



A summary of the Local Climate Impacts Profile for Nottingham

Understanding the local impacts of extreme weather events on public services, places and people, helping us to prepare for future climate change

°Climate east
midlands



Nottingham
City Council

Introduction



How will the climate change in the East Midlands?

UK Climate Projections 2009 data for the East Midlands suggests that, under a medium emissions scenario, by the 2050s the region may see:

- An increase in summer mean temperature of around 2.5°C, and of winter temperatures of around 2.2°C;
- A 14% increase in winter mean precipitation;
- A 16% decrease in summer mean precipitation.

(Source: UKCP09 - <http://ukclimateprojections.defra.gov.uk>)

The Local Climate Impacts Profile (LCLIP) for Nottingham was undertaken in order to increase our understanding of the city’s vulnerability to severe weather events. It helps inform us about how these events affect the City Council’s assets, infrastructure and capacity to deliver services. It also informs us about the impacts on other public service providers and local communities.

The LCLIP covers the period 2000-2010 and was carried out in two phases.

- Interviews with County Council officers and analysis of media reports to understand the impacts of severe weather on the City Council and the city area as a whole.
- Analysis of the impacts of, and approach to, severe weather in Local Strategic Partnership (LSP) organisations through interviews with key members of staff.

In 2007 a separate LCLIP was carried out for the NHS in Nottingham. This was updated in 2009. An integrated LCLIP for the NHS and the City Council was also developed in 2009. Key messages from these documents are incorporated here.

The LCLIP and climate change

Climate change is expected to increase the frequency and intensity of some of the extreme weather events which we already experience, such as heat waves, flooding and drought, though it may reduce the occurrence of severe winter cold spells. By helping us to understand our current vulnerability to severe weather, the LCLIP acts as a starting point for understanding our vulnerability to climate change.

It is for this reason that each of the city and county councils in the East Midlands has developed an LCLIP as part of the first stage of the regional ‘Well Adapting East Midlands’ project on resilience to climate change.

Undertaking the LCLIP allowed all of the authorities to achieve Level 1 of the previous government’s performance framework for local authority action on resilience to climate change, National Indicator 188.

The UK government continues to place high importance on local authority action on

resilience to climate change and will publish a national risk assessment in 2012 and National Adaptation Programme in 2013.

As described in the final sections of this document Nottingham City Council has used the results of the LCLIP as a basis for further work to increase its preparedness, working collaboratively and sharing information with the other East Midlands authorities through the regional project. The East Midlands Improvement and Efficiency Partnership has resourced this by providing funding for ongoing Project Officer support on adaptation to each of the upper-tier Authorities.

Nottingham is the largest city in the East Midlands with a population of 300,800. It is part of the Greater Nottingham urban area which includes Nottingham City, the Boroughs of Broxtowe, Gedling and Rushcliffe, and the Hucknall part of Ashfield district.

The city has a highly integrated public transport system which includes bus, train and tram networks. Nottingham has a mixture of household income levels and has shown progress in alleviating deprivation over recent years.

The centre of Nottingham lies on the River Leen and its southern boundary follows the course of the River Trent. The rivers and the city’s hilly topography mean that it is at risk from both river and surface water flooding. The size of the Greater Nottingham urban area means that it is likely to see an Urban Heat Island effect as the extent of climate change increases over the course of the 21st century.

Key Findings

Key Weather Events and Impacts

Between 2000 and 2010, there were nine major weather events that affected Nottingham City Council’s and other public sector organisations’ service delivery:

- | | |
|---------------------------------------|---------------------------------------|
| • November 2000 - storms and flooding | • June 2007 - flooding |
| • August 2003 - heat wave | • June 2008 - flooding |
| • July 2006 - storms | • February 2009 - severe winter event |
| • July 2006 - heat wave | • January 2010 - severe winter event |
| • January 2007 - storms | |

A range of impacts and consequences were experienced by the City Council, LSP organisations and the community:

City Council service areas that operate in the outside environment, for example those relating to winter maintenance, trees, parks and events, are more affected by weather events than services based within offices.

The interviews with LSP organisations identified impacts including increased

workload and strain on resources, damage to premises and vehicles, financial costs of repairing damage and hiring extra personnel, disruption to staff travel, and uncomfortably warm offices. The NHS LCLIP identified that some of the most wide-reaching impacts were associated with transport disruptions and school closures.



Key Findings

The following impacts and consequences were identified over the period studied:



High water under Trent Bridge in Nottingham during the floods of November 2000.
Credit: Steve Waller.



The high water mark of the November 2000 floods carved into the stone work of Trent Bridge. The similar level reached during the 1947 flood can also be seen.
Credit: Nottingham City Council.

