

# HM Fire Service Inspectorate

**Preparedness of the Scottish Fire and Rescue** Service for a serious flooding event

Integrity, Objectivity, and Fairness.

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All the members of the inspection team contributed to the development of this report and the quality assurance panel 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.

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## 1 Introduction

This report looks at the Scottish Fire and Rescue Service's (SFRS) preparedness for a serious flooding event, providing a review of relevant policies and procedures, the provision of equipment, the distribution of resources, the training of personnel and the level of resilience that is maintained for this incident type.

Statutory responsibility for attending serious flooding events is conferred on the SFRS by the *Fire (Additional Function)(Scotland) Order 2005* which states:

The SFRS shall make provision for the purpose of-

- (a) rescuing people trapped, or likely to become trapped, by water; and
- (b) protecting them from serious harm,

in the event of serious flooding in its area.

We have carried out this inspection specifically to look at the SFRS's preparedness to carry out its statutory responsibility in this regard, and we have not looked in detail at other aspects of flood response – such as protection of critical national infrastructure – that are not covered by the statutory duty. We do, however, anticipate that the SFRS will plan for and respond to requests for assistance that fall outwith its statutory duty – and some of the observations in this report may be relevant to that broader activity.

The SFRS has a further duty under the *Civil Contingencies Act 2004 (Contingency Planning)* (Scotland) Regulations 2005 to co-operate with partners and establish a programme of planning and exercising. Multi-agency planning in Scotland takes place within a defined resilience framework set up by the Scottish Government, which includes Regional and Local Resilience Partnerships (RRPs and LRPs) and, in the North, Emergency Response Groups. RRPs are responsible for producing a Risk and Preparedness Assessment (RPA) identifying risks within their areas and developing plans to mitigate these risks involving their members. Flooding appears as a significant risk within the RPAs of all three RRPs in Scotland. Our inspection considered the SFRS's involvement in this framework.

Flooding is acknowledged to be a significant risk to the public and to Scotland's infrastructure by the SFRS and by its partners including Scottish Government, local authorities, the Scottish Environment Protection Agency (SEPA) and Police Scotland. While likely trends in activity and risk in the future are unclear, it is important that the SFRS is in a position to respond effectively to any reasonably foreseeable flood scenario in Scotland.

We recognise that the SFRS has inherited a diverse range of equipment and resources linked to flood response, and has staff in various locations trained to different levels and with different capabilities. One key aspect of the inspection was to ascertain what plans the SFRS has in place to align its flood response capability across Scotland and how it would aim to provide equity of access as required by the Fire and Rescue Framework for Scotland 2013.

It has been suggested that the cost of flooding in terms of life risk, property loss, damage to critical infrastructure and business disruption are likely to increase in coming years<sup>1</sup>. Many factors have been documented as potentially contributing towards increased flood risk including climate change, the effectiveness of flood defences and new building development.

See for example Werritty et al. Climate Change: Flooding Occurrences Review, Scottish Executive Central Research Unit, 2002

With this in mind, the inspection team wished to establish what work has been undertaken by the SFRS to identify areas of Scotland that may be at risk, and to make decisions regarding resource distribution and appropriate levels of investment in flood response capability.

As mentioned in the opening paragraph, another key element of preparation is the provision of effective training for personnel, and the inspection team were keen to see the training facilities and venues that are available and to witness training taking place. It was also important to speak to training staff and managers regarding the connection between flood response training and water rescue activities and establishing just how closely the two are linked or indeed overlap.

Finally, we have suggested in a previous report<sup>2</sup> that the SFRS should build partnerships with relevant organisations that have rescue capabilities, thereby enhancing the protection available to Scotland's communities. The inspection team were aware that work had been done in this area, and sought to establish the extent of this work and how it may support the Service's duties in relation to serious flooding events in the future.

## A summary of our findings

#### **Planning**

Overall, we found that few site-specific plans for flooding in high risk areas are held by the SFRS. Some generic operating procedures for flood response and water rescue are available and can be adapted by operational crews as necessary to address actual scenarios. However, our view is that the SFRS should work to compile a comprehensive list of flood plans in Scotland so that these can be readily made available at incidents and for training purposes.

The SFRS is in the process of developing national policy and procedures for managing flooding and water rescue incidents. We think that it is important that this work is completed and partner agencies briefed as to the outcomes.

The SFRS's planning focus surrounding the closely linked disciplines of water rescue and flood response is weighted at present towards the former. While acute water rescue is both time critical and closely linked to flood response, we think that it would be useful for the SFRS to develop specific planning assumptions about the number of resources it might need for different types of serious flooding incident, including major, wide-area flooding.

The SFRS would respond to a major flooding event with trained water rescue crews and also Flood First Responder (FFR) crews, who are trained in wading rescues and, in some cases, in the use of inflatable 'rescue sleds' to support these activities. In our view SFRS planning to date has focused more on the swift water rescue teams available to the Service, and should take full account of the capabilities and numbers of FFR crews available to mount a large scale and sustainable response to a major flood.

#### **Training and Exercising**

We have encountered significant evidence of high quality tactical level training being undertaken for water rescue operations which provides a skill base across the SFRS appropriate to the discharge of its statutory functions.

There has been little in the way of practical multi-agency training and exercising for flood response undertaken in recent years, despite flooding appearing on all RRP Risk Preparedness Audits and the UK National Risk Assessment. Although there have been a number of large-scale multi-agency exercises based on other scenarios, we think that there is merit in exploring opportunities for a large-scale multi-agency exercise based on serious flooding.

#### Resources

SFRS resources are available both for boat-based water rescue, and wading-based flood response. In a serious flooding incident, the wading-based flood response capability of the service may be just as important as rescue boats. We think that the SFRS should ensure that the equipment and training provided to FFR stations in Scotland is harmonised, and thought should be given to promoting FFRs as a resource that can be deployed independently of rescue boats in appropriate cases.

There is currently a significant capability gap in the area covered by the former Highlands and Islands Fire and Rescue Service. Water basic awareness training³ has not been completed in all stations in that area, and there are no FFR qualified stations in the area at present. An internal SFRS review recommends that all personnel should be trained to level 1 water awareness standards, and given the large number of watercourses and areas of standing water in the former Highlands and Islands area, this training should be completed as soon as practicable.

