risk was generalised across the portfolio, but in a couple of instances, County Hall and other sites were examined separately, where the risks were felt to be significantly different;
- Finally, Interactive Effects were divided into **knock-on effects** (the risk to other services from impacts on OPS) and **dependencies** (the risk to OPS from impacts on other services).

i. Building Operations

A total of four medium-high (score of 12) risks to Building Operations were identified:

- unfavourable/ hazardous working conditions due to high temperatures/ heatwaves (a risk that may be **increased** by working from home);
- operational disruption due to flooding at high-risk sites, including Beaumanor Hall (cabins), Riverside Court and Watermead Country Park (access roads/ paths);
- drought limiting water supply for use in buildings and grounds (in certain periods);
- drought leading to increased risk of wildfires.

Flood risks at County Hall are assessed as lower risk due to the site's topography. High winds/ storms are inherently dangerous, but this risk is managed through alerts to staff and WFH. Both are given a residual risk score of 8.

ii. Building Fabric

Here the biggest risks are damage:

- to buildings from flooding at high-risk sites (residual risk = 12);
- to buildings from wildfires or direct thermal stress (e.g. overheating of glass or metal) (10);
- to mature trees from low rainfall combined with high winds/ storms (12);

There is also potential for damage from low rainfall leading to soil shrinkage, but this is thought to be managed adequately for the moment through building surveys (8).

iii. Mechanical and Electrical services

The main risk here was assessed to be at Pennine House (current risk to basement 15 = high), which the Council is planning to vacate in the near future. This risk can then be reduced or removed, leaving only low risks to M&E services at buildings.

iv. Procured Services

Two medium climate risks to procured services were identified:

- Impact of flooding on grounds maintenance (relatively low at 8);
- Impact of low rainfall/ drought on grounds maintenance and cleaning (potentially more significant impact on these activities hence residual risk of 12).

v. Knock-on effects (on provision of other services)

Any failure of OPS services – for example, the provision of heat or (where present) cooling in buildings – can have a potentially wide knock-on effect on other services. However, this impact has been partially mitigated by working from home and (now) the Ways of Working policy.

vi. Dependencies (on other services that may be affected by climate change)

Property depends on internal services – notably ICT – and external services such as electricity, gas and vehicle fuel suppliers. The risk of loss of electricity supply is mitigated in the short term by the existence of backup generators. Overall energy dependence is mitigated by the introduction of on-site renewable energy. Both of these will be further reduced by existing projects in the coming years. As a result, these risks are assessed at 4 or 5.

vii. Actions

Various specific actions were suggested to deal with these risks, many of them physical measures to supplement the operational measures already in BC plans. However, it was recommended that Operational Property review its/the corporate severe weather plan for managing operational risks in light of this risk assessment.

Regarding risks related to the physical building fabric (including M&E systems, it was recommended that OPS work with Strategic Property to examine the implications of this risk assessment for building commissioning, construction and refurbishment, and draw up an action plan and/or local standards (e.g. through an extended Zero Carbon Construction Policy).

Operational Property Services - Customer Services

Residual risks: 3 assessed; 3 medium, 0 high.

The Customer Services desk in OPS was identified as a critical service and hence given its own specific risk assessment. This service has a key role in dealing with problems for building users, such as urgent maintenance or access problems, and can be very important in a weather-related emergency.

Procedures and plans are in place to cope with any business interruption, but at the time of the assessment, there were still felt to be some medium-low risks (8 and 10). It may be possible to reduce these at the next assessment, as some procedures have been tested and amended during the pandemic (for example, all office based staff now have laptops and the switchboard now uses the Anywhere 365 platform for calls).

Passenger Transport

Residual risks: 4 assessed; 1 medium, 0 high.

Passenger Transport provides transport services to vulnerable children and adults, using a significant in-house service as well as external providers. The service is assessed as facing a residual risk of 8 (medium-low) because severe weather and business continuity plans are in place and regularly audited, including the option of using external providers in an emergency (and vice versa). Communication links including with schools and media organisations are also good.

Planning Service

Residual risks: 4 assessed; 3 medium, 0 high.

The operation of the Planning Service itself is not especially vulnerable to climate change, but three potentially significant risks were identified (all assessed as residual risk of 8) arising from the Planning Service's role in influencing long-term development in the county.

The first is that climate change resilience is not addressed in LCC planning policies. In fact, the main policies do either refer to climate change (as required by statute) or the protection of environmental assets. However, it is recommended that climate change resilience should be addressed explicitly when developing detailed plans under the Strategic Growth Plan. This can also help to address the risk that climate change resilience not reflected in partnership work involving the Council.

There is also a parallel need to ensure that planning officers receive training, such as Carbon Literacy training, and support to assess climate change risks and implement national adaptation guidance.

