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“Firefighter fatalities at fires in the UK: 2004-2013: Voices from the fireground”

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“...for firefighting, the principal work activity is hazard engagement, which is usually further complicated by extreme time pressure. The customary safety strategy in many high hazard work situations is to implement multiple safety measures, or what is sometimes referred to as ‘defenses in depth’ (Kunadharaju, Smith and Lejoy 2011 on US firefighting)



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ABBREVIATIONS

ACO	Assistant Chief Officer in Fire Services
ADSU	Automatic Distress Signal Unit
ARAs	Analytic Risk Assessments
BA	Breathing Apparatus
BAEC	Breathing Apparatus Entry Control
BAECO	Breathing Apparatus Entry Control Officer
BIS	UK Government's Business, Innovation and Skills Department
BRE	Building Research Establishment
CACFOA	Chief and Assistant Fire Officers Association
CFBAC	Central Fire Brigades Advisory Council
CFBT	Compartment Fire Behaviour Training
CFRAs	Chief Fire and Rescue Advisor
CFRAU	Chief Fire and Rescue Advisor's Unit and Chief Fire and Rescue Advisory Unit
CFOs	Brigade Chief Fire Officers
CFOAs	Chief Fire Officers Association(s)
CHAF	Control of the Hazards associated with the Transport and Storage of Fireworks
CIMAH	Control of Industrial Major Accident Hazards (regulations)
CLG	Communities and Local Government
COMAH	Control of Major Accident Hazards (regulations)
COP	Code of Practice
COPFS	Crown Office and Procurator Fiscal Service, Scotland which contains the COPFS Scottish Fatalities Investigation Unit (SFIU)
COSLA	Convention of Scottish Local Authorities [Scottish local authority body]
CPS	Crown Prosecution Service, England and Wales
DCFO	Dear Chief Fire Officer letters
DCLG	Department for Communities and Local Government
DCOL	Dear Chief Fire Officer Letters
DRA(s)	Dynamic Risk Assessments
ECFRS	Essex County FRS
ESCC	East Sussex County Council

ESFA	East Sussex Fire Authority
ESF[R] S	East Sussex Fire and later Rescue Service
EVAC	Evacuation
FAK	Families Against Corporate Killings
FAIs	Fatal Accident Inquiries
FBU	Fire Brigades Union
FOA	Fire Officers Association
FOI	Freedom of Information
FRAs	Fire and Rescue Authorities
FRSA	Fire and Rescue Service Authorities
FRS(s)	Fire and Rescue Service(s)
FRUs	Fire Rescue Unit
FOPs	Framework Operational Procedures
GRAs	Generic Risk Assessments
GMFRS	Greater Manchester Fire and Rescue Service
Herts FBU	Hertfordshire Fire Brigade Union
HeFRS	Hertfordshire Fire and Rescue Service
HFRS	Hampshire Fire and Rescue Service
HMIFs	Her Majesty's Inspectors of Fire (Services)
HSC	Health and Safety Commission
HSE	Health and Safety Executive
HSENI	Health and safety Executive Northern Ireland
HSIB	Health and Safety Information Bulletin
HSL	UK Health and Safety Laboratory
HASAWA	Health and Safety at Work Act
HSG	Health and Safety Guidance
IC	Incident Commander
IRMPs	Integrated Risk Management Plans
ISO	International Organization for Standardization
LBFRS	Lothian and Borders FRS
LFB	London Fire Brigade
LFEPA	London Fire and Emergency Planning Authority

LGA	Local Government and Local Government Association, England
LRD	Labour Research Department
MAIB	Marine Accident Investigation Board
MHSAW	Management of Health and Safety at Work
MHSWRs	Management of Health and Safety at Work Regulation(s)
MSER	Manufacture and Storage of Explosives Regulations
NAO	National Audit Office
NHS	National Health Service
NIFB	Northern Ireland Fire Brigade
NIFRSs	Northern Ireland Fire and Rescue Service(s)
NIOSH	US Government's National Institute of Occupational Safety and Health
ODPM	Office of the Deputy Prime Minister
OHS	Occupational Health and Safety
OHSAS	Occupational Health and Safety Standard
ONS	Office for National Statistics
OpA	Operational Assessment
PACE	Police and Criminal Evidence Act
PDA	Pre-determined attendance
PORIS	Provision of Operational Risk Information Systems
PPE	Personal Protective Equipment
REEMA	Reed and Malik Company
RIDDOR	The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations
RCC	Regional Control Centre
ROSPA	Royal Society for the Prevention of Accidents
RPD	Recognition –primed decision making
SFBAC	Scottish Fire Brigades Advisory Council
SFIU	COPFS (Crown Office and Procurator Fiscal Service, Scotland) Scottish Fatalities Investigation Unit
SFRS	Scottish Fire and Rescue Service
SMEs	Small and Medium Sized Enterprises
SOPs	Standard Operated Procedures
SSRI	Site Specific Risk Information
SWFA	South Wales Fire Authority

SWFRS	South Wales Fire and Rescue Service
TICs	Thermal Imaging Camera(s)
TUC	Trades Union Congress
WFRS	Warwickshire Fire and Rescue Service
WRDP	Work-Related Death Protocol

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Summary

In the last ten years, the UK has witnessed a horrific series of 14 firefighter/fire technician fatalities at fires in what is a relatively small national workforce - Bethnal Green in London 2004 (2); Harrow Court in Hertfordshire 2005 (2); Marlie Farm in East Sussex 2006 (2); Atherstone in Warwickshire 2007 (4); Dalry Rd in Edinburgh 2009 (1); Shirley Towers in Hampshire 2010 (2); Oldham St. in Manchester (1) 2013. In England alone between 1993/94 and 2003/04, there were 6 firefighter deaths at fires. But in the next ten years 2004/05 to 2013/14 this more than doubled with 12 firefighter deaths and one fire technician death in England (DCLG FOI disclosure May 2014) and another fatality in Scotland. Some of these fatalities occurred in similar settings and similar circumstances.

In the same period there has also been a series of serious injuries to firefighters at fires and other major incidents and an unknown number of near misses. Whilst the risks of firefighting are obvious, the scale of death and injury is unacceptable. Many risks can be avoided if appropriate management and systems, inspection and regulation, training and other related matters are in place. Good practice that exists has periodically been ignored so the problem is compounded by lessons slowly learnt, communication of information stifled, by lengthy legal wrangles creating a justice deficit and by organisational denials of accountability.

The reports by brigades on these fatalities rarely, if ever, identify and acknowledge the direct and indirect roles that central government and senior local government and brigade managers play in such events. Yet these bodies and their 'directors' are ultimately responsible for the laws, budgets, staffing, systems, training, equipment and resources, information, procedures and specific standard operating procedures that the firefighters on the fireground have to rely on or use and the threats that they create.

There should be defences in depth that run from the top of government, through regulators and brigades to the fireground - vital to protect firefighters on the fireground in all incidents - yet on occasions they have been missing and firefighters have been left defenceless and lost their lives. Risks may not have been 'highly calculated', assessed and reduced. Such risks cannot be removed but they can normally be managed far better by fire services, local and central government, and regulatory and inspection bodies.

Additionally, any cuts now in budgets, training, staffing, equipment and fire stations and continued operational duties of much older firefighters may also have serious future impacts on firefighter safety at fires and these impacts may not emerge for some time. It is neither cost-effective nor morally acceptable to cut vital fire services in ways that may endanger both public and firefighter safety.

This report, drawing on interviews with firefighters themselves as well as inquiries, inspection reports and trial papers, provides a series of detailed recommendations to address the continuing threat of firefighter fatalities at fires and their direct and indirect causes.

KEY RECOMMENDATIONS

Statistics and other data availability

- The four UK countries should publish annual reports on firefighter fatalities, injuries and near misses at fires as well as occupational disease rates and details of any related enforcement notices - drawing on information already available within the Health and Safety Executive (HSE), Department for Communities and Local Government (DCLG) and the individual Fire and Rescue Services (FRSs) across the UK;
- HSE should make available all reports of completed investigations of firefighter fatalities on its web pages that are not restricted by ongoing legal cases. This should be done as expeditiously as possible;
- Each FRS across the UK should publish, including on its web pages, injury statistics and details of completed investigations of firefighter deaths at fires. This should be done as expeditiously as possible. There are examples of good practice to draw on: the NIFRS for example has an excellent data base on injuries to firefighters;
- Each FRS should provide annual web-based reports on firefighter health and safety. These data should currently exist but may be 'hidden' from public view in brigades;
- Within the office of the Chief Fire and Rescue Advisor (CFRA), the data available under one and 2 should be evaluated on a regular basis and used to produce publicly available annual or biennial reports as the CFRA has a strategic role;
- FRSs and the CFOAs should provide regular publicly available reports on firefighter fatalities at fires and any other major incidents, serious injuries and diseases and significant near misses when they occur and when they are legally able to do so.

Government departments across the UK including the CFRA office

- The better regulation and red tape challenge agendas of the government have not been properly evaluated. There is little evidence to show that in practice fire health and safety laws, regulations and codes are applied when they should not be or that they weigh down the economy. Where such agendas are not relevant to fires, they should be abandoned;
- The four governments should introduce occupational and public safety and health impact assessments prior to pursuing new policies and legislative changes that may affect firefighter and public safety. The costs of cuts in firefighter staffing, resources and not carrying out occupational health and safety activity in terms of human, social and economic damage should always be considered. These will balance regulatory impact assessments that focus on the costs of regulating and not the costs and consequences of not regulating;
- The departments should ensure that funding for fire safety is adequate and that measures it takes do not weaken the implementation of any of its regulations and guidance on fire safety;

- To achieve and facilitate the above, the departments should ensure that there is a properly funded and staffed CFRA office or its equivalent. The CFRAs would be able to carry out audits under and inspect FRSs to check that public safety and firefighter safety measures are in place and effective;
- Hence the CFRAs or HM Fire Inspectorates should develop a programme to ensure all FRSs are reviewed with regard to their work both on community safety and firefighter safety;
- The economic costs of such an office and unit would be partly covered by the reduction in firefighter fatalities, injuries and diseases, as well as by improvements in public safety, and so should be cost effective. Currently many of the costs of firefighter deaths and injuries are offset within the NHS and by communities and families of those affected firefighters;
- CFRA/Chief Fire and Rescue Advisor's Unit (CFRAU) information should be widely disseminated along with key findings on fatalities and guidance on actions in the future to prevent such fatalities. This should entail a review of the fitness for purpose of Rule 43 letters from coroners or their equivalent to ensure much wider and quicker dissemination of key findings as well as action on them;
- A fire safety and health forum, with all relevant stakeholders invited, should be re-established and funded by governments. It should serve all four UK countries. This should be linked to the development of better means for DCLG and others to engage with firefighters effectively in producing technical and other documents relating to fire health and safety;
- The DCLG and similar ministries in the other countries should urgently set up a review of the failure of some brigades to act rapidly on recommendations from firefighter fatality at fires reports. Almost all of the fatalities discussed in this report, it should be noted, occurred post-2004. The CFRAs/HMIFs would be able to check national audits in brigades and inspect them including ensuring actions were taken on Rule 43 letters. CFRA reports should be widely disseminated along with key findings on fatalities and guidance on actions in the future to prevent such fatalities.

Laws

- Governments should prioritise public health and firefighter safety legislation over financial considerations. There is no evidence of either a compensation culture existing among firefighters or a trivial approach to health and safety operating in firefighting and there is widespread agreement about the hazards of the occupation;
- Governments should ensure the health and safety impact of changes (and related possible adverse economic effects) on or reduction of laws, regulations, codes of practice and guidance relating to fire are as carefully assessed as the economic costs and consequences of bringing in new legislation.

IRMPs produced under DCLG Guidelines and related lower level brigade plans

- IRMPs and related lower level plans should be reviewed in terms of their effectiveness with regard to addressing the occupational health and safety of firefighters. This should end the conflict between planning effective fire services and dealing with budgetary matters which have sometimes been conflated within IRMPs;
- DCLG should accept the FBU call that the government 'issue a circular immediately to advise that fire and rescue authorities must have regard to Fire and Rescue Authorities - health, safety and welfare framework for the operational environment, published in June 2013, when developing their IRMP';
- Departments in the meantime should require all FRSs to document and audit their commitment to and record on firefighter health and safety in every IRMP they produce;
- The Fire and Rescue National Frameworks for England 2012 and Scotland 2013 should be revised, where necessary, to ensure firefighter health and safety is fully embedded within them and effectively prioritise the activity along with public safety. Similar checks should be made on the Welsh and Northern Ireland 'frameworks'.

Local government - the Local Government Association England (LGA) and other similar bodies in Wales and Northern Ireland within in the UK

- Local authorities and their umbrella bodies should carry out good quality and rigorous occupational health and safety impact assessments of any proposed cuts in fire services. These assessments would include the economic consequences of cuts in the same way that regulatory impact assessments assess costs of regulations and proposed regulations;
- Local authorities should re-assess the requirements needed for a safe fire service that will protect both the public and its own firefighters and make adequate budgetary provision to meet those requirements in the light of recent firefighter fatalities;
- If public expenditure cuts prevent local authorities fulfilling these requirements, then local authorities and bodies such as LGA may need to challenge such cuts and ensure that their electorates and their employees are fully informed about the implications of the cuts to the public and fire safety;
- LGA should evidence how they do and will audit and do and will prioritise firefighter safety effectively as well as public safety in their respective FRSs;
- Through LGA and other public bodies, local authorities should be prepared to produce a UK-wide consolidated annual report on firefighter fatalities, injuries and diseases unless this is already done by national governments or HSE. The reports could be based on those from Brigade Chief Fire Officers (CFOs) who should produce a public consolidated brigade report each year on firefighter fatalities, injuries and significant near misses and actions that have been taken to improve firefighter safety documenting any good practice;

- In 2014, COSLA, the Scottish local authority body, no longer had responsibility for fire as brigades had been consolidated into one national body, the Scottish Fire and Rescue Service;
- The 'self-regulation' model for checks on local authority fire services created by central government and adopted by local government should be abandoned as it has failed to prevent several of the firefighter fatalities discussed in this report. There should be a move back in all four countries to formal regulation and national inspections of fire brigades drawing on a reconfigured CFRA office and, where necessary, re-established and independent HMIFs.

UK Fire and Rescue Services (FRSs)

- Examples of good practice in investigating and/or addressing health and safety that exist in all four countries should be systematically rolled out more quickly and widely;
- Both firefighters and fire officers' roles and workload need to be urgently re-assessed relating to the prioritisation of myriad, increasing and sometimes conflicting tasks that impact directly and indirectly on occupational health and safety;
- FRSs should re-assess the nature, scope and application of systems affecting firefighter safety especially with regard to the respective weightings given to behavioural and safe systems of work and effective high level risk management. This should help to further inform assessments and re-assessments of the workings and fit of generic risk assessments (GRAs), dynamic risk assessments (DRAs), analytic risk assessments (ARAs) and related standard operated procedures (SOPs);
- Greater emphasis should be given to how defensive firefighting decisions are or are not taken in the light of recent incidents, the key principles of fire risk management and the impact of HSEs' 'Heroism' and 'striking the balance' outputs;
- FRSs should urgently review the extent to which they have fully implemented Rule 43 letters and incident reports on firefighter fatalities at fires in so far as they have the authority to do so and document their findings;
- All FRSs should review or revise specific aspects of their policies and procedures on firefighting where incident reports indicate this is necessary including information and training for control room staff;
- FRSs should also where necessary re-assess external factors that have contributed to past firefighter fatalities including the need for sufficient fire stations, sufficient trained and experienced firefighters, the right equipment, control rooms able to provide and receive accurate and rapid information on fires;
- FRSs should also, where necessary, address more specific factors that contributed to previous firefighter fatalities and ensure they address the health and safety of those on the fireground.

- This would include for example :
 - ensuring there is relevant, realistic, revised and regular training including the means to ensure relevant ‘comprehensive’ experience - where possible - for firefighters on incident command, fire and building science, standard operating procedures, GRAs and how they influence SOPs, DRAs and ARAs, risk management, BA usage, control and monitoring and other equipment training and experience, compartment and other search patterns, working in high temperatures and its effects, water supply to fires and to firefighters etc;
 - These factors may be viewed as the ‘bread and butter’ of the fire service but it is very clear from examining past firefighter fatalities that have occurred that they are not.
- The firefighters interviewed wanted FRSs and support bodies to ensure there are more effective approaches to bridging the theory/practice/experience gaps for fire officers in training and review activities. This was particularly pressing in incident command and control, especially control, as a number of the firefighter fatalities had occurred sometime long after firefighters had reached the fireground;
- Better mechanisms and practices are needed across the UK to improve and prioritise FRSs’ investigations of fatal incidents to ensure they are as transparent and collaborative as possible. Currently the position is patchy.

Recommendations on risk assessment, risk management and related matters

- Risk assessment and risk management approaches generally embedded within legislation, related official guidance and fire service and brigade documentation should be reviewed again. This should be done not just for single incidents but across all fatalities. Clarity, applicability, comprehensibility, accessibility, utility and user-friendliness on the fireground of risk documentation should be re-assessed. Where necessary, tools and documentation should be revised so they are fit for purpose;
- In the light of firefighter concerns about the particular problems with analytical risk assessments, ARAs should be reviewed along with the role of fireground ‘health and safety officers’. In this context, the LFB development of monitoring officers should be fully evaluated and rolled out more widely if effective;
- Operational risk information systems, if supported by relevant and accurate information may provide a UK-wide means to improve risk assessment and risk management. However, systems need to be fully tested for effectiveness and compatibility across the UK before they are introduced;
- Risk assessment, risk management and its application in practice may present particular problems for retained firefighters and firefighting in rural and remote areas. These potential problems should be more openly recognised and the best solutions available to address them should be discussed across the UK.

Legal matters - courts, inquests, Fatal Accident Inquiries (FAIs), Coroners and the Police including the Crown Prosecution Service (CPS) (England and Wales), the Crown Office Procurator Fiscal's Unit (Scotland) and the Director of Public Prosecutions (Northern Ireland).

- 'As justice delayed is justice denied', there should be a speeding up of processes relating to inquests, fatal accident inquiries and trials for workplace fatalities along with more resources and political will to pursue such cases;
- Improved, expanded and increased training and briefings by CPS and other appropriate bodies is needed for UK police forces on manslaughter and corporate manslaughter and related laws that may apply when firefighter fatalities occur;
- This should focus on building constructive relations with all parties involved, including FBU and avoiding confrontational, vexatious and incorrect investigations that have occurred in past incidents. There are examples of good and bad practice in police handling of fire fatalities and good practice should be rolled out;
- There should be a review of the effectiveness of Coroners' Rule 43 letters and their limited take up by some fire brigades. Such a review may wish to consider better means to roll out recommendations and monitor their uptake. Training of coroners in utilising expert witnesses and writing comprehensive Rule 43 letters with regard to firefighter fatalities and related matters may be of value.

HSE

- HSE should ensure there are sufficient staff and resources available to oversee the work of the fire services properly with regard to the health and safety of firefighters;
- HSE should review its current guidance and reports on firefighter health and safety;
- Data indicate that enforcement action by HSE is very limited, although quite possible, in the light of serious health and safety breaches by brigades. HSE should review its enforcement policy in the light of recent employer failures to safeguard firefighters. It is unlikely that governments will introduce new or more stringent laws on fire safety in the near future but HSE should enforce existing laws better;
- HSE should set up a new and regular inspection programme of FRSs to check that the findings of previous fatality reports and other evidence of hazards to firefighters - safety and health - are being fully implemented across the UK. This should be planned and extend beyond a simple paper and tick box exercise;
- HSE should provide clear and publicly available (not informal) guidance to employers and employees on the priority that should be given to firefighter health and safety by employers;
- HSE reports on firefighter fatalities should be made available as fully, quickly and publicly as possible along the US lines for all to benefit from the information and analyses provided;

- Future research by HSE should target major upstream threats and risks to firefighter health and safety and not marginal human resource topics;
- HSE should draw on the extensive documentation of firefighter fatalities that it has on file to extend and improve its advice to UK FRSs. Currently HSE does not appear to have a coherent picture of the key elements causing fatalities but only a fragmented view;
- Consideration should be given to the establishment of a 'fire investigation unit' along the line of the Marine Accident Investigation Board (MAIB) or Air Crash Investigation bodies. Such a unit could pool resources from across HSE, CFRAU and the Fire Services College at Morton in the Marsh to investigate serious fire incidents.

The Chief Fire Officers Association (CFOA)

- The CFOA in conjunction with LGA, etc should produce a publicly available annual report on firefighter fatalities, injuries and near misses and actions that had been taken across all FRSs to improve firefighter safety documenting any good practice;
- This could be based on consolidating information that would always be included in an improved IRMP for each FRS and should include a commentary on any fatal incidents that have occurred in the year.

Fire Brigades Union (FBU)

- If it does not already exist and can be created relatively easily and cheaply, a centralised FBU data base for all firefighter fatalities, injuries and near misses (and perhaps reported occupational diseases) could usefully be established. If HSE, CFRA, DCLG and FRSs improve their data bases, this should make the FBU task of compiling such a data base much easier. It may also be able to draw on FBU members' own reports of injuries and near misses which will act as a useful check on the accuracy of the official statistics;
- There is some merit in extending further the training and support for those FBU members conducting fatality investigations with a view to building up capacity in the number of reps able to conduct investigations in each region;
- There may be some benefit to be gained from extending links with European as well as North American and Australia firefighter unions and exploring further how these unions and countries compare with the UK in terms of resources and procedures available on firefighter health and safety.

INTRODUCTION

A number of UK incidents that resulted in firefighter fatalities at fires - fourteen in the last ten years (2004 to 2013) - are analysed in the report from a risk reduction and risk management perspective. According to DCLG figures, in England alone between 1993/94 and 2003/04, there were 6 firefighter deaths at fires but in the next ten years 2004/05 to 2013/14 this more than doubled with 13 firefighter deaths and one fire technician death (DCLG FOI disclosure May 2014). The fires happened at different times, in different countries and in different brigades. The fires began at a range of sites including industrial, commercial and domestic premises, some quite large and some small. Sometimes members of the public were at risk and sometimes they were absent from the fireground. The causes of the fatalities have been analysed drawing on available but often patchy and at times conflicting information.

Circumstances normally varied from incident to incident. Nevertheless, what emerges for these incidents is that there have often been common or similar causes for several of the fatalities. Those causes, and the means to prevent them or reduce the risks associated with them in the future, have been identified in a number of sources examined including public and legal reports. In the 2000s, official fire statistics figures indicated UK 'traumatic operational fatalities' happened to firefighters at around one firefighter per 100,000 structure fires (Grimwood 2008:3). This may have been better than a number of other countries but between 2004 and 2013 firefighter fatalities at fires often occurred in similar settings with known causes and were avoidable if previous fatality reports had been acted upon in a root and branch way by governments, brigades and regulators.

Experienced fire analysts were clear throughout this period that safe operational work systems and trained firefighters and incident commanders familiar with a range of perspectives across many operational issues were vital to firefighter safety. They were equally clear about where responsibility ultimately lay.

"It is not acceptable for fire departments to risk the lives of their members because they are not adequately trained or equipped or because they do not apply appropriate judgement in conducting emergency operations". Grimwood 2008:4

The key facts relating to the fatalities at fires are rarely contested but the interpretation of their significance may be. Yet the same underpinning or root explanations for the fatalities constantly recur and relate not to individuals but to factors external to firefighters at the scene - national and brigade procedures, policies, staffing, training, management and equipment. All reveal that the defences in depth failed.

