HM Fire Service Inspectorate

Climate Change: managing the operational impact on fires and other weather-related emergencies

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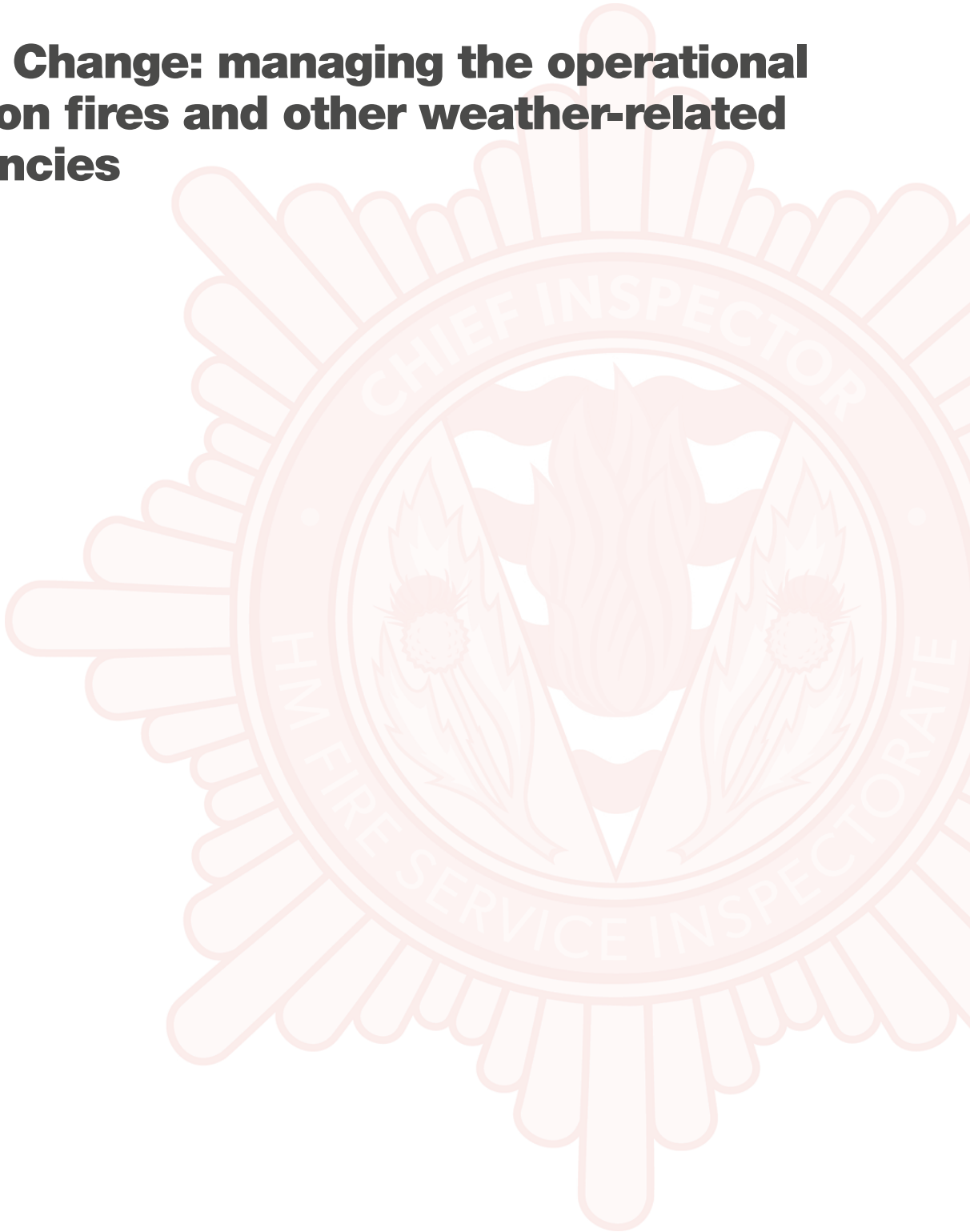

Integrity, Objectivity, and Fairness.

Acknowledgements

We are grateful to those employees of the Scottish Fire and Rescue Service (SFRS), the members of partner agencies, and those individuals who provided us with information and contributed constructively to our interviews and fieldwork.

Laid before the Scottish Parliament by HM Chief Inspector of the Scottish Fire and Rescue Service under section 43C(5) of the Fire (Scotland) Act 2005

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1. Introduction and Background

1. The significant impacts of climate change and weather related incidents have been in the public eye for a number of years.

2. Prior to commencing this inspection in early 2022, Scotland had endured a number of back-to-back weather storms (including storms Arwen, Dudley, Eunice and Franklin) which resulted in damage and disruption to communities, and affected transportation and energy supplies across the country.

3. Compared to 30 years ago, the average temperature in Scotland has risen by 0.5° C, winters have become wetter (by around 5%, with considerable year-to-year variability) and the sea level around the coast has been rising by 10–30 mm per decade[1]. Speculatively, summers will likely become drier on average whilst winters become wetter and sea levels continue to rise.

4. The SFRS's emergency response to climate change has been assessed by the Climate Change Committee[2]:

   "There has been good progress on considering adaptation within emergency planning and response. The Scottish Fire and Rescue Service now recognises the increasing risks of flooding and wildfires in Scotland and is working to assess community risks, address data gaps and improve performance monitoring for these types of events."

5. While the activity and response availability of the SFRS may be impacted by all types of weather-related incidents, our inspection report focus is on wildfire and flooding. This aligns with the Fire Framework for Scotland 2022[3], which contains a strategic priority for the SFRS relevant to weather-related incidents, specifically for wildfire[4] and flooding incidents.[5]

6. In 2015, we reported on a previous inspection that we carried out on the 'Preparedness of the SFRS for a serious flooding event'.

7. This report focuses on operational activity due to climate change. Whilst the SFRS has committed to decarbonisation measures as part of the Scottish Government's long term aim of achieving net zero by 2045, this element of the SFRS's activity is not within the scope of this inspection.

8. The report sets out the facts and presents the Chief Inspector's independent view of the current arrangements. Where appropriate, we make recommendations and identify good practice.

1 *Is Scotland climate ready? – 2022 Report to Scottish Parliament;* Climate Change Committee

2 Ibid.

3 *Fire Framework for Scotland 2022*; Scottish Government

4 In our report a wildfire is taken to be any uncontrolled fire involving grass, gorse, heather, trees or other vegetation (SFRS definition)

5 In our report flooding is taken to mean the covering by water, from whatever source, of land which is not usually covered by water

2. Summary

9. The principal impact of climate change to the SFRS is likely to be increased operational activity at flooding and wildfire events. This report predominantly looks at these two areas but also considers the community asset register and some other issues.

10. The SFRS has developed its water rescue capability and has a significant level of resources and capabilities to respond to flooding incidents and is well equipped to undertake rescues there. We assess the rescue capability as good. The wider aspects of flooding involves a partnership approach with other agencies and the SFRS is well engaged.

11. The Service has set out a methodical and positive wildfire strategy, some aspects of which are still being finalised.

12. Our report contains a small number of recommendations around communications, procedures and operational intelligence where we think there is some realistic scope for development.

3. List of Recommendations

1. The Service should consider whether there is potential to amend the guidance in the Water Rescue and Flooding SOP, so that the application of the '*cannot enter the water*' rule is explained and qualified, with a view to including more definitive guidance for personnel at incidents where there is a very low water, low risk, environment.
2. The ability to retrieve important information on specific hazards at water related incidents can aid with the tactics adopted, inform the crews and incident commander of hazards to assist in their risk assessment process and is ultimately a commitment to firefighter safety. The SFRS holds good information but the provision is inconsistent across the Service. The SFRS should progress consistently the completion of water incident response plans and make them available on the OI system.
3. The SFRS should firm up its guidance and requirements for the recording of maintenance training, carried out by level 3 and 4 personnel in line with its national policy standards on water and flood rescue training to improve accountability and monitoring.
4. The SFRS should review its approach to planning for wide-area flooding, both generally and also where appropriate on a site-specific basis, and take steps to assess or develop plans, and determine how information can be shared with operational personnel to assist with planning, procedures and incident command at potential flooding events.
5. The SFRS should reinvigorate the operation of the Wildfire SFRS National Users Group (SNUG), and look to communicate the implementation plan and encourage two way engagement to assist in participative development of the Wildfire Strategy.
6. The SFRS wildfire SNUG should add crew welfare to its agenda as a commitment to explore practical improvements to welfare arrangements.
7. To realise the full potential of the community asset register (CAR), the SFRS should review arrangements in place and consider the feasibility of improving awareness and utilisation of assets, both internally and with Category 1 partners. (The CAR has been the subject of separate recommendation in two of our other HMFSI inspection reports.[6])
8. In order to try to fully understand the impact of weather-related incidents, facilitate analysis, and realise the impact on the Service of wide area flooding incidents and wildfires, the SFRS should improve its data capturing, statistical analysis and reporting capability.

