



DEVON & SOMERSET FIRE & RESCUE AUTHORITY

REPORT REFERENCE NO.	DSFRA/09/23
MEETING	DEVON & SOMERSET FIRE & RESCUE AUTHORITY
DATE OF MEETING	28 SEPTEMBER 2009
SUBJECT OF REPORT	EMERGENCY RESPONSE STANDARDS
LEAD OFFICER	Chief Fire Officer
RECOMMENDATIONS	<p>(a) <i>That the response standard for road traffic collisions (RTCs), previously approved by the Authority:</i></p> <p>(i) <i>in principle, at its meeting on 27 March 2008 (Minute DSFRA/92(b) refers); and</i></p> <p>(ii) <i>as part of the Corporate Plan 2009/10 to 2011/12, to operate for a trial period (Minute DSFRA/74 refers)</i></p> <p><i>be now formally adopted as the Service's response standard for RTCs</i></p> <p>(b) <i>that the recommendations as set out in the Appendix to this report (section 7 on pages) in relation to the Service emergency response standards for non-domestic buildings and entrapments (other than RTCs) be approved in principle subject to a consultation exercise to be undertaken as part of the proposals for the Authority's next Corporate Plan.</i></p>
EXECUTIVE SUMMARY	<p>Since the revocation of the National Standards of Fire Cover in 2004 Fire and Rescue Services should be defining their own standards in light of local risk analysis.</p> <p>Following the work completed last year in partnership with Exeter University and Dorset Fire and Rescue Service on domestic buildings and RTCs, this paper reports on the results of the trial period for the RTC response standard and outlines work carried out to propose emergency response standards for Devon and Somerset FRS in respect of non-domestic buildings and entrapments, other than RTCs.</p>

RESOURCE IMPLICATIONS	It is estimated that implementing the response standards outlined in this report should be cost neutral.
EQUALITY IMPACT ASSESSMENT	An initial assessment has revealed that there are no equality issues arising from this report.
APPENDICES	A. Defining Emergency Response Standards for Devon and Somerset FRS and Dorset FRS: Part 2 – Response options for ‘Non-Domestic Buildings’ and entrapments (ex RTC)
LIST OF BACKGROUND PAPERS	Defining Emergency Response Standards for Devon and Somerset FRS and Dorset FRS: Part 1 – Response options for ‘Dwelling Fires and RTCs

1. INTRODUCTION

- 1.1 Fire and Rescue Services are called, and have the duty, to attend many types of incident and different incidents require varying levels of resources. Whilst the Services would like to attend all incidents as quickly as possible to alleviate distress and mitigate damage, the criticality of the attendance time varies between incident type.
- 1.2 This report details outcomes from part of the work undertaken to identify a process whereby the emergency resources within Devon & Somerset can be deployed in order to minimise risk and improve safety. It is derived from a joint research undertaken by Dorset and Devon & Somerset Fire and Rescue Services. This report deals with the definition of response standards, for residential (non domestic) fires, non domestic (non residential) fires, and entrapments, (excluding RTCs) in respect of speed, personnel and resources (weight).
- 1.3 However, this report does not recommend a final resource distribution. To complete the process the standards defined in this report must take account of a risk assessment model that categorises each area of the service by risk. This is particularly important in counties with large rural areas with sparse populations as it must be recognised that if a realistic response standard is set, it will not be possible to meet it across all areas, e.g. remote buildings on the moors. Therefore, effective application of other control measures must be considered as part of the emergency response standards.

2. BACKGROUND

- 2.1 In order to determine resource distribution for all incidents a foundation must be established. Life loss is most predominant in dwelling fires and road traffic collisions (RTCs), so as all areas have residential risks and roads, dwelling fires and RTCs have been chosen to define the foundation of the Service's resource distribution.
- 2.2 National fire cover standards had been in place from 1936 (amended in 1944 and 56) to 2004. These standards were based on property density and were focused predominantly on the risk of fire spread in congested areas. It should be born in mind that the standards were developed at a time when fire safety in the construction and use of buildings was not as regulated as it is today. In addition, whilst it is true to say that where there are buildings you will find people, little account appears to have been taken of the risk added by the occupants of a building or the process carried on within it.
- 2.3 The Fire Services Act 2004 requires the production of a National Framework Document which steers Fire and Rescue Services (FRAs). Within the current Framework Document (2008-11) FRAs are charged with producing an Integrated Risk Management Plan (IRMP).
- 2.4 The Act states:-
'An IRMP will set out an authority's assessment of local risk to life and, in line with this analysis, how it is going to deploy its resources to tackle these risks and improve the safety of all sections of society. The IRMP will identify the ways in which the authority can work in partnership with neighbouring authorities and other agencies to deliver improved public safety. It will also set out the targets an authority has set itself and the standards it will apply to meet the specific pattern of local risk. This will be done in the context of its statutory duty to secure continuous improvement and should achieve Best Value for its local council taxpayers.'

- 2.4 Members will recall that statistical analysis work was been completed in 2007 in partnership with Exeter University to develop a risk assessment model for house fires which takes into account demographics, crime and historic data. Basing risk assessment on historic incidents and demographics is a known and widely used system and is the basis of the Fire Service Emergency Cover (FSEC) system supplied by central government. The incorporation of crime data was a new innovation across the three counties and statistical analysis has shown very high levels of correlation between certain types of crime and the risk of fire.
- 2.5 The result of this work led to the Authority approving a new response standard for dwelling fires, establishing an attendance time for all residential buildings and introducing a response standard for RTCs on a trial basis. During the trial further evidence was to be gathered to provide empirical evidence to identify if the numbers of personnel despatched were appropriate for the tasks required. This additional information was required due to the fact that, at that time, information gathered regarding RTCs did not record the numbers of personnel attending.

3. **CONFIRMING THE RESPONSE STANDARD FOR ROAD TRAFFIC COLLISIONS (RTCs)**

- 3.1 At its meeting on 27 March 2009 the Authority approved in principle the following emergency response standards for road traffic collisions (RTCs):

	REACTIVE		PROACTIVE
Time	Appliances	Crew	
1st Attendance 15 Minutes	2 vehicles with defined equipment (3 on multi-lane)	8 personnel (10 on multi-lane)	Local: Road safety as part of local Community Risk Management Area/Service: working with partners
Full Attendance 18 Minutes			

- 3.2 At its meeting on 16 February 2009 the Authority approved, as part of its Corporate Plan 2009/10 to 2011/12, a pilot for these standards (Minute DSFRA/74 refers).
- 3.3 Following the collation and analysis of the questionnaire completed during the trial period, Officers-in-Charge stated that on 96.1% of occasions the number of personnel despatched to the incident were sufficient for the tasks required.
- 3.4 This result confirms the professional judgements made following the initial research questionnaires and the results of the focus groups. Therefore, the trialled standards for RTCs should now be ratified.

