



HUMBERSIDE FIRE & RESCUE SERVICE

ANALYSIS OF RISK

KEY RISKS

Introduction

The following analysis provides the current understanding of the risks affecting Humberside Fire and Rescue Service and the community it serves. It includes our capacity to respond to and minimise these risks.

There is clear evidence within this analysis that the demand for our services is shifting away from fire-related incidents and is more focused on addressing the vulnerabilities within our communities. It demonstrates the changing role of a fire and rescue service over time. The challenges faced by our communities are complex and are worsening, and when combined with the impact of climate change and advancing technology, it will further alter the work of the Fire and Rescue service in the years to come.

Community Risk Matrix

We have developed a method to identify, analyse and score risk themes using the following harm and likelihood markers:

Incident Risk	Societal Risk
The extent of physical harm to individuals	The effect on future demand
The extent of psychological harm to individuals	The effect on employees/staff (morale/motivation)
Financial implications to individuals	The impact on the community
The impact on the community	Public expectation/feeling
Public expectation/feeling	The impact on the environment
The impact on the environment	The imminence of the impact
Incident frequency	The volume of activity
Incident volume	The trend over the previous 12 months
The trend over the previous 12 months	The forecast over the next 12 months
The forecast over the next 12 months	Reputation and Politics
Reputation and Politics	The economic cost
The economic cost	HFRS's capacity to manage the risk
HFRS's capacity to manage the risk	HFRS's capability to manage the risk
HFRS's capability to manage the risk	

Using this method, we have identified and scored (In April 2024) the following incident-related and community/societal risk factors, the highest risks to Humberside Fire and Rescue Service are allocated red through to amber, assessed on the level of risk combined with our capacity and capability to deal with the risk. The matrix plots the risk and our capacity and capability to mitigate the risk. Please note that scores are not comparable between the Incident and the Community/Societal Risk as the criteria differ.

Incident Risk	Risk Score	Community/Societal Risk	Risk Score
Large Industrial Fires - COMAH Sites	114.4	Population - High Rates of Deprivation	45
Flooding	113.4	Health - Deteriorating Mental Health	42.9
Terrorism	81	Technology - Cyber Security	42.2
Hot weather - Wildfires	59.8	Governance - Financial Pressures	40.2
Fires in High Rise Buildings	54	Population - Ageing Population	35.1
Arson in Buildings	44.1	Population - Political Activism	31.5
Hot weather - General Increase in Incidents	43.3	Governance - HFRS Workforce Diversity	29.7
Road Traffic Collisions	42.9	Fire Safety - Business Crime	29.7
Fires in Care Homes	39	Governance - On call Recruitment Challenges	28.8
Accidental Dwelling Fires	38.4	Population - The Rate of Crime in Hull	27
Fires at Waste Management Sites	37.8	Fire Safety - Changing Trends in Industry	26.4
Arson involving smaller fires (e.g refuse and vegetation)	33.1	Technology - Fast Paced Change	26.2
Assistance Provided to Other Emergency Organisations	29.4	Fire Safety - The Risk to Heritage Sites/Buildings	25.6
Fires Involving Lithium Ion Batteries (Including EV cars)	28.1	Health - Increasing Mobility Problems	21.6
Accidental Fires in Commercial Premises (Excluding Large Industry)	27.6	Population - Increase in Economically Inactive People	18.9
Open Water and Mud Rescues	26.4	Population - Lone Living/Social Isolation	16.2
Arson in Vehicles	25.7	Population - Community Diversity	15.8
Commissioned Services - Emergency First Responder	23.4	Technology - Mass Generative AI	14.6
Rescuing People with Obesity	21	Health - Alcohol Harm	12.6
Commissioned Services - Falls Response	15.6	Health - Drug Misuse	10.5
False Alarms to Domestic Premises	14.9	Health - Smoking Habits	3
False Alarms to Commercial Premises	8.4		

Risk Score 114.4

COMAH (Control of Major Accident Hazards)

Humberside has the highest number of COMAH (Control of Major Accident Hazards) sites in the UK. There are 56 COMAH sites in our area, with 29 classified as upper tier. Upper Tier establishments will hold greater quantities of dangerous substances meaning that additional requirements are placed on them by the Regulations. Many of these sites are located near urban areas in Humberside, while others are situated in more rural regions. This discrepancy presents a challenge in ensuring that the necessary resources are available nearby.

Risk Score 113.4

Flooding

Flooding is an exceptional event requiring significant resources over a short period. From the Local Resilience Forum Risk Analysis in May 2024, 3 types of flooding were identified as very high risk:

Risk ID	Scenario Title	Impact	Likelihood	Risk Rating
R75A	Coastal Flooding	4	3	Very High
R75B	Fluvial Flooding	4	3	Very High
R75C	Surface Water Flooding	4	3	Very High
R72	Storms	3	4	High

In June 2007, extreme flooding devastated Humberside, particularly Hull, after torrential rain overwhelmed drainage systems. Nearly all of the city's 98 schools were damaged, and thousands of homes were destroyed, forcing many residents to evacuate. Tragically, a young man lost his life after becoming trapped in a storm drain. The floods affected thousands of properties, causing millions in damages. This led to an independent review of flood defences and investment in improvements. The event underscored the area's infrastructural vulnerabilities and the need for better flood management and emergency response systems.

On December 5, 2013, Humberside experienced severe tidal flooding due to a powerful storm surge with winds up to 90 mph. The Humber estuary reached a record 5.8 meters, breaching sea defences in several areas. In Hull, the tidal barrier held by only 40 cm, but floodwaters still impacted Albert Dock and parts of the city, affecting many businesses and homes.

Other Information/Facts

(ukclimaterisk.org) and ([Government-flooding-summary.pdf](#))

- Approximately 1.9 million people in the UK are at significant risk of river, coastal, or surface water flooding, a number that could double by the 2050s. Those at high risk from river and coastal flooding may rise from 1.6 million today to between 2.3 and 3.6 million by the 2080s. Intraurban flooding risk could increase from 200,000 to between 700,000 and 900,000. Some parts of the country consistently have the worst increases – the Lancashire/Humber corridor, parts of the coast (particularly in the southeast) and major estuaries.
- Humberside's Neighbourhood Flood Vulnerability Index score is 0.27, indicating a greater flood vulnerability than both Yorkshire and the Humber (0.04) and England (-0.06).
- Areas under greatest threat from erosion will be along major estuaries and the east coast.
- There is a considerable amount of work being undertaken in Humberside to mitigate the risk of flooding. The environment agency, 12 Local Authorities and the Humber Local Enterprise Partnership are working together, with the Internal Drainage Boards and Natural England support, to produce a **Humber 2100+ strategy**. More work is planned to cover a wide range of structural and natural environment enhancements some of which can be seen on the **Living with Water Website**.

