On arrival at an incident, the boat requires to be removed from its transit location, carried to the launch site, inflated by use of compressed air cylinders and have the motor attached before any rescue can be attempted.

In direct comparison, water rescue boats in many other areas are stored fully inflated, on a road-going trailer, with the outboard motor and all other equipment permanently attached, ready to be transported by a dedicated 4-wheel drive vehicle to allow ready access at a launch site.

Other resources have equally disparate methods of stowage and transportation. A number of heavy rescue resources around the country are combined with a USAR resource and carried in pods that are transported by a prime mover chassis. This method of transportation is reliable enough, but very slow. The pod requires to be mounted onto the chassis before leaving the station, and always requires to be dismounted at the incident before any equipment can be accessed. The prime mover also needs a very large area of hard standing to accommodate the process of dismounting the pod. Whilst this arrangement allows many areas to claim the availability of a heavy rescue resource, in reality the resource is a much diluted version, with a far slower response time than that provided by a dedicated heavy rescue vehicle such as the vehicle currently located in Easterhouse.

The current USAR provision across Scotland falls far short of the UK national standard. It would appear on the surface that Scotland is very well provided for in terms of USAR teams and equipment, with resources that appear to greatly exceed Government recommendations. However, on closer inspection, none of the teams operating in Scotland has the correct range of equipment, standardised tools or stowage arrangements that would allow us to declare the SFRS with a UK national USAR resource. Apart from the obvious shortcomings in capability that this means for the SFRS, not being a UK standard resource also precludes the SFRS from entering into reciprocal arrangements with fire and rescue services in England, potentially leaving Scotland vulnerable.

Concentrating the existing SFRS USAR assets into key sites around Scotland would serve as the first step towards developing a fully competent USAR response that would stand up to scrutiny and match those resources currently established elsewhere in the UK.

The removal of borders between legacy fire and rescue services, the requirement for more efficient and effective working practices, and the wealth of knowledge that exists across the SFRS must all be factors that are used to ensure a better, more robust and resilient special rescue provision for the communities of Scotland.

6. Water Rescue

Description

This term refers to incidents involving rescue of persons from inland waterways, floodwater and unstable ground. There are a range of water rescue levels within this incident type: shore-based rescue where crews operate from a safe area; wading techniques in flood waters; specially qualified crews entering swift-water or flood environments to affect rescues using tethered swimming techniques; or use of powered boats and associated equipment. The expectation within SFRS is to have the vast majority of crews trained and equipped to carry out shore based rescue, however this report is aimed at the more specialist attributes of rescue from swift water by swimming or powered boat.

Current Position

Water rescue incidents have become more common in recent years, although it is hard to establish whether this is an overall increase in the number people finding themselves in distress in a water environment, or simply an increased awareness by the public and partner agencies of the fire and rescue services' capabilities in this area.

A great disparity currently exists between the training, equipment, storage and deployment methods, and the naming conventions used across Scotland. Powered boats are often carried deflated to incidents, by vehicles designated for a range of uses such as prime movers or standard fire appliances, without any crew welfare provision and with a built-in time delay.