4. **RESPONSE STANDARDS TO RESIDENTIAL AND NON-DOMESTIC BUILDINGS**

- 4.1 Fire research shows that the intervention window for fire survivability starts to 'close' at about 10 minutes, and this research is supported by both central government and the FBU In sparsely populated counties such as Devon and Somerset it is not realistic to attend every building within this time, however, the aspiration should remain. There is also a statutory duty for FRAs to carry out proactive community safety and ensure compliance with Fire Safety legislation.
- 4.2 With survivability being compromised after 10 minutes this should be seen as our target maximum attendance time.

4.3 All occupied premises considered in this report fall under the control of the Regulatory Reform (Fire Safety) Order 2005. All such premises are now required to carry out fire risk assessments and actively work to reduce risk. Their fire risk assessments should not take account of the attendance of the Fire Service in developing their plans to safeguard those who are within the premises. Therefore, with regard to numbers of personnel attending residential and non domestic fires and the equipment requirements, nine personnel with the equipment to be found on one pumping appliance would provide adequate resources.

4.4 It should be noted that given our current methods of delivering personnel to the scene of an incident two pumping appliances would be required.

5. RESPONSE STANDARDS TO ENTRAPMENTS (OTHER THAN RTCs)

5.1 This area covers entrapments in machinery or the collapse of structures or stacked objects. The numbers of personnel dispatched to RTCs takes into account the potential for the Fire Service having to carryout traffic management activities in order to create a safe working environment. Unless the entrapment takes place on, or in close proximity to a roadway these additional duties will not be required, therefore a lower number of personnel can be considered. In the planning assumptions used for RTCs two personnel were included for the performance of additional duties potentially required. Therefore six personnel should be sufficient for entrapments not on the roadway. Where the entrapment is on, or in close proximity to a road, the response standards for single and dual carriageway roads should be used.

5.2 The ambulance service categorise incidents, and RTCs generally fall within two categories Cat A, or Cat B. The attendance time for Cat A calls is 8 minutes and 19 minutes for Cat B calls, which the ambulance service meets, or betters on 93% of occasions for Cat B calls. Medical services work on the principle that casualties need to reach 'definitive care' (a facility where surgical intervention can take place) within one hour which is often referred to as the 'Golden Hour'. It is also the collective experience of all emergency services that identifying the exact location of entrapments can be difficult, especially when not within a building, and as a result takes longer to locate the incident. In light of this a Fire Service attendance time of 15 minutes is proposed.

6. CONCLUSIONS

6.1 The response standards for Residential (non domestic), non domestic buildings and entrapments (other than RTCs) should maintain the same general principles approved by the Authority in setting the response standards for dwelling fires and RTCs namely that:

- the response standard should be expressed as a single value across the Service;
- where the target cannot be met the standard is varied;
- the time should be measured from the time we answer the call in Control to the time we arrive at the scene (individual activity such as call handling, turn out and travel time will still be monitored to drive improvement); and
- the response standard should articulate our re-active and pro-active activity.

6.2 Consequently, the Authority is now invited to adopt formally the response standard for RTCs (previously approved for a trial period) and to approve in principle the Service emergency response standards for non-domestic buildings and entrapments, as set out in Section 7, pages , of the Appendix to this report subject to the outcome of a consultation exercise to be undertaken as part of the proposals for the Corporate Plan.

LEE HOWELL
Chief Fire Officer

Defining Emergency Response Standards for Devon & Somerset FRS and Dorset FRS



Part 2 Response options for 'Non-Domestic Buildings' and entrapments (ex RTC)

Compiled by Mike Holme DSFRS and Colin Chapman DFRS

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1. Context

- 1.1 This report follows on from Part One of the Response Standards project, which aims to identify a process whereby the emergency resources within Devon, Somerset and Dorset can be deployed in order to minimise risk, improve safety and define the performance standards by which the Service can measure its efficiency. It is derived from joint research undertaken by Devon & Somerset and Dorset Fire and Rescue Services. This report deals with the definition of a Response Standard for 'other buildings' (buildings other than private dwellings) with regard to speed of attack and the personnel and resources required (weight).
- 1.2 Fire and Rescue Services are called, and have the duty, to attend many types of incident. Different incidents require varying levels of resources. Whilst the Services would like to attend all incidents as quickly as possible to alleviate distress and mitigate damage, the criticality of the attendance time varies between incident types.
- 1.3 In order to determine resource distribution for all incidents a foundation was established in the Part One report 'Response Standards for Dwellings and Road Traffic Collisions (RTCs)'. These two incident types were chosen as life loss is most predominant in dwelling fires and RTCs and as all output areas¹ have residential risks and roads, they were seen as the ideal starting point for considering the Service's resource distribution.
- 1.4 However, neither this report nor the Part One report recommends a final resource distribution. This issue will be dealt with under a separate project which will be informed by this 'academic' process. Resource distribution is particularly important in counties with large rural areas with sparse populations as it must be recognised that if a realistic Response Standard is set, it will not be possible to meet it across all areas, e.g. remote communities. Therefore, effective application of other control measures must be considered as part of the Emergency Response Standards.

2. Background

- 2.1 The current fire cover standards have been in place since 1936 (amended in 1944 and 56). These standards were based on property types and were focused predominantly on the risk of fire spread in congested areas (see Appendix A). Whilst it is true to say that where there are buildings you will find people, little account appears to have been taken of the risk added by the occupants of a building. The 1956 standards remained in place until they were repealed by the Fire and Rescue Services Act 2004. This Act requires the production of a National Framework Document which steers Fire and Rescue Services (FRAs) activity. Within the current Framework Document (2006) FRAs are charged with producing an Integrated Risk Management Plan (IRMP). The act states

¹ An output area is the unit of measurement used for census data which typically contains approximately 120 dwellings.

'An IRMP will set out an authority's assessment of local risk to life and, in line with this analysis, how it is going to deploy its resources to tackle these risks and improve the safety of all sections of society. The IRMP will identify the ways in which the authority can work in partnership with neighbouring authorities and other agencies to deliver improved public safety. It will also set out the targets an authority has set itself and the standards it will apply to meet the specific pattern of local risk. This will be done in the context of its statutory duty to secure continuous improvement and should achieve Best Value for its local council taxpayers'.

