Hereford & Worcester
Fire Authority

Community Risk Management Plan 2021-2025

Supporting Documents

CRMP 2021-25 Risk Review

Environment

CRMP 2021-25 Risk Review – Environment

Natural Environment

The Service area covers the largely rural counties of Herefordshire and Worcestershire, with extensive areas of unspoilt countryside, farmland and fruit orchards. In particular, some 95 per cent of Herefordshire is classified as predominantly rural. The high quality of the rural environment is reflected in three national Areas of Outstanding Natural Beauty (AONB) designations in the area: the Malvern Hills AONB and parts of the Cotswold and Wye Valley AONBs.[1]

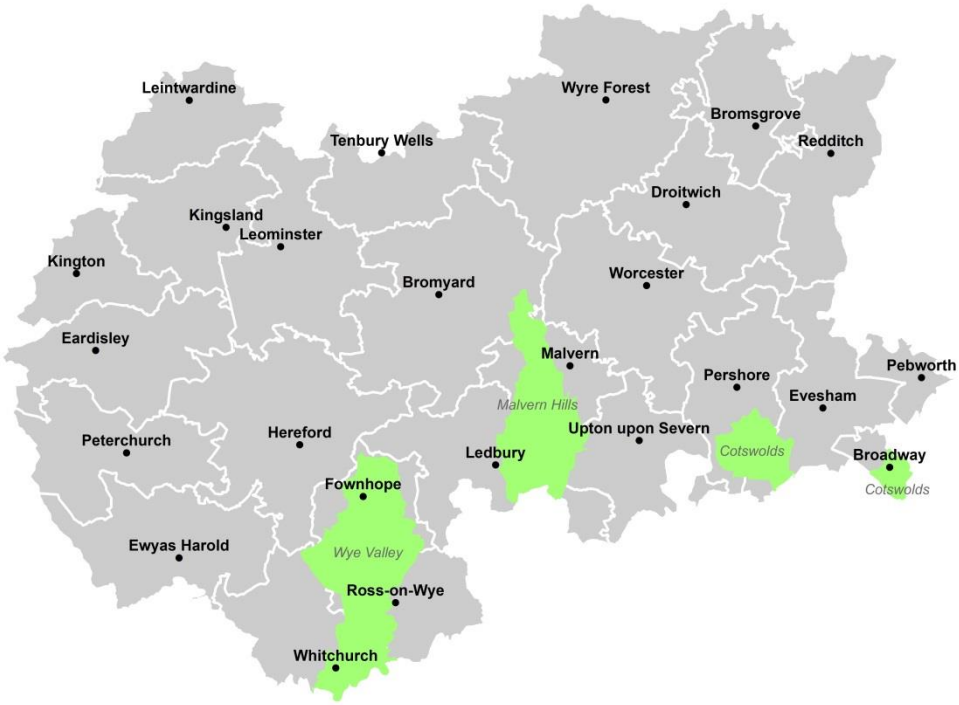
The green space across the two counties is relatively accessible and an important asset for residents, businesses (particularly tourism) and recreation. There are also major urban areas including the cities of Hereford and Worcester, a number of market towns such as Leominster and Evesham and the more populated districts in the north of Worcestershire extending towards the much larger Birmingham conurbation.

In addition to the three AONBs, there are seven National Nature Reserves (NNRs), which aim to protect important habitats, species and geology and provide opportunities to learn about nature conservation. Three are in Herefordshire[2] – Downton Gorge on the Herefordshire-Shropshire border, Moccas Park and The Flits, both to the west of Hereford. The four NNRs in Worcestershire[3] are at Bredon Hill to the south of the county, Chaddesley Woods between Bromsgrove and Kidderminster, Foster's Green Meadows near Bromsgrove, and Wyre Forest to the west of Bewdley.

There are also a further seven Local Nature Reserves (LNRs) and 77 Sites of Special Scientific Interest (SSSIs) in Herefordshire, while Worcestershire has 29 LNRs and 113 SSSIs.[4]

[1] Landscapes For Life - AONBs
[2] National Nature Reserves - Herefordshire
[3] National Nature Reserves - Worcestershire
[4] Natural England - Designated Sites

Map 1 - Areas of Outstanding Natural Beauty



The UK's longest river, the River Severn, runs down through the length of Worcestershire and is fed by three main tributaries, the Warwickshire Avon, the River Teme and the River Stour. The River Wye is the UK's fifth longest river and runs through Herefordshire from Mid-Wales to the Severn Estuary passing through Hereford, Ross-on-Wye and Symonds Yat. The river valleys are characterised by woodland and open farmland on rolling hills leading to broader, flatter floodplains as they get closer the Severn Estuary. Along with many other smaller rivers and brooks the river network, valleys and plains provide valuable natural habitats for wildlife as well as being important tourist destinations.

