

Turning up the heat: learning from the summer 2022 heatwaves in England to inform UK policy on extreme heat

Annex 2. Experiences of the 2022 heatwaves in England, London, Manchester and Yorkshire and Humber

This Annex supports the evidence report '*Turning up the heat: learning from the summer 2022 heatwaves in England to inform UK policy on extreme heat*' by providing regionally-specific insights from our research on experiences of the 2022 summer heatwaves, based on our four focus groups with 21 participants and 38 separate interviews.¹ The Annex presents the feedback we gained from first responders; local and national government and agencies; the utilities sector; and civil society organisations across four case study locations: England; London; Manchester; and the Yorkshire and Humber region. Annex 1 provides insights relating to each of the stakeholder groups.

Summary

Across the regions, commonalities emerged in the issues raised: participants often highlighted a lack of preparedness for the heat, a lack of specific resources and funding, and the need for better communication, public engagement and education as part of a suite of improvements required to tackle heat.

England's resources were severely stretched during the 2022 heatwaves, with stakeholders we spoke to saying they were struggling to keep on top of tasks during the response. Participants largely felt that preparedness did not match the scale of the issue, with reports of stakeholders being taken by surprise, slow decision-making and avoidable impacts. **London** participants stated that resources were extremely stretched with limited capacity to adequately respond during the heatwave response, with the challenge of multiple stressors included a high number of fires in the greater London region, transport disruption and impacts to health and wellbeing. **Manchester** participants felt the heatwave was unprecedented in the North West, and took decision makers by surprise. Some felt there was a lack of preparedness and urgency to deal with the heat. Working in silos, a lack of joined-up thinking, and disjointed processes were mentioned as key issues. Across the **Yorkshire and Humber** region, public services were placed under severe pressure. Participants spoke about a lack of resources and suffering from crisis fatigue or 'disaster exhaustion', along with pressure to deliver and the need for better public campaigns to increase education and preparedness about heat risks.

¹ Fourteen of the interviewees also attended the focus groups.

England

Key points:

- Participants in England largely felt that preparedness to the heatwaves was not adequate and did not match the scale of the issue, with reports of stakeholders being taken by surprise, slow decision-making, and avoidable impacts.
- England's resources were extremely stretched during the 2022 heatwaves: staff struggled to keep on top of tasks, support on-the-ground responses, and a lack of investment in the heat response was apparent.
- Communication, public engagement and education are needed as part of a suite of improvements required to tackle heat.

Impacts of the heatwaves on England as a whole:

- A record temperature of 40.3°C was recorded in Coningsby, England (Met Office 2022).
- There were 2,985 excess deaths observed in summer 2022 – the highest heat mortality since the introduction of the Heatwave Plan for England in 2004 (UKHSA, 2023).

Preparedness and strategy

- Participants in England largely felt that the response to the heatwaves lacked adequate preparedness.
- Although the heatwaves were record-breaking, there was considerable uncertainty from those not directly involved in heat projections and policy decisions about whether they would occur, and when. There was also slow decision-making.
- Concerns emerged relating to a lack of progress on heatwave preparedness, feelings that adaptation preparedness has slipped backwards, being taken by surprise, not expecting the magnitude of the event, and “sleepwalking” into problems.
- There was a perceived lack of preparedness in the face of multiple crises that occurred simultaneously including wildfires and travel disruption leading to avoidable impacts such as the high number of excess deaths (though some debated how avoidable such impacts were).
- The need to better consider and to balance short-term responses with longer-term preparedness was also raised, with the need to ensure these do not conflict with each other.

“I’d say it definitely hasn’t been adequate [...] I mean I think for the country as a whole, we’re not where we need to be on climate impacts, you know, as the Committee on Climate Change has said, we’ve actually slipped back. – England-focused participant

“I don’t think anyone was anticipating the kind of levels that we saw this year.” – England-focused participant

Compounding and cascading impacts

- A range of cascading impacts including wildfires, drought and water scarcity, impacts to crops, and transport disruption made responding to the heat events across England challenging.
- Respondents talked about the challenge of needing to jump from one crisis to another; from managing the direct impacts of heat on rough sleepers to ensuring cool spaces available were indeed cool.