- 2.2 Since the establishment of the standards of fire cover in 1936, greater understanding has been developed of the socio-economic impact on risk both in the home and at work. In addition the field of Fire Safety Regulation has changed the nature of risk within non-domestic premises.
- 2.3 Whilst life loss is most predominant in homes and in RTCs the environmental and societal impact of fires in other buildings needs to be considered. In addition it must be realised that people are not only sleeping within dwellings, so other residential property needs to be considered.
- 2.4 This report will deal with response standards to
 - Residential risks (Hotels, Hostels, Hospitals, Residential Care premises, Boarding Schools and Secure accommodation)
 - Commercial/non residential buildings

3. Methodology

- 3.1 In line with the process established in Part One, existing research will be examined along with current Service policies.
- 3.2 As the body of research is not likely to be as comprehensive as for dwellings, a series of consultation meetings will be carried out to collate local knowledge and experience.

4. Existing Research and Service Policies

Note This paper does not repeat the work carried out in Part One of this project where the 10 minute time line was researched, discussed and applied to all residential premises.

- 4.1 As with all buildings, the old standards of fire cover stipulated attendance times based on the general building type and density. Once established, every building within that area received the same target attendance time, which varied from 5 to 20 minutes and weight of response being between one and three appliances.

- 4.2 Under the old standards the Service also had the discretion to categorise individual or small groups of premises as ‘special risks’. This essentially meant that the number and type of appliances (weight) could be varied. Further details of the old standards of fire cover can be found in appendix A of this report.
- 4.3 Continuing with the principle that people are most vulnerable when asleep it is necessary to think about other residential buildings. When considering this, there is little specific research, but certain aspects of dwelling fire research provides guidance as to survivability. This parallel led to the Part One report recommending that the ten minute ‘speed of attack’ should be used for all residential premises.
- 4.4 In the ENTEC report of 1999 the Home Office examined the statistical relationship between Fire Brigade attendance time and the spread of fire in dwellings and other buildings for fires in 1994 -1997. The main findings of the Home Office analysis of ‘other buildings’ are:

- *Probability of a fire being confined to the item first ignited falls from about 40% to 27% for fires attended in under 5 minutes and over 16 minutes respectively*
- *The probability of a fire being confined to the room of origin falls from about 85% to about 75% for fires attended in under 5 and over 16 minutes respectively*
- *The probability of a fire causing 5+metres of damage increases as follows,*

Table 1

Attendance	% of fires causing 5+m² of damage
Under 5 Minutes	25
6 to 10	35
11 to 15	45
16 to 60	55

Thus, the likelihood of a fire causing over 5m² of damage almost doubles if attendance is in 16 to 60 minutes rather than under 5 minutes. In addition there is a consistent trend in fire size, with an incremental increase in probability of fires causing over 5m² of damage with each incremental increase in response time.

- 4.5 The Home Office also examined the relationship between fire reporting time and fire spread. In this case the results are less consistent, as follows:

- *The probability of a fire being confined to origin is 4%, 35% and 37% for fires reported immediately, in under 5 minutes and over 5 minutes respectively*
- *The probability of a fire being confined to room of origin is 86%, 83% and 83% for fires reported immediately, in under 5 minutes and over 5 minutes respectively*
- *The probability of a fire causing damage over 5m² of damage is 27%, 33% and 38% for fires reported immediately, in under 5 minutes and over 5 minutes respectively*

Thus, whilst the probability of a fire causing over 5m² of damage appears related to fire discovery time, this finding is not clearly repeated for fires confined to item or room of origin.

4.6 A review of fire cover carried out for the Central Fire Brigades Advisory Council in 2002 resulted in the production of **Technical Paper E** which stated;
“There was very little data on which to establish a relationship between the attendance time of the fire service and the societal risk to life in other buildings because, fortunately there are very few large fires that endanger life in such buildings. However, an empirical relationship was derived based upon fire reports of a number of large fires. This has been highlighted as an area where further work would be beneficial” (It is understood that the FPA are embarking on this additional research but no time line has yet been produced.)

4.7 The Fire Brigades Union, in their document *‘Integrated Risk Management Planning, The National Document’ (2004)* define the fire risk in other buildings as
‘the risk from fire posed to occupants of buildings such as hospitals, shops, offices and factories and the risk to the property itself’

The document goes on to say that ultimately due the variation of occupants and buildings

‘.....it is initially envisaged that planned responses will reflect current Pre-determined Attendances.’

Proactive position

4.8 With the exception of certain hostels and small hotels, all non domestic residential premises have been subject to Fire Safety legislation for some considerable time. With the inception of the Regulatory Reform (Fire Safety) Order 2005 however, all premises are now required to carry out fire risk assessments and actively work to reduce risk. Their fire risk assessments should not take account of the attendance of the Fire Service in developing their plans to safeguard those who are within the premises.

‘You should not depend upon the Fire and Rescue Service to evacuate people; your escape strategy must be dependant only on the factors that are within your control.’
Fire Risk Assessment. CLG p27. 2006

4.9 This principle was echoed in the supplementary guide for Means of Escape for Disabled People. (CLG 2007).

4.10 This guidance document goes on to detail the requirements of staff training, fire marshals and fire drills.

4.11 The guiding principle of this and the former fire safety legislation is to ensure that every (non domestic) building is provided with well managed and safe means of escape that allows the occupants to leave the building in the event of fire.

4.12 Over recent years Fire and Rescue Services have been encouraged to consider a more dynamic approach to dealing with calls to premises fitted with fire alarm systems. These systems often generate calls that are not in fact fires. These have become termed as ‘unwanted fire signals’.

4.13 In the context of Devon and Somerset, the agreed policy, approved by public consultation, states,

'False alarms cause a significant drain on Devon and Somerset Fire & Rescue Service Resources. The Service is committed to minimising false/unwanted alarms and thus reducing the number of unnecessary mobilisations and their consequential impact on Service delivery, business and commerce. A reduction in false alarms will allow Service appliances to be available for genuine emergencies. This will also release essential resources to allow more training, preventative and protection activities to take place.

Devon & Somerset Fire and Rescue Service attend in excess of 30.000 incidents each year. 24% of the incidents are generated from Automatic Fire Alarm systems. Approximately 90% of these are false alarms' Devon and Somerset Fire and Rescue Service Unwanted Fire Signals Policy 2008.