6 HMFSI: Command and Control: aspects of the Scottish Fire and Rescue Service Incident Command System, 2020; HMFSI: Contingency Planning Arrangements for Industrial Action in the Scottish Fire and Rescue Service, 2023

4. Our Inspection Findings

13. The SFRS has identified[7] issues that may accompany climate change and that may impact the Service. These are:

- Increased frequency and more severe flooding events
- Increased frequency and scale of wildfires
- Increased frequency of cold weather events
- Regional water shortages
- More frequent and intense storms resulting in structural damage.

4.1 Response to Flooding

> ***"Since the early 20th century, rainfall levels have increased in Scotland by around 11% and on a shorter timescale, since the early 1960s, by around 27%. We expect these changes to continue and intensify. 1 in 11 homes and 1 in 7 businesses in Scotland are already at risk of flooding and, on average, around 2000 more properties will be at risk every year due to climate change".***
>
> Ministerial foreword extract
> Second Scottish Climate Change Adaptation Programme 2019-2024
> Climate Ready Scotland

14. Area flooding can involve:

- coastal flooding, caused by extreme weather including storm conditions combined with high tides
- river flooding, usually caused by periods of heavy rain
- flash surface flooding caused by periods of heavy rain
- groundwater flooding, which occurs when the levels of water below ground rise above normal levels
- damage to water mains or failure of physical structures.

15. Scotland has been exposed to wide area flooding events such as during Storm Franklin. More recently, in November 2022, the east of Scotland was impacted by heavy rainfall and a number of flooding incidents occurred in the north east of the country due to events such as watercourses overtopping.

16. The SFRS's Operational Strategy acknowledges the challenge that climate change presents. It includes the aim of "enhancing partnership working and responding to the increasing climate change emergency" and acknowledges emerging risks by highlighting the "estimated 284,000 homes and premises at risk of flooding in Scotland".[8]

7 *Climate Change response plan 2045*: SFRS

8 Scottish Fire and Rescue Service Operational Strategy 2022-2032 V1.1, Section 5.2

17. While there is a perception within the Service that there is increased SFRS incident activity, the SFRS is unable to provide statistics on the number, location and consequence of widespread flooding incidents that it attends. This is due to limitations in the UK Incident Recording System (IRS) used to record incident data. The reporting tools used to analyse this information do not allow managers to differentiate between wide area flooding and localised flooding incidents, for example those affecting a single property or not caused by a weather event. We have included a recommendation relative to this issue later in the report.

SFRS Planning and preparation

National Framework and Legal duties

18. The SFRS has a legal duty to prepare and provide for the rescue of persons and for protecting persons from serious harm where there is serious flooding[9]. The Service also has a duty to provide its staff with appropriate training and for obtaining relevant information likely to be required for the purpose of responding to this type of incident. The attendance of the SFRS at flooding incidents more generally is within the scope of its power to undertake ancillary provisions within the Fire (Scotland) Act 2005.

19. While the rescue of persons at flooding is a statutory duty, the Service also routinely, uses its resources for water rescue at non-flooding incidents such as loch and river incidents.

20. The statutory function is supplemented by guidance in the Fire and Rescue Framework 'SFRS should continue to strategically place specialist resources in areas where there is a greater risk of flooding (that is flood response stations, swift water rescue units, high volume pumping appliances which divert huge volumes of flood water), and ensure firefighters are prepared, fully equipped and ready to support and protect communities, whatever the weather.'

21. The SFRS standard operating procedure (SOP) acknowledges that HM Coastguard is responsible for the initiation and co-ordination of maritime search and rescue operations in the United Kingdom.

22. It is generally held that the SFRS does not have any specific statutory duty to carry out publicity or prevention work in relation to its water rescue and flooding activities.

Strategy, Policies and Procedures

23. The SFRS operates a tiered capability and resource system for attendance at water related incidents;

- Level 1 water awareness
- Level 2 flood first responder (FFR)
- Level 3 swift-water rescue technician (SRT)
- Level 4 boat operator
- Level 5 water incident manager (WIM).

9 *The Fire (Additional Function)(Scotland) Order 2005*

24. Level 1 is a training provision standard for all firefighting staff. This level of training is designed to give personnel an understanding of the hazards and risks associated with water and know how to carry out shore-based rescues utilising equipment, such as hose inflation kit and throwlines, and to work safely near water. Level 1 trained personnel are not permitted to enter water.

25. Level 2 is training for staff at a declared water rescue or flood response station who will be expected to provide a wading response to water rescue or flood related incidents. During the course of our inspection, the number of FFR fire stations increased from 66 to 78.

26. Level 3 trains personnel in swimming and rescue techniques and develops them to water rescue technician standard which includes training on how to interpret water conditions and to perform in-water rescues as part of a rescue team. This is for personnel who work at declared water rescue stations, to enable them to carry out flood and water rescues safely, on, in, or near inland water. There are 20 fire stations in Scotland with a swift-water rescue capability.

27. Level 4 is for personnel who are already Level 3 qualified and who may be required to operate a powered rescue craft.

28. Level 5 is for personnel who may be required to manage or advise at a water incident at tactical or operational level. At the time of writing, the SFRS does not have any Level 5 qualified personnel, although it is planned to train a number of Flexi Duty Officers (FDOs) to this level.

29. There is also a Level 6 tier. This is flood rescue tactical advisor level, for those who may be required to provide operational and tactical advice in relation to major or wide-spread flood or water rescue incidents. The SFRS does not have any Level 6 qualified personnel. A prerequisite of this course is to be Level 4 and Level 5 qualified and, as detailed above, there are no personnel who have met this standard. The SFRS intends to train some FDOs to Level 5 and utilise this cadre as a tactical advisor role for attending water and flooding incidents, but there are no plans in place to train personnel to level 6.

30. The equipment available includes lifejackets for all personnel responding to flooding incidents, flood suits and safety helmets, wading poles for gauging depth of flood waters and highlighting hazards therein are provided as appropriate to personnel depending on role.

31. There is a greater provision for SRT crews. This includes water rescue boats, water sledges, marker buoys, reach poles, personal flotation devices for personnel and other ancillary equipment to assist in rescue operations.

Good Practice 1

The standard of equipment and capability, demonstrates that the Service operates a good level of preparedness for communities in discharging its statutory duty of rescue at flooding incidents and its activity at other water rescues.

32. High Volume Pumps (HVPs) were provided as part of the government's national resilience programme and can be used to mitigate the effects of flooding by allowing crews to pump large volumes of water away from impacted areas. The SFRS has four HVPs placed strategically across the country situated at fire stations in Cambuslang, Falkirk, Dundee and Elgin. These resources are mobilised on request from an incident by incident commanders.

33. There is a Service lead for the HVP capability, who co-ordinates meetings with representation from the fire stations where HVPs are placed. That person acts as a conduit to a UK national user group to share issues, improve knowledge base and share good practice.

34. A Scottish water national users group (SNUG) has been established within the SFRS. The group meets on a quarterly basis and involves representation from all Local Senior Officer (LSO) areas. The purpose of the group is to identify and resolve issues and ultimately make improvements. The Water SNUG feeds into a UK National User Group through attendance by the subject lead, who is a flexi-duty officer responsible for coordinating the group. There is evidence of good end user engagement at fire station level. A number of staff we spoke to knew of the group and how to raise issues with this group and provide feedback. The water SNUG has been consulted during a SFRS process to standardise equipment and water related PPE used across the Service.

Good Practice 2

The water national users group within the Service works well as a forum for raising and resolving issues. Watch based personnel have good levels of awareness of the Water SNUG and the identity of their representative on the group.

35. The SFRS has a Standard Operating Procedure (SOP) for 'Water Rescue and Flooding'. The terminology and guidance in the SOP indicates that it is written principally for operating at a water rescue response at an established body of water, rather than for flooding incidents. One consequence of this is that some firefighting personnel can be unsure how the guidance applies at a flooding incident.

36. The SOP states that personnel trained to level 1 '*cannot enter the water'*. This guidance is unqualified. While there is a need to have tasks undertaken by appropriately trained personnel and have in place instructions which impose or reinforce this, an absolute restriction when applied for example to minor flooding on level ground or in a low risk environment, seems impractical.

37. The reality is that level 1 trained personnel can be at minor incidents with low water levels and may be required to walk through some water and that they will often use a risk-based common sense approach to decision making. We think that the instruction '*cannot enter the water'* has introduced uncertainty, rather than offer meaningful guidance to personnel.