There are variations in the personal protective equipment (PPE) issued to water rescue and FFR crews across Scotland. We are mindful of the budget issues involved, but would encourage a focus on the standardisation of equipment issued to FFR crews and ensuring its compatibility with training and operational requirements. If it is possible within budgetary constraints, provision of personal issue drysuits to all trained water rescue and flood first responders should be considered.

#### **Flood Mitigation**

There is potential for SFRS crews to deliver property level flood protection advice during Home Fire Safety Visits. This would be a logical progression of the SFRS's community safety engagement activities, particularly if, as expected, special services such as flood and water rescue continue to form a growing proportion of the SFRS's business. Although the detail would be for the SFRS to work out, we would encourage the Service to consider a greater involvement in prevention and mitigation activities when planning its activities in relation to serious flooding.

This provides a basic level of awareness of water safety to emergency crews and trains them to carry out shore-based rescue techniques, such as line throwing, without entering the water.

## 2\_About the inspection

Her Majesty's Fire Service Inspectorate in Scotland (HMFSI) is a body that operates within, but independently of, the Scotlish Government. Inspectors have the scrutiny powers specified in section 43B of the 2005 Act. These include inquiring into the state and efficiency of SFRS, its compliance with Best Value, and the manner in which it is carrying out its functions.

An inquiry by the Inspectorate can be self-directed or can be subject to direction by Scottish Ministers. This inquiry into the SFRS is self-directed by the Chief Inspector. We decided to carry out this inspection based on the expressed intent of the Fire and Rescue Framework that SFRS should be a champion of specialist rescue, engage in multi-agency planning for significant risks, and provide equal access to national capacity. It is apparent from incidents occurring over the past few years, particularly in England, that major flooding presents significant challenges for the fire and rescue service, and we wish to establish whether, on the face of it, the SFRS has planned and is equipped to meet those challenges.

At the outset the purpose of this inspection was stated to be:

To consider the way in which the SFRS has planned to carry out its functions under the Fire (Additional Function)(Scotland) Order 2005 in relation to serious flooding and, in particular:

- How it has defined the limits of its responsibilities under legislation and secured a common understanding of them among other relevant agencies, including the definition of 'serious flooding';
- The nature and quality of the SFRS's plans for a serious flooding incident, including the extent to which it has co-operated with other agencies in preparing them;
- The adequacy of the SFRS's programme of exercises in relation to plans for a serious flooding incident, including the extent to which it has discharged its obligations of co-operation under the Civil Contingencies Act 2004 (Contingency Planning)(Scotland) Regulations 2005:
- The nature and adequacy of the resources available to the SFRS to carry out its functions under the Fire (Additional Function)(Scotland) Order 2005 in relation to serious flooding.

Flooding arises in various different circumstances, which can be broadly split into coastal flooding, river flooding and surface water flooding events. When we refer to flooding in this report, we mean the covering by water, from whatever source, of land which is not usually covered by water. So, flooding does not include bodies of standing water such as lochs and reservoirs, watercourses flowing within their usual banks, or tidal waters up to highest astronomical tide.

River and surface water flooding in particular can require the use of swift water rescue techniques and whilst this report is focused on flood response rather than water rescue, it was inevitable that many operational issues relating to water rescue were also covered within the inspection and within this report. Although we have in general attempted to limit our discussion to flooding-related issues, many of our comments have relevance to the water rescue environment as well.

#### **Methodology**

To underpin our inspection we met with hydrological experts from the University of Dundee, and SEPA, in order to establish what the realistic planning assumptions were for a major flooding incident in Scotland. We explored with them what likely scale of incident, in terms of area and number of households affected, might realistically occur on current levels of understanding. To cover the different types of flooding noted above we asked for advice about the potential impacts of serious river flooding, surface water flooding and coastal flooding events that could affect Scotland. We also held a number of meetings with representatives from the Scottish Government to gain a better understanding of the multi-agency structures around planning for a serious flooding event in Scotland.

Owing to the wide variety of circumstances and locations in which serious flooding could occur in Scotland, we did not conduct our inspection as a comprehensive audit. Instead we focused our inquiries on the preparedness of the SFRS to respond to a serious flooding incident wherever it might happen to occur in Scotland – making allowances, however, for the fact that a 'typical' flood would vary in its nature across Scotland, depending on the geography of the catchment and the extent of development in the locality.

Inspectors met with senior managers from the SFRS and requested documentary evidence of past and current planning for incidents of this nature. This request included multi-agency plans, and SFRS and predecessor services' single agency plans. We considered the advice we had received from expert hydrologists about the likely nature and extent of a major flood in Scotland, and considered how this compared with the SFRS's response planning. We asked about the existence of a programme of exercises to test multi-agency capacity and cooperation.

Once we had ascertained the current state of planning for a serious flooding incident, and had confirmed the SFRS's understanding of its potential role in the event of an incident, we followed two parallel lines of inquiry. We met with representatives of other agencies that had been involved in the planning process and would be involved in response to a major flood, to gauge the extent to which the SFRS's role was understood and agreed. We also carried out a review of the personnel and equipment available to the SFRS, to enable us to reach conclusions on the capacity of the Service to carry out its role.

In order to test the information we had been given about planning and capacity, we visited locations across Scotland in order to speak with SFRS staff and managers, and local partner agencies, to confirm the details we had been given. At an early stage of this inspection, we had intended to test SFRS readiness in relation to specific flooding scenarios, covering a range of possible incident types. However, over the course of the inspection, and to provide a better insight into national capacity, we modified this approach to consider instead the question of whether across Scotland sufficient resources would be available to manage a major flooding incident, taking into account the challenges that might exist in deploying resources in more remote locations.

Overall, while our methodology does not provide confirmation that every possible serious flooding scenario in Scotland has been planned for, it does in our view provide a valid cross-section of the Service's planning and capability in the field; and we were also able to consider the SFRS's ability to deploy a flood rescue capability to a location that does not have one permanently based nearby.

# 3\_Our findings

We report our findings under six headings that we consider are relevant to any flood rescue scenario: multi-agency planning; internal planning; exercising; training and capability; equipment, and legislative requirements. As noted above, our methodology has involved sampling, not auditing – so, for example, where we pass comment on multi-agency planning, those comments will not necessarily hold good for each and every flood planning scenario in Scotland. We consider, however, that the examples we have chosen to look at will give a good overall impression of the state of play across the country.