Map 2 - Main River Network and Floodplains

Risk Factors

With increasing global temperatures, the UK is experiencing an increase in the frequency and severity of extreme weather events. Among the most serious events are storms and gales, low temperatures, heavy snow, heatwaves, drought and flooding.[5] These can have a severe local impact on both the natural environment with the potential loss of valuable habitats, and on local communities with disruption, damage to property and, occasionally, injury and loss of life. The outlook for Herefordshire and Worcestershire shows a continuing pattern of warmer, drier summers, warmer, wetter winters and more periods of intense rainfall and storms. With significant areas of wide, low-lying river valleys across both counties, the risk of flooding (including flash flooding) is likely to increase.

The two counties are no strangers to extreme weather. The storms of 2007 caused widespread damage to trees and buildings and significant flooding as a result of rivers overflowing combined with excessive rainfall. Heavy snowfall and very low temperatures in the winters of 2010 and 2011 caused school closures and power outages with treacherous road conditions and major disruption to transport and essential services. Nationally, in 2003 especially, the hot summer is estimated to have resulted in excess deaths, mainly among vulnerable people. Hot weather and droughts can also lead to wildfires, which can have a devastating impact on large expanses of countryside. It also brings more people into the countryside for relaxation and recreation, but can also lead to increases in accidental (and sometimes deliberate) outdoor fires, and the temptation to stray from designated

[5] For further information on flooding and severe weather, see West Mercia LRF - Community Risk Register 2020

paths or to cool off and swim in rivers, lakes and quarries can have serious, life-threatening consequences.

Over the last decade, the Service has seen a correlation between sharp, short-term increases in incident numbers linked directly to extreme weather events. These have subsequently had a significant impact on overall incident numbers year on year, although our operational activities have been focused within short time-frames as opposed to being spread out across the year.