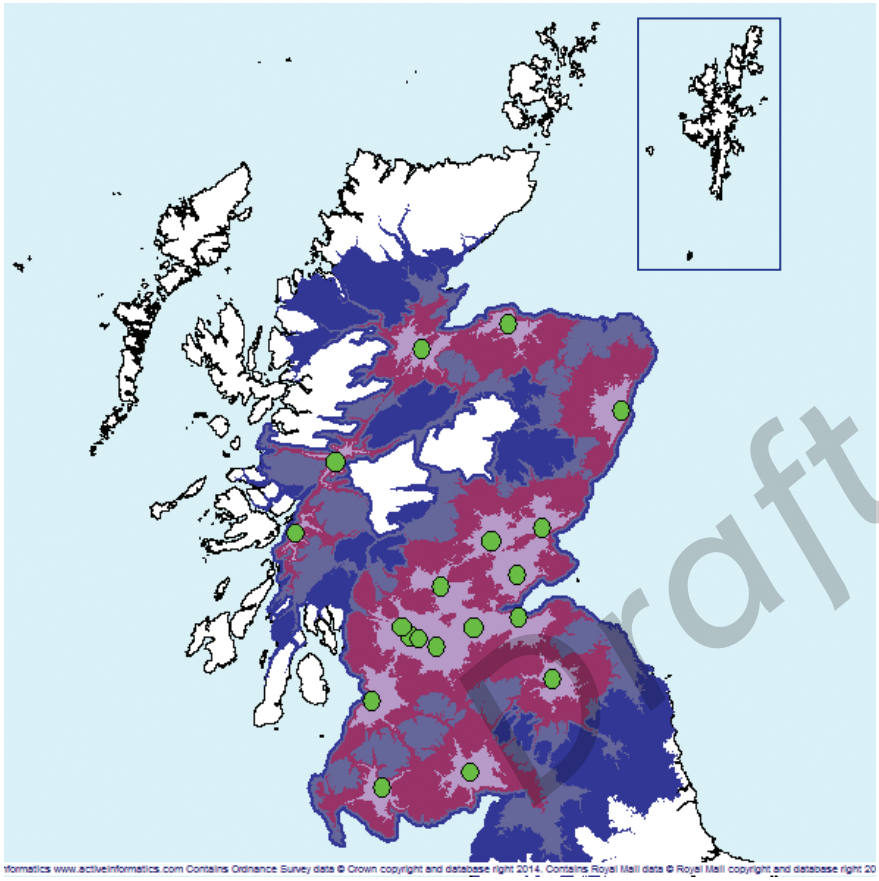
As a result of this, it would be inaccurate to describe all of our existing resources as truly providing a water rescue capability. Of the 16 declared resources, only around 50% are to the standard we would hope and expect; able to provide a rapid response in a range of water-based environments, utilising the full range of approved equipment.

What we plan to do

We recognise an increasing demand for water rescue resources across Scotland, highlighted by some of the tragic events that have occured on our inland waterways, particularly during summer months; and the likelihood of increased rainfall with associated flood potential during wetter winters. Our objective of ensuring equity of access to our resources across the communities of Scotland is a challenging and demanding target in this area. To achieve our targets and to improve our strategic coverage in this field we will deliver the following:

- All resources will have dedicated vehicles with crew welfare facilities, towing permanently inflated boats ready for immediate deployment.
- We will increase the number of fully equipped water rescue stations to 20.
- New resources introduced to Aberdeen, Oban, Fort William and the Scottish Borders to address existing gaps in coverage.
- The existing resource crewed by RDS staff at Annan will be moved to Dumfries to improve strategic deployment and training competence utilising wholetime crews.
- Ensure all crews trained to nationally recognised "team-typing" standards.

Water Rescue - Proposed End State



The adjacent diagram shows the coverage for Scotland following the introduction of new water rescue capabilities in Aberdeen, Fort William and Oban.

*There will also be one further water rescue resource located in the Scottish Borders area.

WATER RESCUE
Elgin
Central (Aberdeen)
Glenrothes
Perth
Kingsway East (Dundee)
Inverness
Oban
Motherwell
Ayr
Polmadie (Glasgow)
Knightswood (Glasgow)
Clydesmill (Cambuslang)
Dumfries
Stirling
Bathgate
Galashiels
Marionville (Edinburgh)
Fort William
Newton Stewart
*Hawick

7. Offshore Firefighting and Support

Description

Our duties and responsibilities on the mainland of Scotland are relatively clear, either statutorily or through custom, practice and community expectation. Our duties in the marine environment are less distinct, but nevertheless require consideration due to the number of inhabited islands and the volume of water-borne traffic around our shores. There are a number of approaches to delivering a response within the marine environment.

The Marine Operations Group (MOG) is the term used to describe trained fire crews that fulfil the SFRS statutory responsibility to deal with incidents on vessels 'alongside' in harbours, ports and terminals. These crews receive enhanced training and some additional equipment to assist them in this task.

Fire and Rescue Maritime Response (FRMR) involves teams with advanced training and specialist equipment responding to fires on ships and vessels at sea, being transported by helicopter or watercraft as appropriate.