Risk Score 81

Terrorism

Terrorists use violence and threats of violence to try to influence a government or to intimidate the public. They do this in pursuit of a political, religious, racial, or ideological cause. The reality of today's terrorist threat being fluid can mean that terrorists can appear to be motivated by multiple, unclear, or shifting ideologies rather than a singular extremist narrative. Terrorists will seek to carry out attacks in a number of ways. They could look to use bladed or blunt force weapons, could seek to use vehicles as a weapon or construct and use improvised explosive devices. Terrorists will often plan their attack by visiting an attack site to conduct what is known as 'hostile reconnaissance.'

Humberside Fire and Rescue are trained to respond to what is called a Marauding Terrorist Attack (MTA), alongside other first responder emergency services. These are fast-moving, violent attacks where assailants move through a location aiming to find and kill as many people as possible. We can also respond to CBRN (Chemical, Biological, Radiological, Nuclear) incidents and would assist as expected with tackling any Fire or Rescue from a location where our skills are required within these hostile and pressured environments should they occur. Whilst Humberside would mostly not be widely regarded as an aspirational or iconic target for pre-planned terrorism unlike locations in London for example, by nature of what terrorism is, it can happen anywhere, be opportunistic and incidents could occur in the area with no notice.

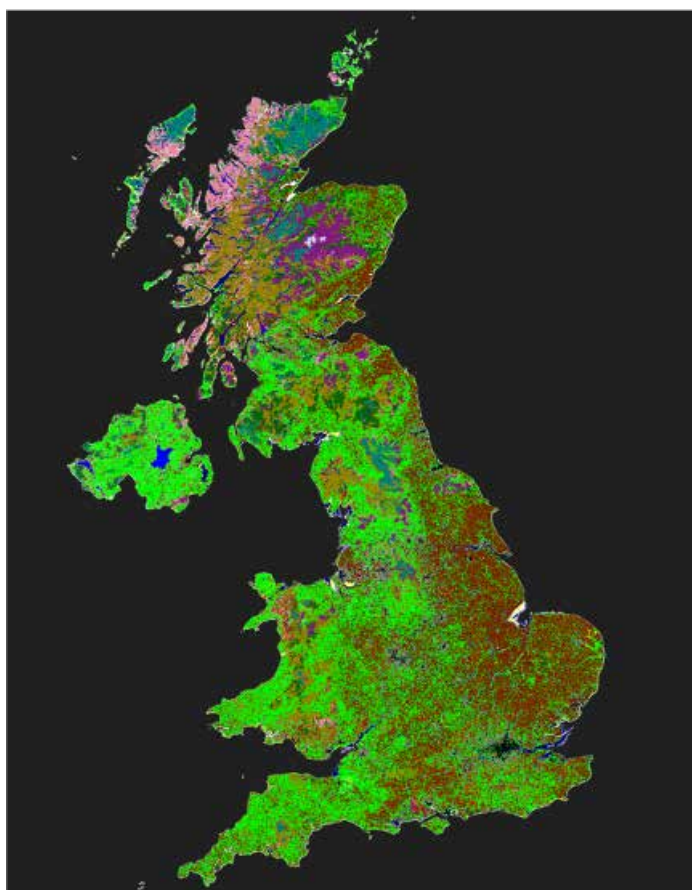
Fire and Rescue services are recognised by the Government for their critical contribution to incident response in these circumstances, aligning to a firefighters' role to save and preserve endangered life and safely resolving operational incidents.

Risk Score 59.8

Hot Weather – Wildfires

July 19th, 2022, marked the hottest day ever recorded in the UK, placing unprecedented demand on fire services following extended droughts and a prolonged hot, dry summer. A major incident was declared that day as temperatures exceeded 40°C for the first time, reaching a peak of 40.3°C in Coningsby, Lincolnshire. More than 800 wildfires were recorded across the country on this single day. Additionally, mid-August saw another surge in fire activity, with 600 wildfires recorded daily from August 11th to 14th as temperatures reached the mid-30s.

Humberside has a unique land footprint in the United Kingdom particularly pertinent to the East of the country where agricultural land is dominant (shown in brown on this map). The wildfire risk in Humberside will not come from peat or forests but from agricultural fields and stock.



Source – UK Centre for Ecology and Hydrology – Land Use

Risk Score 45

High Rates of Deprivation

The Index of Multiple Deprivation (IMD) highlights vulnerable populations in Humberside, Yorkshire and The Humber, and England. The 2019 IMD measures deprivation for small areas, called Lower-layer Super Output Areas, across England, using seven domains:

1. Income Deprivation
2. Employment Deprivation
3. Education, Skills, and Training
4. Health and Disability
5. Crime
6. Barriers to Housing and Services
7. Living Environment

A higher IMD score reflects greater deprivation. Humberside's score of 26.54 exceeds England's average of 21.76. England's neighbourhoods are grouped into 10 deciles, with decile 1 as the most deprived 10%. The map shows the areas in Humberside that are in decile 1.



- In 2019, Hull was ranked as the 4th most deprived local authority out of 317 in England. North East Lincolnshire was ranked 17th.
- There is a correlation between high levels of deprivation and high levels of disability in Humberside. The most deprived wards are associated with a lack of necessities, with the ten most deprived areas located in Kingston upon Hull and North East Lincolnshire. In contrast, the wealthiest residents are found in the East Riding of Yorkshire.
- There is a correlation between high levels of deprivation and increased crime rates at the ward level in Humberside. The wards experiencing the highest levels of both deprivation and crime are situated in North East Lincolnshire and Kingston upon Hull. In contrast, the least deprived areas are in East Riding of Yorkshire.
- There is a relationship between fires and highly deprived areas.
- There is a relationship between higher rescue volumes for people with obesity in highly deprived areas of Humberside.
- The most affluent areas of Humberside accounted for 3510 (7.3%) of incidents between April 2021 and August 2024, whereas the most deprived areas of Humberside accounted for 11348 (24%) of incidents.