- 4.14 In its report into the Fire Service entitled *'In the line of Fire'* (1995) the Audit Commission argued that there was scope for radical change, which could result in the saving of lives, suffering and property. The report recommended:
- There should be a shift of emphasis from firefighting (cure) to fire safety (prevention). They argued that fire cover should be related more closely to risk, and that fire prevention work would reduce calls for firefighting,
 - Future risk categorisation should be based on empirical evidence and there should be more local flexibility, and
 - There should be a re-assessment of the response standards, again giving more local flexibility.
- 4.15 In October 2002 a task group to the Central Fire Brigade's Advisory Council carried out a Fire Cover Review.
- 4.16 In technical paper B of that review, life and property risks were considered. The paper stated that three forms of life risk and four types of property risk need to be considered.
- 4.17 **Life Risks**
- Individual life risk
(probability that an individual will be killed or injured in an incident)
 - Societal life risk
(probability that a number of people will be killed or injured in an incident)
 - Firefighter life risk
(probability that a Firefighter will be killed or injured in dealing with an incident)
- 4.18 **Property Risks**
- Premises risk
(the loss likely to occur at an incident due to damage to property)
 - Heritage risk
(this may occur because the property is of historical significance, or because it has national economic importance)
 - Environmental risk

(loss likely to occur at an incident due to pollution of the environment)

- **Business continuity risk**
(this takes account of businesses which are sole suppliers of goods in the UK)

Entrapments (ex RTC)

- 4.19 Entrapments (other than RTCs) is also an area where little existing research could be found. Therefore it is proposed that the Service consider the issues put forward in Part One in relation to RTCs. The proposals put forward in Part one are supported by the outcome of the analysis of the RTC questionnaire, instigated following the Authorities approval to trial the Dwelling and RTC standards. This Report can be found in Appendix C.

5. Discussion

Non- Domestic Building Fires

- 5.1 In respect of this paper other buildings fall into two categories, residential and non-residential.
- 5.2 These buildings can often be populated by a large number of sometimes vulnerable people. However, the likelihood of injury or death by fire is statistically low, especially in non residential premises. Since 2005 Devon & Somerset has only experienced one death in a non domestic premise, and that was an act of self immolation.
- 5.3 Whilst life risk may be lower, it should still form a fundamental element of our planning, as when life is threatened, the survival times remain the same and the 10 minute thresholds established in Part One of this project, should remain the benchmark for our initial attendance.
- 5.4 However the fire protection regime within the buildings regulated under the Regulatory Reform Order (2005) means the occupiers of the premises are responsible for effectively managing fire risk. Therefore, containment and suppression of the fire should be built into the fabric of the building or fire plan. In addition the evacuation plan and staff training should ensure that occupants are able to effectively and safely leave the building.
- 5.5 Devon & Somerset FRS has recently introduced a targeted, risk assessment based policy of fire safety audits. This policy also includes a more robust enforcement process aimed at raising standards across industry.
- 5.6 In addition the fire safety regime will have been defined without reference to the attendance of the Fire Service indicating that additional Fire Service resources should not be required to deal with the evacuation of premises.

- 5.7 In considering non domestic buildings it must be borne in mind that this title covers a wide range of buildings from hotels through to public lavatories, and therefore represents a broad range of risk. In addition with Devon and Somerset being fundamentally, rural counties, they have a large predominance of agricultural buildings which are unoccupied for the majority of the time. As a result they do not receive the attention of the Fire Safety Order. The sparsity of the counties population and attendant access problems means that even with a significant increase in funding and redistribution of resources it would not be cost effective, or provide the community with value for money, to endeavour to meet the 10 minute attendance time for all agricultural buildings and all non domestic buildings. It is also unlikely that fires in agricultural buildings present a significant life risk. The real impact on such buildings would best be made by proactive work, which would have a greater impact on life and environmental safety.
- 5.8 Again due to the wide variation within the classification of 'other buildings' it is desirable to focus our actions and response standards to those buildings that attract the attention of the Fire Safety Order (2005). Therefore it would be realistic to consider the other buildings module used by the Fire Services Emergency Cover model (FSEC) in which buildings are categorised from A –T (see appendix B).
- 5.9 In the initial stages of a fire, the risk management arrangements within the premises may have the potential to protect firefighters entering the building. However, the differing methods of acceptable construction cannot guarantee firefighter safety. Recent notable events have led to the death or injury of several firefighters due to the rapid deterioration of building integrity.
- 5.10 As the size, construction, use and management of buildings vary so widely it is difficult, and perhaps unwise, to create blanket standards outside of attendance times to all non domestic buildings, especially in relation to firefighter safety. Therefore in many cases individual risk assessment will be required. However, this paper will recommend a baseline attendance which will need to be considered locally, in line with current practice.
- 5.11 As is shown by the statistics, the likelihood of accidental fire death in non domestic premises is significantly less than in domestic premises and the fire safety regime should allow effective evacuation. Therefore the OIC attending an incident has the benefit of an increased thinking time as the need for immediate 'snatch rescues' is reduced, and additional liaison time will be required with the occupiers. Therefore whilst the initial speed of attack should remain to address the possibility of life risk, there is the potential to slightly relax the attendance of all resources, allowing for road risk to be more effectively managed, increasing community and firefighter safety, and recognising the reduced risk and potential earlier detection of the fire.
- 5.12 However, the risk to life is not the only impact on the community. In fires in non domestic premises, two other issues present themselves for consideration,
- The societal impact of business continuity, employment opportunity and economic viability
 - Heritage and environmental damage

- 5.13 These elements of risk posed by non domestic buildings will be most effectively targeted in a proactive manner by
- identifying sole or significant employers in an area.
 - evaluating environmental impact.
 - evaluating heritage risk.
- 5.14 This information could potentially be captured within the Operational Risk Information System (ORIS) process or during the Fire Safety Audit.
- 5.15 In line with many fire and rescue services Devon and Somerset operated a policy of sending a specific attendance to calls suspected of being false alarms. Under this policy systems have been developed to work with occupiers to improve the management of automatic systems and actively reduce the number of false alarms. Whilst the Service continues to attend where there is any doubt about the call there is further scope for reducing the impact of false alarms on the resources deployed in training, prevention and protection activities. Therefore new procedures should be explored to ensure resources are used to best effect.
- 5.16 Any changes to methods of response that alter the current level of service provision would require consultation.
- 5.17 The development and expression of these standards allows the Service to consider a range of options to improve the percentage of the population who fall within the desired attendance time. Therefore, a medium term target should be established that promotes improvement in the achievement of these standards over time.

Entrapments (ex RTC)

- 5.15 With the potential exception of traffic management, the factors affecting the effective management of an entrapment are very similar to the management of an RTC extrication. Therefore it would be appropriate to carry forward the reactive response standards for RTCs.
- 5.16 However, it is even more difficult to define a proactive response standard for entrapments as the variety is extremely wide. Obviously entrapments in machinery are often a result of a failing of the safety/guarding systems within plant and machinery, which is the enforcement domain of the Health and Safety Executive. Therefore, the most significant potential for proactive work would appear to lie in partnership working with other agencies.