Only one remaining FRMR group (previously MIRG) currently operates, from Greenock, and responds to fires on ships at sea, with personnel trained in air and sea transport techniques. Whilst initially funded by Government through the Maritime Coastguard Agency (MCA), if continued, this provision now requires to be supported fully from within the SFRS budget.

What we plan to do

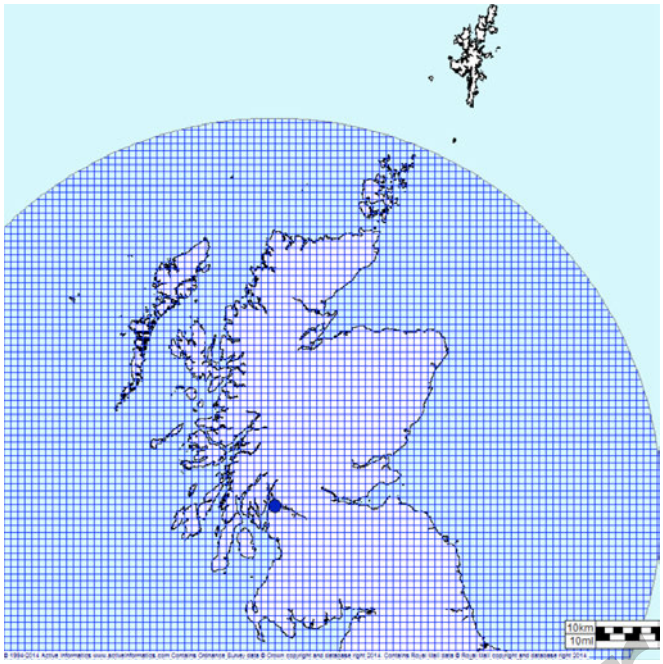
12 stations around Scotland will be selected to carry out the MOG role. A MOG station may be expected to attend incidents outwith its own area of responsibility and will require only limited additional equipment in addition to that carried on a standard rescue pump. MOG teams will only attend incidents in ships that are:

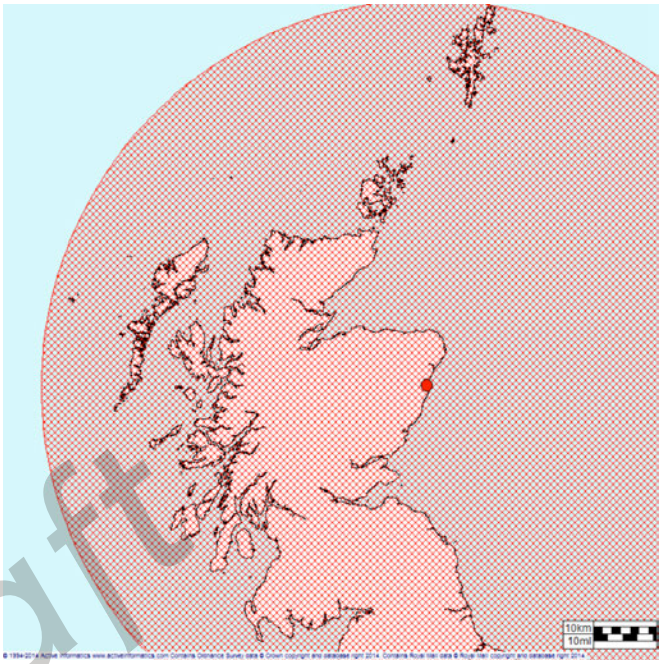
- moored alongside.
- in dry dock.
- under repair.
- under construction.

A separate project team consisting of representatives from the Response and Resilience Directorate and Service Delivery Areas will determine the locations of the 12 MOG stations.

The FRMR team will also be used in the delivery of operational support for remote, rural and island communities, by providing senior officers for incident command and additional firefighting crews for larger or more complex incidents in locations where this is otherwise difficult or impossible to achieve. This will include gaining water or airborne access to remote and island communities, and is part of a wide ranging policy addressing such issues.