“Generally, when it comes to adaptation, despite what the government said in this year’s CCRA [...] it feels to me that we lurch from one crisis to another.” – England-focused participant

Resources, funding and capacity

- England's resources were extremely stretched during the 2022 heatwaves, according to participants in policy and government roles at local and national levels (see Annex 1 for further insights from this group).
- Issues raised included working long hours to stay on top of the response, resources not being sufficient, competing pressures/priorities, and working lives potentially being disrupted as a result of the heat (e.g. being exposed to disruption while travelling or commuting, while working outdoors, or due to local fires).
- Some mentioned a lack of available funding and a lack of appropriate resources and skilled staff, which were needed to improve the response. There were comments of specific circumstances where promises for funding to help manage the response to heat had not materialised, which was often at odds with funding for cold weather periods.
- Some participants highlighted successes in the response, having been able to find a way through and working at capacity despite the severity and impacts of the event.

*“We all ended up working probably 12-hour shifts throughout most of the heatwave.”
England-focused participant*

“... In the summer just gone there was a funding promise retrospectively for the things that local authorities put on in relation to kind of safeguard homeless people in the heat, and then no funding materialised for the delivery of that, whereas in winter it is kind of a given that those funds will be made available. So, I think there is just this massive disparity between perception of risk to our homeless people in winter versus summer.” – England-focused participant

Governance

- Issues with governance processes in England’s heat response were raised including a lack of leadership, a lack of ownership and responsibility, and a lack of joined-up thinking on heat issues.

- Decision-making was on occasion made more complicated by over-cautiousness and concerns about reputational risk – although these qualities were also viewed as required to appropriately navigate the response to the heatwaves.
- Issues with resources being adequately deployed was highlighted, along with the need for better forward planning and simpler decision making processes.
- Tackling siloed ways of working to join up organisational governance processes was highlighted. Participants raised the need to build on networks that emerged during the Covid-19 response to deliver support to those most in need.

“So, while the system as such is kind of in a good kind of procedure the one bit is we need sign off from relevant directors and that often proves difficult. You’re chasing after people that are already extremely busy and then you’re sort of – on days when there [is] a heatwave who are probably ten times as busy, and you still need to wait until they have basically said explicitly, yes, ready to be sent out. So, that’s a sort of a bit of a bottle neck. [...] I guess [there is] sort of an inherent sort of cautiousness in that sort of decision-making in government departments, which I think serves us well.” – England-focused participant

Communication, engagement and behaviour

- While heat risks are increasingly viewed as a salient issue, participants spoke about a lack of knowledge among the public and in some sectors, and of misperceptions, which may have further exposed individuals to the heat and increased their vulnerability. There is a need to influence people’s behaviour under heatwave conditions. Suggestions included disposable BBQ bans and automated prompts in buildings and classrooms to notify people when a temperature threshold has been crossed.
- Improvements to communication, public engagement and education were key suggestions highlighting the importance of, and need for, better public education campaigns to change risk perceptions and shift risky behaviours during heat periods. Good communication and collaboration was viewed as going hand-in-hand with clearer responsibilities laid out between government departments.
- Participants highlighted the need to make sure communications are timely (e.g. when temperatures start to increase), targeted, accessible and delivered by trusted communicators (e.g. teachers). Education about heat risks is needed across different settings, for and organisations to be appropriately tailored and targeted to ensure maximum uptake.
- While improvements to alert systems were welcomed, the need to enhance the dissemination of warnings before and during heat events was also highlighted, while acknowledging that impacts of heat starting to manifest at lower temperatures.
- The challenge of communicating invisible effects of heatwaves was also raised, as heat can be a hidden problem with a range of large, small and unnoticed impacts (e.g. cognitive impairment) and lag times between heat events and reporting of deaths.