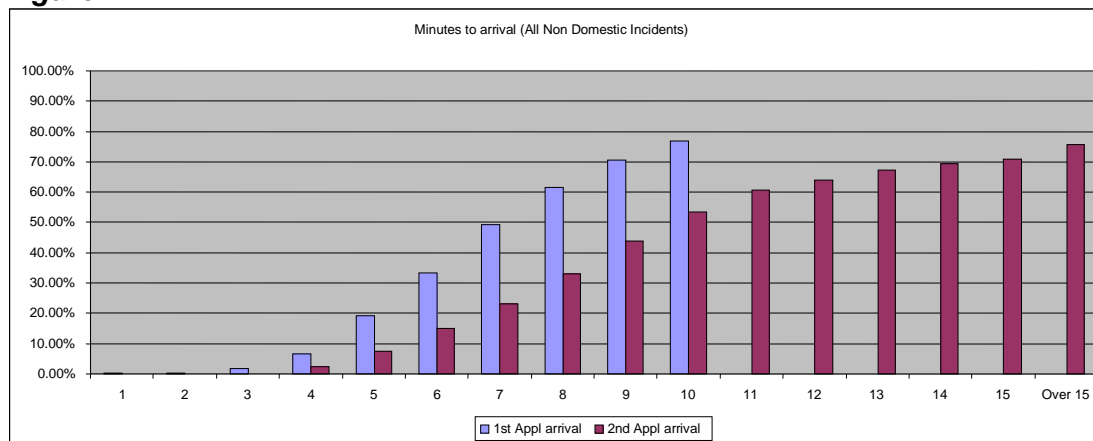
6 Historic Performance

- 6.1 Devon and Somerset Fire and Rescue Service has only been in existence since 2007, so there is a limited amount of historical data available. However, comparable data is available from the constituent Services and has been used in this project. Therefore references to Devon and Somerset may include references to the former independent Services.

6.2 Over recent years Devon and Somerset Fire and Rescue Service have introduced proactive call challenge and call reduction strategies. The policies developed under these strategies have focused significantly on calls to fires in non-domestic premises. In particular, the policy for despatching only one appliance to unconfirmed fire calls generated by automatic fire detection equipment. This has had the result of halving the number of fire calls to non domestic premises, where a full attendance is despatched, over the last three years. Therefore the data set on which to base past performance on is limited and liable to significant fluctuation.

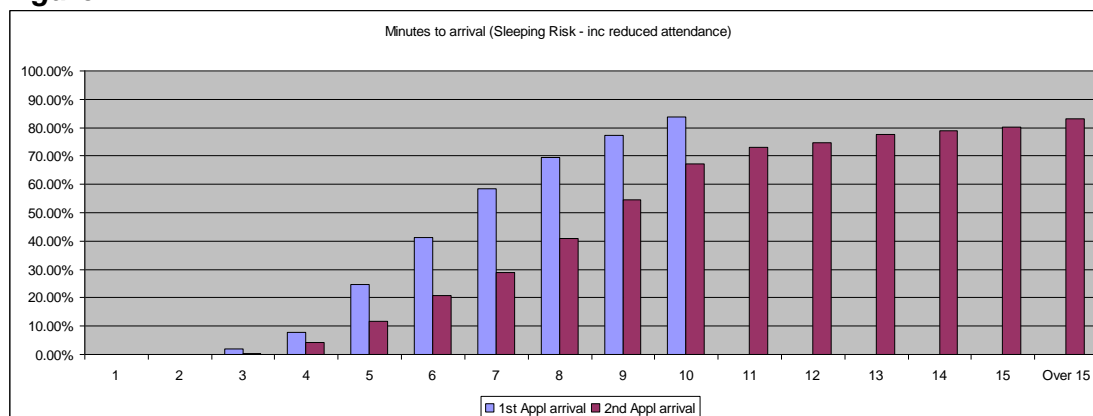
6.3 Taking into account all calls to non domestic premises (including those covered by the AFA policy) over the last three years, our potential performance of making an initial attendance within 10 minutes, and the arrival of the second appliance by minute increments thereafter is represented below, giving the potential for 9 personnel to be delivered to the scene.

Figure 1



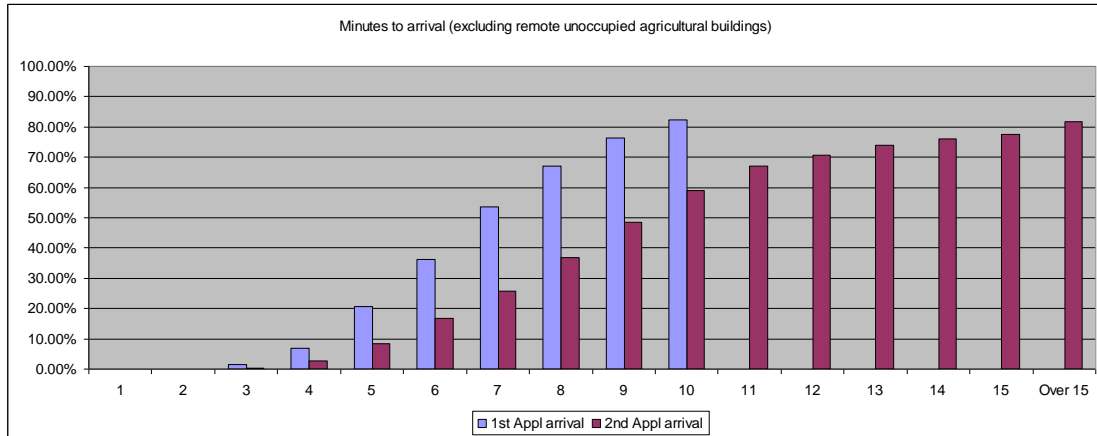
6.4 In particular the performance in relation to other sleeping risks is shown below in Figure 2.

Figure 2



6.5 As stated in the 'discussion' section, remote agricultural properties will always be difficult to attend in under 10 minutes. When remote unoccupied agricultural buildings are removed, our performance to non domestic premises (including AFAs) is reflected in Figure 3.

Figure 3



Other Entrapments

- 6.6 Due to the relatively low number of incidents (30) and the Service wide distribution of RTC incidents the performance figures for the RTC standards published in Part One are considered an appropriate benchmark.