Some issues, such as training and equipment, are by their nature relevant to the whole SFRS in any event. The context should show where this is the case.

In our statement on the purpose of this inspection, we referred to establishing a definition of what 'serious flooding' (the term used in legislation) is. The legislation defines 'serious flooding' as flooding that causes or is likely to cause people to die, be seriously injured or become seriously ill. The definition did not appear to pose any difficulties to the SFRS: there was an unspoken assumption that any flood requiring people to be rescued or kept safe from serious harm was going to be 'serious' in that respect, and any call for help or protection from serious harm would be responded to.

We have already noted that the *Fire (Additional Function)(Scotland) Order 2005*, referring as it does to 'people trapped, or likely to become trapped, by water' does not encompass the protection of critical national infrastructure. We have approached this inspection on the basis that the relevant part of the Order is about rescuing people. We would, however, anticipate that the SFRS would respond to a call for assistance in protecting critical national infrastructure from flooding, in the same way that the fire and rescue service has responded for many years to calls for help in protecting flood-affected property or pumping out water. The High Volume Pumps maintained by the SFRS would probably play an important role in any such incident.

## 3.1\_Planning - multi-agency planning

Overall, we were impressed with the resources available to the Scottish community in terms of flood forecasting and the understanding of how flooding may impact Scotland. The consistent advice we received was that weather-related flooding in Scotland could be expected to be of a different nature to that experienced in England and Wales, owing to differences in landscape, climate, and the river systems involved.

We were told that for any given incident, the acute ('water rising') phase would not be likely to last longer than 48 hours, after which the incident would move into the recovery phase where cleanup and the removal of standing water would become the main priorities. This is in contrast to England where the duration of the acute phase of a flood can last longer.

That is not, of course, to overlook the possibility of multiple consecutive events caused by a prolonged period of bad weather, or simultaneous events in neighbouring regions. However, a reasonable starting point for the SFRS and partner agencies would be to consider the need to resource operations for an initial 48 hours, with consideration then being given to the provision of resilience for multiple consecutive events.

Any serious flooding event will attract a multi-agency response and the SFRS will be one of the key partners during the acute phase of an incident where flood water may still be rising and people and property are at risk. However, the fire and rescue service will not be the lead body in co-ordinating a wide-area flooding response<sup>4</sup>, and must work collaboratively within a team to ensure that their activities complement and support those of every other agency on scene in pursuance of an agreed plan and its aims.

The SFRS's planning responsibilities in this respect sit within a statutory framework: planning obligations fall upon the SFRS under the *Civil Contingencies Act 2004* and the *Civil Contingencies Act 2004* (Contingency Planning)(Scotland) Regulations 2005. This legislation requires the SFRS to plan to ensure that if an emergency occurs or is likely to occur, it is able to perform its functions for the purpose of reducing, controlling or mitigating its effects, or taking other action in connection with it<sup>5</sup>. The SFRS is also required to consider whether it should do so by way of a multi-agency plan<sup>6</sup>. The legislation does not require these plans to be hazard-specific, and so the general doctrine and procedures adopted by the SFRS in relation to incident response and command would appear to fulfil the statutory duty to plan.

Multi-agency planning in Scotland takes place within a defined resilience framework set up by the Scottish Government, which includes Regional and Local Resilience Partnerships and, in the North, Emergency Response Groups. The three Regional Resilience Partnerships (RRPs) are coterminous with the SFRS North, West and East Service Delivery Areas, whereas the Local Resilience Partnerships (LRPs) follow the boundaries of the predecessor Strategic Co-ordinating Groups. An SFRS Deputy Assistant Chief Officer sits on each of the RRPs and Local Senior Officers sit on LRPs. When we spoke to people outwith the SFRS who are involved in LRPs or RRPs, we received positive feedback about the SFRS's involvement and willingness to take a lead in discussing tactical issues, so that there is good evidence that the SFRS is well-involved in multi-agency emergency planning structures nationally.

RRPs are responsible for producing a Risk and Preparedness Assessment (RPA) identifying risks within their areas and developing plans to mitigate these risks involving their members. Flooding appears as a significant risk within the RPAs of all three RRPs in Scotland and this would suggest that planning, training and exercising in how to resolve flooding incidents should be undertaken.

One of our objectives in this inspection was to determine what existing multi-agency flood planning (as opposed to generic emergency and consequence management planning) has been done across Scotland. We were interested in finding out both about non site-specific, and site-specific, planning that had been done on a multi-agency basis. In response to our requests for information, the SFRS was able to provide us with a limited number of plans: but discussions we had as we visited locations around the country led us to believe that there may be more, and that SFRS staff may be aware of these at a local level. At the LRP and RRP level, we also gained the impression from speaking to people that flood planning (whether site-specific, or applicable across a wider geographical area) had been carried out in many areas, but we were not referred to any comprehensive list of flood plans or resource from where they could be obtained.

- 4 This role is undertaken by Police Scotland
- 5 Civil Contingencies Act 2004 s2(1)(d)
- 6 Civil Contingencies Act 2004 (Contingency Planning)(Scotland) Regulations 2005 cl16(1)(b)

We were told by one senior officer that access to local, site-specific flood planning would be important to incident commanders in the early stages of management of an incident – and we think that its clearly correct. Our conclusion is that the SFRS does not have access to a comprehensive list of flood plans and may not be aware of all the site-specific flood plans that exist in Scotland. We recommend that work should be carried out by the SFRS to compile such a list and to make all such plans available to incident commanders through SFRS resources such as mobile data terminals, so that they are readily available in the early stages of an incident.

Because we are uncertain as to the current state of flood planning across the country, we are unsure how co-ordinated the plans that exist are, and how much collaboration there has been between partner agencies in their production. As we discuss later in this report, there has been little in the way of practical exercising undertaken that would identify how well or otherwise individual plans will work when implemented in a multi-agency environment. We think that the creation of a comprehensive list of available plans would be a good starting point for further work to review those issues.