“[We need] effective communication to people who are going to take action, whether it’s individuals or people in positions of authority, and institutions knowing whose job it is to deal with this kind of thing. It’s quite common when you’ve got multiple agencies involved, they

don't always know who's going to be in charge, and so on. So, yeah, effective communication and cooperation between the relevant organisations all the way through to actually being able to get stuff done quickly enough, as well." – England-focused respondent

"The major tool in our kit is training and making people aware of what to do and altering behaviours, so that when the problem comes along – say, for example, the teacher in a classroom knows how to identify the problem, knows what it is and what could go wrong and knows what to do about it." – England-focused respondent

Policy

- While some heat risk-related policy developments were welcomed by participants (e.g. 'Part O' of buildings regulation, which came into force in June 2022 for new builds)² many felt heat risk policies needed to be strengthened. Participants felt that more could be done to protect vulnerable and at-risk groups, improve building regulations, in terms of preparedness, climate adaptation, and health.
- Recommendations included:³
 - Updating policy and guidance to include further temperature thresholds at which more safeguarding measures come into effect (similar to what is in place for cold temperatures).
 - Update guidance to better reflect the wide range of impacts of heat on health, including to sleep and productivity while working or at school.
 - Updating planning guidelines to improve planning for heat mortality – especially for deaths and heat related illness at relatively lower temperatures (i.e. heatwave temperature thresholds).
 - Amending guidance on at-risk groups to heat. Specially this should: decrease the age range of vulnerability from 75+ to 65+; include more guidance on homeless people (e.g. re-balancing the emphasis on summer heat and winter cold, and to help facilitate more places where homeless people can meet basic hygiene needs); acknowledge the cross-cutting vulnerabilities that can increase vulnerabilities of at-risk groups to heat e.g. homeless people with physical and/or mental ill health.

London

Key points

- London participants stated that resources were extremely stretched with limited capacity to adequately respond during the heatwave response.
- Most participants felt that there was a lack of preparedness and strategy for a series of heat events of this magnitude.
- Multiple stressors made the response in London challenging, including a high number of fires in the London region, transport disruption, and impacts to health and wellbeing leading to an increase in hospital admissions, and impacts to productivity.

² Part O Building Regulations see <https://www.homebuilding.co.uk/advice/building-regulations-part-o>

³ Note that some recommendations may now have less relevance given the UKHSA published its new Adverse Weather and Health Plan after interviews and focus groups were conducted.

Impacts of the heatwaves on London:

- A temperature of 40.2°C was recorded at St James's Park, London (Met Office 2022).
- Between 16 June – 25 August 2022, there were an estimated 387 deaths in total in London, and a further 536 deaths in the South East of England (UKHSA, 2023).

Resources, funding and capacity

- Many participants in London spoke about resources being extremely stretched under the circumstances, and issues with resource and capacity available to adequately respond to the heatwaves.
- The record breaking nature of the heatwaves and the huge scale of the response required was highlighted. The London Fire Brigade noted this was their busiest day since World War II.
- Many issues highlighted were linked to a lack of funding and finance for the heat response, as well having limited capacity, lack of centralised resources, lack of people, skills and experience. The lack of resources led to dependence on volunteers in some cases.
- Inadequate mitigation measures – such as cool places not being particularly cool or not being suitable for those requiring them – were also highlighted.
- Some first responders however did mention that, as a result of scoping and preparedness exercises, they felt suitably resourced to manage the impact of the heat particularly with effective leadership and resource allocation.

“So at least 50 percent of my available operational response was immediately deployed to one incident.” – London participant

Preparedness and strategy

- Most participants in London felt that there was a lack of preparedness and strategy for an event of this magnitude, leading to the system being overloaded.
- They felt that more action is needed to make responses to extreme heat ‘business as usual’, as those currently in place were inadequate compared to that of other countries, and that only low-level interventions were carried out (such handing out water to rough sleepers and allowing use of shelters for shade during the day), with a lack of inclusiveness in responses.
- Some highlighted that preparedness was as good as it could have been and highlighted growing levels of knowledge about heat risks.