Action is needed by central and local government including ministers and civil servants at the DCLG and similar government departments in other countries within the UK, LGA England and similar UK bodies, CFOA, CFRA, brigade FRSs, the HSE, the police and lawyers to ensure the findings from such fatal incidents are rapidly and effectively applied so that fatalities, injuries and near misses are prevented in the future.

The rise in on-duty firefighter fatalities in recent years merits investigation to identify causes, patterns and trends and lessons to be learnt for the various bodies that operate fire and rescue services, oversee work practices and investigate fatalities or represent those who do. The report is especially concerned with the broader pre-fire causes of fatalities and post-fire actions taken across the UK and less on the technical details. For the high hazard work of firefighters on firegrounds, the defences in depth required necessitate the best possible standards, procedures and policies to ensure operational measures work. The firefighter is at the hazardous end of this line of activity and needs and deserves the best protection possible.

Three earlier fatalities at Blaina in South Wales 1996 and Limavady in Northern Ireland 2003 are discussed because they provide additional and relevant perspectives; some of which have still to be taken fully on board in 2014. The Dalry Rd fatality in Edinburgh in 2009 and the Oldham St fatality in Manchester in 2013 are only touched on briefly in this report. The former is still the subject of a court case and the latter is in the process of reaching the courts, so discussion on these is restricted to information already in the public domain.

The report specifically examines fatalities at fires. This is not to diminish other circumstances where firefighter fatalities occur such as water incidents, road traffic crashes, training or where particular work-related causes of mortality, such as heart attacks or cancer, apply. Where appropriate and relevant, international incidents or studies have also been used to inform the analysis.

In 2008, the FBU and LRD produced a report with a series of recommendations for action that covered all firefighter fatalities at work not just those at fires. Most of the recommendations are directly relevant to firefighter deaths at fires post-2008 and almost none in 2014 have been fully acted upon. It is tragic and unacceptable that this is the case. LRD recommendations at governmental level included a call for cross-UK fire and rescue service policy, equipment improvements, reviews of existing reporting procedures with reports on all firefighter fatalities, near misses and serious injuries across UK to be published in one place annually. An independent Fire and Rescue Service (FRS) investigation unit was to be established to examine such events and disseminate advice.

There were also calls for government to ensure guidance on issues relating to recent fatalities. These included the need for minimum attendance standards, revised generic risk assessments, minimum regular operational training standards, minimum Breathing Apparatus (BA) procedure standards, minimum Incident Command and Control system standards, updating generic risk assessments (GRAs) and dynamic risk assessment (DRA) policies and training, specialist training in all aspects of compartment fires and ventilation of high risk buildings as well as standard operating procedures for firefighters in high rise residential buildings along with guidance on heat stress minimum standards for backdraught and flashover training. Some technical equipment actions were also flagged for government and some but not all of these have been acted upon.

Operational firefighters were to carry out regular inspections of all high risk buildings. FRSs should ensure suitable equipment for firefighters including appropriate fireground communications equipment. FRSs should negotiate protocols to protect FBU safety representatives with regard to information, disclosure, access to documents and right to have private discussions with employees.

Unravelling the link between funding, staffing, fire incidents, risks and firefighter fatalities is highly complex. The starting point should be how to prevent both fatalities and fires and then to ask what resources, staffing, technology, procedures and policies are needed to achieve that. This is a cost effective approach too if the human and economic costs of fire fatalities and injuries are properly assessed and not externalised by government and employers to victims, their families, their communities and the NHS. There is currently a danger that the opposite approach may apply linked to some flawed logic. The argument put is that as fire incidents have fallen, fire services can be cut without either public safety or occupational health and safety being jeopardised. One assumes this will be done until the incidents begin to rise again and then a lag will occur before problems can once more be addressed effectively.

Further problems may exist with regard to technology and equipment because as PPE, BA and protective equipment improve, firefighters may be able put themselves in more hazardous situations or go deeper into fires than they would have done in the 1980s and 1990s and hence perhaps increase their risks in some situations. There is also a counter-intuitive element: with the reductions in fires, firefighters experience fewer fires in certain settings and the importance of premises inspection and realistic training for instance in compartment fires and in conditions likely to be encountered in high rise buildings is increased.

“The total number of incidents is falling; yet the number of stations and overall FTE workforce strength has not reduced proportionately. FRAs should consider whether they have the right numbers and types of stations, appliances, and people in the right places, to deal effectively with current risks. Judgements should rely on an understanding of local risks and resources. For example, rarely used operational resources are not always poor value for money. FRA risk assessments should identify the circumstances under which resources will be used and consideration of local circumstances”. (National Audit Office [NAO] 2011: 12).

Bodies like the NAO did not usually address the question of firefighter fatalities. However, with regard to firefighter fatalities at fires since 2008, the recent incidents make a powerful case for maintaining if not improving staffing and resources and improved risk assessment and management. It may also be significant that several of the recent fatalities happened in small businesses where there were small numbers of employees: such SMEs are a prime target for government’s deregulatory and soft touch regulatory policies.

It is a moot point how applications of simple ‘business cases’ necessarily benefit either public safety or worker safety.

“One of the restrictions is the different minimum crewing levels to produce optimum levels of staffing and safe working practices in different authorities for the delivery of the same service. I would encourage fire and rescue authorities to use the basis of business cases and risk assessments from other areas where they wish to adopt their innovative solutions to staffing arrangements, and that employer and employee representative bodies and the Health and Safety Executive urgently examine ways of doing so”. (Knight 2013:29).

With regard to firefighter fatalities, what is needed are effective solutions not ‘innovative’ ones linked to business cases. Knight in England makes just one explicit mention of the HSE and worker safety in the whole of his report and none to firefighter deaths. This reveals how a focus on ‘efficiencies’ cannot simply skew priorities but lead to their exclusion in any debate about services and their purpose.

AIMS AND OBJECTIVES OF THE REPORT

The two key aims were (1) to examine recent firefighter fatalities at fires in a variety of settings - industrial, commercial and domestic, and (2) to explore if any generalizable conclusions could be drawn with regard to the findings from the literature and cases explored. The key objective is to formulate recommendations to governmental, regulatory, managerial bodies and others to reduce the number of such fatalities and related injuries in the future.

The report therefore examined issues such as risk assessment, command and control, communication issues, standard operating procedures, BA, training, response times, speed and weight of attack. It identifies any repeated and recurring failures in safe systems of work. It looks at some of the links between firefighter safety and public safety as well as assessing any links between fire service cuts, changes in management approaches and the potential risk of fatalities and related serious injuries in the future. The report draws out common factors, trends, obstacles to change and solutions relating to the incidents analysed. It does not repeat an in depth examination of the incidents already made available in a range of technical, legal and professional publications. Such publications for all the incidents discussed in this report, however, are surprisingly very patchy indeed.

HOW THE REPORT HAS BEEN COMPILED

A rapid review was done for the scientific, governmental and local authority literature available in the UK and beyond on the subject and supplemented by analyses of a variety of detailed reports on the specific UK cases already identified. These included serious accident investigation reports by fire and rescue services, CLG, HSE, FBU and independent advisors, coroners' inquest and legal case reports, and government and fire and rescue service guidance. Appendix 1 contains the range of sources used to examine the various incidents.

Few research papers on UK firefighter at fire fatalities exist although the literature available on the web is much larger as is the literature on related risks, risk assessment and risk management and the international literature on firefighter fatalities.

Interviews were then conducted with long serving current and past firefighters in the FBU who had been involved in investigating the fatalities over the last ten or more years. This allowed a more in depth exploration of views about the causes of the fatalities and drew on information gathered from the literature review and analysis of published reports on each incident. The firefighters interviewed came from England, Scotland and Northern Ireland. Questions about both general causes of firefighter fatalities and specific incidents were asked. Extracts from the eight firefighters interviewed are included in the report. Additional information was also sought from the HSE and the CFRA's office. None was provided by the CFRA office.

The project was subject at all stages to ethical scrutiny by the University's School of Health Sciences Ethics Committee.

TOOLS FOR ANALYSIS OF FINDINGS

The report uses secondary material from various sources, countries and interviews. A thematic analysis was used with regard to the interviews (schedules are included in the appendices attached). Injury investigation may involve the application of a variety of methods. These include some form of root cause or fault tree analysis including fish bone and Swiss cheese models. With the focus on systems, risk assessment and related training, equipment and staffing issues, a simple analytical framework has been adopted here – pre-fire, fire, post-fire. The fishbone analysis throws up recurring causes of firefighter fatalities that remain unresolved in 2014.

Greater emphasis has recently been given to behavioural safety linked to safety cultures and the psychology underpinning decision-making in risky settings. These may be part of the picture for all firefighters at fires and have been built into both dynamic risk assessments at the fireground and aspects of training. However, they present a number of problems.

They may downplay important factors that operate prior to a fire including the state and nature of buildings, activities of owners and bodies such as local authority planners, the materials and processes contained within it, regulations that apply to it, enforcement, the role of regulators, the equipment/staff and resources available to fight the fire, and finally the organisation and management of the fire service. Yet they often have relatively little use in post-fire investigations of systems and policies but behavioural safety can easily shift to blaming the employee and junior managers for anything that goes wrong rather than exploring the wider social and physical environment within which the employee has to operate.

HSE highlighted the need, in a setting which depends on the 'safe person' keeping him/herself safe, for organisational factors to be prioritised in behavioural safety settings. Accountability can be easily skewed by behavioural safety thinking towards those fighting the fire and not those funding FRSs in central and local government or those senior managers at the top of FRSs who create and operationalise the firefighting strategies and practices.

Firefighters quickly recognise these problems of accountability themselves.

“When you talk about the safer person concept what you hear is... the management trying to blame you and that's all you hear. It's up to you, you are supposed to keep yourself, and that's them washing their hands. They don't see that as being part of a wider process where you should have had from the guidance to the training, to the equipment, all the way down and you keeping yourself safe is part of that whole process. That's them taking their responsibility away blaming the individuals. In the same way you know if a plane goes down the first thing you do is you blame the pilot and at a train crash you blame the train driver and if the firefighter gets injured it must be something the firefighter did”. ff1.

There is a lack of visible and effective work on addressing some of the general factors that apply to recent firefighter deaths at fires. The system appears haphazard across some FRSs. Although actions may have been taken to rectify problems, this is not always transparent. It often appears to remain un-audited or lost in current pre-occupations in the UK Government about value for money and better regulation agendas. This report therefore simply touches on behavioural safety at this stage as it is not used as a major analytical tool.

FIREFIGHTER FATALITIES AT FIRES AND RELATED INJURY AND NEAR MISS STATISTICS

UK data remain difficult to access, extract and compare and can be frequently broken by changes in definition. What is available is provided in this section. Time series analyses of trends are therefore difficult. These problems hamper meaningful analysis of the subject and proper assessment of any actions taken to prevent such fatalities and injuries across the UK. With devolved powers on occupational health and safety applying in Northern Ireland and with devolved powers for certain aspects of fire safety devolved in Scotland, the UK picture has become even more complicated. HSE, however, retain responsibility for firefighter health and safety in GB: that is in England, Scotland and Wales.

According to DCLG figures, in England alone between 1993/94 and 2003/04, there were 6 firefighter deaths at fires. In the next ten years 2004/05 to 2013/14 this more than doubled with 12 firefighter deaths and one fire technician death (DCLG FOI disclosure May 2014) and an additional death in Scotland. Between 2005/06 to 2009/10, according to HSE figures, the Fire and Rescue Service's injury and ill health rates were above average. HSE considered there was scope for improvement through better management of health and safety as part of good management practice generally. However, the HSE figures are not broken down into causes of fatalities and injuries. Such information may exist within HSE but it is not currently in the public domain. Details are not provided on major injuries or near misses at fires - an important area to address that should inform developments of effective preventive actions. Individual FRSs may have good data on all these categories but as no consolidated report is provided GB-wide on this, their value is currently lost. It is not clear about the extent to which HSE relies on or uses DCLG data but the latter does not appear to be presented in the same way as the former. Nevertheless the figures as they stand reveal serious health and safety problems. Major injury data indicate the potential for fatalities along with near miss figures but these are not provided.

Table. All firefighter deaths and major and over three day injuries between 2005 and 2010

Employees	2005/06	2006/07	2007/08	2008/09	2009/10p	Total
Fatal	0	2	5	0	1	8
Major	102	123	120	98	96	539
Over 3 day	1202	1087	992	958	539	4778
Total	1304	1212	1117	1056	636	5325

(Source: <http://www.hse.gov.uk/services/fire/statistics.htm>. Accessed October 29 2013)

The HSE issued only 3 notices following the investigation of fatalities to firefighters in the period 2002/03-2012/13. This indicates that one part of the state system for protecting firefighters at work is at best feeble in practice and at worst broken especially in the light of official recognition of major under-reporting within the UK of injuries at work.

Year	Improvement Notices issued
2003/04	2
2007/08	1

(Source: HSE: FOI request - 2013110278 – Fire Fighter Fatalities 27th January 2014)

HSE has also not issued any enforcement notices following the investigation of reported major injuries to firefighters in the same period. Inspections of fire service workplaces undertaken by HSE between 2011/12 and 2012/13 have numbered 3 in 2011/12 and 4 in 2012/13. Yet its own consolidated report in 2010 on 8 fire services noted “there were several occasions where inspectors discovered failings that were serious enough to warrant consideration of enforcement action”.

The RIDDOR (The Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 1995) statistics for including all reported injuries/rates for fire service officers for the period 2004/05 - 2012/13 are as follows.

Severity	Year								
	2004/5	2005/6	2006/7	2007/8	2008/9	2009/10	2010/11	2011/12	2012/13p
Fatal injuries	5	-	-	5	-	1	2	1	-
Major injuries	129	111	133	127	108	106	112	75	171
Over-3-day injuries	1390	1234	1122	1031	995	860	814	649	-
Over-7-day injuries	-	-	-	-	-	-	-	-	553
Fatal and major injury rate ²	250.7	226.2	259.2	260.4	195.1	201.1	227.8	144.5	329.2
Over-3-day injury rate ²	2600.8	2514.4	2186.7	2034.2	1797.8	1616.4	1626.6	1234.3	-
Over-7-day injury rate ²	-	-	-	-	-	-	-	-	1064.6
p = provisional									
¹ Identified by Standard Occupational Classification 2010 (Code 3313 fire service officers)									
² Rates are calculated per 100 000 workers									

(Source: HSE: FOI request - 2013110278 - Firefighter Fatalities 27th January 2014. Rates are per 100,000 workers)

The fatality and major injury figures indicate this sector again merits serious HSE surveillance. The DCLG figures for GB non-fatal injuries appear to indicate an improving picture in terms of recorded numbers and provide data about injuries in each brigade. It may well be that DCLG and Brigades do have these break downs but they do not appear to be publicly available in a user-friendly form. No rates are provided nor are there details on how many fires firefighters attended incidents, the nature of those fires and the time spent on the fireground or other details of the incidents attended that would inform risk assessment and risk management decisions. These data are therefore far less valuable than those available for the USA.

Table 9: Non-fatal firefighter casualties from fires by nature of injury¹, Great Britain, 2000/01 - 2011/12

Year	Total	Nature of injury ¹							Precautionary check-up and first aid
		Burns	Overcome by gas or smoke	Burns and overcome by gas or smoke	Physical injuries	Shock only ²	Other	Unspecified	
2000/01	622	65	26	0	236	0	119	8	168
2001/02	686	67	35	1	271	2	53	0	257
2002/03	508	59	33	1	282	2	30	1	100
2003/04	435	67	19	1	235	3	45	2	63
2004/05	355	64	10	1	221	1	16	2	40
2005/06	334	50	15	1	182	3	19	1	63
2006/07	306	33	21	1	175	1	13	1	61
2007/08	252	43	12	0	106	1	15	0	75
2008/09	285	36	10	0	111	1	11	0	116
2009/10 ³	-	-	-	-	-	-	-	-	-
2010/11	189	13	9	0	56	2	15	0	94
2011/12	233	8	12	1	45	2	19	0	146

¹ Table shows main injury only, priority being given to 'burns' and being 'overcome by gas or smoke'. However, if both these injuries occur, this is shown separately.

² includes anaphylactic shock also

³ 2009/10 figure was not shown due to incomplete record from one Fire and Rescue Authority

[Source; DCLG/ONS. Fire Statistics: GB 2011 to 2012. Time Series Tables]

In Scotland, similar but apparently not identical figures from the Scottish Government have been collected and made available on non-fatal casualties from primary fires for FRS personnel. The table below illustrates the range of these data.

	2008/9	2009/10	2010/11	2011/12
Precautionary check recommended		2	3	3
First aid given at scene		4	3	9
Person went to hospital, injuries appear to be slight		9	18	12
Person going to hospital, injuries appear to be serious		2	3	4
Total		17	27	28

(Source: extracted from FIRE STATISTICS SCOTLAND p47 2011/12 Table 12d.
<http://www.scotland.gov.uk/Resource/0040/00403593.pdf>; Table 9d p33 2010/11
<http://www.scotland.gov.uk/Resource/Doc/361231/0122132.pdf>; Table 9b. p30
<http://www.scotland.gov.uk/Resource/Doc/933/0118382.pdf>

	2009/10
Burns	3
Burns and overcome by gas or smoke	
Overcome by gas, smoke or fumes	-
Smoke inhalation	-
Physical injuries	8
Shock only	-
Precautionary check up	2
Other specified	2
Unspecified/ not known	2
Total	17

(Sources: extracted from Fire Statistics Scotland 2009/10 Table 9a. p30
<http://www.scotland.gov.uk/Resource/Doc/933/0118382.pdf>

In Northern Ireland some firefighters believed the health and safety statistics were not as good as they could be and more information was needed. There was reluctance to record near misses but all fatalities would be recorded.

Table: Operational Staff Injuries (includes RCC and Volunteers on Rathlin Island)

Severity	Year									
	2004/05 ²	2005/06	2006/07	2007/08	2008/09	2009/10	2010/2011	2011/12	2012/13	2013/14
<i>Fatal Injuries</i>	No Data	0	0	0	0	0	0	0	0	0
<i>Major Injuries</i>	No Data	4	0	4	3	3	1	3	1	2
<i>Over 3-day</i>	No Data	58	46	40	31	29	43	45	27	41
<i>Over 7-day</i>	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data
<i>Fatal & Major</i>	No Data	0.08	0.00	0.81	0.06	0.06	0.02	0.06	0.02	0.04
<i>Over 3-day Injury</i>	No Data	1.17	0.93	0.81	0.63	0.59	0.87	0.91	0.55	0.83
<i>Over 7-day Injury</i>	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data	No Data

1. Northern Ireland does not record 7+ day injuries (UK mainland only at present);
2. No data on current accident database
3. Figures per 100,000 workers.

Table. Non-fatal firefighter casualties from fires by nature of injury, NI 2005/06 - 2011/12

Year	Total	Nature of Injury							
		Burns	Overcome by gas or smoke	Burns and overcome by gas or smoke	Physical Injuries	Shock	Other	Unspecified	Check-up or first aid
2005/06	90	1	2	-	81	-	2	4	
2006/07	83	1	-	-	56	-	24	2	
2007/08	78	5	-	-	49	-	18	6	
2008/09	67	2	1	-	41	-	22	1	
2009/10	64	2	-	-	24	-	32	6	
2010/11	84	1	-	-	43	-	34	6	
2011/12	63	2	-	-	46	2	13	-	

1. Main injury only taken into account.
2. Overcome by gas or smoke/affected by smoke inhalation.

(Both tables above were prepared by the NIFRS Health and Safety Policy Unit and kindly made available in July 2014).

“I mean that’s intrinsic to people don’t like to put their hands up and admit that it went badly wrong, they don’t like to do that and that’s part of the cultural difficulty that we have with all of this”. ff5

There was some constructive engagement between NIFRS and the FBU on non-fatal investigations. The smaller the country, it may be the better the communications and hence relationships are and so better outcomes may be achieved on incident investigation. Northern Ireland figures that are available do not break down the statistics in similar ways to England and Scotland and show some significant variation year by year.

Operational Personnel Injured at Incidents or en-route to Incidents are as follows:

*	2005	56 Injuries at Incident / 4 En-route to Incident	TOTAL	60
*	2006	87 Injuries at Incident / 4 En-route to Incident	TOTAL	91
*	2007	79 Injuries at Incident / 7 En-route to Incident	TOTAL	86
*	2008	57 Injuries at Incident / 4 En-route to Incident	TOTAL	61
*	2009	73 Injuries at Incident / 11 En-route to Incident	TOTAL	84
*	2010	82 Injuries at Incident / 2 En-route to Incident	TOTAL	84
*	2011	61 Injuries at Incident / 11 En-route to Incident	TOTAL	72
*	2012	49 Injuries at Incident / 3 En-route to Incident	TOTAL	52
*	2013	58 Injuries at Incident / 8 En-route to Incident	TOTAL	66
*	2014*	27 Injuries at Incident / 6 En-route to Incident	TOTAL	35* (to date)
			TOTAL	689

(Source: Northern Ireland FBU office)

In the USA, the United States Fire Administration both brings together and assesses line of duty firefighter fatality information as well as publishing data in annual firefighter fatality reports and NIOSH published completed reports on the web (Kunadharaju et al 2011:1171). The UK needs a similar system that should include statistics on all UK enforcement action by HSE on FRSs. It would be useful to know to what extent the Fire Service and UK Governments’ departments examine good practice as well as fatalities. If there have been fires similar to those where the fatalities occurred but where no injuries resulted, then much may be gleaned from analysing and comparing them (Tissington 2001).

Recommendations

- The four UK countries should publish annual reports on firefighter fatalities, injuries and near misses at fires as well as occupational disease rates and details of any related enforcement notices - drawing on information already available within the Health and Safety Executive (HSE), Department for Communities and Local Government (DCLG) and the individual Fire and Rescue Services (FRSs) across the UK;
- HSE should make available all reports of completed investigations of firefighter fatalities on its web pages that are not restricted by ongoing legal cases. This should be done as expeditiously as possible;
- Each FRS across the UK should publish, including on its web pages, details of any completed investigations of firefighter deaths at fires. This should be done as expeditiously as possible. There are examples of good practice to draw on: the NIFRS for example has an excellent data base on injuries to firefighters since 2006;
- Each FRS should provide on the web annual reports on firefighter health and safety. These data should currently exist but may be 'hidden' from public view in brigades;
- Within the office of the Chief Fire and Rescue Advisor (CFRA), the data available under one and 2 should be evaluated on a regular basis and used to produce publicly available annual or biennial reports as the CFRA has a strategic role;
- FRSs and the CFOAs should provide regular publicly available reports on firefighter at fires' serious injuries and diseases and significant near misses when they occur and when they are legally able to do so.

UK FIREFIGHTER DEATHS AT FIRES: INCIDENTS BETWEEN 1996 AND 2013

The following incidents in England, Northern Ireland, Scotland and Wales involving firefighter fatalities at fires are listed in chronological order. Incidents prior to 2004 have been included as they cast light on later events but the focus is on the ten year period 2004 to 2013. A synopsis of each incident is provided with a view to examining key factors and identifying common themes. Detailed and sometimes very detailed reports on the various incidents have been produced by for example the fire services themselves, technical specialists, the FBU, the HSE and the courts.

Where these reports are publicly available, they have been cited in the specific incident summaries provided below. The causes of the fires were not always identified and at least one and possibly three involved arson. The properties involved also varied ranging from domestic houses to shops, bars, hotels, warehouses, small industrial units and blocks of flats. All show sometimes significant similarities as well as differences between fires.

