



IRMP 2021-25 Risk Review – Environment

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Executive Summary

- Extreme weather events and predicted weather trends will inevitably increase incidents.
- The widespread river flooding of February 2020 show-cased the implications of resourcing a flooding event, sustained over several weeks. This included supporting the multi-agency response and its command structure as well as maintaining business as usual.
- The County is vulnerable to wildfire with 80% of agricultural land. Uncertainty in agriculture and the diversification of land use will increase the rural fire threat.
- RTC numbers in rural Shropshire may increase as more tourists and support services are attracted to the area. The road network in the south of Shropshire has the highest fatality data and this is where the major tourism of the Shropshire Hills and Ludlow is located.
- Likely increase in support to Partners such as Police and Ambulance to support rescues in rural areas. Church Stretton crews assist partners with injured walkers/cyclists in popular tourist areas like Cardin Mill Valley.
- Increasing use of River will attract life risk and people unfamiliar with the associated risks.
- SPATE conditions will pressurise resources, including Fire Control

- Partners will continue to become increasingly drawn to our resources, e.g. supporting missing persons searches, transporting key workers to work during the snow. This may also be replicated as and when the Voluntary Sector reaches maximum capacity
- The development of operational planning and sharing risk information via RMS is key to mitigating Heritage risk in Shropshire.
- We can expect ever-increasing scrutiny in our carbon footprint including operational and business as usual activities.

Findings.

Natural Environment.

The countryside ranges from the gently undulating landscape in the north through low lying fertile valleys of the River Severn catchment to distinct hills and open, windswept moorlands in the south.

The Shropshire Hills is a designated AONB and covers 310 square miles, each year it's accessibility and outstanding natural beauty attracts thousands of visitors¹. The Shropshire Hills boasts over 90% of the county's open access land including the majority of Shropshire hills. This popularity has led to congestion and challenge. The National Trust, Carding Mill Valley site, Church Stretton estimate that over 1,000 cars were being turned away when the car park became full during 2016.

The county also has multiple walking and cycling routes including one of the largest Rights of Way networks in the country. The county hosts a diversity of geology, wildlife including natural and industrial archaeology.

Facts

- 2 UNESCO world heritage sites*. Ironbridge, Pontcysyllte Aqueduct and Canal²
- 3 National Nature Reserves; Stipperstones, Whixall Moss, Wem Moss³
- 64 Local Nature Reserves

¹ Shropshire Hills Sustainable Tourism Strategy 2017-2022

² [United Nations Educational, Scientific and Cultural Organization \(UNESCO\)](#)

³ <https://www.gov.uk/government/publications/shropshires-national-nature-reserves>

- 140 Sites of Special Scientific Interest (SSSIs) including Attingham Park visited by over 511,687 people in 2018/19, placing it as the 3rd most popular National Trust location in the UK.⁴

Of the 32 river and brooks in Shropshire only the River Severn, the UK'S longest river is navigable⁵. The river provides public water to six million people inclusive of exports to other catchments.⁶ The County has an abundance of canals and other watercourses that were and, in some cases, still are essential for providing water for agriculture, personal consumption, as well as water heritage working waterwheels resulting from previous industry. The Ironbridge at the Ironbridge Gorge is a UNESCO world heritage site but is also an area subject to the significant land movement.

*The [Pontcysyllte Aqueduct and Canal](#) World Heritage Site and buffer zone is controlled by four Local Authorities (including Oswestry Borough Council and Shropshire County Council), a range of relevant Welsh and English national bodies, and by UNESCO Cymru Wales. The majority of the World Heritage Site lies within Wales, however at Gledrid Bridge, Rhoswel in Shropshire the Site is covered by Shropshire Fire & Rescue Service. Shropshire and North Wales Fire & Rescue Services frequently support each other at incidents in this border area.

Extreme Weather

Global warming affects all of us. And we can already see changes here in Shropshire - in weather, landscapes and even in the behaviour of wildlife⁷. More can be expected as temperatures continue to rise. Such changes are increasing the frequency and severity of extreme weather events such as; storms and gales, low temperatures, heavy snow, heatwaves and drought.⁸ The impact is on both the natural environment and local communities with disruption, damage to property and injury or loss of life. The Ironbridge Gorge is susceptible to ground movement a risk that is exacerbated by the rain. This risk is recognised through LRF and local authority planning⁹. Long term weather predictions from the Met Office indicate a continuation of extreme weather events¹⁰.