“It felt very shocking and we were very unprepared. Even just things like offices aren’t air conditioned, so we’re asking staff as well, we’re asking team members to go out, it’d be like walking around the borough in 40-degree heat to carry out their duty to support vulnerable people. And just the infrastructure isn’t there for us to do that. So yes, it definitely felt unprepared for that level of heat.” – London participant

“So what failed this time, what didn’t go well, is because the wildfires, the extent of the wildfires, were not predictable, the network of support failed. So London was unable to call in – there were a few incidences where they did get some external support. But London had to provide all of its own fire crew for a large set of wildfires across a large number of days.” – London participant

Compounding and cascading impacts

- Multiple stressors and ‘knock on’ impacts made the London response highly challenging further stretching capacity of those responding to the heat events
- Compounding and cascading risks were a key part of the challenge in responding to the heatwaves. This included the high and unexpected number of fires in the London region, transport disruption, and impacts on health and wellbeing and productivity.
- The need to address mental and emotional impacts as well as impacts to staff health was also raised.

“The fires also had a really big impact because we didn’t quite expect to have so many of them all at the same time and so it really impacted the capacity of the fire services and so they were saying to TfL, ‘we’re not going to be able to help if there are trackside fires over here or over there.’” So there was a lot of disruption because of that.” – London participant

Uncertainty and complexity

- Uncertainties and unpredictability also contributed to the complexity of the London response. This included the unique, uncertain nature of the wildfires in London, which made it difficult to manage and target the responses. They highlighted that the fires behaved in ways that were atypical compared to what London fire services tend to deal with, e.g. related to the type of wind which facilitated the spread of the fires.
- Uncertainties in relation to information sharing also contributed to resources being deployed to certain locations before managers realised that their capacity would be more effectively utilised elsewhere.

“The way the fires behaved, they are unlike other fires in London. And that made it very difficult, because the London Fire Brigade is obviously very well-trained to deal with an urban setting. They’re very well-trained to deal with problematic buildings, with older buildings, with historic buildings, with a range of London’s built environment. What they are not expert on is climate-related fires and fires that behave differently. So the type of fires we had were ones you might find in places like Italy and Greece, where the climate’s very different.” – London participant

“If you look at the photographic devastation of that incident, it was so indiscriminate, it was actually really challenging for the victims because one house would be burnt out to the ground and the neighbours would be fine. And then three doors down the next house would be burnt down to the ground. And that’s really challenging to work in an environment where they were, and I have been speaking to crews that attended that incident at the early stages, and they said it was literally leaping from place to place to place. [...] So

that was very unique, I've not seen that. And I've spoken to a colleague who attended the Dagenham incident and the fire literally jumped four lanes of traffic, four lanes of roadway to reach the estate." – London participant

Vulnerable groups

- Measures to protect vulnerable groups were particularly high on the agenda for London participants.
- In London, for the first time, the Severe Weather Emergency Protocol (SWEP) was activated by the Mayor of London during the heatwave. This is usually only activated in the cold seasons and compels councils across London (and homelessness charities) to open emergency accommodation for people who are sleeping rough during weather conditions that could pose a threat to life.
- It was felt that more thought is required on the issue of safeguarding and SWEP, and some acknowledged that other measures in place are not yet adequate.
- It was also noted that cross-cutting vulnerabilities need to be understood and acknowledged. For example, if a homeless individual has a physical or mental health issue, this could increase their vulnerability to the impacts of heat.