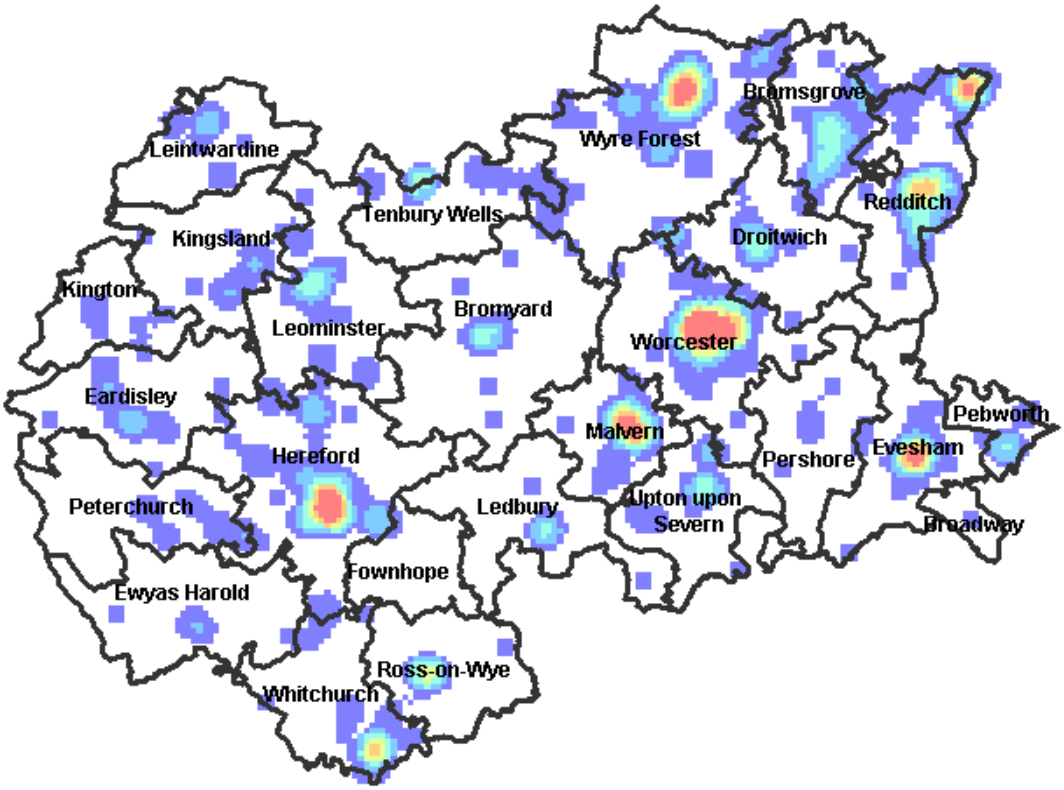
Flooding and water related incidents

In the last five years (2015/16 to 2019/20), the Service attended 750 flooding incidents,[6] the majority of which involved flooding in people's homes (534 incidents or 71 per cent). The Service rescued eight injured casualties in these incidents. A further 126 people were rescued without injuries.

Over the same period, the Service also attended 426 water rescue incidents, the majority of which involved rescuing people from vehicles stranded in moving or rising water (127 incidents or 30 per cent). A further 116 incidents involved rescuing one or more persons rescued from rivers or canals (27 per cent). Of the 426 water rescues, one in four (105 incidents) were along the River Severn and 70 were near the River Wye. There were 75 casualties, including 27 fatalities and 48 people rescued with injuries. The majority of fatalities and injured people (80 per cent) involved rivers or canals. A further 417 people were rescued without injuries. The Service also attended 172 incidents involving animal rescues from water or mud, most of which (65 per cent) involved rescues from river/canal or lake/pond/reservoir.

[6] It should be noted that 354 (47 per cent) of the 750 flooding incidents occurred in 2019-20, when the UK was badly affected by three major storms: Storms Clara, Dennis and Jorge.

Map 3 - Concentrations of Flooding Incidents 2015/16 - 2019/20



Snow related incidents

Heavy snowfall events across the two counties have been relatively infrequent over the last five years, with just seven snow-related incidents attended by the Service. Two of these were in December 2017 and five were in March 2018, when the whole country was affected by cold and wintry conditions brought the so-called “Beast from the East” polar air mass.

Fires in the countryside

Fires in countryside involving grassland, woodland or crop fields tend to be more frequent during the hotter summer months. In the last five years, over half of the 231 primary fires[7] involving grassland, woodland or crops attended by the Service occurred during the three months of July, August and September. While 131 (57 per cent) of these fires were accidental, it is a concern that 43 per cent were recorded as deliberate.

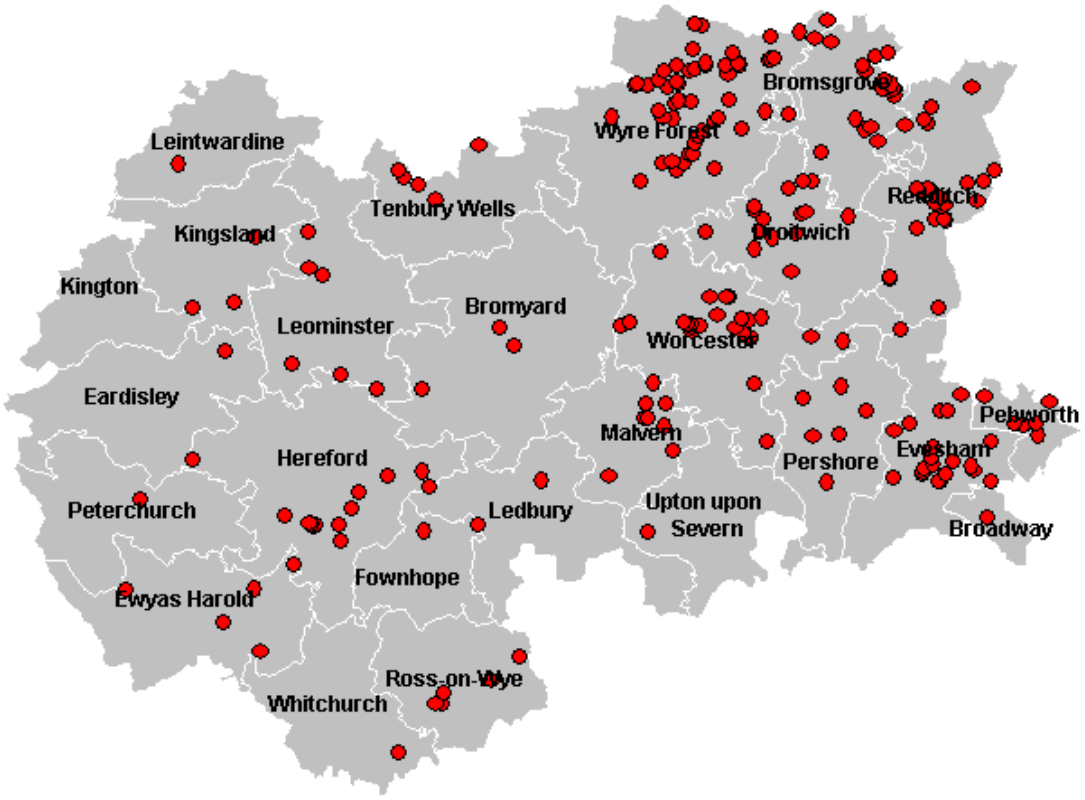
Tackling such fires can require considerable resources, with the average response (from time of call to incident closure, which includes revisits) taking between two hours for secondary[8] grassland fires and four hours for primary grassland fires. Firefighting at the two largest fires at farmland to the north of Kidderminster and Severn Stoke in Worcestershire required 15 and 11 fire engines respectively (plus 11 other Service vehicles) and lasted more than 2 days and 22 hours respectively.