7 Recommendations

- 7.1 As in Part One of this project, the Response Standards proposed below are recommended to be introduced for a trial period and if successful, be formally consulted on in October 2009, subject to the approval of the Authority.
- 7.2 Following the empirical evidence gathered during the six month trial of the RTC response standards, the RTC response standard should now be formally adopted.

Non Domestic Buildings

- 7.3 That the table overleaf be adopted as the Reactive Response Standard for fires in non-domestic buildings. It should be noted that these response standards will work in conjunction with the Service's Automatic Fire Alarms (AFA) policy (whereby, following requested clarification, if a fire initially alerted by an automatic fire alarm system is confirmed then

Table 2

Incident Type and Location	1st attendance	Full	No of personnel
Residential (non-domestic) buildings e.g. hotels, sheltered accommodation etc.	10 mins	13 mins	9
Residential (non-domestic) buildings where we are unable to make first attendance time of 10 minutes	-	-	12
Non Domestic premises confirmed fire. e.g. shops, factories etc.	10 mins	15 mins	9
Non Domestic premises fire where we are unable to make first attendance time of 10 minutes	-	-	12
Prescribed attendance due to specific risk	No change to existing prescribed attendance		

7.4 That the table below be adopted as the Proactive Response Standard for fires in non-domestic buildings.

Table 3

Premises Location	Action
All Premises	Application of the Fire Safety Order Targeting and Enforcement policy

- 7.5 That the Service employs its Operational Risk Information System (ORIS) in order to evaluate risk to Firefighter safety and environmental risk at non domestic premises.
- 7.6 That the current Unwanted Fire Calls policy remains in force.
- 7.7 That the Service investigates opportunities to work in partnership at Service wide and local level.

Entrapments (ex RTC)

7.8 That the table below be adopted as the Reactive Response Standard for entrapments other than RTCs

Table 4

Incident Type and Location	1st Attendance	Full	Crew
Entrapment, off road (1 person trapped)	15 mins	18 mins	6
Entrapment, excluding road traffic collision on a single carriageway (1 person trapped) e.g. incident involving highway maintenance / construction	15 mins	18 mins	8
Entrapment, excluding road traffic collision on a Dual Carriageway (1 person trapped) e.g. incident involving highway maintenance / construction	15 mins	18 mins	10

7.9 That the Service works work other agencies to contribute where possible to proactive activities.

7.10 That the above standards be introduced on a trial basis in October 2009 and be included in consultation for the corporate plan.

7.11 That targets be set that aim to increase the percentage of calls where the standards are met.

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CATEGORY A RISK

Category A risks are normally to be found in the largest cities or towns of the country. For an area to be classified as A risk it should be of substantial size and should contain a predominating concentration of properties presenting a high risk of life loss or damage to property in the event of fire. Examples of such areas might include:

- i. Main shopping and business centres, with department stores, shopping malls and multi-storey hotels, and office properties.
- ii. Concentration of theatres, cinemas, clubs, dance-halls and other entertainment centres.
- iii. Concentrations of high-risk industrial or commercial property.

CATEGORY B RISK

Category B risks are normally to be found in the larger cities or towns not falling within category A risk. For an area to be classified as B risk it should contain continuously built-up areas of substantial size, with a predominating concentration of property presenting a substantial risk of life loss or damage to property in the event of fire. Examples of such areas might include:

- i. Shopping and business areas, predominately of multi-storey properties, offering some degree of concentration.
- ii. Concentration of hotels and leisure facilities such as occur in the larger holidays resorts.
- iii. Concentration of older multi-storey property offering substantial amounts of residential accommodation.
- iv. Industrial or trading estates containing some higher risk occupancies.

CATEGORY C RISK

Category C risk areas are normally to be found in the suburbs or the larger towns and the built-up areas of substantial size, where the risk of life loss or damage to property in the event of fire is usually low, although in certain areas the risk of death or injury may be relatively high. Concentrations of property may vary, but will generally be of limited extent. Examples of such areas might include:

- i. Developments of generally post-war housing, including terraced and multi-storey dwellings, deck access housing and blocks of flats.
- ii. Areas of older, generally pre-war, detached or terraced multi-storey dwellings, with a predominance of property converted for multiple occupation.

- iii. Areas of suburban terraced, semi-detached and detached residential properties.
- iv. Mixed low-risk industrial and residential areas.
- v. Industrial or commercial areas of smaller towns where there are few higher-risk occupancies.

CATEGORY D RISK

Category D risk includes all areas other than those classed as Remote Rural, and not falling within categories A to C.

REMOTE RURAL RISKS

Areas may be classified as Remote Rural risks if they are isolated from any centres of population and contain few buildings.

SPECIAL RISKS

There are certain small areas, whether comprising single buildings or complexes which need a first attendance over and above that appropriate to the risk which predominates in the surrounding area. These premises or small areas should be treated as Special Risks, and given an appropriate pre-determined attendance. There are many different types of Special Risks, but some typical examples might include:

- i. Residential premises of substantial size and presenting abnormal risks, such as hospitals or prisons, wherever they occur.
- ii. Tower blocks, whether residential or commercial in C and D risk areas.
- iii. Major petro-chemical or other high risk industrial plants, wherever they occur.
- iv. Airports, wherever they occur.

Table 4. Speed and number of Pumps in First Attendance.

Risk Category	No of Pumps in First Attendance	Approximate Time Limits for attendance in minutes		
		1 st	2 nd	3 rd
A	3	5	5	8
B	2	5	8	
C	1	8 - 10		
D	1	20		
High risk	Predetermined attendance			

In addition to the prose description a formula was provided to calculate the individual risk rating of a building. The formula used information such as

- Building Density
- Building Construction
- Building Height
- Occupation Density

However, in order to categorise an area (A, B, C or D) it was required that four contiguous half kilometre squares reached the higher categorisation.

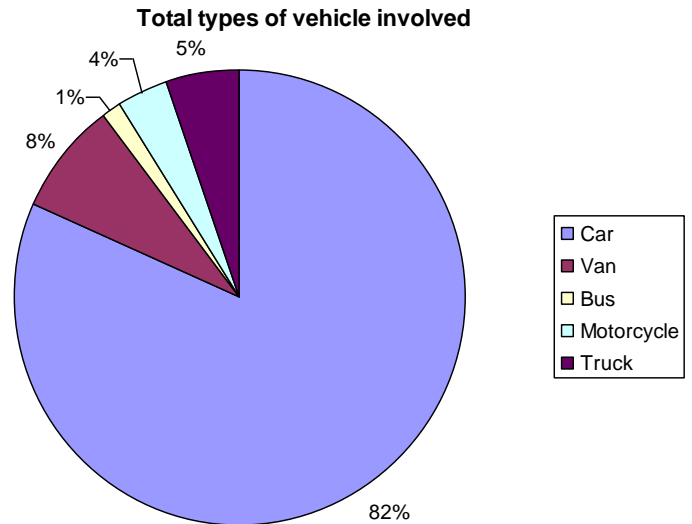
DSFRS RTC QUESTIONNAIRE

July to December - 6 Month Results Report

In the six month period of data gathering, 752 RTC questionnaires have been completed.