Recommendation 1

The Service should consider whether there is potential to amend the guidance in the Water Rescue and Flooding SOP, so that the application of the '*cannot enter the water'* rule is explained and qualified, with a view to including more definitive guidance for personnel at incidents where there is a very low water, low risk environment.

38. The SOP contains procedural guidance on what the action of an incident commander or team leader of a water rescue team should be at an incident, but there is no similar guidance for FFR teams.

39. There is no clear procedural guidance available on the response to wide area flooding. The SOP lacks detail on strategy such as how SFRS priorities might be determined, or how multi agency working would operate at a serious flooding incident.

40. When the SFRS mobilises a response to a weather related flooding incident affecting multiple properties, two fire appliances with crews, along with two swift water rescue teams and two inflatable rescue boats are mobilised. The two appliance crews may be level 1 trained crews. The level 1 crews will be available to provide land-based support and logistics, but otherwise, since they cannot enter the water, their contribution at some incidents will be limited.

Operational intelligence

41. The SFRS's Water and Flooding SOP recognises that as a Category 1 responder[10], the Service participates in multi-agency planning for, and in response to, all types of civil emergencies, and it includes the type of information that should be collated for its operational intelligence system in relation to identified water risks. This includes specific hazards, access points, and physical features. These plans include imagery and site plans to assist responders.

42. A number of "Water Incident Response Plans" (also referred to as 'water OIs'), have been added to the Operational Intelligence (OI) system[11] and the information is available to crews responding to incidents. However, the evidence of this varied by location. Some areas do not have any 'water OIs' and some have created plans but these haven't been added to the OI system due to technical issues.

43. While 'water OIs' are envisaged for rivers and bodies of water, rather than flooding sites, these locations are also impacted by weather events or could be the source of flooding and the existence of OI information may be useful and relevant at flooding or weather related events.

44. We examined some examples of water OIs on the OI system. We found the information to be well constructed and useful. This was borne out by our fieldwork experience when there were positive examples of how crews had utilised information on 'water OIs' to assist in safely progressing incidents, sometimes working in areas which were not familiar to the crews.

10 A category 1 responder is a core responder as defined in Civil Contingencies legislation

11 The OI system is an electronic storage system where risk and other information can be accessed by SFRS computer or mobile tablet

Recommendation 2

The ability to retrieve important information on specific hazards at water-related incidents can aid with the tactics adopted, inform the crews and incident commander of hazards to assist in their risk assessment process and is ultimately a commitment to firefighter safety. The SFRS holds good information but the provision is inconsistent across the Service.

The SFRS should progress consistently the completion of water incident response plans and make them available on the OI system.

45. While flood-prone areas are known and mapped and the risk of occurrence is assessed, the extent of any single flooding event may be unpredictable. Accordingly it is not straightforward to determine what level of OI it might be of use for the SFRS to hold. There are no flood response plans available on the OI system for known flood risk areas.

46. Personnel we engaged with had a general awareness of flooding risk as a consequence of historical events, but did not have detailed knowledge of which properties are at risk of flooding in their local area. This is despite the SFRS Operational Strategy 2022-2032 committing to responding to the increasing climate emergency whilst referencing their awareness of an estimated 284,000 homes and premises in Scotland being at risk of flooding.

Training and exercising

47. The SFRS is registered with Rescue 3 Europe, an international accrediting body for technical rescue courses. Rescue 3 Europe develop training courses used by organisations and individuals operating in high risk environments, including water rescue courses for emergency responders and rescue teams. In addition to registration, where appropriate the SFRS maps high-level outcomes to national occupational standards which are incorporated into the design and development of water rescue course programmes.

48. An overview of the accredited training courses is contained in Appendix A.

49. There are some good examples of fire station personnel having water training embedded as part of their work routines. Though personnel at some water rescue fire stations find it difficult to undertake the required level of water training. The ‘on water’ element of training should be carried out on suitable and appropriate bodies of water. Training involves using class II water conditions which are described as being rapids of moderate difficulty with passages clear. Water training requires a crew to be unavailable for fire cover and there can be availability pressures that make this difficult to achieve for some.

50. There is no clearly understood method for recording and monitoring maintenance of competence training hours. PDR Pro is the SFRS system for recording training, however, the system does not have the flexibility to be used to log water rescue training hours. This can impact on individuals’ ability to demonstrate maintenance of competence and managers’ ability to monitor actual training achieved against requirements.

Recommendation 3

The SFRS should firm up its guidance and requirements for the recording of maintenance training, carried out by level 3 and 4 personnel in line with its national policy standards on water and flood rescue training to improve accountability and monitoring.

51. Exercises – particularly multi-agency exercises dealing with issues of mobilising, command and co-ordination – are a valuable way of testing existing plans, identifying improvement, and offering learning opportunity. The SFRS has competing priorities in respect of exercising and there is little evidence of physical exercising with partners by fire station crews for wide area flooding incidents. There is little evidence of Level 1 crews training with Level 2 and Level 3 crews on water-based scenarios.

Partnership arrangements

52. The SFRS is not the lead body in co-ordinating a wide-area flooding response. There are a number of agencies involved in flood related prevention and response work.

53. The Scottish Environment Protection Agency (SEPA) and Scottish Government approach is that the creation of flood defences alone will not be sufficient to protect homes and businesses from flooding. The need for communities to increase resilience and preparedness is important in order to support those most likely to be affected.

54. The SFRS utilises SEPA's Flood Guidance Service to understand the likelihood of flooding in particular areas. This information is communicated internally to raise awareness and takes the form of a daily flood guidance statement. When appropriate, this flood risk information is shared externally through relevant media channels.

55. The SFRS has representation on Local Resilience Partnerships (LRPs) and has an involvement in planning for flooding through these partnerships. There are 12 LRPs in Scotland, six feed into the West of Scotland Regional Resilience Partnership (RRP), three into the North of Scotland RRP and three into the East of Scotland RRP. This structured partnership approach, consisting primarily of Category 1 and Category 2 responders, is designed to ensure preparedness to respond to an emergency situation. Each RRP produces a Community Risk Register (CRR) which highlights the risks which have the highest likelihood of occurring with potential to have significant impact. Each of the three RRP's published CRRs recognise flooding as a potential risk within their region and refer to multi-agency plans which are in place to support response to this type of emergency.

56. Fire Service managers generally have an awareness of the SFRS's involvement in developing plans at Local Resilience Partnership level. A consistent outcome from interviews is that fire station personnel have a limited knowledge of what flood plans exist within the Service.

57. Although information may be available from local authorities to help identify priorities on those needing evacuation during a wide area flooding incident, there is a limited understanding amongst flexi-duty officers on how this would operate.

58. Our 2015 report considered the situation regarding site-specific planning for flooding and contained a recommendation for the SFRS to compile a list of flood plans and to make them available for incident command and planning purposes. There is little evidence that the Service has been able to develop this. The arrangements that exist for multi-agency planning for wide area flooding are not well communicated within the Service.

Recommendation 4

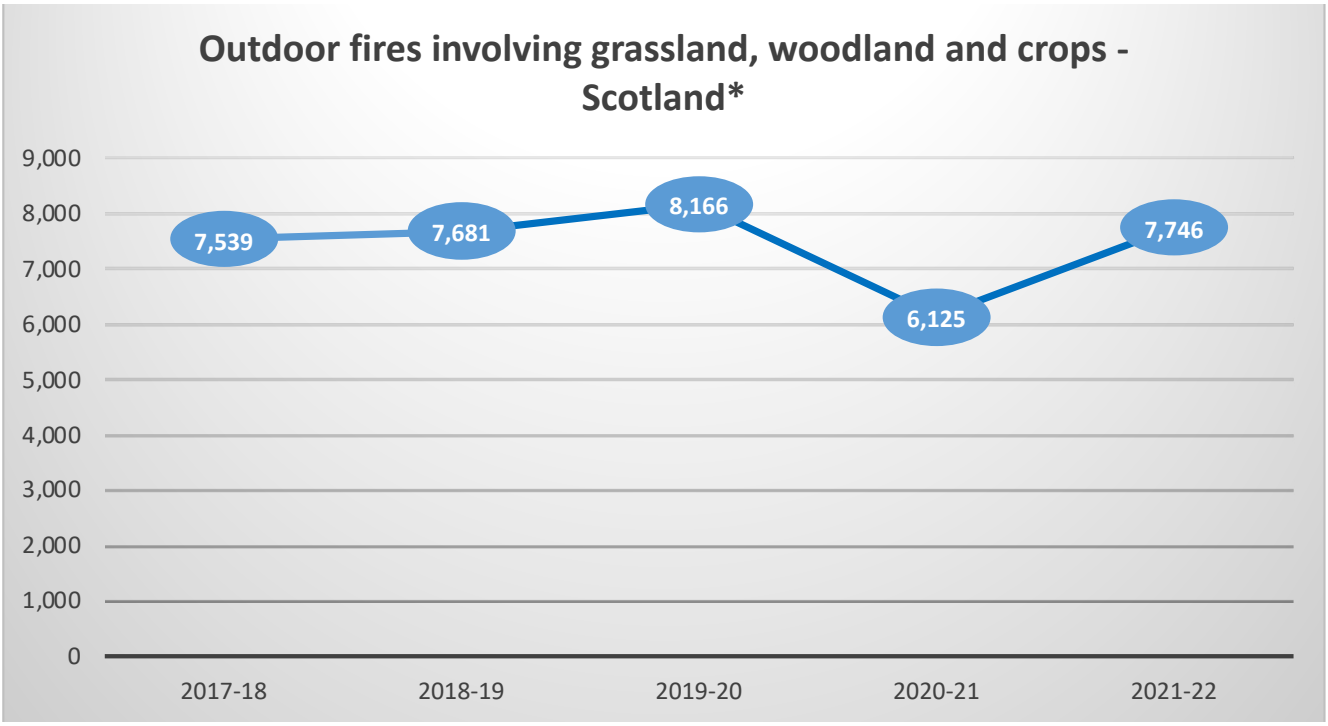
The SFRS should review its approach to planning for wide-area flooding, both generally and also where appropriate on a site-specific basis, and take steps to assess or develop plans, and determine how information can be shared with operational personnel to assist with planning, procedures and incident command at potential flooding events.