[7] A primary fire is a large fire attended by five or more fire appliances or if there is a casualty involved.
[8] A secondary fire is a small fire attended by less than five fire appliances and where no casualties are involved.

Table 1 - Grassland, woodland and crops: primary fires 2015/16 - 2019/20

	Grasslands, woodlands and crops		
	Number of primary fires	Accidental	Deliberate
2015/16	44	23	21
2016/17	42	27	15
2017/18	39	16	23
2018/19	78	48	30
2019/20	28	17	11
total	**231**	**131**	**100**

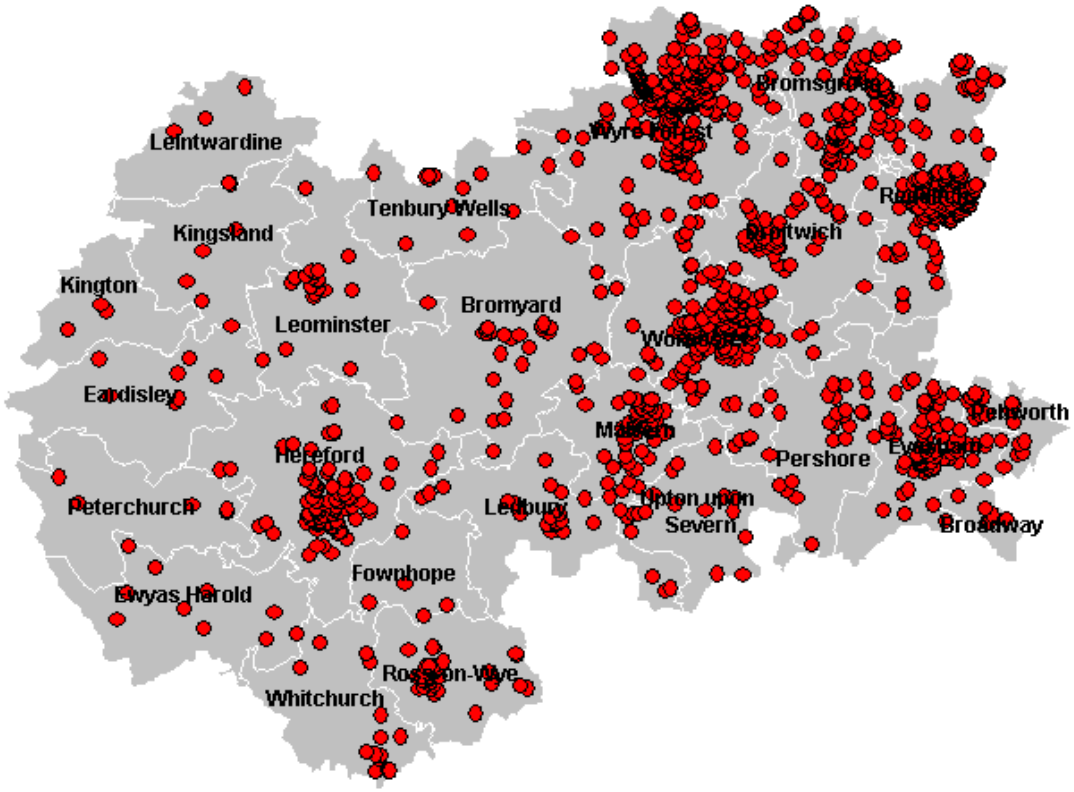
Map 4 - Location of Primary Grassland, Woodland, Crop Fires - 2015/16 - 2019/20