Flooding

- It was found that Nottingham City experiences events severe enough to flood the inside of properties at least once per year. Surface water flooding and flooding of the River Leen and Day Brook are particular risks. Due to its flood defences, the Trent has not flooded since 2000.
- The floods of Autumn 2000 caused major disruption in the city, with Council staff unable to travel due to flooded roads. Hundreds of homes were flooded with very little warning.
- Nottingham was not badly affected by the June 2007 flooding, with the River Trent flood defences able to cope. However, Nottinghamshire Fire and Rescue Service faced a strain on its resources, largely due to flooding in the Nottinghamshire county area and being required to direct resources to flooded areas in other parts of the country under the mutual aid provisions of the Civil Contingencies Act 2004. Following this a programme of water awareness and rescue training was offered to Local Resilience Forum members (which includes the Constabulary and the City Council).
- Flooding of the Day Brook in June 2010 saw 31 homes and businesses suffer internal flooding, while many other householders saw their gardens flooded.

High Winds

- The January 2007 gales caused widespread damage across Nottingham. The City Council’s tree team dealt with 220 call outs, 190 of them on one day alone. Ten schools were closed for a total of 23 days. Nottinghamshire Police closed many roads, with the City Council’s Network Team subsequently being required to check each road to ensure safety before it could be reopened. In addition, Nottinghamshire Fire and Rescue Service was called out to deal with a number of fallen trees and damaged buildings.
 - During gales in both November 2000 and January 2008 the City Council’s Parks and Open Spaces team made the decision to close Nottingham Castle and Wollaton Park for safety reasons.
- ## Snow
- Snow caused disruption for both the City Council and LSP partners in both February 2009 and January 2010.
 - This included disruption to journeys for City Council staff and partner organisations. For example, during the February 2009 event some Nottinghamshire Probation Service staff were unable to reach work, while offenders missed appointments. The snows cost the Property Services Directorate of Nottingham City Homes £23,000 in salaries and lost income (through staff being unable to get out to carry out routine repairs), plus £9,600 in damage to vans.
 - On the day of the heaviest snowfall in January 2010, emergency calls to the Nottinghamshire Police doubled with 123 accidents reported within the city and county.

- Icy conditions put Nottingham Queen’s Medical Centre’s Accident and Emergency Department under strain due to the number of ice-related injuries. For example, it saw 567 visitors to its emergency department between midnight and 4.30pm on January 13th 2010. In order to try to reduce the number of further injuries the City Council deployed 200 staff the next day to grit shopping areas and bus stops.

Heatwaves

- Nottingham experienced five heat related events with two of them (in 2003 and 2006) being classed as extreme. Negative consequences

included melting roads – generally those that had been newly laid – and an increase in calls to Nottinghamshire Fire and Rescue service relating to fires, many of them started deliberately.

- High temperatures also impacted on the health of the local population and Primary Care Trust services. During a hot spell in June 2005 the Queen’s Medical Centre’s Accident & Emergency Department saw 469 heat-related admissions in one day.
- On the positive side, the number of visitors attending outdoor events was reported as increasing during periods of warm weather.



Storm clouds threaten severe weather over Nottingham.
Credit: Nottingham City Council.



A Nottingham City Transport bus goes past a snowbound Old Market Square during the severe winter weather of January 2010.
Credit: Nottingham City Council.

City Council awareness and approach

The LCLIP identified that there is a lack of systematic recording and analysis of severe weather impacts within the council. However, some of the City Council’s most vulnerable services are developing their own processes to ensure flexibility and resilience in the face of severe weather events. For example:

- The Bridges and Structures Service has developed a Surface Water Management Plan which maps surface water flood risk areas across Nottingham and in the longer term will help identify areas that need investment in flood prevention.
- The Winter Maintenance team is using new technology to help monitor the city’s weather conditions in more detail. This includes road heat mapping.
- The Transport Network Team has developed a website that monitors the flow of traffic across the city. This can help to identify which roads are flooded or restricted by debris.
- Children’s Services have developed a formal system of incident reporting allowing future monitoring of weather related incidents.
- The Emergency Planning team uses severe weather forecasts and warnings from the Met Office to help it prepare to react rapidly to incidents.
- Trees Services provide 24/7 emergency cover, which can be escalated in severe or critical incidents to a “Silver Command” status, enabling them to monitor call outs and tree failures.



Café-owners and local residents enjoy the benefits of warm weather in Long Row near Nottingham’s Old Market Square.
Credit: Nottingham City Council.

Key Findings

City Council reputation

It was found that the council's response to severe weather events, particularly heavy snowfall, could affect its reputation both positively and negatively. For example:



A Nottingham City Council grit barn, used as part of the response to the snow and ice seen in February 2009 and January 2010.
Credit: Nottingham City Council.

- In 2009, the city was praised for coping well with the snow; investment in the network of grit barns was highlighted as contributing to the city's effective response.
- However, the snow in 2010 was more severe and many residents voiced concerns that many minor roads were not gritted. The council's policy is to grit only the major roads and ensure that bus routes remain open.