## 3.2\_Planning - internal planning

Regardless of the state of multi-agency planning for flooding across Scotland, we take the view that there is a need for the SFRS to develop policies and procedures for flood response that provide staff with information about what the SFRS will do in response to serious flooding, and how it will do it. The need for this is underlined by the fact that the eight predecessor services, although there were commonalities in some aspects of flood response, all had different internal procedures in place. It is also important for the SFRS to be clear to partner agencies about the nature and extent of the involvement it will have in flood operations.

We think that generic (non site-specific) planning for flood response should take place at two levels: the higher, strategic level of consideration of *what* the SFRS will do, and the more operationally-focused level of *how* it will do it. This could be done in a single document or a suite of cross-referenced documents: but both of those levels of planning need to be covered. The planning that has been done can then be communicated to partner agencies such as Police Scotland (who retain overall responsibility for co-ordinating the response to a flood), local authorities (who will be responsible for aspects such as cleanup and recovery), and more generally across LRPs and RRPs. If this is done, then even if a specific flood plan does not exist for a location, emergency response partners can have some advance knowledge of how the SFRS will fit in to flood response operations.

To take a simple example, where flood warnings are in place, evacuation of potentially affected areas may be the appropriate way to prevent people becoming trapped and potentially put at risk by flood waters. Door knocking is the preferred method of communicating the need to evacuate to a community<sup>7</sup>, but this is a resource-intensive process. The availability of trained, uniformed SFRS personnel to help with evacuations in this way could be a significant benefit to flood incident managers. It should be made clear in advance to the relevant agencies whether SFRS personnel will in principle assist with evacuation activities before a flood takes

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place. This can be set out in a procedural document that is then disseminated to all interested stakeholders – so that there are no surprises at an incident.

The SFRS is in the process of developing policy and procedures for flood response and water rescue. We are advised that this process should be complete by the end of 2015, and we welcome the fact that the SFRS has identified the need for this work to be done, and that it is under way. We would emphasise, however, that having clear and comprehensive policy and procedural documents in place, and communicating these effectively to partners, is important to support an efficient and effective response to a serious flooding incident, and we recommend that the SFRS concludes work on these documents as soon as practicable.

In furtherance of its suggested role as a 'Champion of Specialist Rescue', the SFRS is developing a database to host details of external rescue assets and organisations that may be called upon for special rescue incidents including flood response. This database will be hosted and maintained by the SFRS, and will also be accessible to other organisations such as the police. The intent is that a joint decision would be taken by the response agencies involved in an incident whether to mobilise external resources, and this would, in the same way as other aspects of the response, be co-ordinated by Police Scotland: any such resources would come under the overall command structure of the incident. We welcome the development of this database, which is consistent both with previous recommendations of ours<sup>8</sup>, and the intent of the Fire and Rescue Framework. We hope to see the database in operation shortly – recognising that it will take time for it to be fully populated.

We have referred above to the advice we have been given about the likely duration of a major flooding incident in Scotland and how this may differ from England and Wales. We noted, when looking at SFRS draft documents and speaking with staff, that the discussion of SFRS resourcing levels seems to be focused on the provision of rescue boats, influenced by work done by the SFRS Response and Resilience Directorate on reviewing water rescue specialist resources. The number of water rescue boats (currently 16, intended to be increased to 20) has been based on considerations of how long it would take a boat to reach a water rescue incident across Scotland.

The considerations for a major flood are different: there may be a number of days' warning, and what is important is not necessarily how quickly a boat can reach the scene, but whether there are enough boats, trained personnel, equipment and logistical support to carry out the anticipated number of rescues for the duration of the incident. That requires the making of (informed) assumptions about how long a flood would last and how many people would be involved.

It may also involve different tactical solutions than the use of powered boats by trained swift water rescue operatives. The specialist resources review referred to above contained some discussion of water rescue first responders, otherwise called level 2 teams (level 1 refers to basic awareness of land-based water rescue), who are trained to enter water to wading depth. We found in our inspection that these resources, which are available from 66 locations across Scotland, are also referred to as flood first responders (FFR) and that they could play a significant role in flooding, as well as water rescue, incidents.

A Report to Scottish Ministers – the 2008 Galston Mine Incident, HM Chief Inspector of Fire and Rescue Authorities, 2012 and An Overview of the Scottish Fire and Rescue Service, HMFSI, 2013

Fully-trained FFR crews are able safely to enter flood waters shallow enough to wade in, and can also use unpowered inflatable rescue sleds to move members of the public through shallower flood waters. In speaking with crews with experience of flood response, both at FFR level and fully trained water rescue crews, we were advised that this kind of 'wading rescue' is more common at a flood than a rescue using a powered boat as the mode of transport. It seemed to us that FFR crews might in fact provide the majority of resources at a major flooding incident, and we think that planning for such an incident should explicitly take this into account.

With an intended 20 water rescue stations and at least 66 flood first responder stations<sup>9</sup>, there would seem potentially to be significant resources in Scotland to respond to serious flooding (and our attention has not been drawn to any recent or historic incident where there were insufficient flood rescue resources on hand). But we think that some steps should be taken to define the number and type of resources that SFRS believes it would need to respond to any reasonably foreseeable flood – including not just the resources that would be required to carry out the SFRS's statutory duties, but also resources that the SFRS considers that it might need to commit to other functions such as protection of infrastructure. This work should be accompanied by a consideration of the actions to be taken if, for whatever reason, resources run out.

As noted already, the SFRS is currently working on policy and procedures for flood response, to be completed by the end of 2015. Having discussed this with relevant staff our expectation is that the resulting documents will address the following issues:

- A general statement that a flooding incident is a dynamic and sometimes unpredictable environment, and intelligent, risk-assessed adaptation of standard operating procedures may be called for in unusual situations
- Actions to be taken on receipt of flood warnings
- Response to minor flooding: activities SFRS will undertake and nature of assets to be deployed
- Response where a boat is required: specifically, how many boats and supporting assets would be dispatched to a call for assistance at a flood or water rescue, and minimum crewing required
- Command and co-ordination for an anticipated or actual serious flooding incident
- Assets to be deployed to a serious flooding incident
- Use of powered craft and unpowered rescue sleds or boats in a flood environment
- Whether SFRS will in principle take part in activities prior to a flood occurring, for example assisting police in evacuation of an area under threat of flooding which has not yet flooded
- Identification of tactical priorities at a serious flooding incident, including considerations of property protection and critical infrastructure as well as preservation of life
- Use of high volume pumps
- Consideration of the use of third party assets, particularly RNLI and Coastguard

9 66 is the current number, with more planned in north-west Scotland in particular

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- Consideration of the assistance available from the UK Fire and Rescue Service National Co-ordination Centre
- De-escalation of an incident and when SFRS would seek to hand over the scene to other agencies.