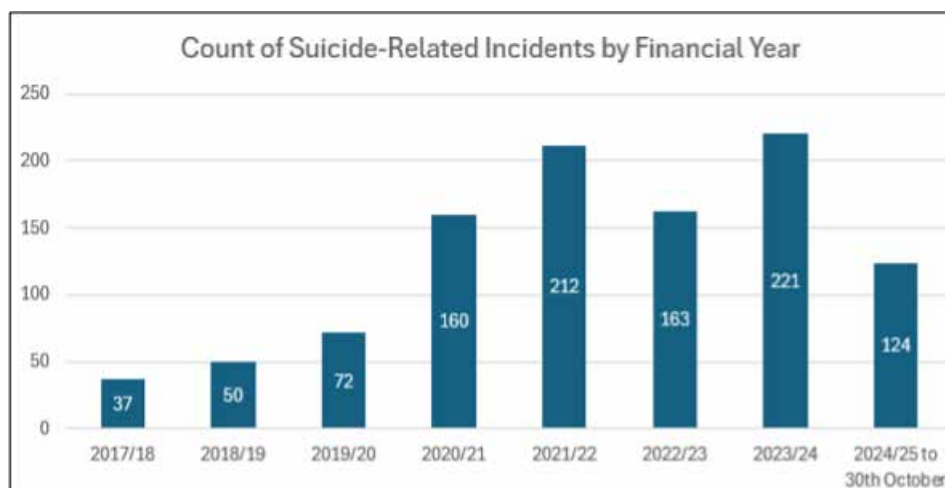
Risk Score 42.9

Deteriorating Mental Health

There are some notable facts about mental health in Humberside from the Department of Health and Social Care Fingertips tool. The data is for the percentage change in 2022/23 compared to 2018/19.

- High Anxiety Prevalence – Worsened by 18%
- Low Happiness Prevalence – Improved by 14%
- Depression Prevalence – Worsened by 23%
- Mental Health Conditions Prevalence – Worsened by 4%
- Hospital Admissions for Self-harm (ages 10 to 24) – Improved by 35% but this was the lowest figure in 13 years so is highly likely to have been impacted by the Pandemic.
- Premature Mortality in Adults with Severe Mental Illness – 2015 to 2017 compared to 2020 to 2022 it has worsened by 23%
- Suicide Rate (Persons 10+ years) – 2018 to 2020 compared to 2021 to 2023 it has worsened by 4%

Our crews are attending an increasing rate of suicide-related incidents which includes suicide attempts.



Risk Score 42.2

Cyber Security

The Official Statistics Cyber Security Breaches Survey 2024 reports that 50% of businesses and 32% of charities report having experienced some form of cyber security breach or attack in the last 12 months. By far the most common type of breach is phishing (84% of businesses and 83% of charities). Further, the National Cyber Security Centre (NCSC) in its 2023 review, reported that ransomware attacks remain one of the most acute cyber threats facing the UK. In 2023 the NCSC received 2,005 reports of cyber incidents, an increase of 64% from the previous year. Four of these incidents were among the most severe that the NCSC has had to manage compared to only one the previous year. The NCSC issued 24.48 million notifications, informing organisations that they were experiencing a cyber incident, through their automated early warning service. Given Humberside Fire and Rescue Services' handling of sensitive data and its reliance on systems to respond effectively, safeguarding data and technology is essential.

Risk Score 40.2

Financial Pressures

Humberside Fire Authority's financial position is dynamic as reported in the 2024/25 – 2028/29 Medium Term Resource Strategy. The Authority faces several significant financial pressures that could affect its position over the medium term. These pressures include:

- Pay awards and price Inflation
- Failure to deliver planned savings
- Industrial action
- Further reductions in the next Comprehensive Spending Review and an unfavourable review of the funding formula
- Future council tax precept rises are limited by excessiveness principles determined by the Government
- Costs associated with the outcome of the national legal challenge to the Firefighters' Pension Scheme (2015) transition arrangements are not met centrally by the Home Office

Risk Score 35.1

Ageing Population

Advanced age is a known fire risk attribute. 21.5% of the Humberside population is aged 65 and older and this is the demographic we target with our proactive home fire safety visit programme. The Projecting Older People Population Information System (POPPI) forecasts that by 2040, the percentage of those aged 65 and over will rise to 28% in the East Riding and North Lincolnshire, and 27% in North East Lincolnshire. Hull is projected to maintain a rate of 21%. A compounding fire risk is living alone. In Humberside, households with only one person aged 66 and over account for 14% of all households, higher than the national average of 13% and the Yorkshire and Humber region's average of 13%. Over the past two years, 34% of the accidental dwelling fires we attended involved people living alone. Additionally, 15% of these were over pensionable age. During the past 4 years, 76% of our home fire safety visits were delivered to people aged 65 and over.

Risk Score 31.5

Political Activism

The anti-immigration riots during the summer of 2024 show how quickly deep-seated social and political issues, including economic grievances, rising cost-of-living pressures, and debates over government policies, can create significant challenges for public sector organisations, including fire and rescue services. The riots resulted in a multi-agency effort to reduce harm, protect communities, and intensified the workload in dealing with incidents.

Risk Score 29.7

Workforce Diversity

A Fire and Rescue Service should reflect the community it serves. A diverse workforce brings a range of perspectives, improving understanding and responsiveness. When the workforce mirrors the community, it goes beyond appearances—staff are more likely to have life experiences that help them relate to citizens' challenges and communicate effectively with communities in need. The latest **Fire Statistics published data** shows that as of 31 March 2024, 9.3% of firefighters employed by UK Fire and Rescue Services were women, compared to 51% of the population. 5.4% of the people who stated their ethnicity were from an ethnic minority, compared to 26% of the population. In the same year, the percentage of firefighters in Humberside who are women is 7.5% compared to a population of 51%. The percentage of Humberside firefighters who are from an ethnic minority is 1.7% compared to 5% of the population.

Risk Score 29.7

Business Crime

Business crime, including issues like modern slavery and fire-related insurance fraud, can have significant implications for a Fire and Rescue Service. Modern slavery operations may involve unsafe work environments, which increase the risk of fires or hazardous incidents, putting both workers and firefighters at risk. The hidden nature of Modern Slavery makes the extent difficult to quantify. Since 2016, there has been an increase in the number of modern slavery offences recorded by the police, from 909 to 5144 offences in 2019, which reflects greater awareness and improved recording. Fire-related insurance fraud can lead to deliberate arson, endangering lives, consuming emergency resources, and diverting attention from genuine emergencies. Business crimes like these not only strain a Fire and Rescue Service's resources but also require specialised training to identify and respond to criminal activity effectively.