"And as part of our rough sleeping strategy, everyone who was rough sleeping in Camden should have an offer of a service which means that they no longer need to sleep rough. So sometimes when the weather is extreme, offering water and sun cream kind of goes hand in hand with [this]." – London participant

Buildings and infrastructure

- The inadequacy of housing stock, buildings, and other infrastructure (such as transport) was a key topic raised by London participants. It was noted that in London (and elsewhere given the old housing stock in the UK) a huge focus on retrofitting is needed. There is, however, a gap in current policies and there is not a clear narrative or framework for retrofitting.
- Cool spaces were cited as a key measure to help protect vulnerable people, however, some mentioned that available cool spaces were not adequately designed, and there were mismatches between London boroughs, with some not able to provide these spaces.
- Challenges with being able to protect and safeguard staff were also raised in relation to inadequate infrastructure, as well as the need to adapt work uniforms for periods of high temperatures.

"So other Boroughs had cool rooms, like cool spaces that were staffed and had people there, the people who are rough sleeping can use. We didn't have that, we just tried to utilise the library service that was already in place. And I know that Westminster, our neighbouring Borough, offered accommodation to quite a lot of people that were rough sleeping. I think another intervention was about showers, we didn't have an offer for showering." – London participant

Integration

- The London focus group offered concrete examples of 'integration', where efforts have been made to increase synergies between climate mitigation and heat adaptation, including:
 - Setting up governance structures to enable different parts of organisations to see what others are doing and increase opportunities to coordinate.
 - Designing and delivering training and 'teach-ins' to ensure as many colleagues as possible understand what mitigation and adaptation are, and how to integrate planning on using nature-based solutions wherever possible for adaptation, which will have mitigation (and biodiversity) benefits.
 - Looking to identify 'trigger points', so that if someone is carrying out a project on mitigation, they will inevitably need to consider adaptation as part of this.
 - Embedding both mitigation and adaptation considerations into output specifications in building design, so that all new schools will be net zero in operation and ready to withstand 2°C and 4°C warming scenarios.

Manchester

Key points

- The heatwave was unprecedented in the North West, taking decision-makers by surprise. Some felt there was a lack of preparedness and urgency to deal with the heat.
- Working in silos, a lack of joined-up thinking, and disjointed processes were mentioned as key issues.
- Improvements to heat and adaptation policies, building regulations, and public communications are needed to bolster the heat response in Manchester.

Impacts of the heatwaves on Manchester:

- A temperature high of 37.2°C was recorded on the 19 July in Greater Manchester. (Manchester City Council 2022)
- Between 16 June – 25 August 2022, there were an estimated 386 deaths in total in the North West of England (UKHSA, 2023).

Preparedness and strategy

- The heatwave was unprecedented in Manchester's history and decision-makers said it took them by surprise. The record-breaking event was viewed as a "shock to the system" in the North West, which typically does not see such high temperatures.
- Several of the Manchester interviewees felt the UK was not ready for more heat events of similar or greater magnitude and participants felt there was a lack of preparedness, and lack of urgency to deal with heat, with heat described as a "blind spot" by one regional decision-maker.
- Uncertainties surrounding the possible range of consequences of the heat event were noted by participants as a result of the lack of experience in dealing with such events in the North West.
- One interviewee mentioned there were good levels of preparedness and planning amongst first responders.

"... It's the first time it's got really, really hot. I think at 35 degrees, I think we're used to just going "OK, it's a couple of hot days," but when it starts hitting 40, in the North West, especially, that was a bit of a shock. I think it was a bit of a shock to the system, I think for quite a lot of people." – Manchester participant

"We know that heat is a bit of a blind spot for us." – Manchester participant

"Well, I think a lot of it was almost a shock or something we'd not really been through before, Manchester is not really renowned for heatwaves. And I think there was a lot of worry with regards to what the consequences could be." – Manchester participant

Governance

- Working in silos and a lack of joined-up thinking was mentioned. The need to address disjointed processes was highlighted.
- Some mentioned conflicting priorities as a barriers to better governance, as well as practical issues like having too many meetings.
- A misalignment between strategic high level and on-the-ground operations was also flagged, as well as a mismatch between strategic and operational perspectives.
- A small number mentioned having strong teams and there being good governance structures in place which made responses more efficient.
- It was felt the response was reactive, and concerns about 'business as usual' returning to local government after the event had passed were also flagged.