(Fig.1 - Types of vehicle involved (total from all incidents))

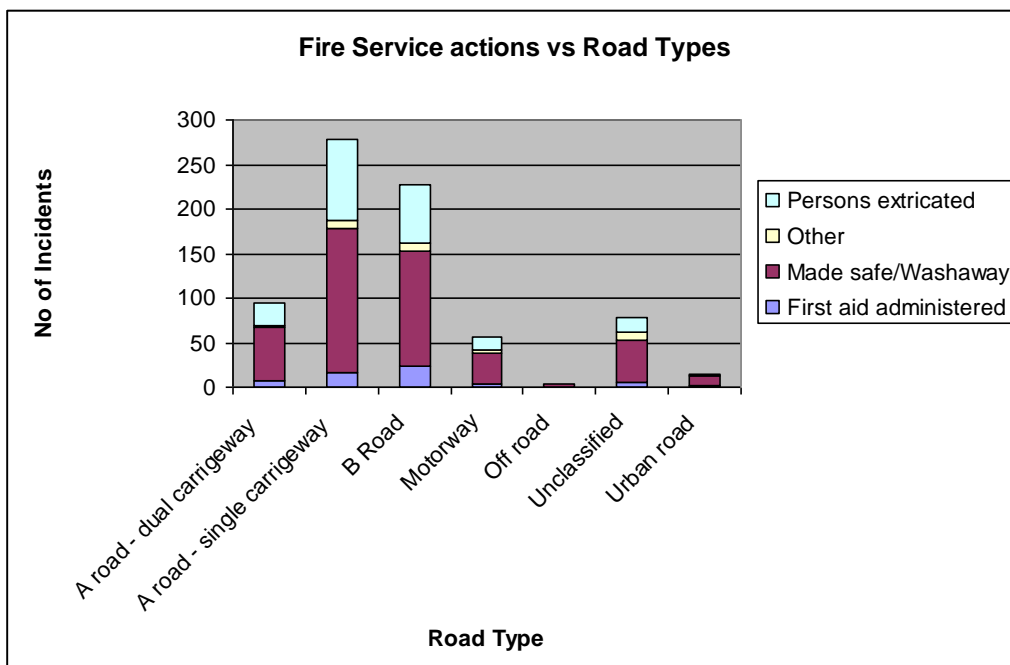
Type of Vehicle	Total
Car	1016
Van	101
Bus	18
Motorcycle	45
Truck	65



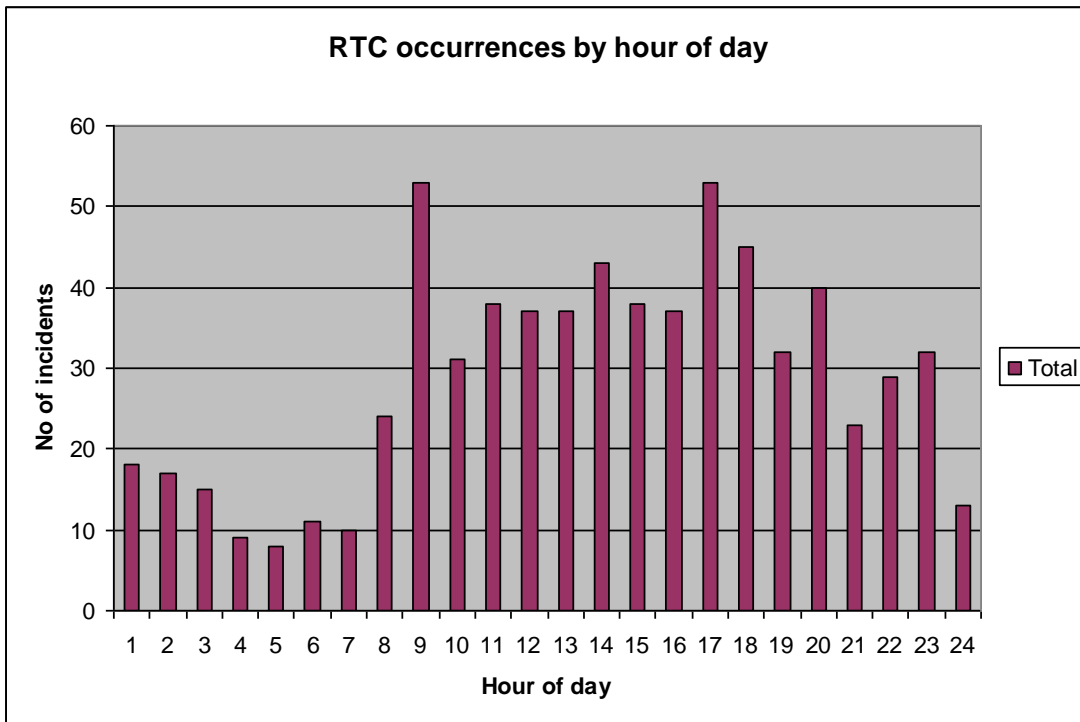
(Table 1) - RTC frequency by road type

Road Type	Total
A road - dual carriageway	94
A road - single carriageway	278
B Road	227
Motorway	56
Off road	4
Unclassified	78
Urban road	15

(Fig 2 - Fire Service actions and road types)