We have been briefed on the proposed content of the SFRS command and response procedures for flooding, and these seem to us to address many of these requirements. It is intended to establish a flood co-ordinating group in the event of a major flood, which would have responsibility for making decisions about the allocation of resources to multiple events, the maintaining of a strategic reserve of resources to deal with other incidents as they arise, and if necessary, to recommend that resources be requested from elsewhere in the UK by way of mutual aid.

Response to a major flood would involve the deployment of flood response groups made up of a combination of rescue boats and FFR crews, together with a Flood and Environmental Response Unit (FERU) to provide support and logistics. We think that this is a sound approach and would additionally encourage the development of some broad planning assumptions as suggested above, to underpin planning for the number of resources that might foreseeably be required at an incident.

In connection with the idea that resources could be requested from elsewhere in the UK if resources from within Scotland were overstretched by a major event, we would also draw attention to the Chief Fire Officers' Association (CFOA)'s debrief of the major flooding in England in 2014<sup>10</sup>. The debrief report notes that

most affected FRS were required to call upon a significantly higher number of resources than had previously been encountered, acknowledging that in some cases pre-existing planning had not envisaged deployments on such a large scale. This provided considerable challenges across the command, control and co-ordination spectrum ...

We think that the conclusions of the CFOA debrief provide valuable guidance on considerations to be addressed when planning both to request and to provide mutual aid in a major flooding scenario, and in that light would encourage SFRS planning to include consideration of how large scale deployments from outwith Scotland would be managed, both logistically and from a command, control and co-ordination point of view.

## 3.3\_Exercising

In the course of this inspection we conducted a number of field visits and spoke to various SFRS staff members at all levels and to a number of partner agencies and to Scottish Government representatives on RRPs. We were advised of one recent table-top exercise based on flooding in the North SDA, but there were no other examples of recent exercising of a flooding scenario brought to our attention. We were told that water rescue training is regularly conducted by the SFRS, with use of various locations for 'in-water' work including the Water Sports Centre at Pinkston in Glasgow. Whilst this training provides a good skill

set for use at flooding incidents, it does not comprehensively prepare crews for all of the challenges that may be faced at a serious flooding incident and does not prepare crews and officers for the multi-agency working that is likely to be required.

A number of people we spoke to involved in the broader resilience community in Scotland highlighted other multi-agency exercises that had taken place based on other scenarios. We were advised that the consequence management elements of these exercises were as relevant to flooding as they were to the scenarios on which they were based: and accordingly, that the multi-agency working that had been tested and developed in those exercises would translate to a flooding scenario as well.

We acknowledge that there has been multi-agency exercising, and indeed a number of significant multi-agency operations, in Scotland in recent years and we agree that this will have contributed in a positive way to the SFRS's preparedness to participate in a multi-agency environment at a flooding incident. That said, we encountered evidence, when speaking to partner agencies, that co-ordination between response agencies in advance of a recent major flood threat was lacking, leading to a duplication of activity and resultant wasted effort.

Notwithstanding the level of joint exercising for other scenarios, we still consider it important for the agencies potentially involved in a serious flooding incident to consider opportunities for exercising. The conduct of exercises – particularly multi-agency exercises dealing with issues of mobilising, command and co-ordination – are a valuable way of testing existing plans, exposing weaknesses, and offering the opportunity to revise them following a classic plan – do – check – act cycle<sup>11</sup>.

There will inevitably be logistical and intelligence activities relevant to a flooding scenario that will not arise in other contexts: we have already observed that SFRS internal planning for flood response will involve a number of concepts which are new in Scotland, including flood coordinating groups, flood response groups and the use of tactical advisers to support Silver and Gold commanders. It seems to us that some level of exercising will be required to check that those resources operate effectively.

We also think that few opportunities have been identified for multi-agency exercising of a serious flood event at regional as opposed to local level. We do not underestimate the obstacles involved. In order for an effective exercise to take place, significant exercise planning resources have to be brought into play, and substantial amounts of management, and potentially responder, time may be involved. Accordingly the conduct of major exercises is not something that can be arranged at short notice, and finite resources have to be allocated to current organisational priorities when planning major exercise scenarios.

Having said that, in our view there is scope for the SFRS to approach partner agencies, the Scottish Resilience Development Service and the Scottish Multi-Agency Resilience Training and Exercise Unit, and to review its own internal exercise programme, to see whether an exercise based on a major flooding scenario could be conducted in the future. We note the major Exercise Watermark that took place in England and Wales in 2011, and which resulted in a substantial post-exercise report and findings. We have already commented on the

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differences between England, Wales and Scotland in relation to possible flooding scenarios, and the absence of Scottish involvement in Exercise Watermark no doubt reflected not only the devolved nature of the issues in play, but the perceived variation in flood risk as between England and Scotland.

It is, however, unlikely to be found acceptable if Scotland is affected by major flooding in the future, and opportunities to check and fine tune response capabilities have been missed leading to deficiencies in the response. We therefore recommend that SFRS should bring some focus to bear on considering how this gap might be filled.

## 3.4\_Training and capability

The SFRS has worked closely with the internationally recognised water rescue organisation Rescue 3 to set its training standards. Rescue 3 is a large and internationally networked company<sup>12</sup> that has provided water rescue training and curricula since 1979 and is represented in 32 countries worldwide. SFRS instructors, working to externally set standards, provide training to SFRS personnel in water and flood rescue techniques, and Rescue 3 periodically audits the work of SFRS trainers to ensure standards are maintained. This arrangement provides a good level of assurance that SFRS personnel are trained to international standards in terms of flood and water rescue tactics.

The water rescue specialist resources review referred to previously listed in detail the available personnel and existing training standards across Scotland. The review document made recommendations for harmonising training and providing a consistent distribution of resources across the country. Based on the review document, it is our view that the SFRS understands the need for a nationally consistent typology and role description for these resources, and work is progressing towards this. The training levels recommended in that review mirror internationally understood standards, for example DEFRA team typing<sup>13</sup>, which is important in the context of potential cross-border mutual aid.