Other Local Strategic Partnership (LSP) organisations' awareness and approach

While LSP members are aware of severe weather impacts and the need to prepare for them, most were not taking into account how the patterns and severity of weather events are projected to change due to climate change.



A Nottinghamshire Police car negotiates surface water flooding on Mansfield Road in central Nottingham.
Credit: Nottingham City Council.

- LSP organisations including the Police, Fire and Rescue Service, NHS organisations and the City Council collaborate through Nottingham Prepared (the Local Resilience Forum) to plan for and effectively respond to emergency situations including those presented by severe weather events.
- In common with findings relating to the City Council, interviews highlighted a lack of systematic recording and analysis of severe weather impacts.
- Nottinghamshire Fire and Rescue Service, Nottinghamshire Police and Nottingham City Homes all receive severe weather warnings from the Met Office, helping them to prepare for incidents.
- The Fire and Rescue Service's budget builds in a contingency amount for emergencies like flooding. It also has business continuity plans in place.
- Both the Police and Fire and Rescue Service had reviewed their vehicles in light of severe weather impacts and the Civil Contingencies act. The Fire and Rescue Service has increased its number of rescue boats, while the Police bought 4x4 vehicles.
- As described above, major impacts for the NHS related to disruption to the transport network. It was identified that the NHS might improve its resilience by engaging with the City Council services that have control over these areas. More joint working and better coordination across health agencies could also help to reduce the need for travel during severe weather, for example by reducing the number of NHS and City Council Adult Support & Health services trying to reach each patient in the community.
- The NHS LCLIP identified that health service commissioning bodies could exercise the power to require the organisations from which they commission services to carry out climate change risk assessments so that they are more aware of and able to cope with severe weather impacts on service delivery.

Using the LCLIP findings

Actions taken and next steps

Following the completion of the Local Climate Impact Profile exercise Nottingham City Council has (as of September 2011) taken the following actions:

- Used the LCLIP to raise awareness of climate change adaptation issues within the Council.
- Continued to work with other East Midlands upper-tier Authorities on collaborative approaches and to share learning as part of the regional project.
- Carried out a Comprehensive Risk Assessment of high risk service areas to identify the risks posed to them by climate change and actions that can be taken to reduce them.
- Developed an Adaptation Action Plan which details identified adaptive actions, timescales and responsible service units. Key actions within the plan include:
 - continuing to protect the City's trees and green spaces whilst looking into new ways of using them to reduce flooding and the urban heat island effect;
 - ensuring flood risk contingency procedures are in place to ensure business continuity;
 - ensuring stringent maintenance of the city's drainage network;
 - developing a layered GIS mapping system to help identify the city's most vulnerable people in relation to the effects of climate change.
- Begun ongoing work to explore how adaptation can be further embedded within services' day-to-day processes, for example through Service Planning or Business Continuity.
- Developed a Climate Change Strategy (to be launched in January 2012) which includes actions on adaptation to be delivered at community level.
- Embedded adaptation into the Council's Biodiversity Position Statement, Breathing Spaces (Parks and Open Spaces) Strategy and Urban Forest Strategy.
- Built a positive working relationship between the Climate Change and the Planning and Parks teams, recognising their significant role in the delivery of adaptation within the city. This will continue to be a key focus of future work.
- Continued work to improve resilience to flooding within the City. For example, the Emergency Planning team have led on the development of Local Flood Response Plans for eight areas at highest risk.
- Held workshops with LSP partners in order to communicate the latest climate change projections, help organisations further understand the risks that climate change and severe weather pose to their operations, and begin to identify adaptive actions.
- Collaborated with Climate East Midlands colleagues to deliver a dedicated workshop with Nottingham University Hospitals to produce a detailed risk assessment and identify adaptive actions.



The Day Brook Water Meadow was restored by the Environment Agency and Nottingham City Council in Summer 2007. It acts as an urban habitat with high biodiversity value, a flood storage area and recreational facility for local people. It demonstrates that schemes which improve resilience to climate change often also provide other benefits.
Credit: Nottingham City Council.



Local Strategic Partnership organisations explore the risks posed to them by climate change at a workshop organised jointly by Nottingham City Council and Nottinghamshire County Council in February 2010.
Credit: Nottingham City Council.



The Nottingham City Council Climate Change Team has worked with the Parks & Open Spaces Team and other colleagues to embed consideration of climate change impacts and the response to them within key Council strategic documents on biodiversity and green infrastructure.
Credit: Nottingham City Council.

Contact

LCLIP project coordinated by Climate East Midlands, advised by UK Climate Impacts Programme and part funded by East Midlands Improvement and Efficiency Partnership.

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For further information on Nottingham City Council's work on resilience to climate change see its webpages:
<http://bit.ly/rIGR3e>

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For information on the regional 'Well Adapting East Midlands' project visit the Climate East Midlands website:
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