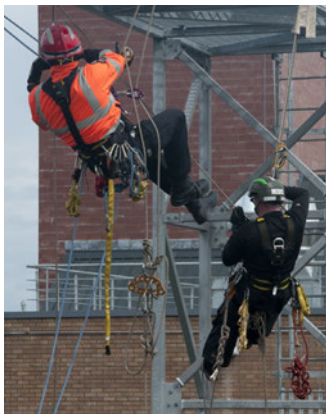
A feasibility study is currently ongoing looking into creating a second team, based in the North East of Scotland, to provide the same level of cover for the North and North East coasts, Orkney and Shetland Islands.





The diagrams above show the coverage afforded by Coastguard Helicopter from bases in Greenock and Aberdeen. All Coastguard helicopters have ranges in excess of 200 miles (400 round trip with 30 minutes operating time on site) which allows for marine firefighting teams or support teams for remote incidents to be transported anywhere on the Scottish mainland and to any of our inhabited islands.

8. Line Rescue



Description

Line or Rope Rescue is a form of technical rescue from height or below ground level, which involves the use of ropes, harnesses, anchoring and hauling devices. For SFRS purposes this is principally limited to urban and structural locations as the other categories of wilderness, mountain and cave rescue are largely the domain of other agencies.

Expectation within the SFRS is that the majority of our crews will be trained and equipped to Safe Working at Height (SWAH) standard, which equips crews to operate safely in such environments, including gaining access to casualties, but provides limited scope for the rescue and retrieval element. This report considers the need for an enhanced level of strategically placed resources, trained and equipped to handle the more complex rescues where height is a factor.

Current Position

SFRS inherited a position whereby seven of the eight legacy services provided some form of rope rescue facility. However, the levels of training, the terminology and the equipment used differ significantly across the country.

The upper end of the capability includes teams trained and equipped to deal with complex technical rescues including from open structures such as tower cranes; or involving horizontal and vertical stretcher lowers and raises. An enhanced SWAH capacity forms the lower end of the capability, which allows simple top-down access in order to stabilise the casualty until a full technical rope rescue team arrives, or if the situation dictates the possibility may exist to carry out a simple snatch rescue.

At present only teams in Edinburgh, East Kilbride and Lochgelly could be formally considered to be technical rope rescue teams available at all times. Additionally, Perth and Kingsway East (Dundee) are trained to a standard somewhere between the higher and lower ends of this capability, specifically to augment and enhance their water rescue provision. Other teams are either at the lower ends of the range, or operate the retained duty system (RDS) which severely compromises the ability to maintain competency under existing training and attendance regimes for RDS crews.

Large parts of Scotland, therefore, presently have limited or no access to technical rope rescue teams, other than through a disparate range of contracts and memoranda of understanding with external companies or agencies.