A consistent message we heard as we spoke to both swift water rescue and FFR crews around the country, was the difficulty that they encountered in getting off-station training that involved the chance to maintain in-water skills. This difficulty comes both from the need to maintain operational cover while crews travel to suitable training locations, and also the challenges in identifying and risk-assessing enough training locations around the country.

We were told of steps that are being taken to address these issues, including a focus on making sure that all personnel are briefed on existing risk-assessed locations, and where possible, identifying and risk-assessing more. We also had the opportunity to visit the Pinkston Watersports Centre in Glasgow which is used by the SFRS to provide water rescue training in a controlled environment. This facility was purpose built for white water canoeing and other water sports, and can provide realistic training in many aspects of water rescue. The SFRS has plans to develop an area of this facility to provide enhanced training for urban flood rescue scenarios, allowing crews to train in the removal of casualties from buildings.

<sup>12</sup> http://www.rescue3international.com/aboutrescue3.php

That is, training and equipping of teams in accordance with the standards set out in a Concept of Operations document published by the UK Department for the Environment, Food and Rural Affairs (DEFRA) in 2010

Skills maintenance for water and flood rescue crews is important, particularly in areas where there may be few actual incidents to maintain operational currency. We encourage the SFRS to continue to focus on how best to provide sufficient skills maintenance opportunities for all its water rescue and flood first responder crews, including the use both of suitable risk-assessed sites in the natural environment, and facilities such as the one at Pinkston.

In general, we found a lack of joint training involving water rescue stations and FFR crews, despite the fact that they would be expected to work very closely together in resolving any serious flooding incident. FFR crews could undertake a number of duties in support of water rescue crews including upstream and downstream safety, so in our view it would be sensible to encourage water rescue teams and FFR crews to train together where possible.

We encountered some differences in the crewing of specialist water rescue resources across Scotland, with associated variations in response protocols. In some locations a minimum of six water rescue trained personnel is required to crew a boat; but once on scene that boat will deploy straight away. By contrast, in another location the minimum crew was five, but the expectation was that the boat would not deploy until a second boat was on scene – perhaps delaying operations by 30 minutes or more.

We expect that anomalies of this nature will be eradicated by national policies and procedures of the kind currently being developed. It is fundamentally for the SFRS to risk-assess and decide upon appropriate minimum crewing and response protocols: we can see merit in the proposal that two boats should be deployed as a minimum to any incident to provide backup and an added element of safety, but along with that we note that in parts of the country, the first arriving boat will deploy without having to wait for the second to arrive on scene. Given the obvious attractions in terms of providing the fastest possible response to a potentially time-critical situation, we encourage consideration of that as part of a suitably risk-assessed service-wide policy.

There is currently a significant capability gap in the area covered by the former Highlands and Islands Fire and Rescue Service. Firefighters in other areas of Scotland have all been trained in water basic awareness. This allows for safe working near water, and use of shore-based rescue techniques such as line throwing or the use of inflated hoses for reaching out to people trapped by, or in, water. This training has not been completed in all stations in the former Highlands and Islands FRS area, and there are no flood first responder (level 2) qualified stations in the area at present.

The water rescue specialist resources review recommends that all personnel should be trained to level 1 water awareness standards, and given the large amount of standing water and watercourses in the former Highlands and Islands area we recommend the completion of this training as soon as practicable.

FFR personnel may play an important role in supporting swift water rescue and flood boat resources (level 3 and 4) and on the face of it we would expect these resources to be available in the former Highlands and Islands area as elsewhere in Scotland. This is particularly so, given that the geography of northern Scotland means that it is inevitable that it will take a significant period of time for level 3 and 4 resources to arrive at an incident in much of this region: having strategically distributed level 2 trained stations would allow for initial actions to be taken to provide command and control, carry out scene safety and initial rescue actions that are within

their capabilities, and relay incident information to oncoming specialist resources. Again, we understand that the SFRS has plans to do this: we would encourage the Service to realise those plans.

The SFRS has staff trained in incident command including Gold Command, and we consider that it would be able to maintain a Gold Command presence in a multi-agency command centre for the duration of any foreseeable flood incident. We have reservations, however, about the level of technical support available. Gold commanders do not receive specific detailed training on flood response, and would require support from tactical advisers to be able to make informed decisions about deployment of flood response assets.

The water rescue specialist resources review outlines a recommendation that the SFRS develops a cadre of tactical advisers for this purpose. Currently the SFRS has only one tactical adviser trained to standards that are recognised by the National Resilience Assurance Team (NRAT) in England. We understand that the SFRS would request resources from elsewhere in the UK as a fall-back position if its own capabilities were over-stretched, and it would therefore be appropriate to be able to offer the same support if required. The ability to move flood response resources within the UK is dependent to an extent on fire and rescue services having staff trained to UK-recognised standards, and we consider that SFRS resilience for a major event is not assured until those staff are available. We think that SFRS tactical advisers should accordingly be trained to the NRAT-recognised standards.

The SFRS has plans to train a number of staff to be Water Incident Managers (WIMs) and initially identified flexi-duty officers as the appropriate source of candidates for this training. We understand, however, that this thinking has developed, given that the first incident managers on scene, and those generally responsible for giving direction at a tactical level, will be watch managers. It appears to us to be logical that watch managers who are responsible for managing level 3 and 4 swift water rescue and rescue boat resources should have access to specialist WIM training.

### 3.5 Equipment

HMFSI has consistently taken the view that we are not experts on equipment, and it is for the SFRS, using the skills and expertise of its employees, to decide upon the appropriate PPE and other resources to kit out its water and flood rescue units. We do, in the context of flood and water rescue, have the benefit of a Concept of Operations document published by the Department for the Environment, Food and Rural Affairs (DEFRA) in 2010, which sets out the equipment relevant to different team types defined in that document, including water rescue boat, water rescue technician, and water rescue first responder. The SFRS proposes to develop a capability aligned with the DEFRA team types, and we think that this is a sensible approach in that the equipment provided to teams will be benchmarked against accepted good practice.