Risk Score 28.8

On-Call Recruitment Challenges

Our firefighter recruitment depends on candidates who live or work near On-Call Stations. However, job opportunities in some local areas of Humberside are limited compared to Yorkshire and the Humber or England as a whole, meaning many potential recruits must travel farther for work. Additionally, low working-age populations around several on-call stations further restrict our recruitment pool. This challenge can sometimes reduce fire engine availability in certain areas, though we implement dynamic measures to minimise the impact and maintain service readiness.

Risk Score 26.2

Fast-Paced Technology Change

Rapid technological advancements are reshaping public sector organisations, presenting both opportunities and challenges. New technologies enable improved efficiency, better data management, and enhanced service delivery, allowing public services to meet the growing expectations of communities. However, the fast pace of change also demands constant adaptation, requiring investments in training, infrastructure, and cybersecurity to protect sensitive data. Public sector organisations often face budget constraints and regulatory requirements that can make it harder to keep pace with private sector innovations. As technology evolves, public agencies must balance modernisation with accessibility, security, and the need to serve all community members effectively.

Risk Score 14.6

Mass Generative AI

The rise of generative AI is transforming various sectors by enabling the rapid creation of content, insights, and solutions across diverse fields. Mass generative AI tools can automate tasks like data analysis, content generation, and customer service, providing organisations with new ways to boost productivity and creativity. However, as generative AI becomes more widespread, it also introduces challenges, such as concerns around data privacy, bias in AI outputs, and the potential spread of misinformation. Public and private sectors alike need to establish guidelines for ethical and responsible use, ensuring AI tools are used to benefit society without compromising trust, accuracy, or security. Balancing innovation with these considerations is essential as generative AI becomes an integral part of daily life.

Other Known Risk

As well as creating a Community Risk Matrix, we have identified other, broader categories of risk that have the potential to impact both our community, incident attendance and our resource planning.

People

Living alone is a significant fire risk. In Humberside, 30% of the households are occupied by individuals living alone. This situation can negatively impact health and well-being, as well as the ability to escape safely in the event of a fire.

Disability is a risk factor in fire incidents, and Humberside has a higher rate of disability benefit claimants compared to the wider Yorkshire and Humber region as well as England. In Humberside, 8.53% of residents are classified as disabled under the Equality Act, which is comparable to Yorkshire and the Humber at 8.10%, but higher than the national average of 7.33%. Furthermore, 27% of households in Humberside have at least one individual with a disability under the Equality Act, which exceeds the rates observed in both Yorkshire and the Humber and England as a whole.

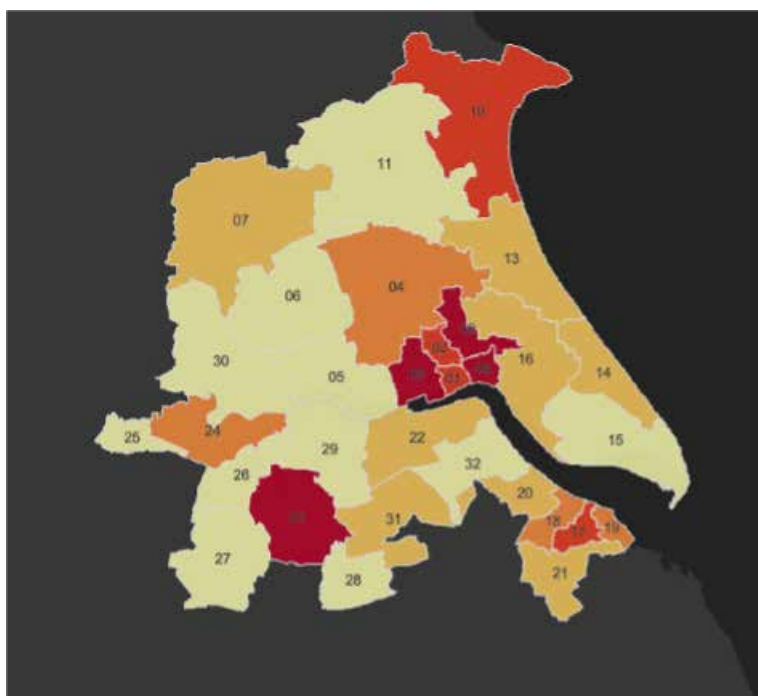
Health, common diseases, and mortality are often worse in Humberside. Self-assessments of health from the 2021 Census revealed that less people in Humberside consider themselves to have very good health compared to Yorkshire and the Humber and England. More people consider their health to be bad or very bad than in the other areas. The rate for people with obesity and for those with high blood pressure is also higher. The standardised mortality ratio is higher than that of Yorkshire and the Humber, as well as the overall national average for all factors considered. If the national average is an index value of 100%, the actual number of cancer deaths in Humberside was 111.7%. This is greater than the percentage for Yorkshire and the Humber, which stands at 106.62%. There are greater numbers of people not working due to poor health in Humberside and self-reported worklessness due to long-term sickness or disability is also higher.

Alcohol poses a significant risk in fires. In Humberside, the Standardised Emergency Admission Ratio (SAR) for an emergency hospital admission specifically for alcohol-attributable harm is 111.65, higher than Yorkshire and the Humber (104.85) and England (100).

Smoking remains a significant risk factor in fires. Cooking appliances cause the most accidental dwelling fires, but smoking is responsible for the most fire fatalities. We expect the rate of smoking-related fatalities to reduce in the years to come due to the reduction in people who smoke or the increase in those who have switched to products with less fire risk such as vapes or electric cigarettes.

Fire Fatality Profile (FFP)

Each year we analyse national fire data to identify the factors that increase the risk of someone dying in a fire. We use a well-established model to score each dwelling based on the likelihood of these risk factors being present. This model incorporates data from the NHS and Experian, with each attribute assigned a weight according to its influence on the outcome. The risk factors we use in the model are smoking prevalence, age, lone living, mobility impairment, alcohol use and housing tenure. The FFP drives our proactive home fire safety visit work. This map displays the number of FFP A premises for the year 2024/25 in each station area. The largest concentration of these premises is in our full-time station areas, indicating that we have a strong capacity to meet the demand. However, there are several on-call station areas with a high or reasonable number of premises that either need support from nearby full-time crews and some that will need resource support of a different kind.