4.2 Response to Wildfire

59. Major wildfire incidents have the potential to be prolonged and resource intensive. Such fires can be unpredictable and can be challenging, physically arduous, and hazardous to firefighters due to the rurality of location, weather in terms of wind and heat, rough terrain, and types of fuel and vegetation involved.

60. It is anticipated that due to changes in climate, the scale and impact of wildfire incidents will increase. Figure 1 shows the number of outdoor fires in Scotland over a five year period.

Figure 1



*** Total outdoor fires recorded affecting land. This includes grassland, woodland and crops, along with incidents recorded as 'other outdoors (including land)'**

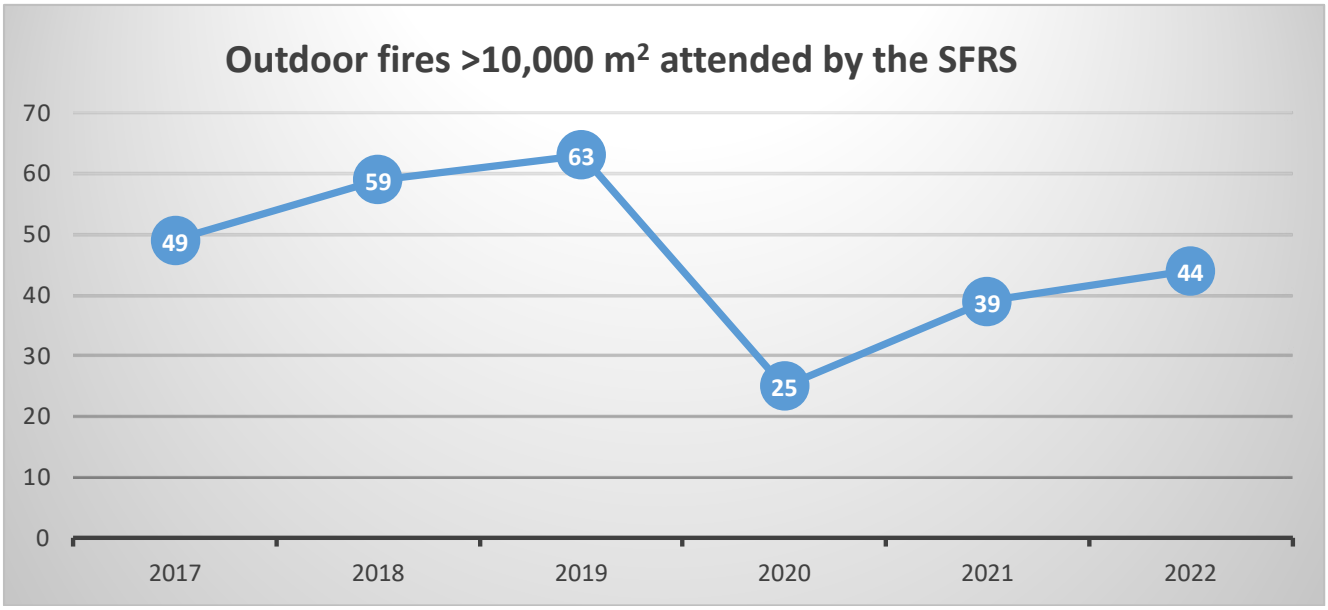
Source: SFRS Fire and Rescue Incident Statistics 2021-22

61. The data in figure 1 includes the period when Covid-19 pandemic restrictions were in place and the occurrence of fires may to some extent have been influenced by peoples' actions or inactions during this time in line with the restrictions.

62. The number of incidents alone does not provide a true picture of the impact of these fires in terms of number of appliances and crews in attendance or the duration of the incident. In April 2023, Glenluig in Lochaber was affected by a wildfire covering 13 square miles. In May 2019, 20 square miles of peatland was involved in a wildfire in Sutherland's Flow Country. However, to be able to accurately analyse trends and the impact on the SFRS of wildfires, more detail would be useful.

63. Figure 2 shows the number of outdoor fires over the same timescale that involved an area over 10,000 m2.

Figure 2



Source: SFRS Incident Data – "Large Outdoor Fires" (data re-produced in graphical format by HMFSI)

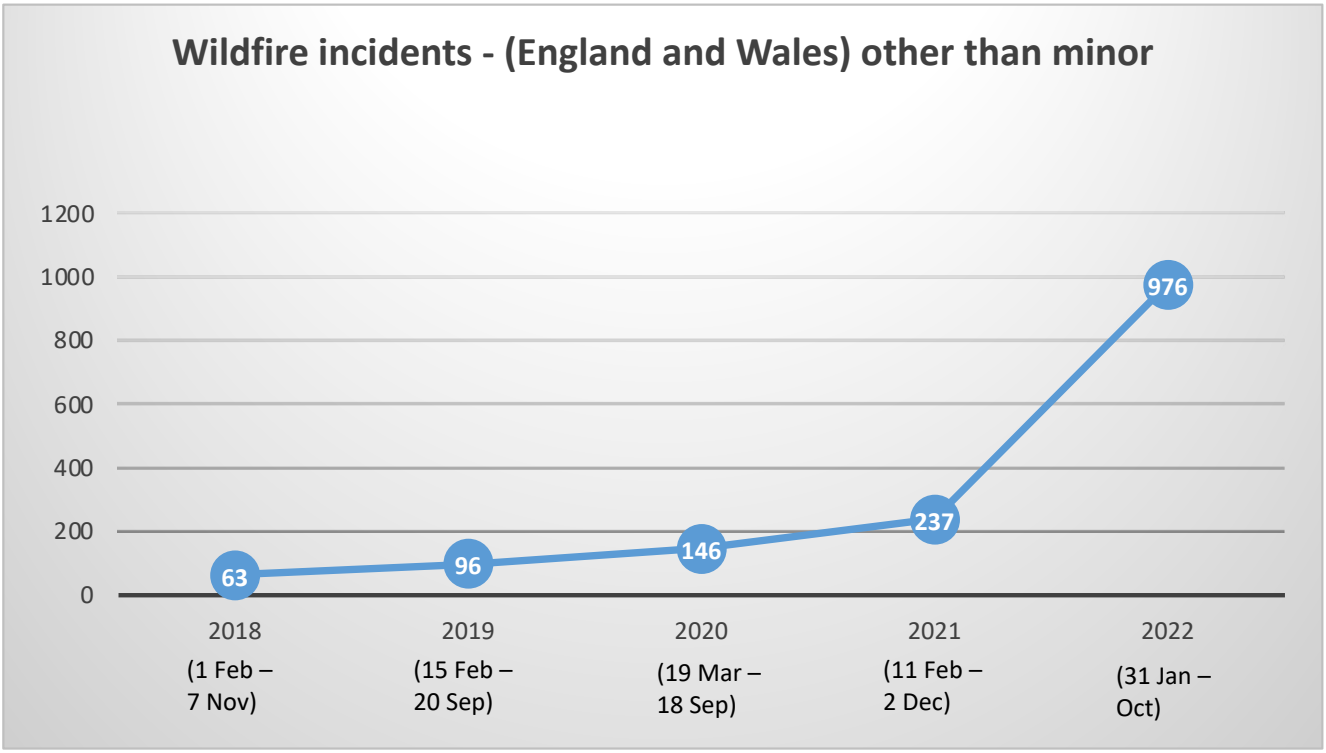
64. A Wildfire operational guidance document issued in 2013[12] contains a list of criteria for recording purposes, and that would assist in drawing a distinction between minor vegetation fires and wildfire incidents. The criteria are any of:

- Involves a geographical area of >1 hectare
- Has a sustained flame length of >1.5 metres
- Requires a committed resource of ≥ 4 FRS appliances
- Requires resources to be committed for ≥ 6 hours
- Presents a serious threat to life, environment, property and infrastructure

65. By comparison, figure 3 shows wildfire statistics for England and Wales using the above criteria.

12 Wildfire Operational Guidance, Scottish Government 2013, Section 3.4

Figure 3[13]



Source: NFCC

66. The Incident Recording System (IRS) used by the SFRS does not record all of the incident criteria relative to wildfires, and limitations of reporting tools available make it difficult for the SFRS to fully understand the level and impact that wildfires have on the organisation. We have included a recommendation relative to this issue later in the report.