They help to reveal what if any actions were taken to avoid similar events in the future and how successful those actions were. Each account is presented at this stage in a simple form with pre-fire, fire and post-fire sections. An analysis of the findings that spans all or most of the incidents is provided after this section.

One firefighter death occurred in Wales in May 2004, that of Richard Jenkins, due to an explosion of a gas cylinder out of sight in an attic following an arson attack in a bingo hall. This is not discussed here. The two men responsible for the arson were found guilty and imprisoned for ten years each.

1. BLAINA 01/02/1996. 14 Zephaniah Way, Blaina, Gwent. Firefighter fatalities - Kevin Lane and Stephen Griffin. South Wales Fire Authority (SWFA later the SWFRS).

“On the first of February 1996, a fire occurred in the South Wales valley town of Blaina. It was a simple house fire, not a complicated incident - the type of domestic fire that many firefighters would regard as a 'bread and butter' job. However, circumstances conspired to turn a run of the mill fire into one that had massive reverberations across the British Fire and Rescue Service. Stable door lessons were learned and, as a result, firefighters are safer due to improved training and awareness of the phenomenon known as 'backdraft'”.
(Prosser 2008:1).

Pre-Fire

The fire broke out in a dwelling house in a terrace on an estate. Building materials and house construction were not unusual. No evidence existed of a battery smoke alarm being present in the house although they were located in houses next door.

Fire

At the time, only one pump was initially required at such locations and only one pump was mobilised. Threats to lives of occupants (children) were known and a snatch squad was used. A backdraught occurred and a door opening inwards, along with the presence of a hose pipe, prevented two firefighters escaping.

The firefighters were attempting the rescue of a second child in the house after one had been successfully removed. BAEC procedure was not followed or possible. If two appliances had been present, this should not have been the case. An emergency team was initially mobilised to rescue the trapped firefighters because of lack of staff and equipment at time.

Post-Fire

No major external (building) problems were identified. Issues were raised about personnel, operation and tactics, incident command and control and equipment. A fire cover review led to assessment that 2 pumps were needed in attendance at such fires and this may also have addressed issues around BAECO and related procedures as well as emergency team mobilisation. Backdraught training issues also emerged for firefighters, incident commanders and crew training as well as BA training. In 1994, a Home Office Fire Research and Development Group surveyed backdraught hazards and found no practical training was given to firefighters in the UK on this subject.

This raises policy and governance questions because many of the firefighter deaths at fires later were due to similar failures to use existing information on hazards and address past problems.

Operational problems arose with BAECO and around firefighter numbers at the scene. Incident command and control issues also emerged with regard to how risk assessments could be conducted adequately under the 1992 Management of Health and Safety at Work Regulations and the training incident commanders needed particularly with regard to prevention of backdraughts and protection of firefighters when backdraughts occurred.

Following the Blaina fatalities, the Home Office published a Supplement to the Manual of Firemanship Volume 2 (Fire Service Operations) in 1997 entitled Compartment fires and tactical ventilation to ensure a common understanding across the UK Fire Service as to how fires in compartments develop. Specifically, the aim was to understand the characteristics of fire development leading to 'flashover' and 'backdraught', and how firefighters should approach these different events. The detailed approach was underpinned by the Home Office shift in policy post-Blaina to the 'safe person' concept in firefighting. This was based on making the assessment of risks to staff the key consideration in firefighting linked to appropriate training on risk (Tissington and Flin 2005).

The HSE's investigation led to an Improvement Notice being served on the South Wales Fire Authority. To support the Supplement, the Home Office also released training videos on compartment fires and tactical ventilation covering fire growth, flashover and backdraught. These included tactical ventilation of fires and practical guidance for recognising incipient flashover/backdraught conditions, associated dangers and how best to deal with them.

Some firefighters questioned the narrow actions taken by HSE to address problems identified at Blaina and the staffing levels necessary to fight such fires safely and effectively.

“Whilst the Health & Safety Executive recognised certain deficiencies as being major contributing factors to the tragic outcome of this incident, their inclusion in the issue of improvement notices were isolated, as there were in fact several tactical considerations that needed redressing if real lessons were to be drawn from the experience. Similarly, the 1997 update of the manual of firemanship (compartment fires) failed to take such an opportunity and in reality, the circumstances that prevailed at Blaina are still likely to occur over and again, perhaps in your very own community in the not too distant future! The point is, I am far from convinced that our firefighters are fully prepared for another 'Blaina'. I certainly don't believe that our fireground philosophy is effectively advanced or proactive enough and I feel that our tactical approach is strongly susceptible to traditionalist influence - we are still 'reactive' in our approach”. [Grimwood 2000
<http://www.firetactics.com/IFE98.htm>)

Specific HSE information from the Blaina fire is only available now in the HSE's improvement notice. The Chief Fire Officer's letters, for example the one on the Safe Person Concept in 1997, to communicate clear messages widely also no longer seem to be publicly available. This is perhaps connected to the downgrading of the CFRA's office and the role of HM Fire Service Inspectors. In 2014, the HSE held no electronic or manual information on this incident (HSE FOI Request 27th January 2014).

Several actions were taken relating to fire cover and other matters but BA and compartment training remain a challenge for many FRSs into 2013. Of some concern with regard to policies and governance of FRSs is how IRMPs now address firefighter safety. The SWFRS Improvement Plan for 2012/13 makes reference to a target to reduce firefighter injuries. Not all such plans do this. Two pages are devoted to health and safety with 35 action points and 7 requirements. These are generally high level and general points but risk reduction refers only to attacks on firefighters not risks at fires.

The post-fire reports and actions by the Home Office and HSE were extensive immediately after Blaina and rolled out widely. Later UK fire fatalities have not produced similar reports and actions and some fatality reports are still locked in to the court system five years after the event.

2. LIMAVADY 11/2003. Gorteen House Hotel, Limavady. Firefighter fatality – Joe McCloskey. Northern Ireland Fire Brigade (NIFB).

Pre-Fire

A hotel storehouse with a significant fire load and including a gas cylinder and thousands of boxes of matches caught fire according to press reports. Arson was allegedly the cause of the fire. Sufficient pumps from 2 fire stations were available and adequate number of firefighters was available. Officers from both stations had received training in operational command and control and firefighters had received fire behaviour training along with some training and lectures on DRA albeit in the late 1990s. This raises questions about refresher training, intervals between training programmes, updating, recall and the testing of the competence of those 'trained' at that time but frequent validation checks were carried out at both stations. The NIFB addressed several of these matters in its own investigation of the incident. The NIFB had its own 'stand and run' card, operational aid memoires and SOPs but drew on UK DRA information.

Fire

Three engines went to the scene so resources were available for the weight of attack needed. No members of the public were at risk. Two firefighters were on a store roof with sledgehammers punching holes through and one fell through when roof collapsed. BA equipment made communications difficult for the firefighter and presented problems for the incident commander in contacting the two firefighters on the roof. The firefighter apparently had no radio. No danger to life was recorded during the initial firefighting activity. There was no evidence on the board or from those present at the fire that an updated dynamic risk assessment was carried out or personnel informed of any updates. Incident command, training and experience appeared to be the key issue in the events that unfolded. No officer was tasked to assess and validate health and safety at the incident.

Post-Fire

Three separate investigations were conducted into this incident but none appear to be in the public domain. There was a NIFB investigation, a HSENI report and a coroner's inquest. An out of court settlement for the family of the dead firefighter adversely affected calls for a public inquiry. An improvement notice issued by HSE Northern Ireland on 2nd May 2004 made clear that the NIFB (now the NIFRS) at all operational incidents should suitably and sufficiently address risks to firefighter safety and "such risks must not be disproportionate to the perceived benefits". Additionally it stated the brigade should follow the principles of the UK 1998 Home Office guide on dynamic management of risks. Fire officer instruction and training based on the principles of DRA was required. HSENI also requested the NIFB to produce formal guidance on flat roof working as such guidance was lacking in 2003. The NIFB did as requested.

In 2004 the NIFB issued all its firefighters with guidance on risk assessment that looked at operational risk management followed by the safe person concept and information about DRA and dynamic risk management.

In 2004, the NIFB also produced a note describing the duties of a safety officer who could be appointed by the incident commander and who should have the minimum rank of station manager. If similar DRA and related measures had been taken in England and Scotland, it seems highly unlikely that several later firefighter fatalities would have occurred.

Whilst in contrast for example with the South Wales IRMP, the NIFRS IRMP for 2012-2015 (published in 2012) makes no explicit reference to health and safety. The focus is heavily on community risk assessments, community safety and efficient use of operational resources. There is one generic reference to 'safety' in the plan in the context of delivering affordable and sustainable services. The HSE 2010 report on the London Fire Brigade (LFB) observed that there were balances to be struck between community action and firefighter safety but noted that improved firefighter safety and training would benefit community safety too.

In practice, firefighters in Northern Ireland consider the brigade takes its health and safety seriously and addresses their concerns. Hence there is a mismatch between the 'paper' IRMP in this country and the good practice that operates below the paper exercise.

3. BETHNAL GREEN 20/07/2004. 419 Bethnal Green Road, London. Firefighter fatalities - Bill Faust and Adam Meere. London Fire Brigade (LFB).

Pre-Fire

A three story building was involved - basement, ground floor clothes shop, two floors of residential flats. Detailed structural plans of the building were not known to the London Fire Brigade. The fire had many similarities with the Gillender Street fire in London in 1991.

Fire

Fifty firefighters and eight appliances in total were eventually at the scene. At 04.38 four appliances were ordered to attend. One hour and seven minutes later, 'make pumps six' was called. Two crews with BA were committed and a BAECO was appointed. Heavy smoke came from a ground floor door. A third and fourth relief crew, the recommitted first crew, were committed to fighting the fire. Faust and Meere were the fifth crew and BA wearers but without communications. A sixth and seventh crew were committed. Rumbles and flames were heard in the building. The seventh crew could not reach the sixth crew. An eighth and ninth crew were committed. The first floor was alight. The time of whistle was near for the fifth crew. An ADSU was heard and crew seven found the first firefighter casualty. Crews eight and nine removed the first firefighter casualty from the building. An eleventh crew found the second firefighter casualty who was later removed from the building.

Two residents had to be rescued from a flat roof. There were heat and smoke problems. Ventilation of building through windows and doors fire by a sixth crew at the rear of the building led to increase in fire intensity. Like other incidents, locating and fighting the fire took a considerable time.

Post-Fire

The FBU's own report on the incident identified a range of factors, latent and active, that led to the two fatalities. The 'latent' or institutional environmental factors covered the risk management and risk assessment approaches that flowed from brigade policies and practices and related training, experience, information, equipment and other elements. The FBU had concerns that the brigade response to various HSE improvement notices issued prior to 2004 had often been lengthy and sometimes not fully implemented.

Active and fire-specific factors covered the need for early ventilation at the front of the building in sight of the incident commander to questions about recommitted crews and the many tasks the BAECO had to address. No dedicated communications officer existed at the BAEC point. Little communication occurred by radio and radio communications were poor outside the incident. Insufficient crews existed to provide BA teams, emergency teams or to fulfil fireground tasks.

BA checks and procedures including using second sets and training were all issues. BA training in realistic settings was mooted. Exhaustion and related withdrawal issues, linked to more training about heat stress problems and training re heat stress and recognising effects.

Other issues involved identification or development of locational tracking systems as even with Automatic Distress Signal Unit (ADSU) soundings, locating casualties proved difficult. Briefing and debriefing issues emerged along with questions about ventilation. Obstruction clearance as well as fire location and fighting issues were also identified. Crews were recommitted. A suspect flashover/backdraught occurred but no EVAC whistle was used. A probationary firefighter was deployed for BA entry into the basement raising concerns about committing inexperienced firefighters in such building locations. Only three of thirteen BA teams were led by an officer. BA ADSU sounded but no action was taken.

Additional problems were identified with plans, the command structure, the low numbers of experienced senior officers at the fireground, and the nature of appointments based on evidence of effective decision making on the incident ground. ICs need dedicated officers to support her/him with regard to gathering and processing. Sector commanders need role training. Water spray and application problems were recorded and low water volume. Emergency crew use, size and provision also proved problematic.

On personnel issues, the FBU recommended increasing the minimum size of an appliance crew to five including a minimum of one Watch Commander and one Crew Commander and that a minimum attendance to all basement fires should be six pumps. Appliance crew numbers in 2012 in parts of Denmark, France and the Netherlands all exceeded five (Scandella 2012). Two FRUs, it was further suggested, should be sent to all basement fires. A review of senior officers mobilised to incidents and a review of the number of senior officers available to be mobilised by Brigade Control were also proposed.

The FBU had concerns about the London Safety Plan and IRMP including risk planning processes. These included problems with the use of firefighter resources, community safety fire priorities, bureaucratisation of watch officers' roles and related negative impacts on training etc of firefighters, plus issues of strategic reserve and impact on fire fighting and OHS. Procedures were questioned with regard to basement flooding, BA team use, entering fires without extinguishing media, protecting dry hose runs, and effective command and control of BA crews.

The Rule 43 letter produced by the coroner in 2013, following the Lakanal House fire of 2009 in a high rise building, where there were resident fatalities but no firefighter fatalities, raises some general points about the LFB approach post-Bethnal Green that still required action. It begs the question as to why measures advocated after Harrow Court 2005 and Shirley Towers 2010 were still not apparently being adopted in 2013. The deficiencies identified by the coroner included the recurring topics of the brigade's risk assessments of sites, familiarisation visits, and communication issues.

London Fire Brigade's 5th Safety Plan for 2013-2016 was drawn up in 2013 and contains the IRMP. It has high level commitment to the health and safety of its staff and also includes some general strategic objectives on health and safety linked to reducing RIDDOR accidents. The impacts of proposed cuts in fire stations, engines, numbers of pumps, crew numbers on fire rescue appliances on firefighter health and safety cannot currently be measured.

HSE do not hold an Investigation Report for Bethnal Green but have a record that has been partially disclosed. HSE withheld personal data detailed in the record under Section 40(2) of the FOI Act, as it relates to third parties (Source: HSE: FOI request - 2013110278 - Firefighter Fatalities 27th January 2014). At least 11 meetings or 'contacts' between HSE and various parties involved in the incident are recorded between 2005 and 2010 in HSE's disclosure relating to actions following the deaths of the two firefighters. In a meeting for which no date is given, probably 2005, lawyers considered there was insufficient evidence for manslaughter, arson or gross negligence charges to be brought against LFB or individuals. Differences of opinion then emerged between the CPS, police and HSE about showing the training video on flashbacks.

The police initially and counsel and coroner all opposed the video showing to firefighters in LFB because it might have influenced firefighter evidence in the courts or at the inquest. HSE argued for showings because lessons could be learnt by firefighters immediately and so avoid endangering firefighters in a future fire. Apparently restricting access through the police and LFEPA to the video until after the inquest was discussed. This related to firefighters involved as witnesses to the fire and would apply until after the investigation. From the note, it is unclear if this applied to the inquest or the LFB investigation and it is not stated if it was actioned but it starkly reveals the tension between health and safety and the law. CPS lawyers, however, in late April 2005 also had some concerns 'as to LFBs independence in investigating incident'.

HSE met with LFEPA early in 2006 for an update on the action plan that had been drawn up and noted the training video on flashover/backdraught had been completed by the end of 2004, released by the end of November 2005 and made available at all stations for Watch training. Training packages were held in stations. Officer and trainee training had been reviewed and an action plan was drawn up requiring more training packages to be reviewed. Radios had been increased - no detail given on numbers of optimum numbers needed, and radio sets were being doubled with the aim of equipping every firefighter eventually with coms but no dates or other details on this aim were included. Implications of increased radio communication linked to the need for a dedicated radio officer to manage the radio traffic were mentioned.

HSE noted BA crews were now to be led by a crew manager 'with sufficient experience'. This is not defined in the note. Specific periods for repeat and refresher training were identified linked to crew manager's judgement. London Fires Service managers briefed HSE on the fire apparently in 2006 although no date is given.

This include details of the fire, its timeline, and specialist reports from BRE that the service had commissioned on such things as air gaps behind wooden panelling and in ceiling voids. BRE concluded ventilation was not critical to the ground floor flashover. HSE did not have copies of the BRE technical reports when the inquest started which is a possible cause for concern in terms of co-ordination in learning lessons quickly from fatalities. Water supply issues were flagged at the inquest but not apparently noted in earlier HSE/LFB accounts pre-inquest.

HSE contacts with the families of the two firefighters occurred but are undated in the disclosure. They refer to updating the families on the HSE investigation report the conclusions of which by June 2009 had still not been made available to the families: five years after the fire. The reasons for the long delays are not explained in the note but family members stated the decisions not to prosecute with regard to the deaths were 'weak and spineless. The families also believed the HSE and the 1974 Health and Safety at Work Act (HASAWA) had failed to protect those killed. Some reference is made to a proposed HSE audit of LFB.

HSE inspectors met, at their request, the LFB Commissioner and senior managers in January 2010 to discuss the outcome of the investigation. The LFB Commissioner accepted the investigation findings and 'assured HSE that measures have been taken since the incident to improve health and safety in the brigade' including action plans, work on other near misses, and post Bethnal Green delivery of new PPE and RPE to be provided in the coming year. No note of the HSE response to this delay in new equipment being rolled for an incident that occurred some five and a half years' earlier is made.

HSE considered the mistakes at the incident stemmed from 'deficiencies in incident command and control' and this was to form part of their coming audit of LFB. HSE then met FBU representatives early in 2010 and stated HSE had not discussed details of the HSE investigation and that the investigation analysis and expert witness report could not be made available because they were privileged. No comment is made in the note on FBU's call for more core training across the UK to compensate for firefighter loss of skills because firefighters were fighting fewer fires and had wider community duties after the 2004 Act.

4. HARROW COURT, HERTS 02/02/2005. 85 Harrow Court, Silam Road, Stevenage, Hertfordshire. Firefighter fatalities - Jeffery Wornham and Michael Miller. Hertfordshire Fire and Rescue Service (HeFRS).

The firefighter risks presented by high rise buildings in the UK had been recognised for some considerable time with deaths, injuries and near misses occurring in the 1980s, 1990s and early 2000s (Grimwood 2005:4-5). These events led to the ODPM commissioning research on high rise fires and in 2003 revising its guidance on these buildings and the policy was developed through liaison between CACFOA, FBU, HMFSI and others. Such a collaborative approach seems highly unlikely in 2014. Not until 2006 were provisional guidelines circulated updating the GRA for high rises.

Pre-Fire

The eighteen story block of flats was built between 1965 and 1967 with a hundred and three flats. It is not exactly clear what work had been done in the flats relating to smoke alarms installation and checks and adoption of BS 5839:2002 on not using plastic trunking to secure fire alarm cables. Pre-paid electricity meters also meant that there was no electricity in the flat to power the smoke alarm. The dry riser for the flat had been secured by a chain because it had been vandalised. No bolt cutters were immediately available to cut the chain. Shirley Towers in 2010 had similar circumstances.

According to the FBU report, firefighters were unfamiliar with the premises and the likely risk they would encounter in an emergency, as they no longer carried out inspections on these types of premises. Training inadequacies existed for firefighters and supervisory officers including BA training, emergency response training and Dynamic Risk Assessments (DRAs) as well as high rise incident training.

Fire

The fire involved a person-reported call and two pumps were initially in attendance. There was no effective BAEC and the two firefighters entered the flat without water and prior to a bridgehead being established. Nine firefighters were present at this stage. One firefighter became entangled in plastic fire alarm cables which fell from overhead plastic trunking: a major factor in his death. Another firefighter and a resident died within the flat.

Post-Fire

The coroner's inquest report included a Rule 43 letter. The recommendations related to procedures for tackling high rise fires linked to familiarisation, information and training, safety features of high rise buildings, general training, personal protective equipment especially ADSUs and their battery operations above 55 degrees Celsius, water supplies and equipment.

It specifically recommended all fixing/supports for fire alarm systems to be non-combustible/fire-resisting but not for other cables. DCLG the changed Building Regulations and in Approved Document B, restated the guidance for fire detection and fire alarm systems for buildings (BS 5839-1:2002) where cable support for cables used in fire alarm systems should generally be non-combustible. BS 5839-1:2002 and A2:2008 (Paragraph 26) followed with three clauses relating to fire alarm cabling. Herts FRS prepared detailed reports on the fire including these cabling issues.

The Herts FBU incident investigation made seventy three recommendations. They identified serious organisational weaknesses in the identification, assessment and inspection of actual high rise risks and checks on SOPs relating to high rise risks. They further found insufficient provision of emergency response resources to form the initial attendance for compartment fires in High Rise risks such as Harrow Court.

Core issues for fire analysts were identified in 2005 and included the inadequacy of the SOPs at the time as well as the Incident Command and Control Systems that applied when high rise fires happened. Further questions were raised about firefighter training on 'procedures, training, pre-planning, resources, adequate firefighting branches, fire dynamics, air movements, logistical demands and hydraulic deficiencies' in such settings (Grimwood 2005:4-5, 17).

HeFRS produced a report on the incident and also made four very specific recommendations, including many to the coroner, on reviewing safe systems of work, supervision and command, equipment and PPE, communications strategies, matters relating to the buildings, inspections and specific operational procedure changes and training actions including BA training and realistic training scenarios. By 2010, several service recommendations relating to procedures, audits and training had been implemented according to the FRSs self-assessment and a group headed by Sir Ken Knight and including CFAU, CFOA and CLG was reviewing national progress on the Rule 43 letter. Debate continues about the speed and extent to which FRSs act on information relating to firefighter fatalities. Some chief officers in other brigades apparently did move quickly on incidents such as Shirley Towers in 2010 and Harrow Court 2005 (Fire Magazine. 2013. www.fire-magazine.com/lessons_have_been_learned_11572.aspx. Accessed 5th December 2013) yet it remains difficult to track and independently validate changes following incident recommendations.

HSE do not hold an Investigation Report relating to this incident but have a record that has been partially disclosed. HSE has withheld personal data detailed within the record under Section 40(2) of the FOI Act, as it relates to third parties (Source: HSE: FOI request - 2013110278 - Firefighter Fatalities 27th January 2014). Notes in the FOI disclosure for 2009 make clear that there were a number of failures identified in the incident and that HSE followed up issues around management of health and safety in the HFRS in its inspection. HSE flagged limitations of the BA refresher training, its delivery by trained instructors and its difference from station-based assessments and training.

In April 2009 the HSE took the relatively unusual step of issuing an improvement notice against Herts FRS on BA refresher training which was complied with in June 2009 (HSE Notice 301924373 served against Hertfordshire Fire & Rescue Service on 21/04/2009). HSE further noted the non-availability or delay in producing operational intelligence packs for high rise buildings or their existence only in draft form; and the uncertainty as to whether high rise procedures had been reviewed and revised in line with the latest national guidance or not. Not all firefighters had participated in a planned training exercise dealing with familiarisation visits to high rise buildings. If UK brigades and HSE had implemented and monitored the necessary changes needed after Harrow Court, it seems unlikely that many of the same or similar problems that emerged in Shirley Towers in 2010 would have existed. Dealing with potential incidents in high rise building was a priority in Northern Ireland during this period.

In 2013, the coroner's rule 43 letter to the LFB on the Lakanal House deaths revealed that the lessons learnt from Harrow Court and Shirley Towers on risk assessments, familiarisation visits, bridgeheads and communication had either still not been accepted or not implemented fully elsewhere in the UK. This again raises questions about national responses and national audits of FRS actions.

