UNDERSTANDING URBAN HEAT RISK

The importance of good heat data for local authorities

Summary from a CAG Consultants / Urban Heat Index webinar · 11 June 2026

EXECUTIVE SUMMARY

Extreme heat is now recognised as one of the UK's most significant climate risks. As heatwaves become more frequent, longer-lasting and more intense, local authorities face growing pressures on public health, infrastructure, public services and community wellbeing.

Yet despite the increasing importance of heat adaptation, many authorities lack the detailed local data needed to understand where heat risks are greatest and which communities are most vulnerable.

This briefing summarises key insights from a recent webinar hosted by CAG Consultants exploring the current state of urban heat mapping in the UK. It highlights available data sources, identifies current limitations, and explores opportunities to develop more detailed local heat intelligence to support adaptation planning.

Heat: A Growing Risk for UK Communities

The UK's first recorded temperature above 40°C occurred in July 2022, marking a significant milestone in the country's climate experience. Since then, evidence has continued to emerge showing that extreme heat poses substantial risks to health, infrastructure and public services.

The Climate Change Committee has identified extreme heat as the most deadly climate risk facing the UK. Future projections suggest that temperatures considerably higher than those experienced today may become increasingly common during coming decades.

The challenge is particularly acute in the UK because much of our built environment was designed for a cooler climate. Heat affects communities in many ways:

- Increased heat-related illness and mortality
- Higher demand on health and emergency services
- Overheating homes, schools and hospitals
- Reduced productivity and workforce wellbeing
- Increased wildfire risk
- Impacts on transport and critical infrastructure
- Disproportionate effects on vulnerable populations
- Pressure on health and social care systems

Why Local Heat Mapping Matters

Heat is not experienced evenly across towns and cities. Neighbourhoods can vary significantly in temperature due to differences in building density, materials, vegetation cover, access to green space and local geography. Some streets may remain relatively cool, while others become persistent heat hotspots during warm weather.

> ***Without detailed local heat information, it is difficult to target interventions effectively or identify which communities are most at risk.***

Understanding these local variations is increasingly important for authorities seeking to:

- Undertake climate risk assessments and prioritise adaptation investment
- Inform planning policy and design standards
- Identify and support vulnerable communities
- Support public health interventions
- Improve emergency preparedness and response

The Current Data Landscape

A number of valuable heat-related datasets are already available, but each has limitations for local decision-making.

Background Climate and Heat Data

Met Office HadUK-Grid Dataset
The Met Office's national gridded climate dataset for the UK. It provides observed temperature, rainfall and other climate variables at a range of spatial resolutions and is one of the key sources of air temperature data used in climate risk assessments.

Met Office Climate Data Portal – Sub Local Authority Temperature Data
A portal providing observed climate data and future climate projections at local authority and sub-local authority level. It allows users to explore projected changes in summer temperatures and other climate indicators relevant to adaptation planning.

NASA Landsat Spectral Bands and Applications
An overview of the Landsat satellite programme and the different spectral bands collected by the sensors. Useful for understanding how thermal infrared imagery is used to derive land surface temperatures and identify urban heat hotspots.

European Space Agency – Cloud Cover Information
Background information on cloud cover and its impact on satellite observations. This helps explain one of the major challenges in using satellite-derived temperature data for heat mapping.

USGS EarthExplorer

The primary portal for accessing and downloading Landsat satellite imagery and other Earth observation datasets. EarthExplorer provides free access to thermal imagery that can be used to derive land surface temperature and urban heat mapping products.

Heat Vulnerability Mapping

DEFRA Overheating Maps
An interactive mapping tool showing projected overheating risk in homes across England and Wales

under future climate scenarios. The tool allows users to explore areas where residential overheating may become a significant concern.

ClimateJust Map Tool

A decision-support tool that combines climate hazard data with social vulnerability indicators. It helps local authorities identify communities that may be disproportionately affected by climate impacts, including extreme heat.

UK Green Building Council Urban Heat Island Web Map
An interactive web map developed by UKGBC and Hoare Lea that uses satellite-derived temperature data to visualise urban heat island effects across a number of UK cities. It provides a useful example of how local heat patterns can be mapped and communicated.

The Missing Layer: Localised Heat Data

There remains a significant gap in the UK's climate data landscape. For flood risk, local authorities have access to highly detailed spatial information at street or building level.

- **Environment Agency – Risk of Flooding from Surface Water (Climate Change) Dataset**
  national dataset showing projected surface water flood hazards under climate change scenarios. It provides an example of the type of detailed spatial risk mapping that is already available for flooding.
- **Environment Agency Flood Risk Map Viewer**
  An interactive mapping interface that allows users to visualise and download climate-adjusted flood risk data. The tool demonstrates how complex environmental risk information can be made accessible to decision-makers and practitioners.

Equivalent heat data is generally not available — limiting the ability of authorities to understand which streets experience the greatest heat exposure, where interventions would have greatest impact, and how heat interacts with local patterns of vulnerability.

The Potential of Satellite-Derived Heat Mapping

Recent advances in satellite data offer new opportunities to understand urban heat at much finer spatial scales. Thermal satellite imagery measures land surface temperature, making it possible to identify local hotspots associated with roads, buildings, industrial areas and other urban features.

In particular, Landsat satellite imagery can provide temperature information at a resolution far beyond that available through many traditional climate datasets — creating opportunities to develop detailed heat maps capable of revealing neighbourhood-level patterns and supporting targeted interventions.

While challenges remain — including cloud cover, data processing and interpretation — these can increasingly be addressed through established analytical techniques. The result is the potential to create a much richer understanding of local heat risk than is currently available through standard datasets alone.

Heat Data Is Only Part of the Story

The webinar discussion highlighted an equally important point: understanding heat exposure is not the same as understanding heat vulnerability. Communities experience heat differently depending on:

- Building and housing design and condition
- Age, health status and underlying conditions
- Social isolation and access to support networks

- Access to green space or cool indoor spaces

Participants also highlighted the importance of lived experience, local knowledge and community engagement in understanding how heat affects daily life. The most effective heat adaptation strategies are therefore likely to combine detailed heat mapping with wider social, health and environmental intelligence.

Emerging Applications for Local Authorities

Participants identified a wide range of potential uses for detailed urban heat mapping. As heat becomes a more significant climate risk, demand for this type of intelligence is likely to increase.

- Climate adaptation and resilience strategies
- Local plan evidence and planning policy
- Public health planning and health inequality assessments
- Emergency preparedness
- Retrofit and housing programmes
- Urban greening strategies and nature-based solutions
- Funding applications
- Community engagement

Developing an Urban Heat Index

Building on our work in climate adaptation, risk assessment and spatial analysis, we are developing an Urban Heat Index that combines high-resolution satellite-derived heat data with local vulnerability indicators to provide a more detailed understanding of heat risk. We are keen to work with local authorities and other partners to refine methodologies, test applications and ensure that outputs meet real-world decision-making needs.

If your organisation is interested in exploring how detailed urban heat mapping could support your work, please get in touch:

Register your interest: Complete our online form

Visit: urbanheatindex.com

To find out about CAG's other climate adaptation resilience services please see:
https://cagconsultants.co.uk/expertise/climate-resilience

EXAMPLE 30M RESOLUTION MAP SHOWING URBAN HEAT ISLAND INTENSITY