SFRS Planning and preparation

National Framework and Legal duties

67. Making provision for tackling wildfires falls within the Service's core firefighting duties. The SFRS has a legal duty to make provisions for extinguishing fires and protecting life and property in the event of fires occurring[14] and for giving information and publicity to prevent fires.[15]

68. The statutory function is supplemented by guidance in the Fire and Rescue Framework 2022: "*Wildfires in the UK already cause substantial ecological and environmental damage and demand considerable and costly fire-management resources and different capabilities to address them. SFRS should continue to invest in the provision of specialist resources, technological advancements and forward thinking operational practices to enhance its response to wildfire events. SFRS should continue to make use of local assets available to bolster its response during prolonged or widespread incidents such as wildfire*."

13 NFCC Wildfire Presentation extract detailing number of wildfires reported on the National Reporting Tool, Paul Hedley (NFCC Wildfire Lead)

14 Fire (Scotland) Act 2005, section 9

15 Fire (Scotland) Act 2005, section 8

Strategy, Policies and Procedures

69. The SFRS has designed a wildfire strategy, although not yet fully implemented, for the provision of resources and advice at wildfires. The strategy describes a four-tier level of resource provision:

- Tier 1: a standard level of training for all firefighters.
- Tier 2: a fire station with wildfire support capability. Fifteen existing locations proposed. These stations will hold additional equipment. In addition to beaters and shovels, they are expected to be supplied with leaf blowers, mechanical brush cutters and hand tools to assist in creating a fire break.
- Tier 3: a fire station with a wildfire specialist capability. Ten existing locations proposed. In addition to the equipment described for tier 2, they are expected to be provided with dedicated vehicles for carrying additional equipment including backburning and tactical burn operations.
- Tier 4: wildfire tactical advisor. Twelve individuals envisaged.

70. Tactical advisors are trained so they can give advice to incident commanders on tactics to contain and suppress the fire as appropriate. They are also trained to provide advice on expected weather impact and advise on logistical planning (incident resources). There are a small number of Wildfire tier 4-trained Tactical Advisors in place, and they are utilised to attend incidents and provide remote assistance to incident commanders.

Good Practice 3

The provision of Tactical Advisors who are available to remotely give advice on tactics to incident commanders is a particularly useful feature of the wildfire strategy given the geography of Scotland, albeit the full complement of advisors has yet to be achieved.

71. Considerable time and effort has been devoted by those involved in the design of the wildfire strategy but the implementation of the strategy has been delayed due to competing priorities within the Service.

72. The delay has been due in part to changes in personnel. Those driving the implementation of the strategy are doing so around their business as usual commitments. The time taken for the procurement of equipment also introduces a time delay.

73. The SFRS has a Standard Operating Procedure (SOP) for 'Wildfires' which was designed alongside the planned implementation of the strategy. Some of the terminology in the SOP is not fully understood by firefighters and some of the SOP content is not covered by the SFRS online training module on wildfire. Specifically, the SOP refers to 'backburn' being a method of indirect attack for wildfires which are intense. This involves deliberate burning of an area of vegetation to create an area free from fuel. The SOP does highlight that this practice is being adopted in certain regions within Scotland and must only be carried out by competent personnel.

74. The online training module content has been refreshed and is well presented and user friendly. Those we spoke to had an awareness of the module and knew how to access this within the in-house Learning Content Management System (LCMS).

75. An element of the SOP which is further explained within the training module is the wildfire prediction system. This details the three major influential factors which can affect wildfire development, these being:

- Wind – which drives a fire, gives it wind direction and feeds it with oxygen
- Slope – which can alter direction and effects the preheating of fuels
- Aspect – the direction a geographical slope faces in relation to the sun; if facing the sun, the ground will be subject to solar heating. This element can differ by the time of day.

76. All three of the above factors have a positive effect on fire development and are the main issues which can increase fire severity, speed and flame length.

77. Wildfires can be classified depending on how many of the above factors of alignment are in its favour. This ranges from factor 0 (no factors of alignment), to factor 3 (all three factors of alignment).

78. A Wildfire SNUG (SFRS National Users Group) has been established, Very few staff we spoke to at fire stations knew about this group, nor its point of contact. Internal communications and engagement regarding the implementation plan, along with the detail behind the strategy, has been limited.

Recommendation 5

The SFRS should reinvigorate the operation of the Wildfire SFRS National Users Group (SNUG), and look to communicate the implementation plan and encourage two way engagement to assist in participative development of the Wildfire Strategy.

79. The equipment available to the SFRS for use at a wildfire incident consists of

- basic equipment in frontline appliances
- additional wildfire equipment carried on a limited number of appliances
- four wheel drive vehicles used to carry equipment and personnel
- five all-terrain vehicles.

80. Frontline appliances carry basic equipment for dealing with wildfires. This includes beaters, which are constructed with a pole and industrial grade rubber (see figure 4). The rubber is used to 'beat' out the flames produced from a grass fire. Other equipment on frontline appliances that would be used include water from the appliance tank itself, and lightweight portable pumps which can be carried to a water source (for example, a loch or burn) to assist in extinguishing fires.

Figure 4

Firefighter at work, using a beater (source SFRS)

81. Additionally, some frontline appliances carry knapsacks, which are effectively backpacks used for transporting water to the scene of a wildfire with a spray nozzle for directing and spraying water onto the fire. And some carry banana pumps which are a smaller, lighter and more versatile type of portable pump which can be used to draw water from an open source.

82. The five all-terrain vehicles are based at fire stations. These can be requested by incident commanders and can be used for carrying personnel and equipment to and from the scene of a fire, thereby reducing some of the physical activity firefighters are typically faced with at wildfire incidents.

83. Some fire stations carry additional equipment in 4x4 vehicles or trailers. Examples of this equipment are radio repeaters which can assist with communication at wildfire incidents, and fogging units which can assist in producing a fine spray ('fog') to assist with extinguishing wildfires by enabling the spread of water delivery over a larger area.

84. Some of the trailers in use which carry extra equipment, such as fogging units, do not have a 4x4 capability. This limits the equipment which can be used at the scene of operations. It is envisaged that the full implementation of the wildfire strategy, including the equipment and vehicles to be used, will improve this capability.

Good Practice 4

As part of the SFRS's wildfire strategy, the increased provision of training and equipment as part of the tiered response levels is a significant investment by the SFRS, which will allow a greater level of capability for response to wildfire incidents.

During the course of our inspection we became aware of progress towards the implementation phase of the strategy, and were advised of completion of the procurement phase of the project through to delivery of equipment.

Personal Equipment

85. Wildfires can occur during periods of higher than normal ambient temperature. The physical activity involved in tackling a wildfire in hot and arduous conditions can have physiological effects for firefighters, including fatigue, dehydration, heat illness and confusion.[16]

86. The majority of firefighters that attend wildfire incidents do so wearing their structural firefighting kit. Structural firefighting kit offers a level of thermal protection but in the hot and arduous conditions often experienced at wildfires, firefighters can be considerably uncomfortable or can suffer physiological effects when wearing this clothing, often for a number of hours.

87. The SFRS wildfire strategy includes the provision of a suitable lightweight firefighting kit for tier 2 and tier 3 responders. Typically, a wildfire will involve the attendance of a number of crews being rotated over a period of days and it is likely that, even with aforementioned provision of lightweight PPE at tier 2 and 3 stations, many of the personnel attending will be required to undertake firefighting activities in their structural firefighting kit, which is not best suited to the conditions at wildfire incidents.