The HeFRS IRMP for 2014-2018 does briefly - in two short references in a ninety five page document - acknowledge firefighter safety as one of the primary risks for the service to consider. It contains a great deal of data but none on firefighter injuries or health and safety matters. Where fire deaths and injuries are discussed and tabulated, no specific reference is made to firefighters. It is therefore of concern that in 2013, firefighter safety appeared to be at the very margins of the Herts IRMP.

5. MARLIE FARM, EAST SUSSEX 03/12/ 2006. Festive Fireworks Ltd, Marlie Farm, Ringmer, East Sussex. Firefighter fatalities - Geoffrey Wicker and Brian Wembridge (video technician). Nine other people were injured in the incident. East Sussex Fire and later Rescue Service (ESF[R]S) was involved.

Pre Fire

The site contained a dwelling house, a storage and retail sales office and retail shop for fireworks licensed by East Sussex County Council Trading Standards, and an area licensed by HSE for storing and preparing fireworks.

In 1998, in Australia, eight ISO containers of fireworks exploded. In the Netherlands in 2000 a fireworks storage complex exploded and killed twenty two people. In Perth, Australia, in 2002 an ISO container of fireworks exploded. In Europe, this led to collaborations between several health and safety agencies including the UK Health and Safety Laboratory (HSL). They looked at experimental explosions of ISO containers filled with fireworks - the CHAF project of 2003. There is no evidence that the HSL or HSE positively promulgated the experiment results they obtained. However, the information would have been available to any who searched for it.

The Manufacture and Storage of Explosives Regulations (MSER) 2005 and related Code of Practice (COP) guidance states:- "Fire Services may wish to consider in advance in what circumstances they would or would not fight a fire. Firefighting action should generally be limited to preventing the fire spreading to buildings or areas containing explosives, or to fighting secondary fires after an explosion. In general the fire services should withdraw to a safe distance if the fire should spread to a building known to contain explosives or other similarly hazardous materials. If there is any doubt about the nature or location of the explosives involved, the fire should not be fought and the fire service should withdraw to a safe distance". ACO Walsh received the Regulations and COP 2005 and was responsible for dissemination of such information since 2003.

There is no evidence that the Code of Practice was ever disseminated within the ESF[R]S, or fully considered by those centrally responsible for safety policy nor ESFRS inspections conducted of the Marlie Farm site under the GRA. It was left to station managers to decide what familiarisation visits should be made to sites of interest in their areas. Station managers were never told by ESFRS centrally to focus on places where explosives were held. The Brigade had not identified all the premises in their area where fireworks were manufactured and stored and apparently no-one had been tasked to contact the HSE to see where the relevant licences had been granted. No ESFRS plan had been drawn up for firefighting at Marlie Farm, though it was licensed to store more than 2000 kilograms of explosives.

In the court case, the judge decided that “there was a failure to ensure that Marlie Farm was not only properly inspected, but that a 7(2)(d) card prepared and made available for firefighters attended the scene”. I have indicated above what information would have been made available by such means.

The Station Managers for Hastings, Preston Circus (Brighton), Battle, the Crowborough stations, the Watch Managers for Hastings, Battle, Eastbourne, Crowborough and Preston Circus were all unaware prior to the incident of MSER 2005 and had no training in the guidance to [fire services] in these regulations. Before December 2006, they had never taken part in training or simulations or exercises involving fireworks or explosives. They were also unaware of ESFRS carrying out any such exercises.

HSE and ESCC Trading Standards issued or amended licences to the two fireworks companies registered on site and under the Regulatory Reform (Fire Safety) Order 2005. Both should have consulted with the FRS but neither did. The Order had come into force at the beginning of October 2006 and relevant protocols were still in the process of being implemented in early December 2006. There were no joint inspections nor were any required legally and ESF[R]S did not know about a HSE site inspection nor its outcome.

Fire

The fire apparently started with igniters on a veranda and then spread to a van. Explosions occurred before the emergency services arrived. Two pumps were initially mobilised. Additional pumps and appliances were then called. An ISO container was cooled. Water supply problems occurred.

As the public were present on scene, the IC requested police to evacuate them but they did not go. So the IC adopted an offensive tactical mode. The Level 2 incident commander asked for police to instigate a six hundred meter cordon but the police reported they had insufficient resources and so they could not do so.

A decision was taken to evacuate the site. The Evac whistle sounded and apparently a fireground message to evacuate was sent. Yet sector 4 crews were seemingly unaware of the evac signal and continued working.

The shipping container then exploded killing Wicker and Wembridge and injuring nine other ESF[R]S personnel, two police officers and two members of the public. A defensive tactical mode was then adopted at the scene.

Post Fire

The ESF[R]S investigation team addressed questions relating to the premises, plant and substances, procedures, people, planning, assessing risks, organization - control, cooperation, communication, competence, monitoring and review. Several of these themes were present in both earlier and later firefighter deaths at fires.

Other concerns were raised about police numbers at the incident and whether they were sufficient to ensure an effective cordon existed around the site.

The ESF[R]S recommended cross-agency development of contingency plans for dealing with all licensed explosives sites, better information exchanges locally, a risk recording system for such sites for operational firefighters with a review on storage and sharing of such information linked to formal procedures on sharing risks and safety information between emergency services. The service also made specific recommendations on operational procedures, new and existing equipment and emergency signals as well as training and service manual updates and risk assessments as well as changes in the regulations relating to explosives regulations. There were recommendations for the HSC (now HSE), CFRAU and CFOA to look at the absence of a national system to disseminate risk critical information and guidance. No independent audits or check apparently exist to ratify actions taken on recommendations. Similar problems existed for several of the other incidents.

The FOA Branch noted concerns in 2010 about current economic pressures and funding pressures that might impact adversely after the Marlie Farm Incident.

In 2013, ESF[R]S stated its IRMP was “part of the CLG's long-term agenda to modernise the fire service and to improve standards of service delivery at a local level. Through a dynamic and holistic approach to risk assessment we will deliver a Fire Service focused on the changing needs of our communities with increased emphasis on prevention and community safety. The concept of risk management has become embedded in and influences all activities undertaken by the Fire Authority and the Fire & Rescue Service....The Fire Authority is seeking to deliver continuous improvement in the services it provides and we will achieve this by investing in our employees, forging strong relationships with a range of partners and valuing diversity” (ESF[R]S IRMP web page. October updated 2013). These statements are strong on rhetoric but very hard to substantiate easily. It is difficult to identify in such high level statements how exactly the service protects its firefighters or any high level commitment to firefighter health and safety.

This may be covered in more detailed lower level operational information but is not transparent and evidence-based here. There are for example no mentions of firefighter safety in EFRS IRMP scoping statements on fire cover and resilience in non-urban area for 2009/10-2011/13. The FBU in the brigade area found no significant improvement in the brigade's occupational health and safety performance.

The two firework company owners were found guilty of manslaughter and sentenced respectively to four and seven years in prison. Discrepancies exist in the information they provided to the ESFRS at the scene of fire and the accuracy of the information they provided to regulators and inspectors before the fire occurred. Relatives and injured FBU and other emergency service workers at this incident have apparently not yet been fully compensated.

In a civil case for damages in 2013, the courts found in favour of the families of those killed and injured in the explosion. The East Sussex Fire Authority (no longer called the ESFRS) in the civil case argued there had been no failures in pre-planning including inspection and training, no incident command and control failures and that one of the fatalities was due to contributory negligence. These defences were rejected by the judge as was their third defence which has relevance beyond the ESFA. The nub of the third defence was that health and safety law designed to protect employees did not apply to FRs because there was 'fire service immunity' on the fireground.

HSE holds an Investigation Report relating to this incident that it has partially disclosed withholding personal data relating to third parties under the FOI Act and details of their enforcement considerations also under the FOI Act. (HSE: FOI request - 2013110278 - Firefighter Fatalities 27th January 2014). The HSE disclosure noted ESFRS took no action about information they had received with regard to increased quantities of fireworks stored at Marlie Farm. No re-inspection occurred and no risk card or contingency plan was available to reduce firefighter and other emergency personnel risks in line with the Fire and Rescue Services Act 2004 s7 (1) and the EFRSs own Manual Note for June 2006. The risk information gathering system was faulty and in practice restrictive with regard to identifying and prioritizing possible new high risk premises and having a method to assess and rate risk.

Planning and routinely checking plans to ensure effective preventive and protective measures were in place in line with the health and safety management regulations and approved code of practice were lacking. Inadequate training existed. The GRA risk assessment in force at the time for fireworks stated fire services should inspect sites with fireworks, develop a firefighting plan for large stores and, where such stores exist, observe a minimum safe distance for personnel and the public of 600 meters (para 3.1). The aide memoire did not contain sufficient detail to help the IC and did not contain MSER 2005 information. HSE thought the causal link of EFRS responsibility for the deaths had been broken because the fireworks owner withheld information about the materials stored in the metal containers.

In November 2008, HSE indicated they were happy with the progress EFRS was making on health and safety particularly through the core briefing system and the tactical decision-making process. The 2008 assessment sits rather oddly with a HSE letter in 2010 indicating satisfaction with the EFRS's corporate approach after apparently having flagged concerns about risk information gathering, monitoring and sharing and some issues still with the core brief system as well as some points about training. Such a letter indicates the 2008 assessment was overly optimistic and that problems continued to exist between 2008 and 2010. In July 2014 the legal case to determine who was responsible for the deaths of the two firefighters, and hence compensation, was still delayed in the Court of Appeal - some eight years after the fatalities occurred (Vowles 2014). Not until Christmas 2014 did the East Sussex Fire Authority concede that it would no longer appeal against the 2013 High Court judgement ordering pay-outs to the families of the dead and injured firefighters.

6. ATHERSTONE, WARWICKSHIRE 02/11/2007. Weal moor Atherstone Ltd, Hangers 1 and 2, Atherstone Industrial Estate Atherstone-on-Stour. Firefighter fatalities - Ian Reid, John Averis, Ashley Stephens and Darren Yates-Badley. Warwickshire Fire and Rescue Service (WFRS) and other neighbouring brigades.

The property had ground and first floors of sandwich panel construction and it was used as a vegetable packing warehouse with ninety five production staff and forty office staff. Property fires within WFRS area have a pre-determined attendance (PDA) of two pumping appliances unless previously identified as a special risk or persons reported this has neither so two pumping appliances were mobilised.

Pre-Fire

The local council knew building work at the warehouse was underway but did not liaise with the FRS. Building Regulations required that the owner's full plans on extension should have been sent to the local council and then in turn to FRS but they never were. No fire suppression system was fitted. This might have dealt with the fire automatically.

Apparently no fire assessment of the premises was done in 2007. The tactical plan at the time was apparently indirectly based on the assumption that fire resisting walls and doors were where they should be. A missing set of fire doors results in a wall with no fire resistance. This added an extra and unexpected burden onto firefighting operations. Some doors failed to operate and there were gaps around fire doors. Building work was incomplete because of the insolvency of the Bomfords' company. The fire loading in the storage/packaging area was far greater than a single pallet. The pallet on fire was one of twenty two pallets located to the rear of the storage/packaging area containing labels, cartons, and punnets and wrapping film. The area also contained property cleaning materials, furniture and old computers. This information was not available to the firefighters who attended the fire.

WFRS had no policy/procedure for designating retained appliance crewing when responding to alerts with regards to BA wearers. The GRA on Operational Risk states: “the process of site specific assessment is achieved through the auspices of Section 1(1)(d) of the Fire Service’s Act 1947 (as amended). The dissemination of site specific information is a process that involves a number of discreet tasks: selecting premises to be inspected; assessing the nature and magnitude of the risk; considering a proportionate level of response; recording the significant findings; making sure that the information is available in a useable form. A site specific assessment would take account of 1(1)(d) inspection information and include information relating to the preplanning of firefighting tactics. Factors to be considered would include the potential for a fire occurring; the intensity of the fire; the stability of the building; the potential for firefighters to become disorientated whilst fire-fighting; the risk of external spread; the potential environmental impact; the potential impact on the community”. The Atherstone fire appeared to present no major environmental threat although a significant number of local jobs might be lost.

An FBU analysis of the incident focussed on ‘systems’ failures (FBU 2014a) and found at the time of the incident WFRS relied on building control to consult with them about fire safety matters. “WFRS had a policy for the passage of information from building control to the Service Fire Safety Department and this should have triggered the premises risk assessment process”. According to the FBU, Section 2 of the GRA guide gave specific warnings and had a direct bearing on the Atherstone fire as it dealt with complex modified buildings with complex access arrangements and unusual patterns of fire spread and behaviour.

The 2000 CACFOA report on fires in large volume buildings flagged key threats including buildings remote from fire stations where, by the time fire engines arrive, the building could be full of smoke with the fire already well developed. Internal size and layout could limit firefighters’ ability to fight the fire and severely limit their ability to search the building effectively whilst locating the seat of the fire maybe impossible. There could be a risk of early collapse of racking and/or the structure as well as a risk of unseen fire spread at high level and due to the fire loading the flame front may accelerate very rapidly.

The conclusion was that unless the role of all parties in ensuring the safety of employees and firefighters alike was made clear and the fact that traditional firefighting tactics was not always possible, fire authorities and individual fire officers would remain vulnerable.

This report was issued seven years before the Atherstone fire and “detailed who was responsible for identifying premises that required a premises risk assessment being carried out which worked on a points system to determine the outcome, whether it would have been an O2 risk card; firefighting plan or operational plan, dependant on the severity of the risk”. A previous incident earlier in 2007 at the premises identified a number of fire safety issues which were reported to the Area Risk Team. A WFRS fire safety inspection was carried out and this identified sandwich panel construction. This information should have, but did not, trigger a GRA response and new assessments of risk.

Fire (based on the legal case and other reports)

The employer's 'emergency plan' should have been based on a suitable and sufficient fire risk assessment carried out under the Regulatory Reform (Fire Safety) Order 2005. Taking inappropriate action on hearing a fire alarm gave the fire more time to grow in its early stages. The accuracy of the plans available and the information from the company representative on site proved problematic where not incorrect. The company representative omitted to inform firefighters of the alternative first floor fire exit. This fire exit if used as the initial entry point would have positioned crews approximately forty metres closer to the fire compartment with a less congested route. Four fighters using BA and engaged in offensive firefighting for reason unknown got into difficulties in the building and died.

Strategic and brigade policies and procedures and training and information were significant factors in influencing how the fire was fought and events raised large questions about their adequacy.

"... all sorts of different firefighters went in there with different levels of experience. Some of the ones were longer in the tooth. They went in there and they got a few yards in and they said: "this is very hot, this is far hotter than I was, as in normal, I don't feel safe" and they were coming out. The ones that died between them they had six was it possibly ten years in the Fire Service between the four of them and they came from a very small village Fire Station and they would never have seen a fire that big in their lives. So they go into that fire and they have got nothing to compare it with. I suspect, and nobody will ever know, but I suspect they just carried on thinking oh well this is what happens in big fires and they didn't realise that they were in an unusual situation and it should have felt bad to them but they didn't know any better. Now, so what's the learning point from that? Is the learning point from that then that the officer in charge made a poor dynamic risk assessment or is the learning point that if you've got firefighters in retained fire stations where there are warehouses on their patch you should train them in fighting fires in warehouses so that, because the officer in charge he's got no real idea how big the fire is. He can't just say "well just in case the fire is horrendous I'll not send anybody in" because he never knows how big a fire is if it's in a ...warehouse. It would mean you would never go in a building at al. He's got to send firefighters in who know enough about their job to be able to come out if it's unsafe and so it was". ff7.

Post-Fire

Arson caused the fire but the arsonists were never found. The police prepared a case against the fire service line managers at the scene but not the senior managers of the County Fire Service. The Crown Prosecution Service then unsuccessfully prosecuted three managers of the WFRS for manslaughter by gross negligence. They successfully prosecuted Warwickshire County Council under section 2 of the Health and Safety at Work Etc Act 1974 for failing to ensure the health and safety of its employees.

Several very different analyses exist for this fire in court and HSE assessments through to the FBU and various expert witnesses who disagreed about the extent to which there were set rules regarding fighting fires. There was, however, some consensus about the critical importance of training both for line managers with regard to incident command and control firefighters on the fireground in such settings and the role that the absence of appropriate training could play in firefighter fatalities. "Direct evidence was that poorly trained, unqualified and inexperienced firefighters were sent into a large fire compartment ...which was hot and humid and in which a fire had been burning unchecked for over one hour". (Dennett 2007).

Sandwich board use in building construction was again highlighted as a major hazard as were falling plastic cables from the lighting system. Problems with provision and effectiveness of radio equipment for firefighters were identified. Questions were raised about the absence of written risk assessments, the command, control and BAECO procedures and resources, use of and defects and limitations with the radios.

HSE issued an Improvement Notice in 2008 served on Warwickshire FRS. This included reference to an action plan identifying a list of new and existing premises, likely to pose risks to firefighters during operational incidents, about which WFRS did not currently have operational premises risk information, upon which to make a suitable and sufficient assessment of what preventative and protective measures may be required. HSE commented: "HSE has formed the opinion, based on the evidence we have seen, that the current arrangements employed by the authority do not comply with the statutory duties to provide its firefighters with all the information they should have to assist them in making the appropriate decisions when attending a fire," according to Alan Craddock, Head of Operations for HSE in the Midlands (Guardian 16th January 2008). He added: "We are not happy with current wider arrangements on their provision of information given to crews attending fires at certain premises and the fire service should create an action plan for the inspection of premises which gives priority to higher risk buildings. He further noted that the HSE had contacted Sir Ken Knight, CFRA at the time, who had issued an alert to all fire services to remind them of their "legal obligations" to make sure that information is easily accessible to crews when attending an incident. To what extent this was implemented and audited is unknown.

The CFOA in a seminar (nd) by Jim Onions, the Assistant CFO for WFRS, on strategic training and learning issue from the Atherstone incident, noted the WFRS response. This included an internal investigation, service improvements linked to policy and planning, BRE fire testing and staff changes and shared learning.

The planning authority, so the FBU thought, had major questions to answer in terms of a lack of planning approval for the £6 million extension, lack of checks by the planning authority of the building, a sprinkler system in the extension not linked to a water supply, fire doors not installed, and the first-floor extension with no external fire exits usable by firefighters.

The union considered that the planning authority and owners' failure to provide information to WFRS meant the service did not carry out familiarisation visits and fire crews did not know how the building was made and lacked a floor plan. Atherstone revealed a catalogue of 'organisational systematic failings' and the FBU challenged the judge's view that dynamic risk assessment was 'common sense'. The WFRS protested that the police seized service reports before they could be considered: the reports contained critical information that WFRS viewed as "vital" to firefighters' safety nationwide, but the fire service was denied access to the reports until May 2011 (Howard Fidderman. HSIB 1st September 2012).

The FBU further flagged the problems with the FRS report, co-ordination between emergency services and a lack of a protocol to ensure collaboration. Recent publications may have addressed this on paper but again hard evidence to support that conclusion is lacking. The FBU also flagged potential conflicts of interest with lawyers representing both FBU members and the families of those injured or killed, the possible need for independent legal advice for the union, the role conflict between liaising with parties to support them and investigating the incident and the need for safety representative training on incidents. The latter may have been addressed by the TUC/FBU pilot course on serious accident investigation in 2012.

The fire occurred three years after the passage of the 2004 Fire and Rescue Services Act. Warwickshire FBU, when investigating the incident, looked at the IRMPs for WFRS issued in 2004 and 2007. The FBU observed "what they noticeably failed to consider was to plan for the delivery of "business as usual" and the capacity of the service to safely deliver its core business of responding to fires. In terms of operational policy then, the service was 'coasting' on the momentum built up in the years preceding 2004.....if... the IRMP process had been followed correctly in line with FBU's 'The Framework Document: How to construct an IRMP', the issues that contributed to the incident would have been captured and the Authority would have been better placed to deal with incidents of this nature". The 2006-2008 guidance on IRMP content from the ODPM did not specifically mention firefighter health and safety although there is reference to wider public safety concerns and 'reducing the severity of injuries of fire, road traffic accidents and other emergency incidents'.

The WFRS IRMP for 2013-2017 (nd) noted there had been no fire-related deaths in domestic premises since January 2011. Its report also specifically referred to ideas to "to further protect the public and keep our firefighters safe" (p4) including the need to examine risk from both the public's and firefighters' perspectives. Additional reference is made to new protective clothing for firefighters and the need for ICs to have the correct numbers of trained firefighters with the right vehicles and specialist equipment to deal with different types of incidents. This IRMP is unusual in that it includes keeping firefighters safe, a table of priorities and a focus on firefighter safety at this level.

HSE holds an extremely large investigation report and a significant amount of correspondence relating to this incident. They considered that the costs of retrieving and extracting the information requested would exceed the FOI cost limit of £600.00. On this basis, HSE refused disclosure on cost grounds. (HSE: FOI request - 2013110278 - Firefighter Fatalities 27th January 2014).

7. BALMORAL BAR, DALRY RD, EDINBURGH 12/07/2009 - Firefighter fatality - Ewan Williamson. Lothian and Borders FRS (LBFRS).

Some aspects of fire safety, although not the HSE enforcement of health and safety laws relating to firefighters, have been devolved. The service has also recently - 1st April 2013 - been consolidated into one nation-wide body in Scotland. A legal case relating to this fatality is currently in the Scottish courts involving the body that succeeded LBFRS, the Scottish Fire and Rescue Service (SFRS) and so the information provided here relates only to that which is in the public domain.

The Balmoral Bar was part of a tenement with a basement, ground floor and then 3 floors of residential flats. The bar had two emergency exits, one at the rear and one at the top of the stairs to the basement.

Pre-Fire

In 2005/06 the advisory structures such as the Central Fire Brigades Advisory Council (CFBAC) and its Scottish equivalent (SFBAC) were removed and the inspection regime operated by HMIFs was changed to one advising the minister rather than inspecting policies, procedures and compliance. Hence self or peer assessment became the norm. Both the advisory councils ensured that consensually agreed procedures and standards were promulgated to the service. Good practice had occurred under the 1947 Act and some firefighters considered it was lost in Scotland when the Fire Services Act was implemented in 2006.

LBFRS Service Improvement Plan 2005-2010 [extract from pages 15 & 18] Structural firefighting stated: "We respond to any call to a fire in a building or any other land-based structure. We will respond immediately to any request for assistance. We will attend any call to a fire within a building or any other land-based structure within a time consistent with our existing targets. We will mobilise a fully capable team to each incident. This will be subject to internal audit and be reported on quarterly. The 1985 standards of fire cover have been revoked. Further details on these standards can be found in 'The CFBAC Report of the Joint Committee on Standards of Fire Cover'. We intend to provide a response to structural fires with time targets which are consistent with the existing first response times. Subsequently, any variations will be based on an evidence-based argument. Our definition of a 'fully capable team' will depend on the type of incident we are attending. Amongst other things, this will mean that we will mobilise two fully crewed appliances to all fires in buildings (where the 1985 standards of fire cover called for only one) and three appliances to a fire where persons are believed to be involved (where the 1985 standards may have called for one or two appliances)".

The Communities and Local Government (CLG) Report notes on the following on Core Temperature, Recovery and Re-deployment during a Firefighting, Search and Rescue Scenario, Fire Research Technical Report 18/2008 (Appendix 14) Executive Summary - Recommendation (2) 'For firefighting, search and rescue activities conducted under conditions of live fire and continued to the operation of the low cylinder pressure warning whistle, the average firefighter should have at least 50 minutes of recovery, ideally, but not necessarily in a cool environment, with their PPE removed, and to consume a minimum of 1000 ml cold water. This recovery duration should be extended to at least 65 minutes to protect 95% of firefighters engaged in more typical 20 minutes deployments.