Flooding

Historically Shropshire has been subject to considerable flooding from the River Severn and its tributaries, however, flood defences in Shrewsbury and Ironbridge have significantly reduced the impact of river flooding in both towns. February 2020 saw extremely high river levels on the Severn which threatened to top and overwhelm

⁴ [Natural England - Designated Sites](#)

⁵ <http://shropshirehistory.com/comms/watercourses.htm>

⁶ <https://shropshire.gov.uk/media/5936/shropshire-outline-water-cycle-study-report.pdf>

⁷ <https://www.woodlandtrust.org.uk/blog/2019/04/trees-and-climate-change/>

⁸ For further information on flooding and severe weather, see [West Mercia LRF - Community Risk Register 2016-19](#)

⁹ Further information can be found on land stability see, <https://www.telford.gov.uk>

¹⁰ <https://www.metoffice.gov.uk/weather/learn-about/climate-and-climate-change/climate-change/index>

these defences. Although considerable damage resulted from the flooding the defences generically held firm.

In contrast to the slower build-up of river flooding and as extreme weather patterns become more frequent, flash flooding or surface water flooding is becoming more commonplace.¹¹ The rural nature of Shropshire means a reliance on the road network with the main routes around the area vulnerable to disruption from severe weather.

Flooding and water rescue are frequently categorised together, but both are different and often independent. Water rescues frequently happen at times of no flooding. The methodology for responding and preventing both types of incident is different.

Pumping out, advice, evacuation and other activities such as isolating electrics are our main flood-based incident activities.

We target our resources to mitigate against flooding and other weather-related events. Weather-related flooding rarely occurs in isolation, in spate conditions in October 2019 we received over 200 calls during a single day. To manage the challenge of SPATE conditions we will triage 999 calls to prioritise life risk. For this reason, it would not be realistic or transparent for SFRS to commit spate flooding response to the response standard.

Spate conditions will bring a high volume of incidents, in such circumstances we are committed to providing the best guidance, information and reasonably practicable attendance.

Water rescue incidents occur throughout the year regardless of weather-related issues such as flooding. People and animals end up in the river or other watercourses often unintentionally. Mental health is also a factor in people ending up in the rivers of the County as is the ever-expanding night-time economies of Shrewsbury and Ironbridge.

The SFRS response to such incidents is part of our response standard and performance against this standard is measured. Preventative initiatives are key to reducing the number of water rescue incidents, Team Shrewsbury a partnership of key stakeholders has been pivotal in improving the River Severn safety infrastructure in Shrewsbury.

The flooding and water rescue data (see performance risk review) shows interesting variations between Bridgnorth and Ludlow two market towns on two different rivers. Bridgnorth had a ratio of over 2:1 water rescue to each flooding incident whilst Ludlow had a ratio of just over 1 water rescue to every 2 flooding calls. Bridgnorth has greater river use and access, primarily tourism especially caravan sites around the river. This data shows the link between water rescues and river usage rather than flooding susceptibility.

¹¹ For further information on flooding and severe weather, see [West Mercia LRF - Community Risk Register 2016-19](#)

Storms Ciara, Dennis and Jorge caused extreme river flooding across Shropshire in February 2020. The flood defences in Ironbridge and Shrewsbury were pushed to their limits as the River Severn reached record levels. All Shropshire Fire and Rescue fire stations were involved in the response to this Major Incident, their actions included:

- Over 300 emergency calls received/discharged in 24 hours.
- 14 people rescued from water.
- Multiple animal rescues.
- Multiple joint attendances with Hereford & Worcester FRS.
- Support given to Local Resilience.

Wildfire/ Heatwaves

It will come as no surprise to learn that hot weather contributes to outdoor fires, this hot weather often comes during holiday periods in summer and Easter where more children and adults spend leisure time outdoors.