The water rescue craft that we saw had, generally, been acquired by predecessor fire and rescue services as part of the New Dimension Programme in the mid-2000s. Consistently at water rescue stations we visited, the equipment appeared well-maintained, and because of its provenance it was similar across the country regardless of the predecessor service in whose area it once fell.

There were differences in the way that boats were kept in readiness for deployment. The SFRS is well aware of these, and the SFRS review of water rescue specialist resources identified, for example, that in some areas boats were kept inflated and on a trailer, whereas in others the boat was deflated and kept on an appliance, with the idea that it would be inflated on scene.

It goes beyond the scope of this report to make judgements about these matters: we welcome the detailed work that has already been done by the SFRS on this subject and endorse the notion of having a single policy across the SFRS for the storage and deployment of rescue boats.

One issue that we discussed with water rescue crews was the availability of drysuits. Drysuits are recognised in the DEFRA Concept of Operations as being appropriate issue for boat operators, water rescue technicians and water rescue first responders. They offer a good level of thermal protection as well as protection against water-borne pathogens (a known risk in flood operations).

We wished to examine whether sufficient drysuits were available to crews and what the arrangements would be for drying them in the event of protracted operational activity. It came to our attention as we discussed this with crews across the country, that whereas in some locations drysuits were personal issue, in others they were a communal stock that potentially had to be shared among different groups of firefighters.

So long as there is an adequate range of sizes (having a correctly-fitting drysuit is a safety matter) and there is sufficient access to cleaning and drying facilities, in principle a system of shared drysuit issue can be made to work. It was suggested to us, however, that in the event of extended operations, it was foreseeable that suits might be passed between crew members without cleaning or drying.

Owing to the effects of hard physical work in what is by definition a watertight suit, we do not think that it is optimal to plan things so that suits may need to be shared in this way. Drysuits are not cheap, and we understand the financial implications of personal issue as opposed to shared drysuits. Again, this is ultimately not a judgement for us to make, so long as the safety of crews is not compromised (and we did not hear any complaint from firefighters that they were asked to wear suits that did not fit, which would be the primary safety concern). The SFRS may wish to keep this issue under review.

Another, related issue is the way in which FFR teams are equipped. We encountered different arrangements across the country: in the West SDA crews have been issued with waterproof waders and jackets, while in the East drysuits are made available, but have to be brought to the scene on an appliance from a water rescue station<sup>14</sup>. FFR teams in the West SDA deploy on the pumping appliances from their stations, but flood rescue equipment will only have been placed on those vehicles if an instruction has been received from Operations Control following a weather warning. That can lead to crews deploying without their equipment if a flood has occurred in the absence of a weather warning – by reason of a burst water main, for example.

We also heard some differences in the equipment that FFR crews could use at an incident. Crews in the West SDA have been trained to use unpowered, inflatable 'rescue sleds' that they can deploy in the course of a wading rescue to carry members of the public to safety.

We note that the DEFRA Concept of Operations provides that flood first responders should be equipped with drysuits.

However, FFR crews in the East SDA were not trained on this equipment and would apparently have to wait for a water rescue station to respond to deploy it.

From this, and other feedback we received about the way in which flood first responder and water rescue crews were intended to operate together, we formed the impression that FFR crews might not always be seen as a resource that was designed to operate independently of a level 4 water rescue crew. However, in the event of major flooding, owing to their greater numbers and wider geographical distribution it will be those FFR crews that underpin the SFRS response. We suggest that the ongoing SFRS review of flood response doctrine should consider the position of flood first responder crews in some detail and should cover in particular the following issues:

- PPE issued to flood first responders, including whether drysuits should be issued to FFR crews to align with the provisions of the DEFRA Concept of Operations
- How flood first responder equipment can be stowed on appliances or otherwise stored so as to be immediately available to flood first responder crews when they are deployed, regardless of whether advance warnings are in place
- Whether unpowered inflatable 'rescue sleds' could be issued to flood first responders so that they can be deployed in a wading rescue situation without having to wait for a swift water rescue team and supporting vehicle to arrive.

Overall, we think that it would be advantageous if FFR crews were available on a 24 hour a day, 7 day a week basis for immediate deployment with all necessary PPE and equipment, and were trained in the use of equipment such as rescue sleds to allow them to operate as an effective and autonomous resource in serious flooding within the overall command structure.

In the course of our inspection in the West SDA we had the chance to see a Flood and Environmental Response Unit (FERU). This is based on a demountable pod with extendable awnings on either side, which carries equipment such as spare suits, rescue sleds, decontamination equipment for cleaning suits, and which can be adapted to provide a training and drying area. It was clear to us that the FERU would be a valuable resource at a longer-duration serious flooding incident, and we encourage consideration of whether additional such units could be provided in the future in other SDAs to enhance national resilience, and promote equal access to this capacity across Scotland.

We conclude this section on equipment with a mention of high-volume pumps (HVPs). Four of those were provided to Scotland as part of the New Dimension programme, and have proved valuable in moving large amounts of water quickly to mitigate the effects of flooding in locations such as Stonehaven. We have not looked at the provision or use of HVPs in any detail in this report: while undoubtedly a valuable tool, they fill a specific niche in the SFRS's capability which spans both the firefighting and flood response spheres. No doubt when this equipment reaches the end of its life, consideration will be given as to how the capability it represents will be maintained.

## 3.6\_Legislative requirements

One of our aims in carrying out this inspection was to assess the extent to which the SFRS could demonstrate its regard for legislation including the *Fire (Additional Function)(Scotland)* Order 2005, the Civil Contingencies Act 2004 (Contingency Planning)(Scotland) Regulations 2005, and also the intent of the *Fire and Rescue Framework 2013* in material respects. In doing so we have not, however, taken specialist legal advice and this report is not intended as a formal statement of compliance, or otherwise, with the provisions of legislation.

In relation to the *Fire (Additional Function)(Scotland) Order 2005*, we conclude that the SFRS has significant resources trained and equipped to rescue people in the event of serious flooding, and to protect them from serious harm, as required by the Order. We hope that the provision of national policies and procedures, and consideration of the other recommendations we make in this report, will improve the level of preparedness in this area, but we think that operationally the SFRS is in a position to carry out its duties under the Order.