Public Health

Residual risks: 3 assessed; 2 medium, 0 high.

The risk of climate change directly affecting the council's own resilience (i.e. provision of public health services) was assessed as low, thanks to business continuity planning.

However, a medium-high risk (12) was that the key public health policy for the whole county, the Health and Wellbeing Strategy, may not sufficiently reflect climate change into its priorities. It was recommended that the Strategy be updated and that the JSNA (Joint Strategic Needs Assessment) should be checked.

The failure of the public health service, although relatively unlikely, would have potentially large knock-on effects on other services. This was given a risk score of 8 (medium-low). To address this, more funding would be needed for local authorities to undertake climate adaptation work.

School Food Support

Residual risks: 3 assessed; 0 medium, 0 high.

This service manages the supply of meals to 240 schools, so it has a key role in ensuring that schools can operate normally. However, business continuity plans are in place and regularly audited; the service is provided entirely in-house with directly employed staff; and the four national suppliers of food and ingredients are adaptable and have backup plans for severe weather, such as switching their delivery vehicles. Hence at the time of the assessment (June 2020) all residual risks were assessed as **low**.

As in many other cases, it will be useful to review this assessment in due course, in the light of the Covid pandemic, for example regarding the potential knock-on effects of reduced service levels.

Strategic Property Services

Residual risks: 11 assessed; 7 medium, 2 high.

Strategic Property Services commissions the construction, leasing and upgrading of buildings for use by council services. Along with Highways, this is one of the major asset-managing services, and as such, a more detailed, tailored risk assessment was carried out. This assessment covered cross-cutting risks (such as whether climate risk to buildings is included in plans and policies), specific risks (such as the risks for building assets linked to water resources, flooding and overheating), risks to procured services, and interactive risks from or to other (non-procured) services.

Two cross-cutting risks were deemed to be **high**, namely the extent to which climate change is addressed in:

- key departmental/ corporate policies and strategies; and
- the specification or design of new buildings or refurbishments.

It was therefore recommended that climate change be considered explicitly in the corporate asset management plan and service plans. In addition, the Zero Carbon Construction Policy and checklist should be extended into a comprehensive “sustainable construction” policy, to include Climate Change risks.

There are related cross-cutting risks (10 = **medium-low**) regarding business intelligence about climate risk, and about addressing this risk in commissioning (leases, purchases, etc). Although some risks are considered, this has not prevented some buildings with elevated flood risk being acquired or leased, so processes may need strengthened, especially regarding long term risk.

Four specific risk types, which need to be considered strategically, were all assessed as **medium** level (12) (note: these are also operational risks, assessed under Operational Property Services):

- management of water resources (there is currently no water strategy for the council);
- strategic response to flooding incidents, i.e. monitoring to aid decision-making;
- overheating in buildings;
- ground cracking or subsidence as a result of alternating drought and heavy rainfall.

For Strategic Property, some of the key external supply risks relate to energy supplies and raw materials for construction projects. These were assessed as medium-low (10) thanks to the council’s prudent procurement approach and the advance purchase of much energy. In light of the supply chain problems in both these areas in summer/ autumn 2021, and the impacts of Storm Arwen on power supplies, it may be necessary to revise this assessment in future, and see what additional steps could be taken to increase resilience. Recent energy decarbonisation projects will already reduce (but not eliminate) the council’s dependence on fossil fuels, but it is important to assess what new weather-related risks that may bring (e.g. impact on delivery of woodchip used for the biomass boiler).

Waste Management

Residual risks: 3 assessed; 0 medium, 0 high.

The Waste Management Delivery service operates 14 Household Waste Recycling Centres and a fleet of waste haulage vehicles and associated plant. It also procures waste treatment and disposal services for the county. Potential weather risks to the service include flooding of sites (some of which are in areas of elevated flood risk), cold weather or flooding disrupting roads, and heatwaves or high winds creating difficult or dangerous working conditions.

Risks to the in-house service, procured services and knock-on effects on other services were all assessed as low (6) due to the existence of business continuity plans. This includes diverting customers to other sites if one site becomes

inaccessible. These must also be supplied by contractors and are regularly updated through contract management.

This assessment was one of the first carried out during this process (June 2019). Two aspects not explicitly discussed are the risk of heatwaves, and whether and how consideration is given to future changes in risk. These aspects should be given more prominence in the next update of this assessment. In addition, climate risks linked to the development / refurbishment / operation of long-term waste management assets (such as waste transfer stations and RHWs), should be examined in more detail.

References

CCC (Committee on Climate Change), 2021. [Independent assessment of UK climate risk](#). Advice to Government for the UK's third Climate Change Risk Assessment (3UKCR). 16 June 2021.

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