Geography and Places

Humberside, around the Humber Estuary, includes parts of historic Yorkshire and Lincolnshire. The River Humber, formed by the Trent and Ouse, divides the region, which is also bordered by the rivers Hull, Ouse, and Trent. Humberside has a North Sea coastline with sandy beaches, eroding cliffs, and notable areas like Spurn Point. Major roads include the M62, A63, A15 (which crosses the Humber Bridge), and A180. Key towns are Kingston upon Hull, Grimsby, Scunthorpe, and Cleethorpes. Prominent features include the Humber Bridge, Yorkshire and Lincolnshire Wolds, and economic drivers like port facilities, fishing (notably in Grimsby), and agriculture.

The vast size of the area presents challenges not only for our Fire and Rescue Service but also for the residents.

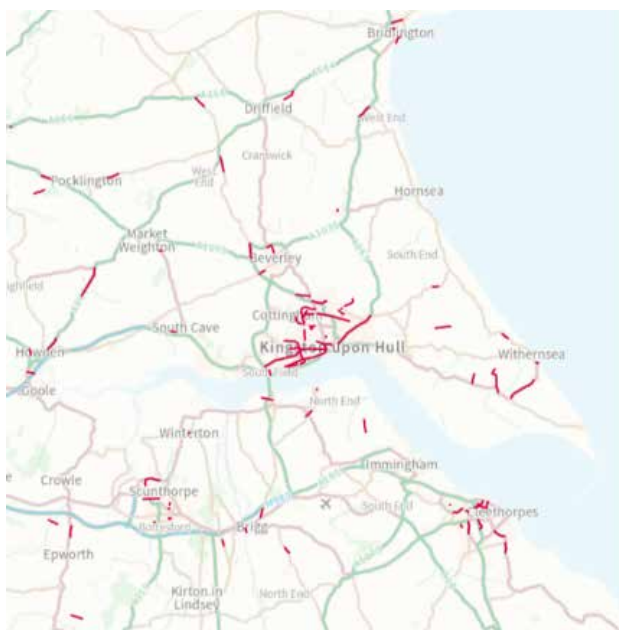
There are challenges in access to key services, community needs, and environmental vulnerability. Travel times to essential services like employment, healthcare, and shopping are longer than in Yorkshire and the Humber and England, potentially leading to heightened road traffic. Humberside's job accessibility score (282) is notably lower than regional and national averages (627 and 698, respectively), pushing residents to travel further for work. The "Access to Health Assets and Hazards" index shows residents must travel longer distances to healthcare and leisure facilities, though they also have less exposure to fast-food outlets and other health hazards.

Community needs are pronounced, with Humberside ranking lower on a community needs index (10,396) than Yorkshire and the Humber (15,002) and England (17,040). In the 2021 Community Life Survey, 64.63% of residents reported a weak sense of belonging, slightly higher than regional and national levels, worsened by pandemic isolation. Community ownership of assets is also lower, with 694.16 assets per 100,000 residents compared to higher figures in Yorkshire and the Humber and England. Furthermore, access to green space is limited, with only 15.40% of households having green space nearby, well below the regional and national averages.

Road Risk

The National Fire Chiefs Council (NFCC) has published a national risk methodology for Road Traffic Collision (RTC) incidents. Determined by set calculations that allocate a score to each carriageway based on the number of collisions for an aggregated set length (so that the longest roads are not always at the top), we have produced a rank list of highways in the Humberside area. This map shows the higher-risk roads in Humberside - longer than one kilometre and has an annual collision rate that is greater than one collision per kilometre per year.

The second map shows the roads longer than 100m where the rate is greater than 0.05 fatal collisions per kilometre per year. Smaller numbers because fatal collisions happen less often than the total number of collisions and often happen near junctions and roundabouts.



Heritage Risk

We have several heritage risks in the HFRS area, including a mix of religious sites, historic market towns, and estate halls in urban and rural settings. Many of these buildings would be irreplaceable should they be destroyed or severely damaged. In Humberside, there are approximately 4,027 listed locations: 162 are classified as Grade I, 229 as Grade II*, and 3,635 as Grade II. Since April 2021, there have been 49 fires at listed locations.

Crime and Deliberate Fire Setting

From June 2023 to May 2024, Humberside's crime rate was 140.3 incidents per 1,000 population, lower than Yorkshire and the Humber's 154.5 but higher than England's national average of 118.1. Certain crimes, like criminal damage and arson, were more common in Humberside. There has been a 24% decrease in arson incidents over the past five years, though the number was unusually high in 2022/23 due to extreme weather. Forecasts predict around 2,360 incidents in 2024/25 and 2,405 in 2025/26.

Type of incident	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	5-Year Change 2019/20 to 2023/24	Trend to 2026/27	24/25	25/26	26/27
Arson (Excluding Prisons)	1574	1964	2488	2729	2661	2402	1822	2507	3078	1837	-24%	Upward	2360	2405	2450

Business

A high percentage of people are employed in heavier industry jobs—such as mining, manufacturing, construction, and agriculture—in Humberside compared to Yorkshire and the Humber, as well as England overall. This has implications in our risk-based inspection programme, which drives our fire safety audits; in ensuring we access the highest risk premises.

High Consequence Sleeping Risk

Fires in care homes and high-rise residential buildings can lead to severe consequences.

Care Homes are included in our Risk-based Inspection Program (RBIP) and are eligible for inspection every three years. We assess the risk using our machine learning methods. Understanding the trend in fires at these premises is crucial, as it allows us to adjust our processes if needed. The trend of fires in care homes nationally has decreased since 2014/15. In Humberside, however, the trend has not followed the same pattern; the rate of incidents has fluctuated significantly. The highest number of incidents occurred in 2010/11 with 14 incidents, while the lowest was in 2015/16, with just 6 incidents. On average, Humberside sees approximately 9.93 incidents in Care Homes per year. The chart shows a z score (allows a comparison of trend for different number scales) for the national picture compared to the Humberside situation.



We include **high-rise residential buildings** in our Risk-Based Inspection Programme, focusing on common areas rather than individual flats (part of our fire fatality home fire safety visit programme). These buildings are selected using a machine-learning model.