These outdoor fires are categorised; however, the recording of wildfire has not been accurate with the definition not widely understood.

The large national fires have captured media and public attention; crews from Shropshire have supported colleagues across the country in fighting large wildfires such as Winter Hill in 2019.

Fortunately, Shropshire has not experienced a significant wildfire since Grinshill in 2013, however, the wide expanses of Shropshire's rural area combined with high tourist numbers make the likelihood of such an event significant. Historically, SFRS has attended numerous fires classed as "Grass Fires" or "Fire in the Open". The Grinshill fire was classed as a Fire in the Open. This incident would now be recorded as a wildfire.

The reporting accuracy is not sufficient to identify trends in such incidents, however, moving forward this measurement will improve as incident commanders receive training and improve awareness of what constitutes a wildfire.

Wildfires are:

- Sporadic in nature. Church Stretton had a wildfire scale fire in March while the south of England was snowbound.
- Occurrence and impact linked to weather patterns; this is not just influenced by heatwaves but also by dry winters
- Level of risk and impact varies
- Resource intensive
- They have a significant impact on FRS and local communities
- The number and severity of wildfires will increase with climate change

The following work by the NFCC and DEFRA a national definition of Wildfire has been established and this change in terminology now states the following;

A wildfire will meet one or more of the following criteria:

- Involves a geographical area of at least one hectare (10,000 square metres)
- Has a sustained flame length of more than 1.5 meters
- Requires a committed resource of at least four fire and rescue service appliances/resources
- Requires resources to be committed for at least six hours
- Presents a serious threat to life, environment, property and infrastructure
- Taking these criteria into consideration we can now establish that a vast majority of “Grass Fires” & “Fires in the Open” attended by SFRS crews could realistically be classified as a Wildfire.

Due to the Nationally Defined Wildfire Criteria, we can acknowledge that Shropshire, Telford & Wrekin have a Wildfire Risk within our county.

The Service recognises this risk and is providing operational staff with appropriate knowledge, training and understating of wildfire incidents and how to manage and deal with them effectively.

How we respond; what vehicles, kit and PPE are also areas of review. (see Response Risk Review)

Water

Heatwaves have also led to water outages impacting on whole communities, this has left vulnerable people without water and firefighters implementing contingency plans to ensure capabilities are maintained.

Hot weather also makes watercourses more attractive to leisure seekers increasing the risk of people drowning. The likelihood of such a tragedy increases when hot weather coincides with school holidays.

Snow

In December 2017 and again in March 2018, during the easterly polar air mass known as the “Beast from the East” we supported requests from our NHS partners to help get key workers to Hospital. Business, as usual, was maintained however contingency planning recognises the risk of our key workers not being able to respond.

Missing Persons.

MisPers can be young or old but are considered 'high risk' by the Police at the time of reporting and require an immediate defined search around their last known whereabouts. The nature of such searching means firefighters are placed in the outdoor environment both rural and urban

Association of Chief Police Officers (ACPO) High-Risk MisPer definition:

"The risk posed is immediate and there are substantial grounds for believing that the subject is in danger through their own vulnerability, or the risk posed is immediate and there are substantial grounds for believing the public is in danger".

This searching for, and rescuing of, high risk missing persons is not new to the Service and has historically been carried out whenever requested, but perhaps not as widely and on as many occasions as possible, and not in a structured manner.

Operational crews have predominantly undertaken the searching for MisPers, and this is reflected in the Fire Services Act 2004, which allows a Fire and Rescue Authority to take action in a situation, which causes or is likely to cause one or more individuals to die, be injured or become ill.

The skills, training and equipment provided to firefighters are invaluable when searching for a missing person who presents a high risk of death or serious harm to themselves. These attributes are considerably enhanced when working in partnership with other agencies who bring their own unique skillset to this incident type.

The sparsity of Shropshire makes assisting Police with missing persons searches a challenge. The variety of our fleet and the ability to get boots on the ground quickly, has contributed to an increasing number of successful outcomes. The use of social media technology such as "what 3 words" app is innovative support that is proving successful at such incidents.