"So I think there is a bit of a mismatch between what people work in nicer offices think and what the crews on the road think." – Manchester participant

"My suspicion is that business-as-usual returns all too quickly." – Manchester participant

"There's probably a couple of different levels of internal response, so you've got the strategic response, [...] which are worried about actually if this is going to become a more frequent thing than how do you factor this into our future planning. And then there's the operational side [...] which they tend to jump from the latest issue to the next issue." – Manchester participant

Resources funding and capacity

- There is a clear lack of funding and investment for heat responses, cool infrastructure and equipment. Participants felt more financial resources will be needed going forward to allow authorities and services to take more effective actions. Participants spoke about a lack of resources, such as specialist staff and personnel to help manage the heat response.
- Civil society respondents in Manchester highlighted the importance of local community champions, who can help the most vulnerable via targeted service provision – suggesting what can be achieved with better resourcing.

- Some first responders mentioned how their uniforms were not fit for purpose during the heatwaves – putting staff welfare at risk – while ambulances and fire appliances were viewed as being poorly adapted for hot temperatures.

“[...] our national laws and the power and the funding is so distorted that local authorities are really limited as to what they can do.” – Manchester participant

“Most of our debrief was quite focused on welfare of staff, uniform came up a lot [...] I couldn't explain quite how uncomfortable our uniform is. [...]. Ambulance stations are generally quite old, they are not very environmentally friendly in any way, shape or form and they were very, very hot and uncomfortable.” – Manchester participant

“And that's where our community champions came in, because they then could get lists of addresses, they could travel around the borough, knock on people's doors, go in, make sure that they had things that they needed. They gave them advice; literature was posted through every letterbox across the borough saying 'ways to keep cool', talking about shutting your windows, drawing your curtains in rooms, and things like that, ensuring that you drink enough fluids during the day, all manner of things – what sort of clothes are best to wear, food, think about your diet and what you're eating.” – Manchester participant

Communication, engagement and behaviours

- While noting there is increasing awareness of heat risks amongst the public and decision makers, Manchester participants also mentioned several issues relating to people's attitudes and behaviours, such as BBQs starting fires that would lead to a drain on resources.
- An understanding gap in experience was highlighted – including a lack of experience for people responding to heat alerts in the North West, a lack of understanding about the nature of hazard, and a lack of learning from experiences amongst decision makers. There were mixed feelings towards communication efforts. Some felt they were ineffective, while others mentioned successes in streamlined reporting and knowledge sharing.
- Those in the emergency services mentioned that they could not carry out protective behaviours themselves to stay cool due to the nature of their work (e.g. being in a hot vehicle for many hours a day).
- Cultural barriers to better heat resilience – such as the seeming Inflexibility of life priorities and routines – were also raised.

“Now because it wasn't flooding, it wasn't winds, it wasn't snow, it wasn't ice or anything else, it was extreme heat. This was the first extreme heat warning that the Northwest had seen. So it was a new thing. We only started issuing them last summer, 2021. There were two there and none of them were for the Northwest. So this was the first one that hit the Northwest. So we knew we were literally playing with fire a little bit and we had to be, it was uncertain as to how they would interpret what I was saying and what the warning was saying.” – Manchester participant

"Our problem was that there's things everyone else could do; go home, sit with their feet in some water or go and take a break or for a swim or walk round the park and cool down or whatever, we couldn't do. All those things like shop windows with shop curtains just don't apply and it's... that was the key challenge, staying in a vehicle with the engine running for 12 hours a day, it's not comfortable and I think that's what the staff really struggled with was lack of air conditioning, just anywhere to cool down during that time." – Manchester participant

"You know, it doesn't matter what you put in place you get a load of idiots take a barbecue up to the moor land and all of a sudden you've got resources taken away for days at a time, water being used." – Manchester participant

Compounding and cascading impacts

- Impacts on productivity due to the heat were raised, for instance offices getting too hot to work effectively leading to many shifting to working from home where possible, and taking precautions there.
- One responder mentioned the benefits of quieter roads while on duty.