LBFRS Framework Operational Procedure covered environmental conditions, heat and humidity. It notes that working in hot and humid atmospheres can lead to serious physical effects including rapid fatigue and confusion. In consequence, performance levels deteriorate, decision making and manipulative skills reduce and vision is adversely affected. In order to reduce the risks involved fireground control measures will include:- keeping personnel cool and relaxed prior to deployment; limiting exposure; working at low rates of effort, taking breaks where possible; and drinking water.

Fire Service Manual, Volume 4, Fire Service. Training, Guidance and Compliance Framework for Compartment Fire Behaviour Training (CFBT) (Appendix 17) covered similar ground including physiological controls and risk control measures to prevent harm being caused and describes pre-exposure control measures, health monitoring and self-assessment prior to any period of training involving exposure to hot conditions. Firefighters must be given adequate information and training not just in recognising the symptoms of heat related illness but also in understanding how their susceptibility might vary and the factors that can contribute to that variation. "The Heat is On" document used by a number of brigades provides reminds trainers and students of the various risks and personal factors that may have an impact on their wellbeing.

Fire

The bar was reported on fire at 00.38. Three pumps and turntable ladder were mobilised with sixteen firefighters. Firefighter Williamson was in BA in the bar and became trapped. The ground floor collapsed and firefighter Williamson was found dead in the building.

Post-Fire

Four years after the fire, the crown finally brought three charges against SFRS, the successor body to the Lothian and Borders FRS. It includes a claim that there was a failure to prioritise Mr Williamson's rescue. The first allegation claims the necessary "instruction and supervision" was not provided to employees. This includes an accusation that there was a lack of appropriate training for firefighters in relation to tackling basement fires.

The second charge states the fire service failed to provide "a system of work" that was safe and without risks. Prosecutors allege there was not an adequate response to Mr Williamson becoming trapped in a toilet on the ground floor at the Balmoral Bar. The indictment details a failure to appropriately "prioritise his rescue" and utilise the relevant equipment to save him. It further claimed there was no proper response to a breathing apparatus emergency situation. The charge also alleges there was a failure to institute an effective communication system between firefighters. The final charge claims there was not a "suitable and sufficient risk assessment". It includes an allegation of not identifying adequate control measures in conditions of "restricted visibility and extreme heat".

Current LBFRS Operational Procedures include Framework Operational Procedures (FOPs). LBFRS use FOP's to detail the hazards, risks and control measures applicable to various incidents. The FOP's are used as a framework to form an integral part of the risk assessment made by the IC when dealing with an incident. FOP 3.1 deals with Fighting Fire in Buildings. All FOPs are available in electronic format from LBFRS Intranet system. They are not held in paper format in fire stations, and therefore are not readily accessible to all. FOP 3.1 concentrates on large or unusual buildings such as 'Buildings of complex design or construction, large insulated sandwich panels, large uncomparted buildings, buildings under construction/demolition and Dangerous buildings'. FBU noted there was no FOP for compartment fires in general or fires in basements and nor was there a written procedure or FOP for tactical ventilation.

The Strathclyde IRMP for 2010-2013 (nd) focused on risk critical information as the basis for improving operational tactics and training that 'will contribute to firefighter and public safety' (p12) linked to the work of its incident research and investigations section but provides no more detailed insights into how it would ensure firefighter health and safety.

In a review of the implementation and impact of IRMPs in Scottish Fire and Rescue Services for the Scottish Government (nd) by Steve Torrie, the Chief Fire and Rescue Advisor, the importance of risk-based enforcement strategies for improved firefighter safety was very briefly noted and linked to integration of core services. However, the document does not provide information about firefighter injuries whereas several tables cover public injuries and public safety.

The Scottish Fire Service Strategic Plan for 2013-2016 (2013) does flag firefighter safety and includes a target on reducing firefighter injuries linked to a general statement about training, high quality PPE and specialist equipment (p26).

8. SHIRLEY TOWERS, HANTS 06/04/2010. Flat 72, Shirley Towers, Church Street, Southampton. Firefighter fatalities - Alan Bannon and James Shears Hampshire Fire and Rescue Service (HFRS).

Shirley Towers is a sixteen story block of hundred and fifty residential flats - each flat covering three floors - made by the REEMA construction process.

Pre-Fire

A DCLG Generic Risk Assessment in 2008 covered high rise buildings (GRA3.2:v2 2008). It explicitly discussed extended lines of communication creating “an additional demand on resource management”, and complexity of internal layout including “a lack of information on the internal layout”. It further observed that “commencing operations before adequate resources are assembled to facilitate a safe system of work will severely compromise firefighter safety. There is an inevitable paradox here in that the time necessary to assemble sufficient resources will allow conditions in the fire compartment to deteriorate and increase the risk of flashover or backdraught. If adequate resources are not available to implement a safe system of work, firefighters may face a moral dilemma and make a premature attempt to save life” (p8).

A key control measure came through the operational pre-planning and information-gathering basis for strategic and tactical planning of incidents and comes under information from s7(2)(d) of the Fire and Rescue Act 2004. This would also have applied to Harrow Court in 2005. Pre-planning “should also include” assessing selection of firefighting equipment, compatibility of gear, “development of contingency plans for reasonably foreseeable events”, fire spread and multiple rescue, water supply loss, communications failures, lift failures, planned actions if firefighters become marooned. So there should be provision for a pre-determined response that reflects access and facilities and relates to ‘adequate resources’ provided to ‘undertake initial assessment and effect an early response to the incident’. Links also to roles from call room handler to fireground and to monitoring and training.

Firefighters had concerns about how the GRA operated for the high rise in Southampton.

“... it’s supposed to be the foundation of the Brigade making its own policies and procedures that they should take that document and then apply it to its own risks and get its personnel to produce the ground safe systems that work based on that as just as a minimum. What they didn’t pick up from that document was they did not amend their previous one from the information because it was a bit basic. It didn’t have any technical plans in it and they didn’t have any specific information on risks for the particular premises of Shirley Towers. As in fact the internal design is unusual where you have an internal flat crosses three floors and unless you understand that sort of design feature then you can apply the wrong sort of tactics if you just consider it one flat, one floor and that sort of thing. Also the information wasn’t spread as wide as it should have been because the generic risk assessment wasn’t made available to the control operators and they weren’t aware of that information. This is why key information is important and pre-planning and that sort of thing”. ff8.

These elements all link in to appropriate resources and their use, training for dealing with fires in high rise buildings and the different risk perceptions that might exist among managers and firefighters about priorities. The importance of central government getting out information as quickly as possible from investigations of previous fatalities at fires in high rise buildings to inform firefighters elsewhere is highlighted by Shirley Towers.

According to the HFRS investigation of the fire published in 2013, Shirley Towers was “previously recognised as a significant risk due to the life risk (number of occupants) and the ‘scissor block’ design. As a result of visits required by the FRA in 2004 an Operational Plan was drawn up which provided information for the fire commanders and crews. This plan had been updated over the years with the benefit of knowledge from previous serious fires. A hard copy of the plan was carried on all predetermined attendance (PDA) appliances”.

The flats were electrically rewired between 1995 and 1996 and replacement wiring routed along the walls of the common areas and within the individual flats via external plastic trunking. This met the electrical installation regulations in force at the time of installation.

The mobilising message used in the turn-out of the pre-determined first attendance did not include the floor number or that flames had been seen in the front room.

Fire

A fire was reported in Flat 72 and the first appliance attended four minutes after the call. A dynamic risk assessment was conducted on arrival and 6 appliances were called for. BA teams entered the building, one using a TIC and hose line.

The team containing the two firefighters who died had BA, radio and a TIC but no hose. Windows were opened in the flat to aid visibility but then temperatures rose rapidly and to an 'unbearable level'. The two firefighters became entangled in cables that had fallen from walls and ceiling when plastic fixings and ducts melted.

Post-Fire

The Coroner's inquest included a Rule 43 letter that recommended all cables, and not simply fire alarm cables as referred to in the Harrow Court Coroner's rule 43 letter, should be supported by fire-resistant cable fixings/containment and the Building Regulations should be amended accordingly as well as BS 7671. This was linked to improvements in BA design and provision of insulated wire cutters and related training developments. The Atherstone fire of 2007 also of course involved problems with cables. Hampshire FRS prepared detailed reports on the cable issues after the fire. Reviews of training on techniques to contain and cool compartment fires were also recommended along with a review of training with regard to tactical ventilation procedures in compartment fires and changes in sprinkler requirements, signage and GRA training.

The coroner further noted guidance and clarification was required with regard to search procedures as set out in Technical Bulletin 1/97 (Breathing Apparatus Command and Control Procedures), to ensure that thermal imaging cameras are used to search for fire in smoky conditions and that firefighters understood the importance of fully extinguishing fires before proceeding past or above the fire scene. In addition methodical search patterns were needed for example area by area, room by room or floor by floor. Search patterns should be standardised across every FRS in the UK so that there was a common understanding and procedure when firefighters from different FRSs were engaged in joint working. This is an issue raised in a number of incidents before the Shirley Towers fire for example in Harrow Court in 2005, Atherstone in 2007 in the Balmoral Bar fire in Edinburgh in 2009.

There were several problems with how the FRS, police and HSE dealt with the inquiries into the events in the first two years. Police interviews had to be repeated to comply with PACE and the police again restricted access to information. Insurance company representatives were also reportedly sitting in at investigation meetings. There were also suggestions that the initial HSE report had been modified. FBU continued to have concerns that investigations tended to focus on human error by firefighters at the end of a long chain of decisions and not structural and organisational failures that underpinned and determined how fires were dealt with by firefighters at the fireground.

The HFRS investigation report recommended action on information about scissor designs of flats and related fire control and access points, giving consideration to providing firefighters with a method of identifying ambient working temperatures and reviewing brigade operational training with regard to procedures for dealing with working in excessive temperatures.

Some similar concerns emerged about the latter with the Balmoral Bar fatality. Reviewing the training and guidance given to personnel with regard to the importance of fully extinguishing or controlling fires before proceeding past or above the fire scene was noted. Choosing the most appropriate and methodical search patterns, for example area by area, room by room or floor by floor was also picked out.

A range of points on PPE were mentioned - more research on other methods of signalling BA wearer distress and checking methods of providing the BAECO, and rescue teams, with directional information to speed the rescue process. The HFRS wished to review its guidance on when and how near miss reports were submitted and ensure all personnel, especially officers in charge, were aware of the importance of submitting these reports which would be comprehensive. Unfortunately it appears the near miss reporting procedure is not being used as comprehensively as it should, resulting in serious and potentially critical learning points not being reported and therefore not acted upon to reduce the likelihood of a reoccurrence. Despite as many as six personnel 'mentioning' that fallen cables had been an issue for them, only two near miss reports were submitted, and these only after prompts by the FBU.

HSE holds an extremely large investigation report relating to this incident and a significant amount of correspondence but estimated that retrieving and extracting the information, when taken into consideration with all the other information requested, would take in excess of three full days and exceed the FOI cost limit of £600.00. They therefore refused an FOI request to disclose their own investigation report. Instead HSE provided a link to the investigation report already published by Hampshire Fire & Rescue Service and in the public domain because it was apparently very similar to HSE's own report. In 2011, the HSE raised several questions with HFRS that related but not in all cases to the Shirley Towers incident. These covered the HFRS search procedures especially linked to stairs and access at different levels, the adequacy of briefings with regard to search patterns and the related competence of officers to conduct such briefings.

They also related to when to call a BA emergency as distinct from what to do in a BA emergency; provision of information about potential for risks from falling cables in the premises; the capacity of TICs always to pick up fallen cables; and operation of the familiarisation process in higher risk premises and ensuring it occurs.

HSE wanted to alert officers that retraining and re-assessment is needed and monitoring and recording that training; preplanning in GRA 3.2 for worst case scenarios; proper training, preparation and prompts for staff to use Site Specific Risk Information (SSRI); appropriateness of type and numbers of radios provided and their battery charging and monitoring. In addition, procedures for dealing with dead reception spots need to be considered and PPE should be standard unless otherwise justified. (Source: HSE: FOI request - 2013110278 - Firefighter Fatalities 27th January 2014).

HFRS in 2011 responded to the ten points raised by the HSE above which the HSE reviewed and commented upon further. To outsiders, it is surprising that the queries raised by HSE in 2011 had not already been dealt with in HFRS.

With regard to the Shirley Towers fatalities, HSEs “reached the conclusion that it was likely that certain parties had breached health and safety legislation, in relation to actions taken, instruction omitted, or through the inadequate provision of safe procedures. However, we also considered whether or not these breaches had significantly contributed to or caused the sad deaths of the firefighters. We concluded on all counts that there were certainly acts and omissions which if carried out differently may have had an effect on how the incident developed, but the evidence did not reveal any single act or omission, or defective or absent procedure, which taken alone could be said to have caused the deaths”.

HSE then in 2012, following their earlier 2011 correspondence with the HFRS, made 49 specific recommendations to HFRS on management, policies, procedures and equipment. There was a greater focus on the role of HFRS than is reflected in the HFRSs own incident report. Recommendations covered the need for HFRS to develop contingency plans for a range of reasonably foreseeable events that a firefighter could encounter at high rise buildings, as recommended in GRA 3.2 'High Rise Fire Fighting'. The contingency plans should be proportionate and include flexibility to allow Incident Commanders to adapt to incident circumstances.

What is of concern is that GRA3.2 was issued in 2008 and, two years after its issue, it did not appear to be used by HFRS. A further two years elapsed before HSE made its recommendation to the HFRS. Then HFRS agreed to develop appropriate contingency plans for reasonably foreseeable events. HSE also recommended action on several other points included within GRA3.2 relating to water jets and BA cover, call handling and training. The reasons why HFRS had not incorporated key parts of GRA 3.2 2008 by 2012 are not explained. Such responses emphasise why external inspection and not self-regulation are so critical along with the need for a properly resourced HSE able to act expeditiously rather than producing piecemeal reports and visits that are not implemented fully and quickly by brigades until follow-up visits occur.

HFRS reviewed its operational training including videos, compartment training in high temperatures after the fatalities as well as checking events on the fireground and issuing updated operational bulletins. The city council introduced new signage for high rise buildings and checked cabling. Issues remain for the FBU about BA technology and use.

In 2009, the HSE had carried out sample inspections of HFRS's management of health and safety and recommended the Service should “ensure that their BA refresher training provides a standard at least equivalent to that recommended in Fire and Rescue Service Circulars 18/2009 and 17/70 and should actively monitor the use of the 'rapid deployment' BA start up procedure to ensure correct procedures are being followed”.

It further noted “the Project to revise the Dynamic Risk Assessment should link in with national work currently being undertaken in this area. Terminology used should reflect that in the Fire and Rescue Manual on Incident Command”. Several of the issues later identified in the HSE’s investigation of the Shirley Towers fire in 2010 were not directly picked up in these sample inspections: for example adoption of good practice outlined in GRA 3.2 2008. It would be valuable to hear from HSE as to how it assesses the effectiveness of such inspections and whether it audits them and revises its approach accordingly.

In 2013, the HFRS Service plan for 2013-2016 that covered the IRMP functions was produced and made no specific reference to firefighter health and safety but did make reference to acting on reports such as those from HSE. References to community safety are included. The HFRS Annual report 2011-2012 makes no reference to health and safety of firefighters and provides only aggregate figures for all fatalities and injuries in fires. Within 3 years of the 2 fatalities at Shirley Towers, it appears from the IRMP that a high level focus on firefighter health and safety has disappeared within the county.

9. OLDHAM ST. MANCHESTER 13/07/2013. Paul’s Hair World. Firefighter fatality - Stephen Hunt. Greater Manchester Fire and Rescue Service (GMFRS).

No information beyond press reports is available for this incident. No HSE, police, brigade or FBU reports are currently in the public domain.

Pre-Fire

No information is yet available.

Fire

The fire, which started in the store room of the shop, was “particularly difficult to tackle due to the complex layout of the building and the amount of materials inside”, a spokeswoman for the fire service said. Twelve crews and more than sixty firefighters from stations around the county were tackling the fire which broke through to the first floor. The County Fire Officer for GMFRS, Steve McGuirk, said: “Mr Hunt is thought to have been enveloped by some kind of “super heat”. He added: “At the minute it’s really too early to say what’s led to the firefighter’s death. It doesn’t look like a building collapse or that he fell through any floors. The early indications are an absolutely massive, ferocious and sudden build-up of heat. But where that came from and what caused that we have got absolutely no idea at this stage. That’s really the purpose of the investigation that we are now engaged in”. [Source: Daily Mirror 14th July 2013].

Post-Fire

The GMFRS produced a document specifically on Integrated Risk Management for 2013/14 (nd) that looked at community safety and addresses value for money concerns but nowhere explicitly mentions the importance of protecting firefighters and ensuring high standards of occupational health and safety. It should be noted that a firefighter, Paul Metcalf, died in 1999 in the GMFRS area in a non-fire related incident, and questions were then raised about the service's risk assessment of water rescues.

The GMFRS Corporate Plan for 2013-2016 that contains its IRMP was produced in June 2013, a month before Stephen Hunt died, and contains just two references to firefighters and nothing explicitly on occupational health and safety in its fifty seven pages.

10. OTHER INCIDENTS RELEVANT TO FIREFIGHTER DEATHS AT FIRES AND NOT MENTIONED ELSEWHERE.

- (1) At the Sun Valley Poultry factory in Hereford, England on 1st September 1994, two firefighters, John Davies and Dave Morris, died when a fire began that trapped them under a ceiling. Sandwich panels were used and insulated with expanded polystyrene and polyurethane insulation that led to the rapid spread of the fire (Fire Prevention Magazine 285). Sandwich boards were again a major factor in the Atherstone fire of 2007.
- (2) Lakanal House. The fire in 2009 in the block of flats resulted in the death of six residents. The Coroner's Rule 43 letter raised points about risk assessments and crew familiarisation of such buildings by LFB as well as procedures on establishing bridgeheads, brigade communications, handling of fire survival calls, use of forward information boards, mobile data terminals, search and rescue policies, compartment firefighting policy and improved firefighting branches. Several of these issues emerged in the Shirley Towers fire of 2010 but the information was unavailable to the FRs because the Lakanal House Rule 43 letter was not issued until March 2013 to LFB.
- (3) The Australian and Dutch fireworks explosions discussed under the Marlie Farm incident of 2006 all happened prior to that event.

THEMES AND TRENDS THAT EMERGE FROM THE REVIEW OF INCIDENTS

In most of the incidents, laws, regulations, guidance and standard operating procedures - sometimes very general and sometimes very detailed - existed to protect firefighters and no new legislation emerged. Risk assessment and risk management affected every case, underpinned all too often by a lack of training and experience and sometimes compounded by poor information and communication. Technical guidance may have identified effective safe systems of work in all the fatalities in this report but they were either not operationalised or not operationalised fully on the fireground or through training and experience. The key high level problems came with the top management, usually never adequately acknowledged, and operation of several of the FRSs that repeatedly and across the UK failed to implement existing legislation and follow guidance adequately. These developments ran parallel with changes in government policy, oversight and scrutiny by central and local government and inspection and regulation by HSE. The failing also impacted to a lesser extent on information, equipment and, of greatest concern, implementation of earlier fatality reports.

A smaller number of the incidents, often those resulting in multiple casualties, related partly to a lack of coordination between various bodies - such as planners, building controls and FRSs - in terms of ensuring necessary information about fire hazards and risks was made available to and circulated by those operating fire services and acted upon. In some cases there were particular problems with materials and methods used in buildings that necessitated changes in building regulations and alarm systems. There were also a smaller but important number of incidents that threw up failures in equipment such as ASDUs, TICs and BA or the lack of necessary equipment such as cutters and access to water supplies, hoses and related equipment suitable to fight the fires in question.

In all the incidents, it is clear that multiple upstream failures led to the fatalities. The firefighter at the fireground has some responsibility for his or her own safety but can do little individually to address the root causes and creators of conditions that put them at risk. In this context the 'swiss cheese' analysis, shown in the diagram and developed by James Reason and others applies with the failures slipping through several layers to lead to fatalities, serious injury and near misses. These failures were both latent and active. However, the model is often used in ways that can underplay or disguise 'external' or latent environmental factors and organisational, management and training systems as well as policy failures. This may lead to an over-emphasis on the human factors and behavioural safety elements in fires and under-estimating the roles of management, inspection and regulatory elements linked to flawed audits.

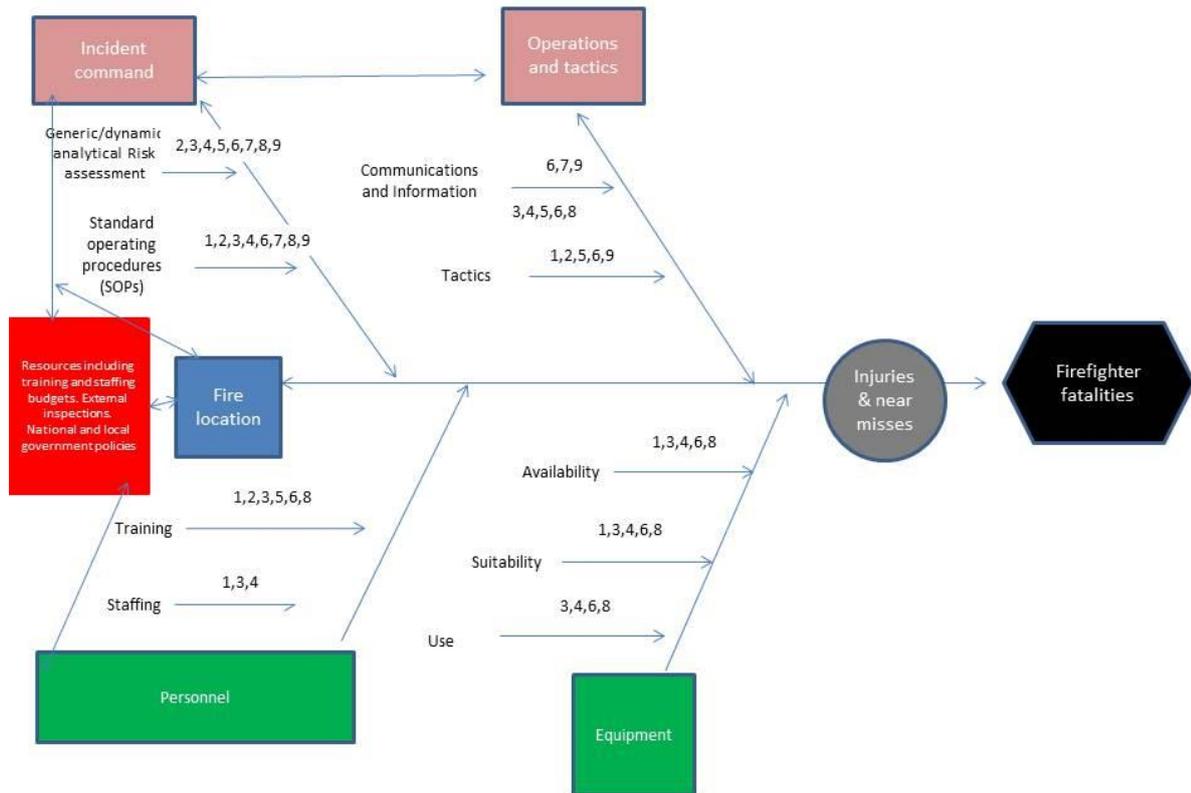


An articulated 'interactive' fish bone perhaps better illustrates the approach adopted here. For every key element involved in a fire there will be multiple other factors influencing that element as the diagram illustrates. For clarity and simplicity this report simply separates the incidents into pre-fire, fire and post-fire elements.