Outdoor Incidents; Summary

Many of these types of outdoor incidents require a specialist response. The Service has boats and equipment available to assist for water rescue and flooding support. To meet the demands of Shropshire's terrain and sparsity, there are a fleet of 4WD Incident Support Unit vehicles located strategically around the county, in addition, Church Stretton has a PINZGAUER multi-terrain vehicle. Two water bowzers plus 2 high volume pumping units also enhance our capability to tackle wildfires in the countryside. These incidents can become large and protracted and may require substantial resources over a lengthy period, this can have a significant effect on firefighters. The Service also works closely with many other agencies through the West

Mercia Local Resilience Forum¹² to help communities be prepared in the event of an emergency.

‘Are our water incidents increasing? If so where?’

Our incident data provides an overview of operational boat deployments, water rescues and flooding incidents:

	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Totals
Boat Deployments	24	36	27	39	36	59	221
Water Rescues	21	18	22	22	22	43	148
Flooding Incidents	35	44	63	46	86	174	448
Totals	80	98	112	107	144	276	817

Across the three incident types combined, there was a general increasing trend across the 5-year period, culminating in a dramatic spike in 2019/20 caused by two separate occasions of ‘spate’ conditions. This spike can also be seen from the yellow highlighted figures; the highest recorded total for each incident type for the 5-year period observed.

If we consider 19/20 to be anomalous, the previous 4 years saw boat deployments increase by 50%, water rescues remain essentially static and flooding incidents more than double (+143%). There is some assumed synergy between flooding and boat deployments; the more floods there are, the more we need to use the boats (for access, checking properties etc.), but this doesn’t seem to increase the number of people needing to be rescued (by boat or otherwise).

In terms of where our incidents have occurred, separate yearly hotspot maps for flooding incidents and water rescue incidents are available, plus 5-year maps showing these incidents separately and combined. A 5-year boat deployments map is also available. The size and resolution of these maps make tracking the changes challenging, however, the most obvious changes can be seen during the 2019/20 period as spate conditions occurred.

Climate Change.

The environment of Shropshire is vulnerable to a changing climate therefore the communities in Shropshire are also vulnerable. Shropshire’s economy is dependent on agriculture, rural industry and tourism, industries reliant on the existing climate. In Shropshire, long term climate change trends mean hotter, drier summers and milder

¹² [West Mercia Local Resilience Forum](#)

wetter winters and an increase in extreme events across the seasons, including intense rainfall, extreme cold and heatwaves.

Average annual maximum temperatures are expected to rise by 4°C by 2080 although daily maximums could rise by around 6.6°C. By 2080 summer rainfall is expected to decrease by 25% whilst winter rainfall will increase by 24%.¹³

Reducing our carbon emissions enough to avoid the worst impacts of climate change will require a transformation in public sector service delivery, and it's essential that this transition to a low carbon future is transparent. Telford & Wrekin Council have committed to ensuring its activities and operations are carbon neutral by 2030. Single-use plastics will be removed from the Council's operations and activities by the end of 2023. All Council libraries have now signed up as Refill Stations which means that anyone can now go in and ask for a free water refill.

SFRS have adopted an environmental policy to ensure that we actively manage our activities to minimise any negative environmental impact. We will take all measures reasonably practicable to improve our environmental performance. Our performance is assessed using an environmental management system to ISO1400:2004; and is reported annually through our statement of assurance (Annual Review), which is available on our website.

As of January 2020, the Service has 20 electrical vehicle charging points located around the county with 16 available to the public, making us one of the leading providers in Shropshire.

SFRS must act and commit to taking positive steps to reduce negative impacts we may have on climate change. We will work with our partners to communicate inspiring and effective initiatives and help to create and support progressive national policies. We must strengthen our Service's resilience to climate change and adapt to ensure that the communities we serve are also resilient to climate change. We will commit SFRS to a sustained, comprehensive and accountable response to the challenge of climate change and encourage similar action amongst those we work with.

Preparing infrastructure and resources, engage with policymakers and understand the risks of wildfire, flooding and extreme weather events. This will include working in partnership with landowners to create defensible forestry spaces, understanding managed burns. Resourcing the Protection Team to provide challenge and guidance to planning in areas of flooding or high vulnerability to wildfire.