Nationally, as well as in Humberside, there has been a downward trend in incidents, followed by a period of stabilisation where the numbers remained mostly flat. Over the past two years, the rate of incidents has been relatively low. Humberside experienced an unusual peak in 2020/21, recording a total of 27 incidents. This spike was primarily attributed to a series of fires involving refuse chutes. While the average number of refuse chute fires in the previous years was six, that particular year saw 11 incidents.

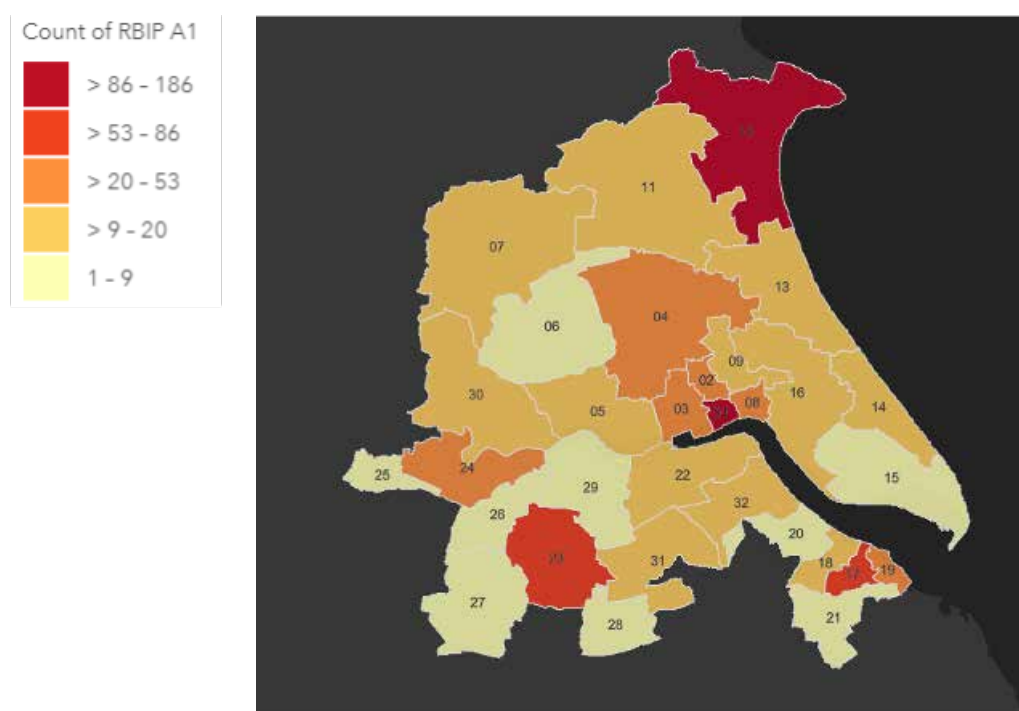


Risk Based Inspection Programme (RBIP)

We have created a model to generate our risk-based inspection programme that is like the FFP. We use a variety of data sets to identify key attributes which increase the risk of a fire. Additionally, we categorise our address lists based on risk consequence levels by dividing our address list into sleeping risks for inspectors (A1) and non-sleeping and less complex buildings for crews (B1). We handle care homes and high-rise premises as one group so that the risk is assessed within this group only, and not swayed by the risk in other premises types. Care homes and high-rise premises are placed into our A1 group.

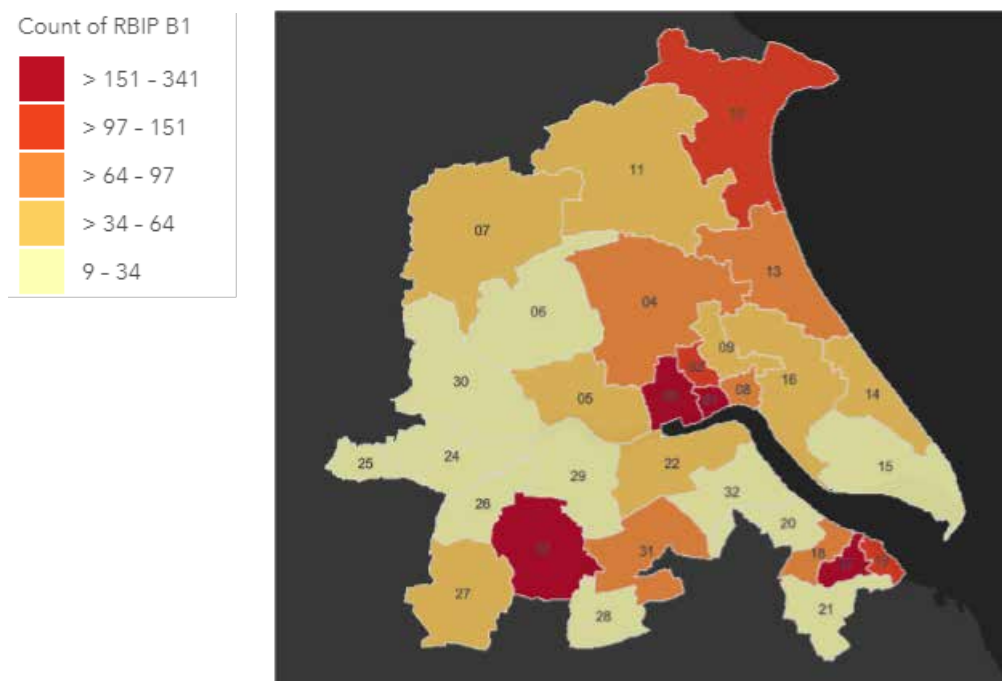
A1 Premises

This map shows the station areas with the highest rate of A1 premises. Hull, Grimsby, Scunthorpe, and Bridlington are the station areas with the most A1-rated premises in the 2024/25 profile.



B1 Premises

This map shows a similar pattern for B1 premises as the A1 locations. The areas with the most premises are Hull, Grimsby, Scunthorpe, and Bridlington.



During a fire safety audit, we assess compliance with fire safety articles under the Regulatory Reform (Fire Safety) Order 2005. We have noticed a rise in non-compliance rates, which could be due to better identification of high-risk properties through machine learning or improved inspector training. However, community-based reasons may also contribute to this increase. The evaluation of the articles between 2017/18 and 2023/24 has shown that some premises have a higher average risk score than others as shown in this table:

Licensed premises are subject to engagement within our B1 process, by crews.