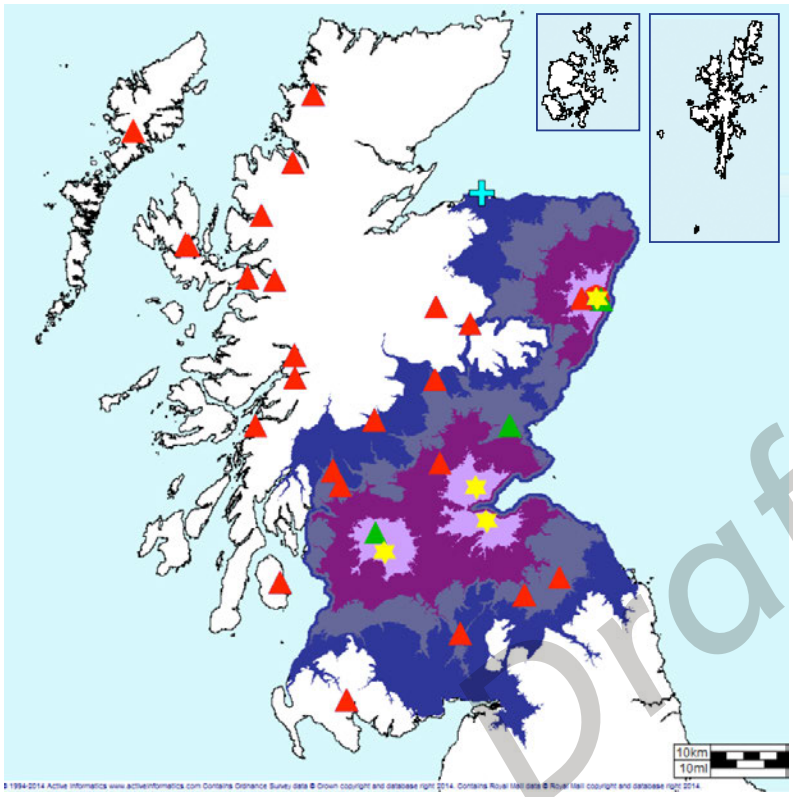
What we plan to do

The key objective for this attribute is to ensure we have competent crews, suitably trained and supported to carry out these complex tasks safely and successfully. This requires the implementation of a number of basic principles:

- Line rescue will be deployed from wholetime, multi-appliance stations to ensure the best use of resources in maintaining the onerous training requirements and thereby improving resilience.
- Where possible, with the exception of high-reach appliances, no competing specialist attribute will be deployed from a line rescue station.

The resultant recommendation is that 4 dedicated line rescue stations will be created. Teams will be maintained at East Kilbride, Lochgelly and Tollcross (Edinburgh), whilst a new team will be introduced at Altens (Aberdeen), giving a more strategic distribution of line rescue resources with much improved coverage for the whole of Scotland. In addition Perth and Kingsway East (Dundee) will continue with their limited line rescue resource, principally aimed at supporting their key water rescue capability. Newcraighall (single pump) and Falkirk (Recall To Duty staff) will be removed once Altens is fully operational.

Line Rescue - Proposed End State



This map shows the coverage for line rescue in Scotland that is achieved by introducing a new SFRS team in Aberdeen. A register of external rescue agencies including Scottish Mountain Rescue will be kept and will assist in providing a resilient line rescue response in more remote areas.

LINE RESCUE
East Kilbride
Lochgelly
Tollcross (Edinburgh)
Altens (Aberdeen)

Key - Travel Time

- *20 minutes*
- *40 minutes*
- *60 minutes*
- *90 minutes*

Resource Key

- *SFRS dedicated line rescue teams*
- *Scottish Mountain Rescue Teams and Search and Rescue Teams*
- *Police Mountain Rescue Teams*
- *RAF Mountain Rescue Team*

9. High Reach

Description

A standard fire appliance carries a number of ladders with a maximum reach to the 4th floor of most buildings. Dedicated 'high reach' appliances are used to address the need for firefighting and rescue in the taller buildings that are common in urban environments

A diverse range of high reach appliances are available; including turntable ladders (TL) , hydraulic platforms (HP) and aerial ladder platforms (ALP). In recent years combination appliances known as aerial rescue pumps (ARP) or combined aerial rescue pumps (CARP) have become a viable alternative, offering the capability of performing conventional pumping appliance tasks whilst also having a high reach capability.

Current Position

There are currently 27 'high reach' appliances available across Scotland, a combination of ALPs, ARPs, HPs and TLs. Data Analysis and risk modelling have shown that the ideal spread of high reach appliances is broadly in line with the actual current distribution, although there are small gaps worthy of further consideration, and some appliances that are no longer considered fit for purpose.

The existing spread of appliance types, however, is based on historical preference and taste, and includes little acknowledgement of the most suitable type for individual risks or concentration of risk. In some areas, Edinburgh, for example, the existing fleet is predominantly turntable ladders and all elderly and at risk of becoming obsolete. ARPs are mostly clustered in the West at the moment, and those located at Dumfries and Stranraer are deemed unfit for purpose due to design issues.