Develop incident command and disaster management capabilities for extreme weather events. Understanding the impact of extreme weather on fire crews and the communities. Enhancing equipment and providing appropriate PPE to support those engaged in these types of protracted incidents.

¹³ <http://ukclimateprojections.defra.gov.uk/content/view/390/499/>

Heritage and Historic Environment

Shropshire is rich in heritage, from the birthplace of Charles Darwin in Shrewsbury to the Ironbridge Gorge, a UNESCO World Heritage Site. Attingham Park is the third most visited National Trust location in the UK¹⁴. Shropshire is home to the world's first skyscraper, Ditherington Flax Mill, situated just outside of Shrewsbury and built-in 1797.

Shropshire has 6,993 listed buildings and sites consisting of;¹⁵

- 121 Grade I - These are classed as properties or sites of exceptional interest, sometimes considered to be internationally important.
- 490 Grade II* - These are classed as properties or sites particularly important with more than special interest.
- 6,382 Grade II - These are classed as properties or sites nationally important and of special interest.
- 433 Scheduled Ancient Monuments¹⁶
- 34 Registered Historic Parks and Gardens (including 3 which are cross-border)
- 1 Registered Historic Battlefield.
- 127 Conservation Areas in Shropshire together with the wealth of non-statutory undesignated heritage assets (c 35,000) recorded on the Historic Environment Record¹⁷.

Losing any historic building or structure to fire, storm or flood would be a significant loss to local, and in some cases national, heritage. Many of the buildings and structures have unique features in their construction and many contain important and irreplaceable artefacts and works of art. Many are timber-framed and liable to a faster spread of fire.

Tackling incidents in historic buildings starts with understanding their unique nature, their construction methods and their important contents. The Service records all Grade I and Grade II* listed buildings in Risk Management System (RMS) with plans to ensure firefighters understand the particular risks and are aware of how best to control the spread of damage and to salvage important objects, where required. The Service is also a member of the regions Heritage Working Group.

¹⁴ National Trust Corporate Plan 2018/19 <https://nt.global.ssl.fastly.net/documents/201819-annual-report.pdf>

¹⁵ [British Listed Buildings - England](#)

¹⁶ [Ancient Monuments - England](#)

¹⁷ Historic Environment Record - <https://shropshire.gov.uk/environment/historic-environment/>

Other Environmental Factors

HAZMATS

Accidents involving hazardous chemicals and other dangerous substances, which can cause serious injuries to people and damage to the environment can occur almost anywhere. They are especially prevalent in agricultural and industrial locations. In certain situations, people may need to be evacuated from their homes and businesses prevented from trading. Pollution from these incidents may also adversely affect the local environment, watercourses and air quality, and contamination could spread to agricultural land and wildlife populations. The impact on both residents and tourists could be significant.

Tackling such incidents often requires specialist equipment and training, to minimise the impact of environmental pollution, clear up spills and leaks, and ensure that runoff water from firefighting activity is contained as far as possible. The Service works closely with the Environment Agency and the West Mercia Local Resilience Forum in addressing these incidents and maintains plans for many industrial sites in the event of an emergency¹⁸. This risk information is provided to Crews via the Risk Management System.

In just over 66% of all HAZMAT incidents for the last 5 years of data, we have mitigated damage to the environment through containment activities. We have and continue to work with partners, especially the EA to plan for specific risks. This working was most notably carried out in Much Wenlock to develop prevention and response plans at a specific site.

When is a HAZMAT incident recorded as such? This is variable. For example, a commercial fire with an asbestos roof may well be recorded as a commercial fire rather than a HAZMAT incident. The data also shows (see performance review) that carbon monoxide incidents are often reported as a HAZMAT incident. This, in reality, means the containment percentage is a lot higher than the 66% recorded as carbon monoxide incidents will rarely produce water run-off.

¹⁸ See West Mercia Community Risk Register [West Mercia LRF - Community Risk Register 2016-19](#)

Map showing Shropshire Hills Area of Outstanding Natural Beauty.



Shropshire Tourism Map.



Map of River Basin and Water Table for Shropshire