"It got almost unbearably hot, I'm sure you remember as well. I didn't have aircon I just got a fan, and that was just belting round hot air by then. So it got a bit difficult to work but we carried on" – Manchester participant

Buildings and infrastructure

- Infrastructure relating to the emergency response, such as ambulance stations, were also reportedly poorly suited to high temperatures.
- One decision maker highlighted that cooling facilities (including community spaces and water centres) were provided in the region.

"[...] our Ambulance Stations are left locked during the day because there's no one in them. So the windows lock; there's no fresh air getting in there, there's no cooling, most of them have got..." – Manchester participant

Yorkshire and Humber

Key points

- Public services were placed under severe pressure in the Yorkshire and Humber region, with one first responder describing 'apocalyptic' scenes in the health service.
- Participants spoke about a lack of resources and suffering from crisis fatigue or 'disaster exhaustion', along with pressure to deliver.
- A range of policy improvements and measures are needed, including better integrated adaptation policy in the region, a vulnerability assessment for heatwaves, public health campaigns, and a broader need to place more emphasis on climate adaptation.

How Yorkshire & Humber was affected:

- A temperature of 39.8°C was recorded in Bramham, West Yorkshire (Met Office 2022)
- Between 16 June – 25 August 2022, there were an estimated 391 deaths in total for the Yorkshire and Humber region (UKHSA, 2023).

Preparedness and strategy

- Public services were placed under severe pressure in Yorkshire and Humber, while a lack of preparedness in the face of multiple crises (such as the Covid pandemic, industrial relations crisis) increased risks.
- One participant used the term “apocalyptic” to describe scenes in the health service, where patients were at risk of overheating while waiting in queues of ambulances.
- Participants mentioned that the heat led to an increase in violent crimes, civil unrest and domestic abuse, which emergency services had to deal with.
- Ambulance services had to deal with a rise in patients indirectly resulting from impact relating to the heat. They described a chain of knock-on impacts from fires and drought, which affected fire services initially, then secondarily affected other emergency services.
- Impacts to staff productivity were also felt across sectors due to the heat.
- Interviewees felt that much more could have been done to build resilience, highlighting the need for a hot weather plan, and legislation such as a maximum safe working temperature threshold.

“So what happened during the heatwave is people were left in the back of ambulances. So let’s take it as an apocalypse – very much an apocalyptic scene. They were all parked up, back doors open and they actually had to get additional air conditioning units to pump in cold air into the back of the vehicles because they just physically couldn’t cool the vehicles down. And the other challenge was that because they were waiting there for quite a prolonged time, and in some parts of the UK some of those patients were onboard an ambulance for up to 25 hours – it’s not very many, is it – we had to look at that you don’t want to leave the engines running because they’re on the back of the vehicle for so long. So you’ve got that duality of having horrible diesel fumes pumped into A&E, pumped into the back of the vehicles within the middle of a heatwave. And the additional pressure it put on A&E was pretty drastic, I think.” – Yorkshire and Humber participant

Resources, funding and capacity

- Several mentioned lack of available resources, placing emergency services and first responders under significant pressure to deliver their duties.
- Participants also mentioned suffering from crisis fatigue or disaster exhaustion, having just recovered from the Covid-19 pandemic and continuing to experience those and other constant pressures to deliver.
- As in other locations, lack of funding and finances was raised by the Yorkshire and Humber participants, with much more investment needed to build heat resilience and adaptation.

- Issues with work clothing and uniforms being unsuitable during the heat were also raised.