The US fish bone was developed from a large analysis of firefighter fatalities beyond deaths in fires that included a range of health and other causes. Several bones of the 'fish bones' therefore do not apply to the UK fatalities examined here. So the diagram has been revised and retitled to include the movements within the skeleton. Numbers running along the 'ribs' in the fish bone refer to the fatal incidents described earlier in the text. Colours reflect the relative importance of the key headings in the fish bone - red for the most important 'external factors', purple for the most important factors on the fireground, green for moderately important factors and grey for those where little or no data exist.

The fishbone shows repeated failures by brigades to address the key elements that lead to firefighter fatalities at fires. The failures may be multiple and connected to other failures elsewhere in the fishbone. Hence incident and command and control failures may link to training and experience, management systems and resources, the impact of IRMPs and even government policy and guidance. Failures in BA usage link again to training and experience as well as incident command and control and technical guidance issued at the level. Lack of equipment link in to prioritisation within the brigade, and that links to local government funding and that may connect to central government policy.

An animated framework for analysing some key factors in firefighter fatalities
(adapted from the Kunadharaju, Smith and Lejoy fishbone 2011)



Incident numbers. 1. Blaina 1996 2. Limavady 2003 3. Bethnal Green 2004 4. Harrow Court 2005
5. Marlie Farm 2006 6. Atherstone 2007. 7. Balmoral Bar 2009. 8. Shirley Towers 2010
9. Oldham Street 2013

Appendix 2 details how there have been repeated recurrences of common factors across many of the incidents and at all stages - pre-fire, fire and post-fire. Problems identified in 1997 have materialised again in 2013. Firefighters in service now who investigated the fatalities identified many common elements in the incidents and had a list of priority causes that were very similar to those tabulated here. ‘Upstream’ factors were viewed as the primary concern. One noted that a number of factors usually ‘conspired’ to cause the fatality and traced a number of the most significant problems back to 2004.

“(in) 2004 the Fire Service the leadership of the Fire Service changed and in effect what is lost is any sort of independent scrutiny. We lost the Fire Service Inspectorate which was a bit like a governing body that went round and actually made sure that Fire Service views measured up to the minimum standardswhether it would be at establishment levels or how they responded or how they were organised, how they were trained. Since 2004 we’ve become an entity that is almost self-policing. If you want to scrutiny audits then we tend to get our neighbouring chummy Brigades to do it which obviously I don’t think is effective. But also what you’ve got now is you’ve got the pressure of austerity”. ff8.

Pre-fire

The IRMPs provide the framework and machinery within which firefighting goes on and provide the basis for staffing, resources, training budgets and other elements that create safe working conditions and effective management at fires. But whether the high level policy making of the plan reflects what finally occurs at the fireground is a moot point.

“The issues about the risk management plans are that often they appear to us to be a tick box exercise, we’ve done it, we’ve got one, there you are. The reality of it is something different and it’s not based in our opinion (on) the overall risk. I come back to this because their risk management plans tend to say you have two pumps. We have one pump and that doesn’t indicate the resources that are on it and it doesn’t say and by the way one of those will have a set of cutting equipment and one of them will have a thirteen and a half metre ladder and one will be able to.... they don’t relate that kind of information. You will get a fire engine within five minutes and you take South Yorkshire and other places around the country that are trying to introduce small fire vehicles with two people on them, go off and, they say that it’s for a rubbish fire but actually the reality is they can be the first to arrive anywhere. We’ve got reduced attendance on automatic fire alarms. So they only send one fire appliance now instead of what was....If you have an automatic fire alarm here it would probably be two pumps and a high reach appliance that would turn up. Probably these days they would only send one pump and then they will make an assessment when they get here, and then of course if they do get here and find it is a fire it’s now ten minutes or five minutes later before the other resources arrive. ff6.

Several of the fatal fires also involved either a lack of information or inspection or a lack of communication about information gathered prior to the fire linked to appropriate training. This was the case at Marlie Farm and Atherstone for example and one firefighter who explored the Shirley Towers fire noted:

“It was recognised as a key risk and would have been on the Station’s plan to make either a six monthly visit or watches or an annual visit but at the time visits tended to be a bit cursory and not much effort was put into them. So you might have two people who would check the dry risers from ground to top floor but little else. What they really should have done was made arrangements with the warden and seen the design of the internal flats and maybe laid out some hoses to see physically how much hose was required for each floor. There wasn’t any training as such”. ff8.

Government had a role and again the same fire produced this observation:-

“At the time of Shirley Towers the CLG was supposed to produce some guidance for Harrow Court on what information was required and how it should be organised. But that hadn’t been published so that was stuff that was sat with the CLG that hadn’t been completed at the time and that was completed April 2012 I think just before the Shirley Towers enquiry”. ff8.

Continued lack of detailed data on fatalities and near misses means that learning from occupational health and safety mistakes before a fire starts can be limited or even non-existent. There may be issues with regard to the accuracy and availability of information about the various premises that firefighters could be called to. These were major factors in 2003, 2004, 2005, 2006, 2007 and 2010. Fire prevention work and fire visits are inextricably linked to the ability to fight fires safely. Prioritising fire prevention in homes is important but with the staff available, this inevitably may lead to less inspection of commercial and other properties and lower familiarity by firefighters with the layout and hazards of such properties.

“The (location) is a good example pre modernisation that crews would have been in the (premises) doing their fire precautions inspection and would have found that they’ve actually got a (room) in the premises in ...but because we’ve stopped doing that they were oblivious they didn’t have a clue and any plans that they had didn’t reflect it”. ff1.

Public expenditure cuts and high level policy decisions about resources also had indirect effects on firefighter safety according to one firefighter:-

“It may not have a direct impact on the number of people on fire engines but it is starting to have that now. It tends to take away some of the background support people who would have been making sure that all the documents, procedures, equipment were all up to scratch. Over time what you tend to do is start unpicking, you’re not sacking people but you’re not replacing the people who undertook those roles. Also there is a change in the depth of knowledge people seem to have so policies and procedures are different. The Fire Service is trying to do so much I think we are just spreading our skills too thinly to try and cover all the extra functions we are trying to take up”. ff8.

Background support, control room issues and pre-fire intelligence issues were all important factors in Marlie Farm, Harrow Court, Atherstone Shirley Towers and Dalry Rd.

For others, fatalities could be linked to incorrect information, a lack of information or lack of inspections of premises and this links to staffing, work role and work load.

“I think firefighters across the country are spending more time doing community fire safety, visiting homes, you know, but not necessarily visiting the risks that they are going to face”. ff6.

Cutting firefighter numbers and stations can therefore impact on intelligence-gathering and pre-fire preparations as well as speed in reaching firegrounds and crew levels when they get there. Problems with entrances and exits, other layout features and storage and building materials so critical in fires in 2003, 2004, 2005, 2006, 2007, 2009, 2010 and 2013 would all be identified in pre-fire stages if FRSs are properly resourced and supported by incident analysis carried out by DCLG, CFRA/CFRAU and brigades.

Pre-fire planning of firefighting activity remains a critical and still only partially resolved problem. In the 'fishbone' analysis, it comes into play with training of personnel and staffing. Again, availability of trained staff in sufficient numbers, capable of reaching the fireground in time and able to mount emergency teams are critical factors: absent for example in 1997, 2004 and 2010 fires. Incident command and control structures and competence are pre-fire factors and should be underpinned by central and local government standards, resources and support as well as by FRSs. Hence IRMPs, GRAs, advice on DRAs and ARAs, SOPs, effective risk assessment and accountability of organisations and senior managers are also major influences.

Other training issues were flagged by firefighters that raise neglected questions and counter-intuitive points.

"". So I said "the next time I go to a house fire (following a training experience) and it's getting on for that hot I'm not going to think blimey this is dangerous and could flashover and kill me. I'm going to think, well, it was hotter than this at training school so I'll be fine. So what the Fire Service does in terms of the heat that people are exposed to the reason firefighters are exposed to so much heat is because they are trained to be exposed and so on to unfeasible levels of heat as part of their training. The Fire Service has not really got a handle on that. I mean the rest and recovery thing yeah I mean that's just a question of training managers understanding those issues. Some of them are very good and some of them are very bad. You hear about the bad ones because its where people get injured or worse but there are good ones but again, I mean it comes back to these tactical respectable operational procedures that are being written about". ff7.

The requirements, techniques and mechanisms for effective incident command and control and operation and tactics are generally well known and available. The infrastructure, policies and high level ministerial, local authority and brigade senior management accountability, however, may be deficient. A further challenge exists in terms of ensuring officers have the necessary fireground experience to draw on. This may be due to wider but critical failures in IRMPs that work through FRSs from high level documents and set the 'tone' for pre-fire preparations and practices. Other pre-fire factors relate to the choice, availability and use of equipment such as TICs, radios, BA equipment, ADSUs. This again links to resources, staffing and training.

Equipment issues and their use emerged as factors fires in terms of availability and use and with radios, effectiveness in the fires in 1997, 2003, 2005, 2007, 2009 and 2010.

Implementation of guidance, where it is good, needs to be acted upon. This remains problematic as events post-Harrow Court 2007 showed in Shirley Towers 2010. Pre-fire actions look as if these could be addressed both relatively easily and relatively cheaply when compared with the human and economic costs of fatalities and near misses in fires and related inquiries. For example the provision of cable cutters to each firefighter has still not happened in some brigades.

Continued delays and limitations on disclosure of information both on technical problems in fires and procedures affect the capacity of both FRSs and firefighters to identify and hence foresee threats from past fires. The fires in 2004, 2006, 2007, 2009 and 2010 illustrate this.

How problems identified in previous fires are resolved in planning for future fires appears to be a major obstacle. Nationally the pre-fire preparations of firefighters, post 2004, 2005, 2009 2007 and 2013 for example still appear deficient. These involved BA training, realistic training in compartments, understanding of heat stress and high temperatures, ensuring firefighters are not over-loaded and search pattern strategies and water availability.

Disquiet among FBU members about new BA guidance is considerable and links to the need for sufficient firefighters to be on scene. This may be a different issue to the number of pumps required. BA was used in all the fire incidents in this report and so is a critical part of the picture.

“We are being pushed and pushed on the breathing apparatus command and control principles to allow people to wear them on their own or to wear breathing apparatus without having a control board and having a Rapid Deployment control board for example. So the way they are putting their tallies into this board and in essence throw it in the back of the fire engine until someone can come along and have a look at it. So the, the control levels start to diminish and so I very much believe that we ought to be thinking about the number of people we get there and the time we get them there”. ff6.

Often secondary factors may come together in a fire and contribute to fatalities. For example, breathing equipment issues may link in with rest periods for BA wearers, fireground temperatures, access to water and general welfare of crews. Ignoring one or more of these factors could affect the capacity of the firefighter to fight the fire, make sound judgements and escape from the fire when circumstances were especially dangerous. For this reason firefighters make such factors very high priorities.

“...breathing apparatus wearers and rest periods, the welfare of crews and that is absolutely crucial”. ff2.

Yet at fires, such things may be neglected and the impact of fire environments appear to be downplayed sometimes with BA wearers repeatedly returning to fires when they should not.

“...and we’ve got the Circular which researched all this. It told you that if you want to give the firefighter an opportunity to properly cool and rehydrate then it’s got to be 1000ml of water and a fifteen minute break. So that evidence is there. It has since been introduced into the Health and Safety framework for the operational environment and yet you will go to an incident now and you will still see the same thing happening today”. ff3.

Some firefighters focused less on immediate equipment issues with regard to the fatalities at fire, and more on the training and information available prior to the fire.

“I wouldn’t get hung up on the fact that all these incidents happened when people were wearing BA because, you know, if you looked at fatalities on the building site where they all occur when people are wearing hard hats quite simply because, you know, you wear a hard hat on a building site. But when you go anywhere near a fire that’s full of toxic smoke you wear BA and so the question really is what they were doing when they were wearing BA if you see what I mean”. ff7.

Firefighters considered that information available for decades had been ignored and that these could make new findings and guidance inapplicable.

“and then the latest techniques that they came in with for doing searches they were wanting you to count the corners and I said “well wait a minute how can you count the corners if they are putting you into heat and humidity and heat and humidity confuses you, all you need to do is make one mistake and you are lost”. So we’ve gone from being very cautious about the impact of heat humidity to completely ignoring it and going the other way. We have people carrying out functions that we knew twenty years ago became more and more or increasingly difficult the more you were exposed to the heat and the humidity. Yep inside corners and outside corners and if you go around one you subtract one “oh jeez wait a minute”. You just showed us that if you carry a barrel around a training block for twenty minutes and its warm you don’t know where you are”. ff1.

Standards between stations and brigades varied on rest periods at fires and on supplies of and access to drinking water with some appliances always carrying drinking water and others having to buy drinking water at shops when incidents occurred. The consequences of a lack of water for decision-making by firefighters at fires could be considerable and potentially lethal.

Training programmes and facilities received mixed reviews but one issue that emerged related to budgets. In some brigades it was felt that budgets determined for example the amount of BA training available instead of ensuring the risks to firefighters were dealt with as fully as possible in whatever training programmes were necessary.

“What they did was they structured the training department based on their budget and didn’t take into account what you were needing. When you do it the opposite way round and you say “well we’ve got X number of people who all need a BA course once every two years for two days that is X number of days of the year and we’ve got this and we’ve got that and we’ve got the next thing and therefore we need to have X number of training instructors in order to deliver all that, oh well we can’t afford that”. So that’s one area where it’s all fine saying “yeah we can be risk lead what we are putting out on the ground” but the risk led bit requires to be trained and if your training is budget led you’ve not got enough people to train all of you and that’s a real, that’s a real problem just now”. ff1.

The ramifications of deficiencies in the training itself could be serious. This was highlighted on numerous occasions by other firefighter interviews. For example:-

“....again it’s time and resources. It’s also the experience of and the quality of that training and what I mean by that is it depends on the experience of the actual BA instructor and what sort of situations they’re put through”. ff8.

A number of brigades had concerns about technical bulletins relating to BA training and related command and control procedures and different brigades could operate different procedures. Such a varied approach could present difficulties where different brigades might be present at the same fire as was the case at Atherstone.

“...at the moment because there was no specifically outlined process for conducting a search then it tends to be the Brigades would adopt whatever training school they sent their BA instructors. That would be the procedure that they would follow. So I’m aware of, I don’t know, Hampshire being different to Suffolk, being different to Surrey, being different to Berkshire, being different to Oxford and they all have their slightly own slightly different versions of BA searching...What will happen is the CLG will produce the technical bulletin and then the Brigades will take a year to actually in-bed it in their own policies and procedures and within that year they’ve changed their BA training. So the behaviour will not take place until I don’t know eighteen to twenty four months later because it’s just so difficult to action and you just can’t suddenly change the procedure overnight you actually have to train every single BA wearer into the new procedure”. ff8.

The role of a fireground safety officer

The 2004 NIFB note described the duties of a safety officer who could be appointed by the incident commander and who should have the minimum rank of station manager. The use of such an officer across the UK has been limited and the post could prove problematic even though the incident commander/sector commanders may retain overall responsibility for health and safety at the fireground.

However, the core duties of the safety officer cover a range of areas that, if feasible and performed at other incidents perhaps by other available commanders, could again have prevented serious health and safety problems emerging. The duties for example included ensuring safe access and egress (six incidents), monitoring unsafe structures (two incidents), ensuring evacuation of crews if necessary (six incidents), ensuring an inner cordon was established (one incident), monitoring the physical condition of personnel (five incidents), and ensuring welfare including drinking water availability (four incidents).

The UK Fire Service manual dealing with Incident Command, published in 2008, has a general section dealing with safety officers. Responsibilities listed there included observing the environment, monitoring the physical condition of personnel, maintaining safe systems of work, checking for alternative safe means of access and egress and tactical ventilation (HM Government Fire Service Manual 2008:82). Again, if these functions had been carried out, it seems possible some of the fatalities in 2009, 2010 and 2013 would have been avoided.

Control room issues

Control room issues emerged for at least three of the fires reported above. This related both the nature of the information gleaned, the process of extracting information from emergency calls and the dissemination of the information. For Shirley Towers, it was noted that:

“The other thing that they (the control room) can do is they can have prompts on their computer screens which refer to other incidences so like a cue card so they can have a set of key questions that for each incident that they are prompted on or so they can ask the occupier, you know, “is everybody out?” etc etc I’m not sure that was ready at the time at Hampshire. It’s been amended now”. ff8.

FIRE

The view that 'a fire is a fire is a fire' was raised in the interviews. There was an assumption, whatever the circumstances, that the firefighter should be able to tackle any blaze in a safe and effective way. This was based on the necessary human and other resources being available, firefighters being trained and the incident commander having the necessary information, training and experience too.

Incident command and control and underpinning factors

Much revolved around the management of the fire. When asked to identify the main causes of firefighter fatalities at fires, most firefighters interviewed believed the primary factor was 'command and control' and its underpinning, whatever the circumstances of the fire.

"Command and control, lack of command and control at incidents. It seems to me ... that the firefighters are being killed not in the first moments of or the early stages of fires they are being killed a considerable time into incidents. Things ought to be well under control at the time that these people are being killed and it seems to me that that's just purely a lack of command and control". ff6.

The reasons for these failures were listed as:-

"I think a lot of it is poor training and lack of experience but a lot of the managers that are turning up have not had the experience of incidents and it seems to me that a lot of the training that they do is a sort of table top type. I think the culture in the Fire Service seems that there is a kind of reluctance of people to say "I'm not sure, what should I be doing here"? You know, and seeking any kind of advice or help so they have maybe set down a path and find that they have difficulty to change at times". ff6.

There are multiple reasons for the lack of experience, many of them widely recognised across the UK and sometimes with no immediately obvious, easy and manifestly effective solutions.

"Well, I think, it is quite clear the number of incidents that we are attending is going down, so they are not having that experience of three, five, eight pump fires with thirty or fifty firefighters on the ground. These are fewer in number and therefore you are getting less experience in doing that. Even as a firefighter they have not had the experience of attending as many incidents as perhaps you would have had in the past, so you are not building up that experience as a firefighter to carry through with you and your career development". ff6.

The role of fatigue in injuries and fatalities of firefighters at the fireground has been primarily addressed with regard to cardiac events (Smith 2011; Amster et al 2013).

Long hours and long shifts are factors that receive much less discussion but in the context of working in high temperatures, with inadequate supplies of water and other factors, it may affect judgement and decision-making: both known factors in serious injuries and death in the workplace. The subject may merit greater investigation in the fire service.

Yes I think that, you know, (fatigue) has been a factor (in two incidents), and I'm not sure that that has been a factor elsewhere and I'm not sure that there is any evidence to suggest that fatigue has played a big part elsewhere. I would, I would guess not but it's not been something that I've thought. Oh they've done their second night shift and they've never looked at that to be honest. They've never looked to say "well at what stage in a duty pattern have other people been killed is it the end of their second nightshift or is first day shift and is there any pattern to that"? ff6.

Practical training and time for training for managers above station level emerged as one important solution along with reducing many of the more mundane and humdrum human resource management activities of fire officers and increasing their engagement with fire-related work. This in the view of the firefighters needed to be linked to learning wider lessons from fatality incidents.

"Managers seem at the moment to me to be carrying out a lot more managerial responsibilities, managing absence, managing discipline, managing..... day to day functions of managers in any industry less and less of their time is actually spent on their own training, ..So they might come to supervise training of firefighters at station level and make (sure) they are doing exercises properly so they are aware that, they are checking training records to make sure that people have had hot fire training and that ...they can put up ladders properly, pretty simple vocation but, I mean that's still a function that, people train on regular but they are not sitting down to say "right okay well what training do I need when I'm going to have a multi-agency fire"? ff6.

However, the location and nature of fires may also affect decision-making. The assessment that for instance nine firefighters are always needed to fight a variety of house and other fires may not be possible in rural and remote areas across England, Scotland, Wales and Northern Ireland.

As one firefighter observed:

“Well the maxim is a firefighter, is a firefighter, is a firefighter but that’s not the case at all. It’s a big span of incidents that you are used to dealing with in a big urban town like was like say Belfast or London it’s a big span and you don’t have the same span ordinarily in rural areas there will be grass fires and you’ve car fires and RTA and the odd house fire so if they end up getting something a bit bigger than that that’s when you end up getting big problems because they don’t have the experience of it. Again there is a certain reason why we did the high rise stuff because it was only getting the experience on a day to day basis of it that we foresaw that there was a real risk of something very seriously bad happening, you know”. ff5.

And resources may have an impact on responses both for the public and firefighter. In Northern Ireland there was a view that:-

“we tend to have a better, my understanding, better resourcing of the retained areas in most GB places all of our retained stations have two pumps which isn’t the case in GB. So we do have a better weight of attack as well and a quicker response to some because we are bigger retained area but we do have good response and the troubles its fading away now but the experience that people gained during that because we were going all over the country as well”. ff4.

The strategic and tactical fighting of fires and the use of offensive and defensive modes and clear procedures on retreat and evacuation are linked to the role and training of incident commanders.

The same firefighter remarked, considering the recent fatalities:

“Those warehouses are built to be built if they go on fire they are easily replaceable and they are designed for that, I mean that’s ...the design of them that’s why they are open plan and all the rest of it and again that can be fought defensively. Once they (ICs) knew that there was no personal risk that’s when you, that’s why the risk assessment is dynamic it changes but if you don’t, if you can’t make, if you don’t have the operational intelligence to make those changes then you are putting people at risk and you need to operate it dynamically”. ff4.

So the strategies and tactics rely on the use of risk assessments based on available, accessible and accurate information on the fireground and having appropriate staff, resources and equipment ready. The information for applying appropriate risk assessments and effective risk management at firegrounds proved problematic in the fires of 1997, 2003, 2004, 2005, 2006, 2007, 2009, 2010 and 2013.

It appears that the underpinning laws applying to GRAs, DRA and ARAs documentation available were adequate - although the risk assessment provisions of the Management of Health and Safety at Work Regulations 1999 may be neglected - but that problems emerged around the information available to inform decisions, and the operation of sometimes complex and rapidly changing conditions at the fireground. This raises more questions about training, about support, about roles and functions all of which relate to pre-fire solutions and post-fire dissemination of critical information.

Firefighters had two views about defensive firefighting. Where there was no threat to the public and no significant infrastructure damage likely to occur, then the defensive mode was appropriate. However, some also considered that in certain circumstances, the initial decision to fight a fire defensively could lead to greater risks later for the firefighter.

“.... if a defensive firefighting mode had been adopted in Warwickshire nobody would have been killed. The building burnt down and collapsed anyway, at the right time if the tactical mode had been changed. I mean Warwickshire was classic there was, two and a half hours and there was no evidence that they had put water on the fire and nobody made that decision. We knew from early stages that they weren't looking for anybody. The only people they ever ended up looking for was the three firefighters that were trapped in there or four at one point but I think only one of them got out. I think that was just a whole load of poor decision making but I don't think the people could have made any better decisions because they were poorly trained and they didn't have a good understanding of the risks”. ff6.

The DRA had in the eyes of the firefighters some significant limitations on the fireground.

“It's drilled into everybody as soon as they join but it's like most things their actual comprehension of its value and how to actually make it significantly useful so it can become a bit routine. Possibly the worst thing that happens is it's just not communicated to all the required people so the plan will be done because that's what the organisation asks for but it's not shared as widely as it could be”. ff8.