Type of Premises	Average of Score
Licensed premises	23.5
Purpose Built Flats >= 4 storeys	23.4
Another workplace - Catch all category	22.9
Other premises open to the public	22.7
Shop	22.7
Factory or warehouse	22.5
House converted to flat	22.3
Office	21.6
Further education	20.7
School	20.2
Care Home	20.0
Purpose Built Flats up to 3 storeys	19.7
Hotel	19.7
Hospitals	19.4
Other sleeping accommodation	18.9
Hostel	17.6

Enforcement action is a last resort, and we are taking more action in other sleeping accommodations than any other kind of premises. This includes premises such as adult placement centres, boarding schools, caravan and chalet parks, halls of residence, dwellings of multiple occupations (HMOs) houses, and sheltered accommodation.

Incident Trends

The types and frequency of incidents we are called to respond to have evolved. It is an undeniable fact that most incident types that have increased—and are projected to rise further—are not fire-related. Instead, they are associated with societal challenges and operational changes (such as increased collaboration) underscoring the evolving role of the Fire and Rescue Service. We have analysed the trend for types of incidents. The table below shows those that have increased over the past 5 years, what the trend is and how many incidents we predict we will have over the next three years. We are expecting many of these incident types to increase. Special Service incidents are non-fire, non-false alarms and include incidents like road traffic collisions, water rescues etc.

	Year and Total Incidents											Forecast* to 2026/27			
Type of incident	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	5-Year Change 2019/20 to 2023/24	Trend to 2026/27	24/25	25/26	26/27
Special Service - Standby No Action	23	13	8	11	10	5	7	12	13	20	300%	Unchanged or Unstable Trend	19	19	19
Special Service - Assist Other Agencies	66	66	83	110	124	159	241	291	550	625	293%	Upward	685	745	805
Suicide-Related (all incident types)	-	-	-	37	50	72	160	212	163	240	233%	Upward	280	315	350
Arson in Prisons	11	14	31	34	31	18	12	7	5	47	161%	Unchanged or Unstable Trend	21	22	22
Special Service - Advice Given Only	74	77	59	73	63	84	79	120	144	200	138%	Upward	212	224	235
Special Service - Suicide or Attempt	8	22	20	28	20	10	15	19	12	23	130%	Unchanged or Unstable Trend	19	19	19
Special Service - Rescue of Person with Obesity	33	50	46	63	69	54	71	87	105	111	106%	Upward	112	120	128
Special Service - Effect Entry or Exit	260	418	551	599	602	564	749	918	946	1087	93%	Upward	1106	1187	1269
Special Service - Medical Incident (Excluding falls)	34	74	69	65	83	75	74	109	159	130	73%	Upward	136	146	157
Special Service Hazardous - Materials incident	5	41	24	41	29	23	29	27	35	35	52%	Upward	38	37	40

	Year and Total Incidents												Forecast* to 2026/27			
Type of incident	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23	23/24	5-Year Change 2019/20 to 2023/24		Trend to 2026/27	24/25	25/26	26/27
All Special Service Incidents	1875	2109	2342	2557	2590	2907	2769	3485	3677	4167	43%		Upward	4149	4380	4612
Fires at Waste Processing Sites	18	23	25	24	38	30	30	37	42	43	43%		Upward	49	48	47
Falls Response	-	250	532	1034	1304	886	992	863	1092	1260	42%		Upward	1335	1420	1505
Deliberate Fires in Commercial Premises	59	73	89	83	87	65	41	51	57	86	32%		Downward	82	80	79
Special Service - Removal of Objects from People	145	150	140	154	154	180	159	219	238	236	31%		Upward	248	259	270
False Alarm Malicious (Attended and not)	268	303	258	319	377	196	107	165	204	247	26%		Downward	161	148	135
Special Service - No action (not a false alarm)	148	210	345	371	375	435	448	536	528	540	24%		Upward	593	635	678
Special Service - Road Traffic Collisions	428	460	492	481	498	438	320	437	480	516	18%		Unchanged or Unstable Trend	452	452	453
Special Service - Other Transport incidents	39	48	56	56	64	64	40	74	55	73	14%		Unchanged or Unstable Trend	68	71	73
Special Service - Spills and Leaks	127	168	150	160	156	159	145	139	192	176	11%		Unchanged or Unstable Trend	174	178	181
Emergency First Responder (including over border response)	590	5923	4840	1861	1478	1889	1287	1917	1180	2040	8%		Downward	1337	1124	911

Emerging Risk

Accidental Dwelling Fires

Anecdotal evidence from our teams has suggested a theory regarding properties in disrepair—specifically, that individuals who have died in fires were often living in poorly maintained accommodations compared to other dwellings in the same area. Our Fire Fatality Profile (FFP) is a well-established process for managing the highest-risk accidental dwelling fires, using extensive national data to identify key factors that increase the likelihood of fire-related deaths. Recently, we have observed a demographic shift, with a younger population - predominantly male - experiencing serious injuries or fatalities in fires, distinct from our typical older demographic addressed by the FFP.

Analysis has shown a correlation between fire incidents, housing tenure (privately rented), and the indices of deprivation. This presents a strategic opportunity to focus our intervention efforts on the identified younger (male) demographic through a targeted, area-based approach, complementing our ongoing FFP activities.

By examining the rate of Accidental Dwelling Fires (ADFs) alongside three Experian Mosaic Groups with a high rate of privately rented dwellings (K,J and L), we applied spatially Constrained Multivariate Analysis at the Lower Super Output Area (LSOA) level. This method resulted in the creation of six clusters within each Local Authority Area, which were then used to select one target LSOA for each full-time crewed area in Humberside as a trial approach to see if we can identify and support these people at risk in the community. The LSOAs selected for the trial are:

Summary Information about One Target LSOA in each District									
District	LSOA Code	LSOA Name	Count of J Group	Count of K Group	Count of I Group	Total Dwellings	Top 20% England? ¹	ADF Over Index? ²	IMD Decile ³
Hull	E01012891	Boulevard & St Andrew's Quay	721	248	37	1006	Yes	Yes (over 3 times higher)	1
North Lincolnshire	E01013330	Scunthorpe Central & Crosby	752	131	29	912	Yes	Yes (Nearly 3 times higher)	2
East Riding of Yorkshire	E01013000	Goole East	539	219	116	874	Yes	Yes (Almost twice as high)	1
East Riding of Yorkshire	E01012931	Bridlington Hilderthorpe	246	25	67	592	Yes	Yes (over 3 times higher)	1
North East Lincolnshire	E01013221	Grimsby West Marsh	509	321	81	911	Yes	Yes (Over 4 times higher)	1