The Civil Contingencies Act 2004 (Contingency Planning)(Scotland) Regulations 2005 require the SFRS to co-operate with partners and establish a programme of planning and exercising. We saw good evidence that the SFRS participates in LRP and RRP activities at strategic and operational level, and is seen by partners such as Police Scotland as a leading contributor. We heard also that there had been significant multi-agency planning and exercising across Scotland in recent years albeit not specifically in relation to flooding scenarios.

In general terms, it is clear that the SFRS participates actively in resilience structures, and we cannot identify any statutory provision that requires the maintenance of specific flood plans. We think that if the opportunity arises to conduct multi-agency exercises based on flooding then that would be a further demonstration of the SFRS's compliance with the Regulations.

The Fire and Rescue Framework 2013 emphasises the importance of multi-agency working, and the comments we have made in relation to the Regulations are relevant here as well. Another significant aspect of the Framework in the context of serious flooding is equal access to national capacity. We did in this respect note the lack of FFR capacity in the ex-Highlands and Islands Fire and Rescue Service area, and given our comments about the value of the FFR capability in responding to many types of flood, we would endorse and encourage the stated intention of the SFRS to develop a FFR capacity in this area.

Given the distances between major population centres in the north of the country, we think that it is unavoidable that longer response times will be experienced for specialist resources such as rescue boats than would be the case somewhere like the Central Belt. In those circumstances, provision of FFR assets, and a good understanding of what other resources are available from agencies such as the Coastguard or the voluntary sector, is important to maintain service provision to remote areas.

In contrast to the position in relation to fire, the SFRS does not have any statutory duty to carry out prevention work in relation to flood hazards, and the Fire and Rescue Framework does not touch on this. It appears to us, however, that it would be consistent with the intent of the Framework, and also with the conclusions of the Christie Commission<sup>15</sup> that public services

should prioritise preventative measures, for the SFRS to consider whether it could include aspects of flood hazard in the Community Safety Engagement (CSE) work that it carries out.

The concept of property level protection involves actions that householders can take either to make their property more resilient to flood damage, or to prevent ingress of water through drainage systems, air bricks and the like. There would potentially be a role for SFRS personnel carrying out home fire safety visits to include advice on property level protection in areas where this is relevant. Other safety messages that SFRS staff could be involved in include advice about the dangers of entering flood water whether on foot or in vehicles. Although it is a matter for the SFRS to work out whether and in what way flood-related advice could be included in its CSE agenda, we encourage some thought to be given to that.

# 4\_Conclusions and recommendations

The 2005 Act requires that the SFRS must have regard to this report and, having done so, must take such measures (if any) as it thinks fit in relation to the report. We have summarised below the most important conclusions coming out of this report and our recommendations in respect of them.

Overall, we found that a significant number of flood and water rescue resources are available to the SFRS and they have been trained to a good level. For this reason, if a serious flooding incident occurred now, it is our view that the SFRS would be able to deploy substantial resources to it, and would be in a position to discharge its statutory responsibilities in relation to serious flooding. There are, however, some opportunities for improvement in the overall preparedness of the SFRS as follows:

- 1. It is unclear to us exactly what the current state of multi-agency flood planning across Scotland is, and we do not think that the SFRS has access to a comprehensive collection, or list, of current flood plans. We recommend that the SFRS takes steps to compile a comprehensive list of flood plans in Scotland and make arrangements for them to be available to staff for incident command and planning purposes.
- 2. SFRS development of national policy and procedures for flooding is underway. It is important that this work is completed, and that partner agencies can be fully briefed on SFRS capabilities at a serious flooding incident for planning purposes, and we recommend that development work on these policies and procedures is completed as soon as practicable and shared with partner agencies as appropriate.
- 3. SFRS planning for resource allocation appears to us to have been based primarily on acute water rescue response. We are not aware of any work that has been done to estimate the probable number of resources that might be required at a major flooding incident and the length of time they would be required for. We recommend that the SFRS develops planning assumptions for resourcing a response to a major wide-area flooding incident, to include consideration of how resources from outwith Scotland would be requested and managed if they were needed.
- 4. Although water rescue boats are an important element of flood response, trained flood first responder (FFR) crews able to carry out wading rescues using inflatable sleds may have a significant role to play in operational capability at a serious flooding incident. We recommend that SFRS policy, procedures, training and equipment provision recognises the potential of FFR crews and that they are considered as a standalone specialist response option for flooding incidents.
- 5. We understand the financial and logistical barriers to conducting large-scale exercises based on a major flooding incident. We think however, particularly given that there has not been a major exercise of this nature in Scotland in recent times, that the SFRS should explore opportunities to conduct exercises based on a major flooding scenario, specifically with a view to exercising multi-agency procedures.

- 6. We think that generally speaking, training provided to SFRS water rescue and flood responders is of a high quality and should support both effective response and firefighter safety in this field. We have recommendations in two specific areas:
  - a. The proposed cadre of tactical advisers is an important support to SFRS senior managers and also a potential cross-border resource, and this cadre should be developed and trained to UK-recognised standards
  - b. The SFRS should ensure that level 1 (water awareness) training is completed by all its front-line staff, with particular reference to the North SDA, and a needs analysis should be carried out, again with particular reference to the North SDA, to identify train and equip an appropriate number of level 2 (flood first responder) staff to participate in and support flood operations.

# **Glossary and abbreviations**

An explanation of abbreviations and terminology used in this report can be found below.

CCA 2004 Civil Contingencies Act 2004

CSE Community Safety Engagement

DEFRA Department for the Environment and Rural Affairs

FERU Flood and Environmental Response Unit

FFR Flood First Responder

FRS Fire and Rescue Service

HMFSI HM Fire Service Inspectorate

LRP Local Resilience Partnership

Order, the Fire (Additional Function)(Scotland) Order 2005

PPE Personal Protective Equipment

Predecessor organisations The eight fire and rescue services in Scotland, and the Scottish

Fire Services College, that were combined into SFRS.

RPA Risk and Preparedness Assessment

RRP Regional Resilience Partnership

SDA Service Delivery Area

SEPA Scottish Environment Protection Agency

SFRS Scottish Fire and Rescue Service

SLT Strategic Leadership Team of the SFRS; the senior executive

officers and Directors.

WIM Water Incident Manager

2005 Act Fire (Scotland) Act 2005

2005 Regulations Civil Contingencies Act 2004 (Contingency Planning) (Scotland)

Regulations 2005



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