Operational Intelligence

88. The SFRS wildfire SOP does not envisage the holding of site specific plans on the SFRS OI system relative to wildfires. There is however an expectation that there will be preplanning in line with plans made by individual landowners.

Welfare

89. The provision of welfare arrangements for personnel at wildfire incidents can be difficult. This is largely influenced by the rural location in which many of these incidents occur.

90. There are a total of five welfare units and two welfare support vehicles strategically positioned across Scotland. The units are carried by prime movers to incidents upon request by the incident commander. They have toilets, a rest area, hot drinking water, washing facilities and heating and lighting. There were limited examples of where the welfare units have been used at wildfire incidents. It was expressed to us that this is mainly due to the rural locations most wildfires occur, and the considerable distances away from where the welfare units are located.

16 NFCC National Operational Guidance, Wildfires (page 128).

91. The Wildfire SOP advises incident commanders to consider crew rotation as appropriate. Operations control (OC) personnel we interviewed described the practice of providing relief crews, where possible, who have not recently been utilised at that same incident. In spate call conditions this can be challenging to achieve.

92. The SOP emphasises the importance of personnel maintaining hydration at such incidents by utilising bottled water carried on appliances. Practically, transportation at an incident can be difficult due to the requirement to carry firefighting equipment and handheld radios, whilst there is no provision of bags or carrying devices to carry equipment.

93. We received suggestions during our fire station visits for the provision of rucksacks for carrying items across rural terrain and camel packs for ease of carrying water and other items. There was also a view that only items already available on the stores platform (computerised catalogue system used to order consumable items) could be requested and that there is no forum available to suggest ideas or improvements.

Recommendation 6

The SFRS wildfire SNUG should add crew welfare to its agenda as a commitment to explore practical improvements to welfare arrangements.

Training and exercising

94. Tier 1 wildfire training for personnel involves following the online learning content within the SFRS's national training schedule –'rural and wildfire' module. There is also a module in place as part of the FDO training schedule. These modules cover operational procedures for dealing with wildfires and include an explanation of the wildfire prediction system and suppression tactics. The training pack (rural and wildfire module) does not fully encompass the content of the wildfire SOP. Some of the terminology used in the SOP is not widely known.

95. There is no specific additional training package in place for tiers 2 and 3 personnel as this aspect of the wildfire strategy is yet to be developed.

96. The SFRS does not have the level of expertise to train tactical advisors in-house and training for the cadre of tier 4 tactical advisors is provided by an external provider. Previously personnel travelled to Catalonia to learn the required skill-set, as until recently there was no UK training. Northumberland FRS has now developed training courses and the SFRS envisages utilising this training. It is a longer-term aim for the SFRS to develop in-house training for tactical advisors.

97. Evidence of exercising with partners for wildfire incidents, either practical or table top exercises, is limited.

Wildfire Prevention

98. The SFRS's Prevention and Protection function provides a limited amount of resources which are designed for use by fire station personnel and community action teams when delivering wildfire prevention initiatives.

99. On speaking to crews at fire stations across the country, some were able to talk about examples of wildfire and outdoor fire prevention initiatives carried out in their area. Examples were, educating communities and tourist populations, including guidance on safe use of barbeques and providing campsite safety messages.

100. Some staff we spoke to felt that there could be more of a preventative focus regarding wildfires. No examples were given, for example, of station or community action teams directly engaging with land managers to discuss themes such as the muirburn code.

101. Muirburn is the controlled burning of vegetation by land managers of moorland to promote growth and maintain open moorland. The Muirburn Code[17] provides guidance to practitioners for the burning and cutting of vegetation, and sets out statutory restrictions for those practicing muirburn. Using fire and cutting equipment are useful land management tools. When carried out correctly muirburn can provide benefits which can contribute to reducing the impact of wildfires, due to the managed reduction of vegetation which could be considered to be fuel for potential wildfire development.

102. However, muirburn is understood to be a major cause of wildfire in Scotland. Wildfires can develop due to reasons such as having inadequate firebreaks, insufficient numbers of staff and equipment when conducting muirburn or due to undertaking muirburn in the wrong conditions.

103. The principal legislation governing muirburn is the Hill Farming Act 1946 and this covers the burning of all moorland vegetation including grass and gorse.

104. The Wildlife Management and Muirburn (Scotland) Bill (the Bill) was introduced in the Scottish Parliament on 21 March 2023. Part 2 of the Bill regulates the making of muirburn by extending the licensing system for muirburn. There would be different requirements depending on the time of year and whether the muirburn is taking place on peatland or not.

105. If passed, the Bill will largely replace the current regime for regulating muirburn, set out in the Hill Farming Act 1946.

106. The Muirburn season runs from 1 October to 15 April, extendable to 30 April with permission of the land owner (although this extension is not encouraged by the Scottish Government due to increased risks to ground-nesting birds in late April). The Bill includes provision for Scottish Ministers to be able to amend the Muirburn season if deemed necessary in relation to climate change or for preventing or reducing the risk of wildfires.

17 The Muirburn Code – Guidance (nature.scot website)

107. The SFRS actively promotes heather management to reduce the fuel load and prevent wildfires. In addition, the SFRS encourages land managers to complete a new online course which promotes best practice, thereby reducing the chance of wildfires occurring when conducting muirburn. The development of the course has had multi-agency involvement, whereby the SFRS worked collaboratively with the Scottish Gamekeepers Association, Scotland's Regional Moorland Groups and NatureScot to help shape the lessons.[18]

Partnership arrangements

108. The Scottish Wildfire Forum (SWF) is a partnership which includes the SFRS and representatives from relevant organisations with land management interests. It has the aim of achieving a reduction of the number of unwanted wildfire occurrences in Scotland and raising the profile of work being carried out to minimise the impact of wildfire. The SFRS's wildfire lead is the chair of the SWF.

109. The forum aims to achieve its objectives by developing initiatives which will reduce[19]:

- the risks to firefighters and members of the public
- the amount of damage to vegetation
- the negative impact on property, assets and ecosystem services
- the costs of firefighting.

110. Partners who attend scheduled SWF meetings include the SFRS, NatureScot, Scottish Gamekeepers Association, Scottish Environment Protection Agency, NFU Scotland, along with moorland groups and representatives and managers from land estates.

111. Through its engagement in the SWF, the SFRS receives Wildfire Danger Assessments, which are voluntarily produced by one of the partners. These warnings are circulated to the land management sector and to the SFRS when there is considered to be a heightened risk of wildfire in Scotland. The SFRS uses this information for communicating the predicted location of increased threat of wildfires to operational personnel and also utilises the risk assessments in social media messages to the wider public, with accompanying advice to communities on enjoying the outdoors safely and responsibly.

112. The Wildlife Management and Muirburn (Scotland) Bill contains provision for licensing and that where an application for a muirburn licence relates to conducting muirburn on peatland, Scottish Ministers granting a licence must be satisfied of conditions including "no other method of vegetation control is available". Peatland, according to NatureScot, accounts for over 20% of Scotland's land area. The alternative to muirburn for managing surface growth is cutting which is a more resource intensive method of controlling vegetation. We feel that the SWF has a key role to play as a conduit between stakeholders affected by the progression of the Bill and that the SFRS should monitor developments whilst retaining its focus on wildfire prevention.

18 The SFRS Website. News article, January 2023

19 Scottish Wildfire Forum – terms of reference; (scottishwildfireforum.co.uk)

113. There is a potential for varying views amongst partners which may impact on the future progression of joint wildfire prevention strategies. Opinions expressed to us suggest that environmental bodies may discourage muirburn, for example, due to the potential effects on the environment. However, land managers generally believe that good land management including the controlled burning of excess surface fuels helps new growth which encourages wildlife and the carbon levels released through muirburn may be less harmful to the environment than those of an uncontrolled wildfire.

114. The SFRS has been involved in the development of the SWF and has an influential position within the partnership. It seems to us that it is important for the Service to continue to have a prominent role within the SWF to fully appreciate the full range of opinions, to enable discussions with partners and for progressing a national wildfire strategy.

4.3 Other Issues

Community Asset Register

115. In 2009, after a series of water-related incidents, Paddy Tomkins QPM was commissioned by the Minister for Community Safety to prepare a report[20] which included a focus on the resources and capabilities of agencies involved in water rescue emergencies including flooding. As a result, he identified the need for a register of shared assets to enhance "*the important contribution that the voluntary section has and wishes to make*". His recommendation at that time was "*each FRS in Scotland, working under the aegis of their respective* [Strategic Coordinating Groups] *SCGs, should be requested by Scottish Ministers, through the relevant Fire and Rescue Boards, to compile a public register of declared water rescue assets in the public, private and voluntary sectors (including individual private persons) to include a clear definition of the capability in each instance."*[21]

116. The Tomkins report was published before the inception of the Scottish Fire and Rescue Service. The eight legacy services became one in 2013 (the SFRS), and the recommendation to compile a register for each legacy FRS in Scotland by default became a recommendation to create one national register for Scotland.