In the last five years, there were also 104 primary fires involving non-residential agricultural buildings such as barns. The majority of these were accidental (81 per cent), though 20 fires were recorded as deliberate. These buildings are often complex structures storing highly combustible material such as hay bales, and can take considerable firefighting time and resources to extinguish. 67 of the 104 fires were attended by four or more Service vehicles with an average time of nearly 22 hours for each incident. The two largest fires in agricultural buildings were at a large hay storage barn near Leintwardine in Herefordshire and at a farm at Stretford near Leominster. They required attendance by 12 and 8 fire engines (supported by 12 other Service vehicles), with firefighting lasting 3 days and 6.5 days respectively. The Leintwardine fire was also recorded as deliberately started.

In addition to the 231 primary grassland, woodland and crop fires and the 104 primary non-residential agricultural building fires in the last five years, there were also 1,404 secondary grassland, woodland and crop fires (of which 515 or 37 per cent were deliberate), and 15 secondary non-residential agricultural building fires (of which nine were deliberate).

Map 5 - Location of Secondary Grassland, Woodland and Crop Fires 2015/16 - 2019/20



HWFRS has taken measures to effectively manage the risks, with many incidents requiring a specialist response. To be as prepared as possible for such events, the Service has invested in a range of equipment and specialist skills over a number of years. For example, the Service has boats and equipment such as High Volume Pumps available to assist during flooding events and for water rescue; and there are 4-wheel-drive vehicles and water tankers to help tackle wildfires in the countryside. The Service is also investing in compact fire engines and pumps with larger water tanks.

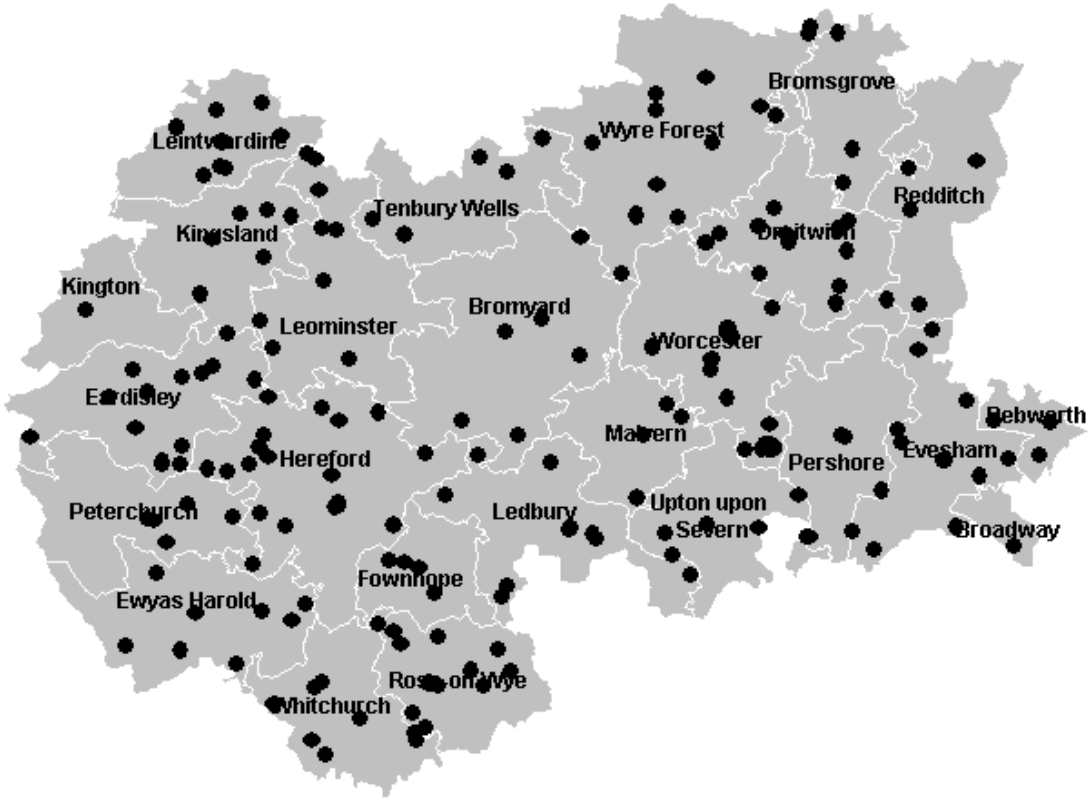
These incidents often require substantial resources over a lengthy period and can have a significant effect on firefighters. The Service also works closely with many other agencies through the West Mercia Local Resilience Forum[9] to help communities be prepared in the event of an emergency. Going forward, it is anticipated that specialist resources will continue to be required and developed further in order to meet increasing demand.