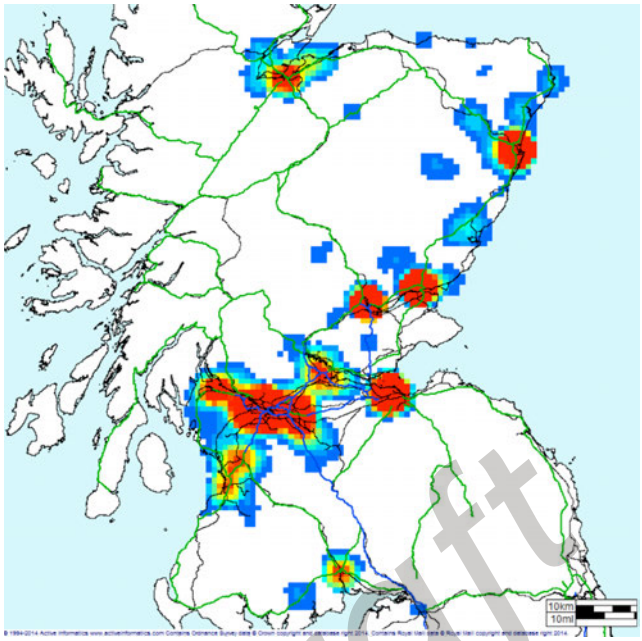
What we plan to do

A replacement strategy has commenced with the procurement of 6 new chassis to be built as high reach appliances. These will be distributed as necessary to replace older appliances as they reach 'end of life'. The overall number of high reach appliances available across Scotland will not change initially, although there will be an overall increase of one additional height appliance once the new build vehicles become available. Nationally, there will be changes to locations in some cases, and an improved distribution of vehicle types.

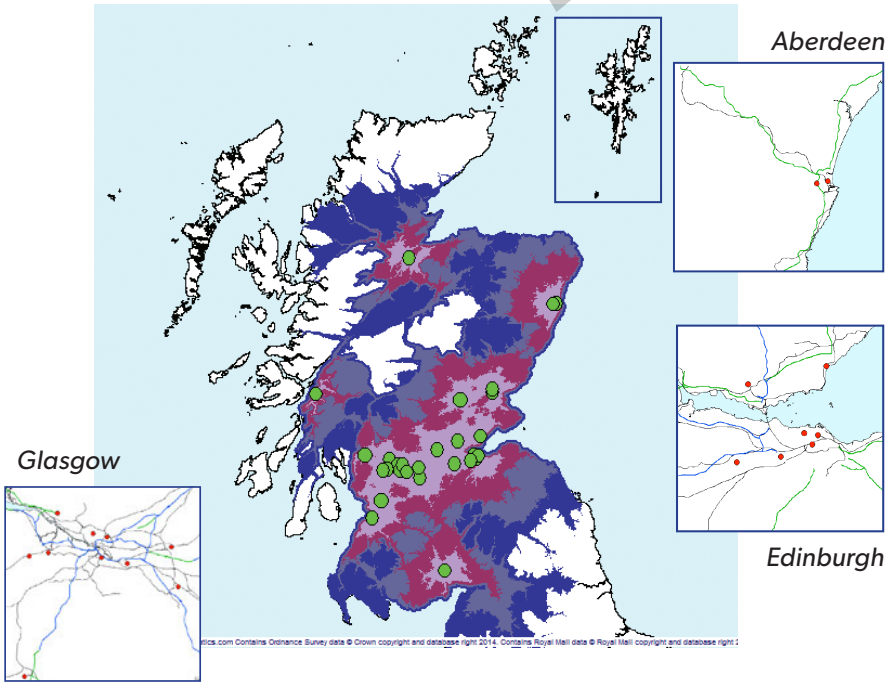
Specific changes at present will be:

- The existing ARPs in Dumfries and Stranraer will be removed, with a replacement vehicle reintroduced immediately to Dumfries only. Risk profiling and historical activity demonstrates limited added value in siting a high reach appliance in Stranraer.
- Replacement of the existing Turntable Ladder at Sighthill with an Aerial Rescue Pump, allowing disposal of one vehicle which is close to 'end of life".
- Potential allocation of a high reach appliance to Livingston when one becomes available following delivery of the new build appliances .
- Redistribution of some appliance types to meet longer term distribution model (plan includes having at least one ARP and one ALP in each of Scotland's 4 largest cities).

The adjacent diagram shows incident activity over a 4 year period (2009/10 – 2012/13) where high reach appliances were mobilised.