117. The Community Asset Register (CAR) has become a Scottish database of resources and assets that are available to assist the response from Category 1 responders. The database was established by and is managed by the SFRS. The database includes a range of assets and capabilities (wider than water and flooding response), and includes assets whose services have been offered from both private and voluntary sectors.

118. Three quarters of recorded outdoor fires over 10,000m^2 occur in the Highland LSO area and some FDOs interviewed from this area spoke of the CAR being utilised to assist with the SFRS's response to wildfires.

20 Report by Paddy Tomkins QPM: Independent Review of Open Water and Flood Rescue

21 Ibid (Recommendation 5)

119. In contrast, there were few examples provided of where the CAR has been utilised in other LSO Areas to assist with a response to incidents.

120. Most personnel we spoke to did not have an understanding of what assets may be available to them and did not appear confident in utilising the register. Some managers we spoke to were concerned about the command and control of these resources at incidents, particularly in the inner cordon.

121. Although the database has been designed for use by Category 1 responders and the SFRS has routinely communicated the availability of the CAR to partners at relevant forums, agencies other than the SFRS seldom utilise the register. The SFRS intends to re-establish a service level agreement with other Category 1 responders.

122. The CAR is generally under-utilised. The database is not accessible to operational incident commanders at incidents. Although OC staff can see what assets are on the register, they tend not to propose or suggest assets to incident commanders. OC staff generally rely on requests from the incident commander and then search the database and liaise with the asset holder to establish availability and journey time to the incident. The incident commander then decides whether or not to request the assistance of an asset.

123. Some examples of assets which may assist in climate change-related incidents are:

- Drones
- Robo-cutters (for cutting a fire break at a wildfire incidents)
- Four wheel drive vehicles
- Welfare providers.

Recommendation 7

To realise the full potential of the community asset register (CAR), the SFRS should review arrangements in place and consider the feasibility of improving awareness and utilisation of assets, both internally and with Category 1 partners.

(The CAR has been the subject of separate recommendation in two of our other inspection reports.[22])

Resource allocation

124. The SFRS has in place a Service Delivery Model Programme (SDMP) looking at analysis of risk across Scotland to identify where the SFRS can best deliver its response model. This includes scenario planning and an assessment of current levels of risk and potential future changes to inform service planning on resource allocation to meet known and predicted risk.

22 HMFSI: Command and Control: aspects of the Scottish Fire and Rescue Service Incident Command System, 2020; HMFSI: Contingency Planning Arrangements for Industrial Action in the Scottish Fire and Rescue Service, 2023

125. The Community Risk Index Model (CRIM) is an element of the SDMP which aims to analyse and mitigate for known or predicted community risk on a short to long term basis. Whilst the SFRS is able to consider flood mapping sources and relevant predictive modelling tools as part of this process, it is still evaluating and considering wildfire prediction models.

126. We identify earlier in the report that statistical analysis of flooding and wildfires could be improved.

Recommendation 8

In order to try to fully understand the impact of weather-related incidents, facilitate analysis, and realise the impact on the Service of wide area flooding incidents and wildfires, the SFRS should improve its data capturing, statistical analysis and reporting capability.

SFRS Business Continuity

127. The SFRS is not immune from the effects of weather. Fifty-seven fire station buildings in Scotland are at high risk from flooding.[23]

128. A fire station being impacted by flood has potential ramifications, but this will depend on what the outcome of the flooding may be and we would expect to see a corresponding assessment and mitigation plan, and reference to the risk in the fire station business continuity plan (BCP).

129. The SFRS Climate Change Response Plan states that the SFRS will need to either invest in flood mitigation measures on these sites or consider relocating. Either of these options would require significant additional capital investment.

130. The SFRS has BCPs for its premises and these plans are regularly reviewed. This process helps the organisation anticipate, prepare for and recover from disruptions which may include impacts of weather related events, such as flooding or the effects of spate weather conditions including storms. We established that operational personnel, generally, have 'very limited' to 'no' knowledge of the BCP in place for their fire station, nor how this would be invoked if required.

131. The SFRS has a Severe Weather Plan General Information Note (GIN), which details preparedness actions to be taken during periods of severe weather to support effective service delivery. This includes consideration for convening the Strategic Severe Weather Action Group (SSWAG), responsible for ensuring all areas of the Service are prepared and equipped to maintain service delivery. The GIN details other practical measures in support of business continuity such as managing ice/snow at workplaces, ensuring flood equipment not routinely carried on fire appliances is made readily available, and making available 4x4 vehicles for the use of the duty FDO Group.

23 The SFRS Climate Change Response Plan 2045

Accidental Drownings

132. Accidental drownings often occur when there is increased water-based leisure activity during warm Summer weather. Warmer Summers could see further increased activity and increased risk.

133. During a hot weekend in July 2021, six accidental drownings occurred across four separate bodies of water. These tragic incidents were reported in the media[24] and they highlight the risks involved when undertaking leisure activities in and around open water.

134. Scotland has a water safety action plan to reduce accidental drowning deaths and reduce risk among the highest-risk populations, groups and communities. This involves a multi-agency partnership approach with the SFRS being one of the key partners of Water Safety Scotland, a voluntary association whose main purpose is to understand the risks around water in Scotland and engage with partners to develop a consistent approach to the prevention of water related fatalities.

135. The SFRS developed the Partnership Approach to Water Safety (PAWS) with a focus on improving outcomes in prevention, incident response (training the public on how to safely respond) and a review process which considers factors or trends to improve a focused approach to drowning prevention. PAWS has now become established cross-sector, through Water Safety Scotland delivery.

Emerging Risks – Electric Vehicles and Lithium-ion batteries

136. As the number of electric vehicles increases, the technology to support such vehicles present new hazards. This requires the FRS to explore new concepts and procedures to allow effective response to such incidents.

137. The motor repair and service industry has had to adapt practices in respect of electric vehicles, including fire precautions arrangements.

138. Due to their efficiency, lithium-ion battery cells are used to power electric vehicles. If damaged, for example during a road traffic collision, a damaged battery cell can produce a fire which can repeatedly flare up. A fire involving lithium-ion battery cells can cause an explosion hazard, typically gives off toxic gases and can take up to twenty four hours to extinguish.

139. The Service has trialled equipment for dealing with fires involving electric vehicles but does not have a procedure on how to deal with fires involving lithium-ion batteries in electric vehicles.

140. There are databases available to first responders which provide useful information on vehicle construction and safety data. We referenced this information in a 2019 inspection report.[25] This type of information is not available on the OI tablet. If this information was available to crews responding to incidents involving electric vehicles, it would assist in safely planning and executing rescue and firefighting operations.

24 BBC News article, Scotland's weekend of water deaths

25 HMFSI: *The Scottish Fire and Rescue Service's arrangements for the provision of Operational Risk Information,* 2019

141. This emerging risk is not unique to the SFRS and the Service has been considering the development of its procedures, training and equipment through engagement with sector expertise and with reference to National Operational Guidance.[26]

4.4 Conclusion

142. This report examines the Scottish Fire and Rescue Service's current and proposed arrangements for responding to the impact of climate change; both in relation to responding to fires and other weather and climate related incidents.

143. The elements anticipated to impact most on operations of the SFRS due to the effects of climate change are flooding and wildfire incidents. Our inspection and report has duly focused on these areas. We have also considered other elements which are consequential to climate change. Other operational impacts include the SFRS's business continuity planning and accidental drownings due to weather extremes, along with the impact of responding to incidents involving alternative fuelled vehicles.

144. Our findings conclude that the SFRS has considered its response to elements we have focused on. In particular, there is a commitment to improving resilience levels in flood response and an in-progress wildfire strategy aimed at improving response capability. HMFSI aims to assist continuous improvement by the SFRS and alongside highlighting some clear examples of good practice, we have identified some areas with scope for improvement and have provided recommendations in line with our findings. These recommendations are mainly in relation to operational intelligence and sharing and communicating information.

145. The areas of focus within this report are based on current trends, research and sector understanding around climate change. The actual future operational demand due to the effects of climate change may vary and there may be other consequences of climate change which are not yet fully realised. As the nature of demand changes so does the need to review equipment and training needs to ensure preparedness for any new challenges the SFRS may face. The SFRS should continue to look outwardly and closely monitor the developing climate change landscape to proactively consider its ability to meet future demand.