[9] West Mercia Local Resilience Forum

Heritage and Historic Environment

The two counties are home to thousands of sites and buildings of national and local importance, from Neolithic burial mounds to churches and stately homes. There are over 12,000 Listed Buildings[10] – 5,933 in Herefordshire and 6,428 in Worcestershire. Of these, 236 are Grade I Listed Buildings, which means they are of exceptional importance to our national heritage, and 683 are Grade II* Listed Buildings, which are also particularly important buildings and structures. The Grade I buildings include Hereford Cathedral, home to the Mappa Mundi, the famous medieval map of the world, and Worcester Cathedral, resting place of King John.

Map 6 - Location of all Grade I Listed Buildings



As Map 6 shows, all 25 fire station areas have at least one Grade I listed building. Every station area also has a number of Grade II* listed buildings. There are also 433 Scheduled Ancient Monuments[11] – 268 in Herefordshire and 165 in Worcestershire. Scheduled Monuments are archaeological sites or historic buildings of national importance. The two counties also have a wealth of stately homes, country houses, medieval manor houses and castles, including Hampton Court Castle, Hanbury Hall and the famous 'black and white' half-timbered buildings across north Herefordshire[12].

[10] British Listed Buildings - England
[11] Ancient Monuments - England
[12] Visit Herefordshire - Black And White Village Trail

Risk Factors

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 every Station Risk Profile, and maintains tactical plans for many of these buildings 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. As with severe weather events, these incidents can require considerable firefighting resources over a sustained period.

In the last five years, the Service has attended 12 fires in Grade I or Grade II* listed buildings. Of these, three involved chimney fires though none required salvage operations. To meet this type of demand in the future, the Service intends to review and improve its operational planning to ensure the impacts of any incidents are mitigated.

Other Environmental Factors

Industrial and transport accidents may involve hazardous chemicals and other dangerous substances, which can cause serious injuries to people and damage to the environment. In some cases, people may need to be evacuated from their homes. Pollution from these incidents may also adversely affect the local environment, water courses and air quality, and contamination could spread to agricultural land and wildlife populations.

One of the largest incidents in the last few years involved a major warehouse fire at the Blackpole Industrial Estate in Worcester in April 2017, which required 26 fire engines over three and half days to bring under control. Five people also had to be evacuated from their homes. There was also a serious fire involving hazardous materials at the Firs Industrial Estate in Kidderminster in October 2017, which required 20 fire engines and took over two and a half days to bring under control.

In the last five years, the Service has attended 507 incidents involving spills or leaks (not from road traffic collisions) or hazardous material. Of these, 28 required attended by three or more fire engines, with one incidents of a lorry leaking hydrochloric acid requiring attendance by seven fire engines.

Table 2 - Spills/Leaks (not RTC) or Hazardous Materials incidents attended 2015/16 - 2019/20

	Number of incidents	Hazardous Material Present?	Vehicle Leaking Fuel?
2015/16	84	30	54
2016/17	104	36	68
2017/18	111	41	70
2018/19	99	38	61
2019/20	109	48	61
total	**507**	**193**	**314**

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 from firefighting activity is contained as far as possible. To assist this, the Service works in partnership with the Environment Agency, who provide a significant amount of the environmental protection equipment on frontline fire engines. There are also detailed, tactical plans in place for many industrial sites in the event of an emergency.