Height Appliance - Proposed End State



Key - Travel Time

- *20 minutes*
- *40 minutes*
- *60 minutes*
- *90 minutes*

The above diagram shows the coverage across Scotland achieved with the proposed distribution of height appliances.

HEIGHT APPLIANCES
Central (Aberdeen)
North Anderson Drive (Aberdeen)
Blackness Road (Dundee)
Macalpine Road (Dundee)
Inverness
Perth
Oban
Kilmarnock
Ayr
Dumfries
Clydebank
Maryhill (Glasgow)
Polmadie (Glasgow)
Springburn (Glasgow)
Greenock
Motherwell
Coatbridge
Clydesmill (Cambuslang)
Johnstone
Paisley
Tollcross (Edinburgh)
McDonald Road (Edinburgh)
Crewe Toll (Edinburgh)
Sighthill (Edinburgh)
Falkirk
Dunfermline
Kirkcaldy
Livingston

10. Rescue Pump

Description

This is now considered the standard fire appliance in Scotland, carrying a full crew of firefighters providing the first response to all emergency incidents. The term "rescue pump" is used to indicate that these appliances carry an enhanced range of equipment to deal with the wider array of activity now expected of the service.

A traditional firefighting appliance was equipped with breathing apparatus, hose, water, ladders and incorporated a firefighting pump to allow rapid intervention in the event of fire. Over recent years this has been gradually developed to now also include a range of rescue equipment such as airbags, hydraulic cutters, spreaders and rams to provide a capability to effect rescue from road traffic collisions and other emergency incidents.

Current Position

The majority of appliances in the SFRS fleet are already fully equipped rescue pumps. This carries the distinct advantage of ensuring at least one rescue pump is mobilised in the first stages of the vast majority of incidents across Scotland; and further negates the requirement to routinely send specialist vehicles unless requested by on-scene incident commanders.

Having said this, some significant gaps exist in the distribution of these appliances, notably in the Highlands and Islands areas. Although these areas historically experience very low activity, they are also often very remote and difficult to support with additional crews or specialist equipment. Priority requires to be given to upgrading the fleet in these areas to ensure a better spread of available rescue pumps.

Efforts to deliver these improvements however, are not assisted by the incredible range of configurations and specifications inherited in the existing arrangements. Differences in equipment, stowage, vehicle charging and radio installation etc, make the task of standardising and rotating the fleet, to plug these gaps, very time consuming and expensive.

What we plan to do

The SFRS has developed a rescue pump programme which will deliver on a number of key objectives:

- To ensure that fully equipped rescue pumps are allocated to those stations that do not have such a provision at present, with priority going to achieving at least one rescue pump in all multi appliance stations.
- To standardise the wide range of appliance configurations and specifications inherited across Scotland.
- To deliver a rolling programme of vehicle replacement to maximise the use of all of our fleet and ensure an efficient and effective servicing and maintenance regime. This involves rotating the fleet around different stations, rather than permanently assigning a vehicle to a single station which often results in massive discrepancies between appliance workloads and mileages and is not an efficient use of our resources.

In order to achieve this, a total of 48 new appliances are currently under construction, with 16 already delivered as of March 2014. A target of 30 new appliances per year has been set, which although challenging, will deliver a first class fleet of emergency vehicles across Scotland.

As can be seen in the image below, a standard SFRS rescue pump carries a considerable amount of dedicated rescue equipment. Whilst full standardisation of this equipment will take some time to achieve, the list of equipment that follows is typical of rescue pumps across all areas of Scotland:

- Hydraulic cutters, spreaders, rams and pedal cutter
- Portable 1.6 tonne wire rope winch
- 2 x high pressure air bags (20 and 40 tonne capacity)
- Vehicle stabilisation equipment (blocks and chocks)
- Casualty protection and sharps protection
- Rescue board (stretcher)
- Trauma kit (first aid and oxygen therapy equipment)
- Defibrillator
- Lifejackets (crew safety)
- Throw lines and hose inflation kit (shore based water rescue)

This equipment provides a comprehensive rescue capability for shore based water rescue, road traffic collisions, incidents where persons are trapped and all incidents where casualties require immediate trauma care.