26 National Fire Chiefs Council (NFCC): *National Operational Guidance – Hazards, Roadways, Alternative Fuel Vehicles*

Glossary

>	greater than
≥	greater than or equal to
BCP	Business Continuity Plan
CAR	Community asset register
FDO	Flexi Duty Officer
FFR	flood first responder
flooding	the covering by water, from whatever source, of land which is not usually covered by water
FRS	Fire and Rescue Service
HMFSI	His Majesty's Fire Service Inspectorate
HVP	high volume pump
IRS	Incident recording system
LAI	Local Area Inspection
LSO	Local Senior Officer
NFCC	National Fire Chiefs Council – a professional body that drives collective improvement and development throughout the UK FRSs.
OC	Operations Control
OI	Operational intelligence
PAWS	Partnership approach to water safety
PDA	Pre-Determined Attendance
PPE	Personal Protective Equipment
SCG	Strategic coordinating group
SDA	Service Delivery Area
SFRS	Scottish Fire and Rescue Service
SG	Scottish Government
SNUG	Scottish national users group
SOP	Standard Operating Procedure
SRT	Swift-water rescue technician
wildfire	an uncontrolled fire involving grass, gorse, heather, trees or other vegetation
2005 Act	The Fire (Scotland) Act 2005

Appendix A

Overview of water level system training

Water Level 1 – training to safely effect shore-based rescue and work safely near water.

- Initial course consisting of nine hours which is valid for three years, after which refresher training may not be required if skills maintenance can be evidenced.
- Maintenance is nine hours annually by means of an online training module in LCMS.

Water Level 2 – Undertake wading rescue and response, working safely near or in water to wading height.

- Initial training consists of Water Level 1 training plus 12 hours instructor contact over 2 days. This is valid for 3 years.
- Maintenance training is 18 hours annually, which covers a range of relevant subjects and is required to be recorded.

Water Level 3 – Undertake rescues from water using a range of technical water rescue equipment.

- Initial training consists of Water Level 1 plus 4 days or 21.5 hours. This is valid for 3 years.
- Maintenance training is 30 hours annually, quarterly training and 1 day every 2 years as a team at a water rescue training facility is recommended. This training covers a range of relevant subjects and is required to be recorded.

Water Level 4 – Undertake rescues utilising a powered vessel

- In addition to Level 3 qualification, initial training consists of 30 hours over 5 days. This is valid for 3 years.
- Maintenance training is 35 hours annually, spread across 3 occasions per year plus 1 day spent every 2 years as part of a team at a water rescue training facility is recommended. This training covers a range of relevant subjects and is required to be recorded

On Water Training

For those trained to Levels 2, 3 and 4, on water training shall be carried out on suitable and appropriate water.

Where water-based training is involved, this will take place in an extensively assessed and approved environment. All practical elements will be under the direct supervision of the SFRS instructor at all times.

For Level 2 trained personnel, this shall be no more than Class II.

For Levels 3 and 4, this shall be minimum Class II swift water or marine equivalent with appropriate hydrological conditions for all aspects of training to be carried out safely and effectively.

Water Class Definitions:

Class I	Easy	small waves passage clear no serious obstacles
Class II	Medium	rapids of moderate difficulty passages clear
Class III	Difficult	waves numerous, high and irregular rocks and eddies rapids with passages clear though narrow
Class IV	Very Difficult	long rapids waves high irregular dangerous rocks boiling eddies best passage difficult to scout
Class V	Extremely Difficult	exceedingly difficult long and violent rapids following each other almost without interruption riverbed extremely obstructed big drops violent current very steep gradient

Appendix B

About HM Fire Service Inspectorate

His Majesty's Fire Service Inspectorate in Scotland (HMFSI) is a body that operates within, but independently of, the Scottish Government (SG). Inspectors have the scrutiny powers specified in section 43B of the Act. These include inquiring into the state and efficiency of the SFRS, its compliance with Best Value, and the manner in which it is carrying out its functions.

HMFSI Inspectors may, in carrying out inspections, assess whether the SFRS is complying with its duty to secure Best Value and continuous improvement. If necessary, Inspectors can be directed by Scottish Ministers to look into anything relating to the SFRS as they consider appropriate.

We also have an established role in providing professional advice and guidance on the emergency response, legislation and education in relation to the Fire and Rescue Service in Scotland.

Our powers give latitude to investigate areas we consider necessary or expedient for the purposes of, or in connection with, the carrying out of our functions.

The SFRS must provide us with such assistance and co-operation as we may require to enable us to carry out our functions.

When we publish a report, the SFRS must have regard to what we have found and take such measures, if any, as it thinks fit.

Where our report identifies that the SFRS is not efficient or effective (or Best Value not secured), or will, unless remedial measures are taken, cease to be efficient or effective, Scottish Ministers may direct the Scottish Fire and Rescue Service to take such measures as may be required. The SFRS must comply with any direction given.

We work with other inspectorates and agencies across the public sector and co-ordinate our activities to reduce the burden of inspection and avoid unnecessary duplication.

We aim to add value and strengthen public confidence in the SFRS and do this through independent scrutiny and evidence-led reporting about what we find. Where we make recommendations in a report, we will follow them up to assess the level of progress. We will aim to identify and promote good practice that can be applied across Scotland.

Our approach is to support the SFRS to deliver services that are high quality, continually improving, effective and responsive to local and national needs. The terms of reference for inspections are consulted upon and agreed with parties that the Chief Inspector deems relevant.

Appendix C

How this inspection was carried out

The aim of this inspection is to assess the effectiveness, efficiency and preparedness of the Service and alignment to SG policies and how it plans, prepares and responds to incidents related to changes in weather conditions.

An inquiry by HM Inspectorate can be self-directed or can be subject to direction by Scottish Ministers. This inquiry is self-directed by HM Chief Inspector. The decision to carry out this inspection was influenced by the topicality of the subject, the strategic priority in the Framework, and the legal duties imposed on the SFRS.

The Inspection team members were:

- Robert Scott QFSM, Chief Inspector
- Rick Taylor, former Assistant Inspector, lead inspector from inception of this inspection until leaving the inspectorate in November 2022
- Brian McKenzie, Assistant Inspector, lead inspector from November 2022
- Iain Cameron, Inspection Officer (Seconded from the SFRS)

A quality assurance process assisted us by challenging a draft of this report. Quality assurance was carried out by Dan Stephens QFSM, Chief Fire and Rescue Adviser and Inspector for Wales.

All the members of the inspection team contributed to the development of this report and the quality assurance provided a professional challenge to the contents, assumptions and conclusions made. However, the Chief Inspector takes sole responsibility for the report, its contents and conclusions.

Our report reflects the circumstance at the time of our visits and interviews which were undertaken between August to December 2022 and March to May 2023. The SFRS is continuing to change and evolve, consequently, material changes may have occurred since the writing and publication of this report.

This inspection was not intended to be a comprehensive in-depth audit, albeit it is sufficiently detailed in order for the Chief Inspector to give a professional judgement on the activity and suitability of the Service's arrangements within an operational context. It has established, to the Chief Inspector's satisfaction, the facts needed to draw conclusions, make recommendations, identify areas for consideration and highlight good practice where appropriate.

Methodology

The inspection methodology used is similar to our previous Local Area Inspections (LAIs), our successor 'Service Delivery Area Inspections' and previous thematic inspections. It provides a structure to our inspection which is risk-based and proportionate.

A draft outline was prepared which defined the scope of the inspection. This was published on our website and consulted upon with the SFRS before fieldwork commenced.

The inspection commenced with a desk-top review of the SFRS's policy, procedures and data in relation to how the Service prepares, plans and responds to incidents that are weather related.

We spoke with key SFRS staff involved with the formulation of policy, gathering and providing information, training and exercising, monitoring performance, research and development and frontline call handlers and responders.

We visited a number of Service premises across Scotland, including fire stations covering all duty systems in the three SDAs, to interview and determine the understanding of the staff most likely to respond to weather related incidents. Our planned programme was modified to ensure Covid-19 control measures were maintained. This was necessary to protect all those we needed to engage with and to comply with restrictions in place at that time. Consequently we reduced the number of physical visits and included 'virtual' interviews using video technology.

The data and information supplied to us was used to cross-reference the written policies, procedures, reports and used to triangulate information we received in our interviews. Performance data supplied to us and data from published sites has been used to give context and inform the report.

The sampling methodology that we adopt is not designed, nor guaranteed, to identify all potential areas for consideration or good practice; we intend that it is a proportionate activity that provides sufficient detail and engagement, comparable with other inspections that we have carried out.

Our report is the product of reviewing and analysing the current data, engaging with a wide range of SFRS staff and external stakeholders, and considering evidence from our previous thematic inspections, LAIs and other inspections. It is reflective of the circumstances at the time of our interviews and visits.

During the inspection, HMFSI provided feedback to the SFRS single point of contact.

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