“So I think it’s the finite capacity to deal with the new emergency situation; we were still in the middle of two events. As I say, if I’m honest, the COVID emergency and the industrial relations emergency, when along came the heat emergency and just speaking for the railway, there’s a bit of, almost, disaster exhaustion in the rail network at the moment. And the danger with that is that everything that comes along is just another thing rather than “crumbs.” – Yorkshire and Humber participant

“It’s difficult enough finding funding to improve the energy efficiency from a thermal performance perspective of properties without them trying to find the resources for adaptation around heat.” – Yorkshire and Humber participant

“We were under severe pressure within the ambulance service nationally because of the heatwave and the impacts of the drought, the fires, which from an ambulance service perspective didn’t directly affect us but affected us through the patients that were impacted by all of the things through the fire service, as well.” – Yorkshire and Humber participant

Vulnerable groups

- Measures were being taken in Yorkshire and Humber to protect vulnerable people (such as using existing local knowledge to pinpoint and tailor efforts to those who need it most and adopting a flexible approach to ensure that people or workers who would not usually be ‘vulnerable’ were classified as such due to their temporary direct exposure to the heat).
- Despite this, buildings, ventilation and cooling measures available (such as electric fans) were viewed as inadequate, meaning that decision makers in the region described keeping people cool as being a ‘real challenge’.

“It was a combination of being at work and being at home. So for the organisation, it was a similar thing for most office based staff. So I think it reinforced what we already know, our buildings just don’t work. So in terms of actually being able to keep people cool is a real challenge in most of our – in fact, pretty much all of our buildings, which is a real issue. No air circulation in buildings, but fans being brought in to try and provide some level of cooling or movement, but particularly during the heatwave, they became pretty useless as they just moved hot air around. There was no real cooling impact or benefit from those.” – Yorkshire and Humber participant

Buildings and infrastructure

- Yorkshire and Humber participants felt that UK infrastructure was not fit for purpose in terms of heat risk resilience. Buildings in particular were flagged as being ill equipped for heat (e.g. in terms of cooling, air circulation and ventilation), with one participant stating “our buildings just don’t work”.

- Other infrastructure such as railways were seen as being particularly vulnerable too, while maintenance of emergency service infrastructure and equipment was described as being minimal.
- Some successes, such as having water/drinking fountains that were set up as part of the UK City of Culture designation, were noted.

"I think it reinforced what we already know, our buildings just don't work. So in terms of actually being able to keep people cool is a real challenge in most of our – in fact, pretty much all of our buildings, which is a real issue. No air circulation in buildings, but fans being brought in to try and provide some level of cooling or movement, but particularly during the heatwave, they became pretty useless as they just moved hot air around. There was no real cooling impact or benefit from those." – Yorkshire and Humber participant

"When they bring in ambulances for maintenance because the aircon is not working, you tend to find lots of other things go wrong with it as well, and it takes an ambulance off the road for longer. So they tend to wait until it's actually really properly breaking down before they bring the ambulances in to be maintained. So there might be occasions where the aircon isn't working, but I think in that sort of weather they will prioritise patient safety over the way that the ambulances were working." – Yorkshire and Humber participant

Communications, engagement and behaviour

- The need to improve public understanding of heat risks, and shift some behaviours was again mentioned by Yorkshire and Humber respondents. Issues such as lack of knowledge, limited behavioural responses and problematic behaviours were raised.
- Some viewed communications as being ineffective (citing issues such as a lack of pre-prepared messages, and not disseminating messages in different languages), while other challenges such as problematic media framings around heat risks, were also raised. In turn, participants highlighted the need to improve risk communication, learning lessons from events.
- Suggestions included educational campaigns, framing heat in terms of health impacts, making warnings widespread, doing more public community engagement activities, improving message deployment and tackling unhelpful media portrayals of heatwaves.

"And then the other thing is it really maxes out on our capacity and production and capacity. Because the network is put under immense stress because everybody, people start filling paddling pools, you wouldn't believe the difference in demand that you get that relates directly to air temperature when you start getting these high temperatures. You do get to the point where them people start going inside and actually doing less, but demand is very, very high and if it's a sustained peak, more than three days, it puts us under immense pressure." – Yorkshire and Humber participant

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