Liaison between or actions by other emergency services also appeared to be deficient in some cases: for instance 2006 and 2009. It may be that recent guidance has resolved this matter. Even the frequency and number of handovers between fireground commanders may be problematic with information slipping through the handover gaps.

Many concerns about incident command at fires were raised focusing on both hazard and risk assessment:-

“the incident command structure absolutely failing because it’s failed to identify the hazards and the risks that are present for the people that they are putting into the risk area. They have failed to do that because they’ve been totally focused on extinguishing the fire without actually reaching any seat of fire. So realistically after the first hour that they were there they were never going to extinguish that fire by the means that they were employing. So they need to, they need to have a look at the risk culture within the Service and whether managers understand the risk assessment process because I don’t believe they do”. ff2.

And again:-

“but because there are fewer incidents nowadays we are so focused on training but not just your firefighters your officers in charge have no real experience of dealing with a lot of these incidents whereas it was bread and butter years ago”. ff4.

Post-fire: procedures for investigating fatalities, injuries and near misses

“Fire Services get anxious that they are going to get blamed for something and there doesn’t seem to be a willingness to get information out there to share with other services whether it’s because they feel, they are going to be criticised because they see it as some kind of failure and therefore want to try and keep it in house. This is a real common thing: let’s try and keep this within the Brigade. Others will deny “well that wouldn’t have happened here”. I think most of the incidents that have happened around the country could probably happen anywhere”. ff6.

The analyses of incidents may be held up for a variety of reasons so that lessons to be learnt are delayed or missed. This appears to be the case especially with the fires of 2004, 2005, 2006, 2007 and 2009. It is unclear if general lessons learnt by coroners or FAIs are always rolled out in Rule 43 and similar letters. It is also unclear how exactly FRSs are audited after fires and for how long. Increasingly brigades may be self-regulated and self-audited or use peer-reviews and commercial organisations to assess their performance. This has proved inadequate in other countries and other sectors when addressing occupational health and safety questions.

The extent to which brigades across the UK act upon reports of fatalities at fires and then continue to review and apply good practice is not clear. The role of the DCLG, CFRA and CFOAs in this process is also unclear. HSE has a statutory role in investigating fatalities and injuries in the workplace but it is the exception and not the norm currently that their reports are put in the public domain. Their capacity to inspect FRSs on regular basis has also been diminished with staff and resource cuts.

For checks on good and bad practice on incidents not necessarily leading to fatalities, debriefs would seem to be important but may be used in limited ways:

“And it’s left to individual stations or watches to actually carry out those debriefs but historically I think the problem with those debriefs has been that when areas of either good practice or poor practice have been identified it goes into the system and then someone up the tree decides that we are going to do this. But it never comes back and nobody gets informed that you did that incident debrief and someone put down on the form that we need a different piece of equipment. Well because of that here’s the different piece of equipment so people completely disengage from the process and switch off incident debrief, post incident debrief. One of the key things that always came up in (one area) was we need fireground radios communications and it was issues about barriers, issues about interference, issues about performance of the equipment and it would always get fed in and nothing would happen”. ff2.

And again:-

We engage with both, both from the Stations and the management about there has to be feedback, “I mean we’ve had, we talk about these incidents that the five major investigations that were going on in the HSE (in one region). Those incidents were investigated but the feedback to the people that were actually involved in the accident, and they were absolutely impacted by the outcome of that, were never told what happened. So when somebody comes along and says “I’m doing an accident investigation” and they are like “well OK whatever”. It doesn’t do anything and it doesn’t go anywhere and nothing changes so, so it’s almost pointless me taking part in that. ff2

Where fatal incidents occurred firefighters were often puzzled by what they perceived to be a lack of guidance and this affected both incident commanders and the firefighters.

“We were surprised. This is going a little bit back a bit in the conversation, but we were surprised at how little guidance the UK Fire Services got for basement fires and that’s still the case. So it then becomes difficult to measure what happened on the night against what should have happened the basement is just classed as firefighting the buildings. It’s a building so therefore they are not recognising the characteristics of the basement and so the guidance isn’t there for Incident Commanders and for the firefighters to go to deal with what they are presented with”. ff2.

General lessons to be learnt that might apply across several recent firefighter fatalities, as distinct from analysis of specific incidents, appear to fall outside or be ignored by government departments, chief fire officer groups and the CFRA. Rule 43 letters sometimes comment on more than one fatality but no one seems to have a brief to look at the fatalities across the board.

Yet there are many recurring elements to these fatalities and FBU members have reflected on the wider picture and some possibly broad lessons that can be learnt from many or all of the UK fatalities recorded in the last ten or more years.

“There was nothing in those buildings that we shouldn’t have been aware of. So I think the command and control was about training (and) is about having systems, predetermined safe systems if you like or safe systems will work for people. It doesn’t take away the need for almost a constant risk assessment process. If managers and firefighters for that matter are trained in order to do that then of course (it) needs building into that training. There also has to be a way of communicating that information as often I think we’ve found evidence that suggests that people were aware of risks but it was not getting communicated around the fireground. So, those controlled measures are not put in place, command or whatever label you want to put on it but the information doesn’t get back to the people that need to make the decisions”. ff6.

THE ROLE OF GOVERNMENT – CENTRAL AND LOCAL INCLUDING MINISTERS

Government ministers may propose legislation to parliament on fire safety and they produce policy on the same subject and provide related budgets to local authority and central bodies. Fires safety matters in 2014 fall under the umbrella of the Communities and Local Government Ministry where a junior minister has responsibility for the fire brief. The ministry may also monitor and review fire safety enforcements and the collection of statistics.

The Home Office had the key role in fire safety in the 1990s and produced guidance and policy that still positively influences thinking on the topic especially on risk assessment and risk management which is discussed in a later section. In 1996, the Fire Service Health and Safety Guide for managers gave clear advice on the need for training to expose firefighters to the hazards in the training environment in order to reduce the risks at the fireground (FSC 5/ 1996. HSE OP8 1996). There was a “legal obligation to train staff to meet the hazardous situations to which he may encounter (sic)” and this was recognised in the Report of the Home Office Review team on Blaina 1996. It was also recognised in DCFO letter 11/1999. In the light of the incident at Bethnal Green following on as it did from the near fatality at Telstar House in 2003, it appears unarguable that now (HSG 65) HASAWA and the MHSWA regulations required and requires Brigades to meet the requirements to provide practical real fire training including flashover and backdraught, and training in the other behaviour of fire. Yet training issues continued to emerge in the eight incidents resulting in fatalities after 1996.

In 1998, the Home Office produced “Out of the Line of Fire: Modernising the Standards of Fire Cover” Report of the Joint Committee on the Audit Commission Report to the Central Fire Brigades Advisory Councils. This report, unlike later ones from CLG, does discuss the implications for firefighter health and safety of changing cover arrangements and the possible consequences of longer response times for firefighters who may then be faced with fiercer conflagrations.

The Office of the Deputy Prime Minister had a key role in the 2000s for overseeing fire health and safety but no longer does. Post-2004, a minister was responsible for producing national frameworks. National Frameworks, discussed later, are written for the FRSs by the Secretary of State under Section 21 of the Fire and Rescue Services Act 2004. National Frameworks 2004-05, 2005-06 and 2006-08 contained guidance on IRMPs and the detail needed in an IRMP.

In 2004 the FBU argued that the 2004 Bethnal Green Rd fire indicated the LFB and authority had failed to fulfil their policies, obligations, statutory requirements and to carry out the advice from the ODPM on several subjects. (Effective inspection and review to check necessary actions were taken was again lacking here).

These included ensuring Section 2(2) of the Health and Safety at Work etc Act 1974 to provide “information, instruction, training and supervision” was properly carried out. Regulation 13 of the Management of Health and Safety at Work Regulations 1999 that made a general requirement to provide training when there are new or increased risks and to new recruits was neglected. Other fire service guidance outlined the need to provide realistic training and provisions for attendances on real fire training courses. National Guidance to Principal Officers from ODPM also dealt with the need to provide real fire training, comprehensive knowledge on the behaviour of fires and measuring the outcomes. These points were often not properly addressed. In 2014, firefighters across the UK are still concerned about the patchy nature of training in some parts of the country especially with regard to access to effective hot fire training.

The DCLG works at various levels: technical, policy and increasingly ideological. The technical advice and guidance provided by DCLG has been revised at various times in the 2000s. This material draws on research and evidence and addresses directly and indirectly several of the causes of firefighter fatalities at fires. It is unclear the extent to which the impact of such advice is monitored and audited within the FRSs.

The high level policies of DCLG that relate to the fire service and affect staffing, resources, terms and conditions of firefighters do not look evidence-based. They also need to be set in the context of wider government economic and regulatory priorities. For example, spending on national security in terms of state surveillance and defence spending remains huge for often non-specific, distant and low level threats.

Yet spending, where there are specific and immediate threats covering public safety on fire prevention and occupational health and safety including that of firefighters, is being reduced or soon likely to be reduced. Occupational safety and health impact assessments of these changes and proposed changes are missing although regulatory impact assessments have multiplied. CLG guidance initially built on and used earlier guidance from ministries that historically dealt with fire matters and the department now plays a key role in firefighter health and safety with regard to issuing and revising technical guidance and producing broad based policy documents. These are critical influences on firefighter safety at fires.

The DCLG Ministry has not produced visible English-wide guidance on issues thrown up by recent firefighter fatalities or clearly identified research findings covering wide training, operational preparedness and emergency responses. The minister since the 1990s and early 2000s set some store in the Practitioners Forum, discussed later, for addressing other issue but this body is now defunct. There appear to be significant differences developing between England and Scotland with regard to the role of inspections and these may impact on factors that influence firefighter health and safety directly and indirectly.

“The Inspection Regime in Scotland has changed quite distinctly. They used to come round and you would line up at the back of the fire engine and you would show them all shiny kit that you had painted the night before and you’d answer sort of trivial questions and then they would go away. I think they are getting much more into detailed analysis of what’s going on and I think that’s a real positive. HSE’s consolidated report threw up that the biggest issue was competence and I can’t really point to some process that we’ve got in place that says “there’s how we are addressing that”. But if you went in and said “have you got training” “yes” “have you got this” “yes” “have you got that” “yes” tick, tick, tick “oh that’s great everything’s in place, perfect”. But the relationship between what’s in the file and the folder and what happens on the ground, that’s the bit that’s missing. Just recently I think HMI is getting to grips with that and they are starting to ask more pointed questions and I think that’s a real positive. So it’s not all a negative in terms of where we are I think that oversight is improving”. ff3.

For firefighters in Scotland:

“HMIs are good in terms of the engagement that they have with us. They meet with us and they keep us informed of their work programme and whatnot so when we’ve met with them. It’s naturally they are always going to ask “what’s on the top of the FBU agenda”. ff1.

From the 1990s successive governments, Labour, Conservative and Coalition, have supported policies and deregulatory strategies that have had a considerable impact on how fire brigades function and how their activities are both funded and monitored at national and local level. The UK Government's Business, Innovation and Skills Department (BIS) has direct and indirect influences on fire safety through its better regulation and red tape agendas. The recent BIS review report on the Enforcement of the Regulatory Reform (Fire Safety) Order 2013 illustrates this with its focus on barriers for SMEs and necessary support for and information from fire protection departments.

The review found some officers were felt to be "pursuing an unobtainable zero risk; and cumulatively this has a negative impact on the quality of regulatory activity". Nowhere does the review consider firefighter health and safety yet three UK firefighter fatalities at fires have occurred in what might be termed SMEs - the Limavady hotel storeroom in 2003, the Balmoral Bar in Edinburgh in 2009 and Paul's Hairdressers in Manchester in 2013.

The devolution of powers across the UK and the devolution of several key responsibilities from central government to local FRSs also appear to have had an effect on the transparency and nature of oversight of the services with regard to firefighter health and safety. Local autonomy may bring benefits but it also creates many challenges.

Very specific 'national' cuts reduced training and technical support in ways that indirectly were felt to reduce firefighter safety at fires. The commercialisation of the Fire Service College in Gloucestershire is one example. Another would be the effective demise of the Fire Experimental Unit based at the same campus.

"Another failure is that we used to have a thing called the Fire Experimental Unit which was based at Moreton in Marsh and again what they used to do was they would take pieces of Fire Service equipment and test them to breaking point and say "Here's the good things about them. Here are the bad things about them". The Fire Services would get the reports and the manufacturers would get the reports and everybody would learn from it. The Fire Experimental Unit was vastly wound down in the beginning of the 2000s when the only project they had was to develop the Fire Service Emergency Recover Tool Kit. Since the last election I believe it's completely folded up. It's just a vacant building now and we have no Fire Experimental Unit. It's up to each individual Fire and Rescue Service to do its own testing of equipment and there is a huge, huge, failing". ff7.

The FBU assessment of this change is highly pertinent to the current political landscape within which fire and rescue services operate and those firefighter fatalities that occurred after 2002/03:-

“Prior to 2002/03, fire and rescue services were required to meet national standards of fire cover and crewing. They observed the contents of Fire Service Circulars, Dear Chief Fire Officer Letters (DCOL) and fire service manuals which gave direction on detailed management issues. They were inspected by an external inspectorate of fire and rescue service professionals, who measured against national guidance and performance indicators. From 2002/03 those controls were all but removed (FBU 2014).

There were mixed views among the interviewed firefighters about DCLG and related publications and policies. Some questioned the process of producing new technical bulletins and their value.

“I’ve sat in some of the consultation process and some of the trialling with what would have been the new set of standards. That would have been around 2008/2009. My view of the new technical bulletins was totally different from the one that actually resulted. The technical author has since then removed a lot of the contentious stuff. By doing that they have watered down the impact. So rather than being explicit it’s more generic and less clear and less standardised. So it gives the opportunity for bigger differences for each Brigade rather than being explicit and saying “you must do such and such” but that sort of guidance has gone. It was like saying don’t, you needed almost a dedicated crew to manage BA or you need a BA communicator in charge of BA resources but can also fully appreciate the management of BA”. ff8.

Recommendations

- Better regulation and red tape challenge agendas of the government have not been properly evaluated. Little evidence shows that in practice fire health and safety laws, regulations and codes are applied unnecessarily or that they weigh down the economy. Where such agendas do not apply to fires, they should be abandoned;
- The four governments should introduce occupational and public safety and health impact assessments prior to pursuing new policies and legislative changes that may affect firefighter and public safety. The costs of cuts in firefighter staffing, resources and not carrying out occupational health and safety activity in terms of human, social and economic damage should always be considered. These will balance regulatory impact assessments that emphasise focus on the costs of regulating and not the costs and consequences of not regulating;
- The departments should ensure that funding for fire safety is adequate and that measures it takes do not weaken the implementation of any of its regulations and guidance on fire safety;

- To achieve and facilitate the above, the departments should ensure that there is a properly funded and staffed CFRA office or its equivalent. The CFRAs would be able to carry out audits under and inspect FRSs to check that public safety and firefighter safety measures are in place and effective. Hence the CFRAs or HM Fire Inspectorates should develop a programme to ensure all FRSs are reviewed with regard to their work both on community safety and firefighter safety;
- The economic costs of such an office and unit would be partly covered by the reduction in firefighter fatalities, injuries and diseases, as well as by improvements in public safety, and so should be cost effective. Currently many of the costs of firefighter deaths and injuries are offset within the NHS and by communities and families of those affected firefighters;
- CFRA/Chief Fire and Rescue Advisor's Unit (CFRAU) information should be widely disseminated along with key findings on fatalities and guidance on actions in the future to prevent such fatalities. This should entail a review of the fitness for purpose of Rule 43 letters from coroners or their equivalent to ensure much wider and quicker dissemination of key findings;
- A fire safety and health forum, with all relevant stakeholders invited, should be re-established and funded by governments. It should serve all four UK countries. This should be linked to the development of better means for DCLG and others to engage with firefighters effectively in producing technical and other documents relating to fire health and safety;
- The DCLG and similar ministries in the other countries should urgently set up a review of the failure of some brigades to act rapidly on recommendations from firefighter fatality at fires reports. Almost all of the fatalities discussed in this report, it should be noted, occurred post-2004. The CFRAs/HMIFs would be able to check national audits in brigades and inspect them. CFRA reports should be widely disseminated along with key findings on fatalities and guidance on actions in the future to prevent such fatalities.

LAWS RELATING TO OR IMPACTING ON THE OCCUPATIONAL HEALTH AND SAFETY OF FIREFIGHTERS

Laws, regulations, codes of practice, guidance and government reports and advice all affect firefighter health and safety, again both directly and indirectly. It has been a dreadful truism that fatalities at fires often triggered positive legal changes but some changes in recent years have often been for the worse according to firefighters. The 1974 Health and Safety at Work etc Act dealt with the general duties of almost all UK employers and employees including duties to assess risks and provide employees so far as was reasonably practical with information, instruction, training and supervision (Watterson and Wright 1995) - the crux of much firefighting. Particular regulations and codes then supplemented that law.

The Blaina Fire in 1996 triggered various actions and was followed by the Fire Precautions (Workplace) Regulations 1997 which was repealed in 2005. In 1997 the Home Office Fire Research and Development Group Fire Brigade Response Options Study Final Report appeared. In 1998 the Dynamic Management of Risk at operational incidents document was first published by the Home Office, Scottish Office and DCE, Northern Ireland indicating considerable reach. Its aim was: “to provide an acceptable level of protection at operational incidents, brigade health and safety management must operate successfully at three levels - Strategic, Systematic, and Dynamic”. In 2000 came the CACFOA report on fires in large volume buildings - The Stocking up on Safety: Fire Prevention document - which noted such ‘buildings are often remote from fire stations; by the time fire engines arrive the building maybe full of smoke with the fire already well developed ... internal size and layout will limit firefighters ability to fight the fire and severely limit their ability to search the building effectively’. In many respects the document could have been written for the Atherstone fire that was to occur seven years later.

2003 saw the HSE commissioned Competence assessment for the hazardous industries from Greenstreet Berman that was highly relevant to Marlie Farm in 2006. In 2005, HSE’s CIMAH Buncefield report, an incident that involved 180 firefighters and 26 pumps made only one mention of fire services in the initial report and could have been catastrophic. The Harrow Court 2005 Rule 43 letter, although limited was clearly not taken on board by other brigades where fatal fires occurred later.

With European engagement, the Management of Health and Safety at Work Regulations (MHSWR) 1999 were produced and required employers to: make a suitable and sufficient assessment of the risks to their employees ‘to which they are exposed whilst they are at work’ and others (Regulation 3). This effectively encompasses GRAs, DRAs and ARAs and places the legal responsibility for the assessment, at different levels, squarely on the employer and senior managers. The Regulations also provide appropriate procedures (Regulation 8); and provide employees with information on the assessment of the risks, the preventative and protective measures and the procedures provided (Regulation 10).

Regulation 10 specifically requires an employer to provide employees with, among other things, comprehensible and relevant information on: the risks to their health and safety identified by the assessment; the preventative and protective measures; the procedures for serious and imminent danger and for danger areas; the identity of those persons nominated to implement the above mentioned procedures and evacuations etc; and any risks drawn to the attention of the employer by virtue of cooperation with other employers.

Regulation 11 specifically deals with risk assessments. Risk must involve an assessment of the hazards that may be encountered. In many cases commonly occurring or easily identifiable hazards can be dealt with using generic or standard operating procedures without recourse to “site specific” information. Where this is not the case, site specific information must form part of the risk assessment, and the risks, procedures and protective and preventative measures must be provided to employees. Regulation 13 deals with skills and training. Particular incidents reveal very specific failures in fire services carrying out their legal obligations. The FBU considered there were brigade failures at Harrow Court under these Management Regulations because “they failed to take account of the capabilities of their employees whilst entrusting tasks to them for which HFRS had not ensured they had been adequately trained and competent to undertake” (FBU Report Harrow Court 2007:231).

The Fire Services Act 2004 and guidance issued by the Office of the Deputy Prime Minister (ODPM) required FRSs to plan for, and provide, the required weight and speed of emergency response resources to actual risks that exist in their areas under the Regulatory Reform (Fire Safety) Order 2005 implemented in 2006. This applies to all commercial and multiple-occupancy housing properties in England and Wales. The Order states that the nominated responsible person must carry out a fire safety risk assessment and, if there are more than 5 people employed at the premises, record the findings. These assessments and checks on their enforcement affect firefighter safety. The Order requires any person who exercises some level of control in premises to take reasonable steps to reduce the risk from fire and ensure occupants can safely escape if a fire does occur.

A number of firefighters considered the order had created a weaker structure than existed before.

“I think the Regulatory Reform Orders took some of the influence that the Fire Service had in terms of fire certification away from the Fire Service. I think that was probably a loss because that was a loss in the expertise and also the ability to encounter changes. Somebody had to come to the Fire Service to get a Fire Certificate and had to go and check the building. They would say “oh wait a... minute. Here pass that to the Station. You’d better go and have a look at that, they’ve changed it”. It might have been an OK change but at least they’ve identified it’s a change. Some were sort of mechanisms for passing information and they’ve taken it away now. ff6.

However, the 2004 Fire Services Act was, according to several commentators on the post-2004 fire fatalities, breached by fire services. Section 7 (2)(a), (b) & (d) required brigades to secure the provision of the personnel, services and equipment necessary to respond to fires and to secure adequate provision of training for the personnel involved and to make sufficient arrangements to obtain the information needed to protect life and property in the event of a fire.

The Corporate Manslaughter and Corporate Homicide Act 2007 makes Fire and Rescue Authorities criminally liable for the death of an employee if the way in which they manage or organise themselves amounts to a gross breach of the duty of care owed to employees, and the gross breach causes an employee's death. The Health and Safety at Work etc Act 1974 applies to all employers in relation to health and safety and imposes the general duty on Fire and Rescue Authorities to ensure, so far as is reasonably practical, the health, safety and welfare at work of all of their employees. In 2006, HSE and others produced 'Work-related deaths A protocol for liaison in Scotland'. It was not until 2012 that HSE/CFOA and others produced the Work-related deaths: Investigators' guide for England and Wales.

Very particular circumstances applied in some but not all respects to the fireworks explosion at Marlie Farm in 2006. This was followed by the third edition of the Manufacture and Storage of Explosives Regulations 2005 and guide for those applying to the health and safety executive for a licence to manufacture or store explosives. The regulations had been in force prior to the 2006 fire but had not apparently been drawn to the attention of the firefighters. There followed the 2008 GRA 5.7 on Incidents involving explosives and the 2012 GRA 5.7 on the same subject. With Atherstone in 2007, 2008 saw the production of GRA 2.1 Rescues from confined spaces and GRA 2.1.4 on collapsed structures. In 2008 came the UK Government's Fire and Rescue Manual, volume 2 on Fire Service Operations Incident Command. The Balmoral Bar fatality happened in 2009, the same year that a variety of documents were produced: GRA 5.8 on flashover, backdraught and fire gas ignitions; GRA Fire and Rescue Operational Guidance on Occupational Health, Safety and Welfare Guidance. Also in 2009 came CFOA/LGA on Operational Assessment (OpA) and between 2009 and 2012, 30 such assessments with external peer challenges were completed.

Shirley Towers occurred in 2010 and produced another Rule 43 letter including recommendations on cables, BA and training. It also contained a call for more information on Guidance and clarification is required with regard to search procedures as set out in Technical Bulletin 1/97 (Breathing Apparatus Command and Control Procedures), to ensure that "thermal imaging cameras are used to search for fire in smoky conditions; firefighters understand the importance of fully extinguishing fires before proceeding past or above the fire scene; methodical search patterns are undertaken e.g. area by area, room by room or floor by floor".