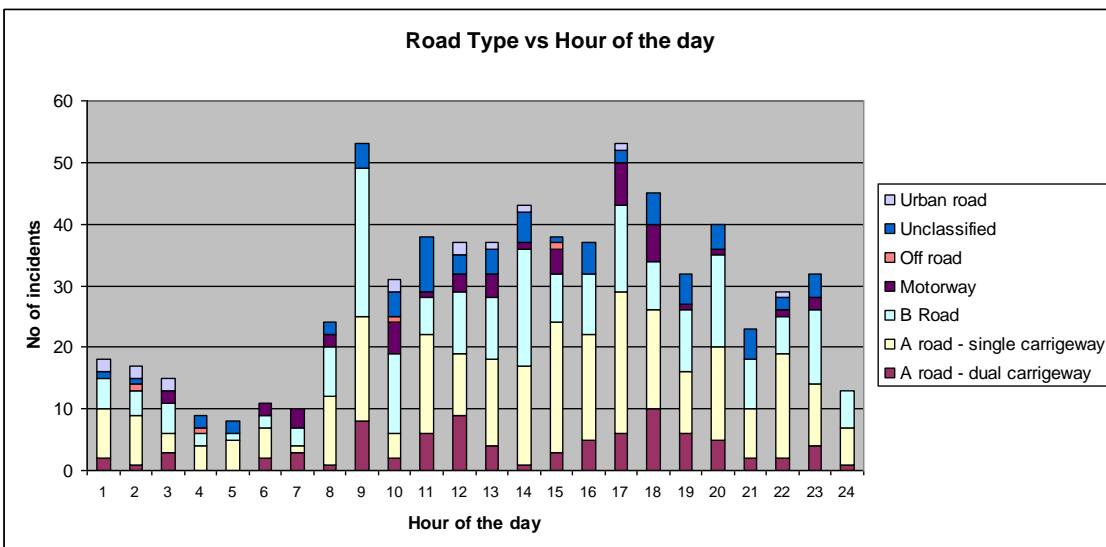


(Fig 3) - RTC occurrences by hour of day *



*59 incidents omitted due to time data missing

(Fig 4) - RTC Occurrence by hour of day and road type



EXTRICATIONS:

(Table 2) - Procedures used at entrapments

Extrication Procedures	Total
Roof Removal	95
Dashboard Roll	13
Side Removal	44
B Post Rip	15
3rd Door Conversion	8

(Table 3) - Equipment used at entrapments

Hydraulic Equipment	Total
Dedicated Cutter	118
Dedicated Spreaders	68
Combi Tool	81
Ram Telescopic	21
Ram Other	10
Hand Pump	4
Chain Attachments	2
Epcos + Clark Ferm tool	2

Non-Hydraulic Equipment	Total
High Pressure Airbags	3
Low Pressure Airbags	5
Sharp Protection	128
Stabfast Stabjacks	18
Blocks	160
Step Chocks	134
Rapidstairs	7
LGV Platform	6
Reciprocating Saw	37
Cones	56
Airbag Protector	73
Small Tools	528

Traffic management

Fire Service personnel carried out traffic management at 29% of the incidents we attended. In total, we spent 2851 minutes managing traffic. This averages to 13 minutes per incident in which traffic management was required.

Casualty care

At 29% of RTCs we attended, our personnel were required to carry out casualty care. In total we spent 3233 minutes on this, which gives an average of 15 minutes at each incident in which casualty care was needed.

RESPONSE STANDARDS

One of the main intentions of the questionnaire was to gather information on how appropriate our response standards are in terms of personnel attending. At each incident, the questionnaire asked if there were enough FS personnel in attendance. 96.1% of the responses said 'yes' to this.

When 'yes' was the response to this question the average number of personnel in attendance was 9. (*13 incidents were omitted as they read 0 for personnel attended.)

Table 4 - Results from question ' were sufficient FS personnel in attendance ?'

Total No FS Personnel	No of Incidents	No	Yes
4	74	12.2%	87.8%
5	123	3.3%	96.7%
6	129	0.0%	100.0%
7	12	8.3%	91.7%
8	39	5.1%	94.9%
9	70	7.1%	92.9%
10	59	3.4%	96.6%
11	43	7.0%	93.0%
12	56	1.8%	98.2%
13	25	0.0%	100.0%
14	25	4.0%	96.0%
15	25	0.0%	100.0%
16	17	0.0%	100.0%
17	10	0.0%	100.0%
18	8	12.5%	87.5%
19	5	0.0%	100.0%
20	7	0.0%	100.0%
21	1	0.0%	100.0%
22	4	0.0%	100.0%
23	2	0.0%	100.0%
24	3	0.0%	100.0%
28	1	0.0%	100.0%
30	1	0.0%	100.0%
Grand Total	739	3.92%	96.08%

Table 5 - Number Of Casualties At Incidents With Insufficient Personnel

No of Casualties	Incidents
0	4
1	14
2	8
3	1
4	1
6	1
Grand Total	29

89.7% of incidents where the OIC considered there were insufficient personnel had at least 1 casualty, compared to 68.9% of incidents considered to have sufficient FS personnel.

ADDITIONAL COMMENTS

The questionnaire invited any further comments on the incident. Of note, are two occasions in which crews mentioned the difficulties involved with removing the roof of a Honda Civic 'R'. This is due to the width of the 'c' post and the curtain charge contained within.

QUESTIONNAIRE FINDINGS

Further explanation of the results now follows, expanding upon the information above and also presenting information from the questions that invited a written response.

Fig 1 illustrates the proportion of incidents which contain vehicles other than cars. The information suggests 18% of the vehicles involved were other than cars. This may prompt the question – does RTC training in DSFRS adequately reflect our requirement to work with vans, trucks and buses? It is important to note here, that these categories rely on individual interpretation and that we can expect some discrepancies eg MPV's, 4x4's, estate vehicles used as work vehicles etc. With this said, the point remains that our crews have considered that 18% of the vehicles they dealt with were not cars.

The information in fig.2, suggests that motorway incidents, and to some degree dual carriageway incidents; account for a proportionally (and surprisingly ?) low number of extrications.

Regarding numbers of personnel in attendance, the results suggest that in general our response standards are working. Interestingly, the number of occasions in which eight personnel were considered adequate proved high, at 94.9%. These results are convincing, especially since it can be difficult to judge if more personnel would have added to the quality of incident management and the natural tendency is to lean toward answering yes.

From the questions requiring a written response some learning points have emerged. Airbag management is a recurring theme. Ten comments were noted to say that that the equipment is not readily available to make them safe. A further six references were made to awaiting the arrival of the RT before having all the equipment required. Also noted were two occasions on which Reserve appliances without hydraulic capabilities were in use.

Fourteen incidents were referenced in which (either) traffic was not managed safely or that management drained FS personnel resources. The introduction of cones may improve this situation – consideration should certainly be put to any kit that may benefit crews further.

The last section of the questionnaire, invited any further comments to be added. The information returned in this has been invaluable in providing a forum for crews to note any difficulties they experienced. Some of these have emerged as trends, allowing us to pass this information to other departments for their attention. The best example is the information gained on the Honda Civic R previously noted, -

Several mentions were also made regarding the new Hi-Viz surcoats and the problems in fit and heat fatigue.

In this section, sixteen incidents were referenced in which it appears that the Fire Service was called late or not alerted at all. Further investigation of these instances will follow.