Case Study

Adapting to Climate Change
Leicester City Council

Climate east midlands

Assessing Buildings at Risk

How will the climate change in the East Midlands?

Hotter, drier summers, milder, wetter winters and more frequent extreme weather events are the headline findings of future climate modelling.

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 temperatures 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)

This case study describes how Leicester City Council has used information from the Environment Agency to help understand the risks that are posed by climate change on its estate: 57 buildings have been identified as being at risk of flooding or subsidence and these risks are likely to increase over time.

Key points

A mapping exercise has allowed Leicester City Council to identify its properties that have a higher risk of damage from the local impacts of climate change, with respect to subsidence and flooding. The projected changes to rainfall patterns and temperatures (illustrated left) are expected to have an increasing impact on buildings and infrastructure over time, although extreme weather in the short term is already a challenge. This was identified in the first UK Climate Change Risk Assessment 2012.

The project has then developed a standard survey that is able to be completed by building managers without specialist knowledge in climate change adaptation.

It has also highlighted some risks and hazards in council properties that can be addressed immediately to increase the the council's resilience to climate change.

The results of the project and the on-going completion of risk assessments will allow the Council to focus its increasingly limited funding and resources where it is needed most.

This project aims to assess the risks posed by the local impacts of climate change on Council property, and to evaluate the adaptability of these buildings in relation to climate change.

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Background

A higher frequency of storms and flooding are some of the predicted local impacts of climate change in the Midlands. Work completed by the Environment Agency (EA) has allowed the City Council to analyse the flood zones of 100 and 1000 year floods, as well as areas where pluvial (surface water) flooding is more likely. A significant amount of developed land and Council infrastructure falls within these flood zones, so it is in the council's best interest to investigate the adaptability of its stock, and ensure that buildings are capable of withstanding the projected local impacts of climate change.

In addition to flooding, some of the Council's property may be at risk of subsidence, due to the interaction between groundwater and the type of underlying geological material.

Individual buildings may also be vulnerable to storm damage, for example by being exposed to prevailing winds and with vulnerable parapets or tall chimneys.

What we did and how

To assess the possible risks of these impacts on Council property, firstly an interactive map was created. This map incorporated the EA's spatial data on pluvial flooding in Leicester and detailed information on the underlying geology of Leicester. This project phase highlighted 57 council buildings and land that were located in flood zones for a 100 year flood (as projected by the Environment Agency) and/or located on top of a geological material that increased the building's risk of subsidence.

Within this map Council properties situated within flood zones and on top of geology types whose composure would be significantly affected by prolonged dry or wet spells, were highlighted.

Risk assessment surveys were then carried out at these buildings that were identified of being vulnerable. A questionnaire was developed that would allow the building manager to relate detailed information on the building back to the Council's Environment Team, to allow them to understand how resilient that building was. The survey looked at what kind of natural resilience measures were in place, for instance the amount of natural vegetation surrounding a building and how many trees were on the building plot. It also considered the building manager's experience of the drainage systems around the building. All of this information provided a further level of detail to be able to understand how resilient the most at risk buildings owned by the council were.

Next steps

The survey needs to be redesigned to enable it to be completed by premises managers themselves.

With the additional information on its buildings from these surveys, the next step will be to assess adaptation measures that can be retrofitted on to council property and to assess the costs for multiple repairs and maintenance if no action is taken.

Training for all premises officers to identify risks and hazards in relation to flooding, strong winds and storms, and subsidence will be considered as a result of this project.

Contact details

For more information about adaptation to climate change in Leicester contact:

E: environment@leicester.gov.uk

One of a series of case studies about adaptation to climate change, developed as part of the Well Adapting East Midlands project and supported by Climate East Midlands. Other case studies can be viewed at the web address below.

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E: info@climate-em.org.uk

T: 01664 502 620

W www.climate-em.org.uk

East Midlands Improvement and Efficiency Partnership

East Midlands Councils

Leicester City Council

Environment Agency