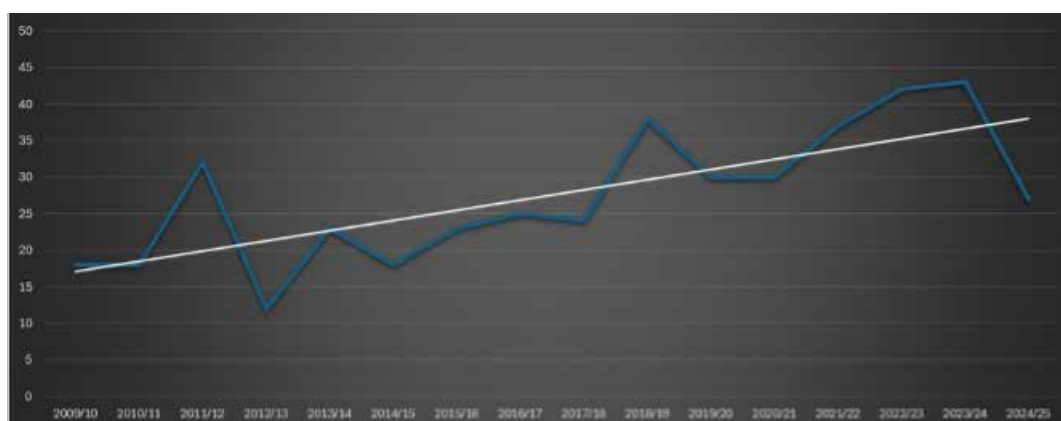
1 - Top 20% in England for the number of privately rented dwellings

2 - The LSOA over indexes for the number of ADFs compared to the number of dwellings, i.e. the number of ADFs is higher than we would expect for the number of dwellings.

3 - Indices of deprivation decile (1 is the 10% most deprived)

Fires at Waste Sites

Fires at waste and recycling sites, as well as those occurring during transit on lorries, are increasingly seen as a growing national concern. This is due to the wider use and improper disposal of lithium batteries, which can ignite or explode when damaged. The chart below shows incidents in Humberside showing that the upward trend is reflected here. Additionally, there is concern regarding the regulation of the waste sector, with large piles of waste often left unprocessed due to business failure or neglect. This has significant environmental implications.



Demand and Resource Modelling

We have developed a model to assess demand in Humberside by analysing incident counts, appliance deployment, crew numbers, and response times. This model scores 1 km by 1 km grid tiles to provide a vulnerability rating for the region.

From January 2013 to December 2023, Peaks Lane and Central stations showed the highest demand, while the lowest was in the on-call areas of Kirton, Crowle, Snaith, Waltham, and Patrington. Notably, 66.55% of the total vulnerability score comes from ten full-time station areas, excluding Goole and Immingham East. The vulnerability score reflects both incident demand and our response capabilities.

Station	Total Vulnerability Score	% of Humberside Vulnerability
17 - Peaks Lane	74067.02	11.4%
01 - Central	73873.31	11.4%
23 - Scunthorpe	56582.13	8.7%
03 - Calvert	47237.45	7.3%
02 - Clough Road	44666.02	6.9%
08 - East Hull	44101.67	6.8%
10 - Bridlington	31120.46	4.8%
09 - Bransholme	30931.79	4.8%
04 - Beverley	30767.64	4.8%
16 - Preston	21709.63	3.4%
05 - Brough	20394.68	3.1%
11 - Driffield	16470.25	2.5%
20 - Immingham East	15509.09	2.4%
07 - Pocklington	14901.62	2.3%
22 - Barton	13452.82	2.1%
31 - Brigg	13055.18	2.0%
24 - Goole	12972.96	2.0%
13 - Hornsea	11767.82	1.8%
30 - Howden	11542.98	1.8%
06 - Market Weighton	9034.48	1.4%
27 - Epworth	8650.43	1.3%
19 - Cleethorpes	8226.17	1.3%
14 - Withernsea	7462.02	1.2%
15 - Patrington	6107.16	0.9%
21 - Waltham	5872.06	0.9%
29 - Winterton	5825.96	0.9%
25 - Snaith	4345.77	0.7%
26 - Crowle	3821.98	0.6%
28 - Kirton	3247.66	0.5%

We have established a high-demand threshold of a score of 20 or more for any individual tile. The table below illustrates how this criterion affects the ranking of high-demand tiles based on their percentage share by station. Central station has the highest number of high-demand tiles, with the tiles for Spring Bank West and Hull Royal Infirmary consistently scoring as vulnerable. The same on-call stations appear at the bottom of the table. Notably, 70.62% of vulnerability scores that meet the high-demand threshold of 20 or more are located within the full-time station areas.

Station	Percentage Vulnerability - High Scoring Tiles
01 - Central	14.16
17 - Peaks Lane	12.03
23 - Scunthorpe	8.45
08 - East Hull	8.03
02 - Clough Road	7.51
03 - Calvert	7.28
09 - Bransholme	5.53
04 - Beverley	4.66
10 - Bridlington	4.29
16 - Preston	2.92
05 - Brough	2.92
11 - Drifffield	2.31
07 - Pocklington	2.07
20 - Immingham East	1.84
31 - Brigg	1.78
22 - Barton	1.77
13 - Hornsea	1.66
30 - Howden	1.54
24 - Goole	1.49
19 - Cleethorpes	1.2
06 - Market Weighton	1.12
14 - Withernsea	1.08
27 - Epworth	0.88
15 - Patrington	0.88
21 - Waltham	0.7
29 - Winterton	0.65
25 - Snaith	0.47
26 - Crowle	0.45
28 - Kirton	0.32

We are partnering with Parallel a local software development consultancy specialising in interactive mapping, data visualisation, and insights. Their software solutions assist major organisations, including the NHS and local authorities, in making informed decisions on service and estate planning. These decisions are based on various factors such as population demographics, levels of deprivation, accessibility, clinical activity, environmental considerations, and more.

Parallel is also the provider and developer of the Department of Health and Social Care's SHAPE tool—an evidence-based, web-enabled application that supports and informs the strategic planning of services and assets across the public sector.

Our collaborative research question is:

Are HFRS stations and resources in the correct location to service the community's risk and incident demand?