This letter echoed problems identified in fires in 2005, 2007 and 2009 and may well prove relevant to a 2013 fire. HSE's consolidated report on the management of health and safety in the GB fire and rescue service appeared in 2010 based on the eight inspections completed by HSE in 2009/10. October 2010.

The very direct impact of deregulatory policies which was in some senses built in to the 2004 Act oddly came after the HSE's 2010 report on the group of fire brigades. In 2010 HSE's 'Striking the balance between operational and health and safety duties in the Fire and Rescue Service' appeared. Then in 2012 came the CFOA/LGA Operational Assessment and Fire Peer Challenge Toolkit. The document notes "In the new policy landscape with the abolition of the inspection and regulatory regime and the national performance framework, there is a shift towards local accountability for performance and self-regulation. This fits well with the governance of FRAs, and the sector led approach to improvement". In 2012, the Fire and Rescue National Framework for England was produced primarily to attack 'Whitehall bureaucracy and red tape' and 'central' controls paradoxically by requiring greater collaboration in a very directed manner from central government and with no reference to the benefits of regulating health and safety. However, more useful GRAs followed on BA, confined spaces and collapsed structures in 2013.

Several firefighters expressed the view that some laws, procedures and policies brought in during the last decade and a half had weakened health and safety for firefighters in ways that may contributed to recent fatalities. Across the UK firefighters have also expressed concern about how risk assessment has been implemented or ignored under the 1999 MHSWRs.

"If you go back previously when they had the Fire Precautions Act 1971 when you used to go and do legislative fire and safety and it was the crews that did it you would have gone into commercial premises with a map to check if they had smoke detectors, fire extinguishers and their exits worked. That was taken away and really replaced by community fire safety. So you would have drawn up to that building and where before you would have done an inspection on the commercial premises. What you are doing now is you are going up and doing home fire safety visits on the domestics and you are not doing the commercial". ff1.

Laws, however, relating to buildings, materials, alarms and smoking bans did contribute to important declines in the number of fires reported. The decline was not just due to fire prevention visits by the fire brigades.

"I think one of the things we need to be very careful of is it's almost automatic acceptance that the prevention benefits keeping the fire deaths down. I mean there are other factors there as well and things like cigarettes legislation, furniture legislation and how buildings are constructed now and again how that impacts on Fire Brigade behaviour. If you have a fire in a high rise you are talking about confined spaces on a balcony, very little air ingress if you open a front door and then you get beaten back, so it is about understanding all of that". ff4.

Recommendations

- Governments should prioritise public health and firefighter safety over financial considerations;
- Governments should ensure the health and safety impact of changes (and related possible adverse economic effects) in laws relating to fire are as carefully assessed as the economic costs and consequences of bringing in new legislation.

INTEGRATED RISK MANAGEMENT PLANS (IRMPs)

“I think if you look at the IRMP process which is pretty similar whether it’s Wales, Scotland or Northern Ireland or England it passes the responsibility onto the local authority. Scotland obviously there is some changes now but the, there is no one in England monitoring those IRMPs. The legislation says that your Minister should be satisfied but he’s not measuring anything to see, he waits to see if something goes wrong and then says “well I’d better do something about this”. So he is not going in there and this goes right back to the Labour government that introduced them, you know, and I can remember having a discussion with the Minister and saying “well what are you going to do? How are you going to tell if IRMPs in use?” He said “well it’s not going to be up to us it’s going to be up to local authorities to determine and if something goes wrong they will find themselves in Court”. ff6.

The move away from prescriptive national standards may have given local FRSs a good deal of flexibility to address the risk profiles of their particular geographic areas but it has also meant that the way each FRS addresses high level IRMPs varies and training under the umbrella of national occupational standards may vary too. It is clear, even in the light of recent firefighter fatalities, that several FRSs have lost sight of firefighter health and safety as a priority matter and have become pre-occupied with value for money and retrenchment. There is a strong argument for ministers to require all FRSs to document and audit their commitment to and record on firefighter health and safety in every IRMP they produce. Better standards of firefighter health and safety should also ensure better community safety and best use of resources too.

The problems with IRMPs may vary from country to country within the UK. Some firefighters consider they have worked well. Others, facing different circumstances and managers, are much more sceptical and consider their IRMPs confused functions and priorities.

They wanted the IRMPs to be driven by risk management with any discussions about budgets clearly located in the political not the IRMP arena. These decisions may have huge implications for firefighter and public safety for reasons identified in the nine incidents.

“One of the reasons why we were so keen to break this link with Integrated Risk Management Plan was whenever you got into budgetary constraints the IRMP changed and to me that was the wrong way round. One was a risk document and the other is a budget process now we all live in the real world and I know there is a link between the two. But if you are saying “here is the risk, here’s what we’ve identified as professionals, here’s what we think you need to reduce that risk. Ah we haven’t got enough money. What do you want us to not provide Mr Politician - over to you”? IRMP was being done where the risk was being manipulated to suit the budget so when the Service came in and said “oh we can’t afford to have all of this. What we’ll do is well we’ll reduce that risk and we’ll change this and we’ll only provide that and we’ll do this and we’ll do the next thing”. ff1.

FBU members have raised specific concerns about IRMPs because they view them as ‘not likelihood and outcome based’ and failing to identify types of emergency and establishing expected outcomes. It may be that technical material and guidance below the high level IRMP does pick up these topics but they are still absent from the IRMPs themselves. Usually they are not referenced or linked in these documents. Connected to these shortcomings, there are additional FBU concerns about IRMPs because the organisational risk assessments are not done by emergency type or by significant hazard and the impact of human error can be downplayed.

These concerns are highly relevant. Harrow Court and Shirley Towers for example were the same type of emergency with very similar hazards and outcomes. The consequences for human error were high but avoidable if the pre-fire assessments, information, organisation, training and incident command and control policies and procedures had been put in place or revised and then properly audited between 2005 and 2010. And the full impacts of IRMPs and their related policies have not yet emerged.

“I don’t think there have ever been any real IRMPs done properly. I mean it’s fascinating that after 1947 until 2004, we seemed to have got all the Fire Stations in the right place. That was a bit lucky wasn’t it? We are doing proper risk management plans. Or in Wales it is risk reduction plans which is probably a better term. If you think about it you are planning to reduce your risk instead of just managing for the risk. So I think we have to change it so it’s two things. Pre 2004 fire attendance standards were based on the number of pumps and nobody ever talked about the number of people that were on it. At local level we did but government standards said you should have one pump in an A risk and you should have two pumps within five minutes and one within eight minutes and B risk. It was integrated risk management plans that have extended the attendance times. Do I think that’s good or bad? I think it’s bad but equally if we look at what’s happening there is clearly a reduction in the number of fires, there is a reduction in the number of fire deaths but is there an increase in property loss? I think it would be safe to say there is probably significantly more fire damage than there was previously because it is taking us longer to get there and put the fire out so the fire is more advanced. Escape mechanisms are better for people and warning mechanisms and all the rest of it so people are getting out and less people are getting killed but I would rather see eight firefighters turning up after ten minutes than three turning up after five minutes only for the other five to come or whatever the other number is to make them up and coming later”. ff6.

Recommendations

- IRMPs and related lower level plans should be reviewed in terms of their effectiveness with regard to addressing the occupational health and safety of firefighters. This should end the conflict between planning effective fire services and dealing with budgetary matters which have sometimes been conflated within IRMPs;
- DCLG should accept the FBU call that the government ‘issue a circular immediately to advise that fire and rescue authorities must have regard to Fire and Rescue Authorities – health, safety and welfare framework for the operational environment, published in June 2013, when developing their IRMP’;
- Departments in the meantime should require all FRSs to document and audit their commitment to and record on firefighter health and safety in every IRMP they produce;
- The Fire and Rescue National Frameworks for England 2012 and Scotland 2013 should be revised, where necessary, to ensure firefighter health and safety is fully embedded within them and effectively prioritise the activity along with public safety. Similar checks should be made on the Welsh and Northern Ireland ‘frameworks’.

‘CHIEF FIRE AND RESCUE ADVISORS ‘(CFRA) AND THE CHIEF FIRE AND RESCUE ADVISORY UNIT (CFRAU) IN ENGLAND, NORTHERN IRELAND AND WALES AND HM INSPECTOR OF FIRES IN SCOTLAND

In England, the CFRA is employed by DCLG and “provides strategic advice and guidance to ministers, civil servants, fire and rescue authorities in England and other partners (including the devolved administrations, the police and Health and Safety Executive), on the structure, organisation and performance of fire and rescue authorities” (DCLG July 2014). The CFRA can also commission operational guidance and these include key GRAs - and BA Operational training guidance – to meet the requirements of the Management of Health and Safety at Work regulations. Such activities include a strategic view of firefighter fatalities at fires and work with HSE and the police on such matters. Despite repeated requests and phone calls, at the time of writing this report, the CFRA office has not responded to requests for more information about their current role, functions and work, if any, on firefighter fatalities in the UK. The CFRA role has been much diminished and now appears to have a stronger focus on policies dealing efficiency and value for money rather than to evaluating how such policies can or will impact on public and firefighter safety.

A properly staffed and resourced CFRA office with an active CFRAU should be a major contributor to solving the problems relating to firefighter fatalities at fires.

“The advisors should be telling the Minister that everything is OK or if everything is not OK but it’s so under resourced aid. There is no an inspection regime as I keep coming back to that”. ff6.

Similar post holders elsewhere in the UK advise their respective governments. The role has been reduced in England in terms of responsibilities, resources and time. They do not operate like the Chief Fire Inspectors of the past. There was a consensus among the firefighters interviewed that although the fire inspectorate may not have been perfect, the lack of a proper replacement for it had damaged the capacity of the UK fire service to deal with occupational health and safety. The fragmentation and loss of oversight are major limitations. Delays in drawing wider conclusions from several individual fires were flagged as particularly serious.

For example, with regard to fires in high rise building one firefighter concerned about bringing together technical information and speedy implementation of action across the UK noted:-

“Now from a technical point of view that was a common cause and then we would say ‘well what can we learn from that’? What you learn from that is if the Fire Service itself would sit down and look at that sort of thing and come up with common causes if they had the systems in place they would say “okay we do need to go out and gather up operational risk information on blocks of flats”. But the ones that we need to do first are the ones where you’ve the scissor design ones where you’ve got windows on two faces of the building they are our highest priority. We need to train firefighters in the wind effects of fires in high rise buildings ...identifying the technical problem or the technical causes identifies your training needs. Yes the knowledge needs and the training needs and the information gathering needs but the problem is of course the Fire Service doesn’t have any kind of body that oversees the whole country.... We’ve got forty odd different completely different independent organisations and the lines between them are huge even though they are doing the same job”. ff7.

There also appear to be growing differences between the four UK countries in terms of government policies and some priorities and practices of FRSs. In 2013, HM Fire Inspectorate Scotland carried out a review of what is now one unified Scottish FRS and provided a case study of community and firefighter safety linked to risk management and the fire service emergency cover model although occupational health and safety was otherwise neglected.

Further disparities emerge that have implications for both public and firefighter safety in different parts of the country.

Now we had a fire in an old peoples home in country X a few years ago, there were lots of learning points from that about response time, about knowledge of the building, about gathering operational risk information and out of that country X changed their regulations so that now you have to put sprinklers in old people’s homes but nothing happened in other countries. The regulations certainly weren’t changed and even the learning points about the fact that the firefighters actually they turned up at the back door instead of the front door because they didn’t know the building well enough but that was never passed around the Fire Services in England to learn from because it’s almost as though well Scotland is a different country and what happens in Scotland is nothing to do with us it might as well be Germany for all the interest that we have in it”. ff7.

In Northern Ireland, a former chief fire officer from Scotland has been carrying out the review functions for that service.

After Marlie Farm in 2006, the county brigade made recommendations to several bodies, including the Chief Fire and Rescue Advisor’s Unit in England, to examine the absence of a national system to disseminate risk critical information and guidance. In 2010, the CFRA was playing a part in implementing proposals based on the Harrow Court incident of 2005.

A number of service recommendations on procedures, audits and training had been implemented according to a group headed by Sir Ken Knight and including the CFRAU. However, it is now difficult to locate publicly available reports and recommendations on such firefighter fatalities from the web pages on the CFRA. There are occasional references in fatality reports to both the role of the CFRA and CFRAU. The work of the CFRAU is not currently mentioned on the main English Government - DCLG - web site and its role is very unclear. With publication of 'In the Line of Duty' report by LRD and FBU in 2008, the UK minister responsible for fire at CLG, Sadiq Khan, responded to the report's recommendations. In 2008 the Minister was considering the benefits of a co-ordinated approach to the collection and analysis of data on firefighter deaths and injuries and an independent fire and rescue service investigation unit. In 2013, no such data collection and analysis system existed and the role of the CFRA has been downgraded and no investigation unit has been established.

The CFOA chaired the English Fire and Rescue Service Practitioner Forum that met regularly for many years and advised government on fire and rescue-related policies. By 2008 it had had 33 meetings until disbanded following the last election. This body included senior fire officers, Local Government Association members, a range of trade unions, fire service college staff. Meetings were usually attended by Scottish and Welsh local or central government officers. Firefighters saw it as a forum where discussion about firefighter fatalities at fires could happen.

"We had a thing called the Practitioners Forum and they thought that it was the Central Fire Brigades Advisory Council and they just sort of changed its name now. They were meeting places at a national level for all of the Stakeholders in Fire and Rescue (including) the Chief Fire Rescue Adviser or HMI before that and all of the people who had an interest in the fire rescue and what would have happened. Ideally, I'm not saying it happened all the time but if there was something (related to) the Rule 43 Letters, especially something that was to do with a firefighter fatality, then that would have been raised at that level in that national organisation whichever one it was. We, the Fire Service would have decided what we would do with it. Should we write a Dear Chief Officer letter, should we update a Manual of Firemanship, should we write to so and so and get them to change something else and that's how it would have happened? Since the last election, the Practitioner (Forum) has fallen. Its last incarnation just folded up and disappeared. The reason was that at the last election the DCLG halved the funding that it gave to the CFOA. The CFOA said "well if you're going to cut our money then we are not going to chair all these meetings". So they stopped organising the meetings so then the whole thing just withered and died. What it means now is that if you take Shirley Towers I'm sure a Rule 43 Letter would have been sent to Hampshire Fire and Rescue Service but nobody else knew anything about it but yeah it may have been circulated around the findings may have come out and all that. But nobody centrally looked at it and said "what are the lessons from this that the whole of the country can learn"? ff7.

“(The CFRA England) seems to have had very little impact in my opinion. It feels an almost kind of toothless office. I’m not aware of them really taking any action that’s called anybody to account. They have been not very critical about anybody. It doesn’t feel independent to me again its ex-Chief Officers that tend to be in there and so it doesn’t have an independent feel. If your advisers are all ex-managers, you know ...”. ff6.

Recommendations for CFRA/CFRU

- A properly funded and staffed CFRA office should be created along with a CFRAU that is capable of carrying out necessary inspections - thus avoiding fire brigades policing themselves - and investigations including investigations of firefighter fatalities and their UK-wide significance;
- The economic costs of such an office and unit should be partly covered by the reduction in firefighter fatalities, injuries and diseases, as well as by improvements in public safety, and so should be cost effective. Currently many of the costs of firefighter deaths and injuries are offset within the NHS, communities and families of those affected;
- A fire safety and health forum, with all relevant stakeholders invited, should be re-established and funded by governments. It should serve all four UK countries;
- Across the UK, the CFRAs or HM Fire inspectorates should fully inspect FRSs with regard to their work on both community safety and firefighter safety;
- Across the UK, the type of approach contained within the 2012 Operational Guidance on Operational Risk Information produced by the CFRA England for DCLG should be fully tested. Where its effectiveness can be demonstrated, it should be available for adoption across the UK.

FIRE AND RESCUE FRAMEWORKS

In 2012, the Fire and Rescue National Framework for England was produced and part of it was undoubtedly ideological rather than pragmatic. It was supposedly designed to attack ‘Whitehall bureaucracy and red tape’ and ‘central’ controls. Paradoxically the aim was to be achieved by requiring greater collaboration in a very directed manner from central government and with no reference to the benefits of regulating health and safety. This approach focused mainly on community safety and notes the fall in fire deaths at homes since the 1980s. Whilst the ramifications of the framework for firefighters were considerable, these are not addressed and there is one cursory mention of firefighters in the whole document and one to health and safety. The framework flagged IRMPs but only in so far as they looked at community risk and better regulation approaches and did not consider risks to firefighters posed by the framework.

On a more positive note, the 2012 Operational Guidance on Operational Risk Information produced by the CFRA England for DCLG was geared to promoting common principles, practices and procedures but FRSs could choose not to adopt it. The aim was to provide: “robust yet flexible guidance on developing and maintaining a consistent approach to managing, processing and using strategic and tactical operational risk information that can be adapted to the nature, scale and requirements of the individual Fire and Rescue Service” (p2). In the strategic perspective section of the guidance, the first of the policy aims and objectives listed is: “the prevention of injury and ill health of firefighters and other emergency responders” (p17). It is difficult to see how such priorities are actioned in some IRMPs. They have not yet been reviewed across the UK only in Scotland. The data gathering process in the Provision of Operational Risk Information Systems (PORIS) Risk Assessment Matrix, discussed later, does establish firefighter risk as a major category (p49) and this links in with risk management.

In Northern Ireland FBU members may sit on national fire safety bodies and in Scotland, FBU members sit on the Scottish Operational Guidance Board dealing with fires. There may be differences developing in policies and practices but DCLG remains very influential still across the UK especially with regard to bulletins and ‘guidance’ notes.

Recommendation

- The Fire and Rescue National Frameworks for England and Scotland should be revised to ensure firefighter health and safety is properly and effectively embedded within it and prioritised along with public safety.

RISK ASSESSMENT AND RISK MANAGEMENT POLICIES AND PRACTICES PRODUCED BY GOVERNMENT AND BRIGADES

Information and training for senior managers, incident commanders and firefighters on risk assessment, risk management and risk reduction have already been identified as critical elements in effective health and safety systems for firefighters. They influence the production, understanding and use of such things as Standard Operating Procedures (SOPs). However, firefighters are clear that risk assessment: “is a powerful tool for informing but not dictating, decisions on the management of risk”. (Grimwood 2008:4).

Generic risk assessments (GRAs)

Operational Guidance relating to risk information from the DCLG/CFRA made clear that:- “Generic risk assessments and standard operating procedures will often form the backbone of the information required to address specific risks. While a range of information will be used to support dynamic risk assessment, it is recognised that the information gathered on site specific risks as part of the pre-planning process is critical to assist the Incident Commander in making effective and timely decisions on the incident ground” (DCLG/CFRA 2012:7).

The 2009 Generic Risk Assessment: Fire and Rescue Operational Guidance dealing with Occupational Health and Safety and Welfare specifically explores occupational safety issues in the context of the 1999 Management of Health, Safety and Welfare Regulations and regulations relating to consulting employees (1996), Safety Representatives and Safety Committees (1977 as amended 1992). It also refers to HSEs Five steps to risk assessment (INDG 163), HSG 65 on Successful Health and Safety Management and BS OHSAS 18001:2007 on health and safety management systems, BS OHSAS 18002:2008 on Implementing OHS management systems and BS 18004:2008 Guide to achieving effective OHS performance.

Specific and detailed GRAs have also been developed or revised for example to deal with explosives (2008 and 2012), flashbacks (2008), collapsed structures (2013), high rise buildings (2008). Several of these now provide a better means for assessing the risks to firefighters than existed at the time. However, as has been highlighted in the section dealing with Shirley Towers, in a number of cases relevant GRAs were produced after firefighter fatalities occurred earlier yet had still not been acted upon in later incidents that also led to fatalities. The role of the HSE or the now defunct HM Fire Inspectors should be critical in identifying and addressing these shortcomings if staff and resources were available and effective inspections of FRs occurred beyond ‘paper’ and tick box exercises.

Firefighters had concerns that in some rural and remote areas, there would be insufficient firefighters available to fight fires based on an ‘optimum’ GRA. They identified safety critical tasks that might for example indicate twelve firefighters were needed when only five were initially present. These firefighters searched for more practically-based advice.

“Take those generic risk assessments which are so generic in themselves they aren’t any use to the firefighter on the ground. Their entire purpose is that they should go along to managers in Fire and Rescue Services who look at them and say. ‘Well here are the generic risks people have identified and I now need to translate that into operating procedures, into standard operating procedures’. When they are writing the standard operating procedures then they sort of drill down into those risks and control measures and look at how they apply to them locally. Converting generic risk assessments into planned operating procedures is done in different brigades. It is done to different standards and in some places it is not done particularly well at all”. ff7.

Such guidance often produced mixed responses from firefighters.

“And the way guidance is going these days it’s only going to get more and more because the guidance that is being produced now is far too woolly and all it is doing is devolving that responsibility down to incident command. So you are not giving them the tools to know how to deal with it safely. Guidance has to be prescriptive through your standard operating procedures and you then give the Incident Commander the latitude to say “OK I’m now presented with something different from what I anticipated here’s what I’m going to do” and that’s where the dynamic risk assessment comes in”. ff3.

Central to the guidance is the observation that the Incident Command and Control system requires the IC to make the ‘safety’ of their personnel ‘the principal consideration’. So a risk assessment comes first when the IC ‘must’ identify the hazards, assess the risks, and implement all reasonable control measures before committing crews into a risk area” (1.1 p7).

The IC should have the competence to do this. Where there is no threat to public safety, this may be easily achieved. Where there are threats to public safety, not prioritising firefighter safety will often also endanger public safety.

Risk assessments should decide priorities and minimise risks using a hierarchy of control measures and for FRSs notes the importance of ‘systems of work’. (1.5p12). Tactical decisions must also consider ensuring adequate resources, ensuring communication and evaluating the tactical plan against all info available ensuring a risk v benefit analysis is conducted. Strategic considerations included the need to monitor progress of crews at fire including giving crews ‘sufficient rest, relief and refreshment’ depending on resources and levels of fatigue. (p30). Supervisors should continually monitor the physical condition of crews and address personnel welfare - food, drink, facilities and shelter needs (p46). “Where foreseeable events exist, GRAs must be carried out” (p63).

Other topics included the role of ICs, the use of GRAs, risk cards, fire safety plans, SOPs and info from crews, incident information at scene including from owners and others to assess nature of tasks to be carried out, significant hazards presented and risks to firefighters, other personnel, public, environment, resources available and intro and declare tactical mode, select and assess system of work based on pre-planning and training and available personnel and if necessary intro additional control measures and re-assess both (Steps 1-6) (p69).

If accurate information along the lines outlined above had been available or was known not to exist - for example at Limavady in 2003, Bethnal Green 2004, Marlie Farm 2006, Atherstone 2007 and Manchester 2013 - then the firefighter fatalities may have been avoided. For several of these incidents, where there was no threat to the public or to the environment, then the need to fight the fire in the way in the way it was fought would have vanished. Bringing together the GRA and DRA and producing and preparing and reviewing analytical risk assessment (ARAs) provides further safeguards on paper.

Dynamic and related risk assessments

DRAs may present a greater challenge than GRAs and it is a topic that has attracted much attention from fire services, firefighters and researchers. Getting dynamic risk assessment right has to be a downstream activity that is one of the final parts of the firefighting process. The Blaina fire happened in 1996. Two years later a Home Office document on dynamic risk management was introduced. Risk assessment, albeit not described as such in name, has of course a much longer history and 'practice' in the fire service including duties of fire officers to safeguard their firefighters (the Manual of Firemanship, Part 6A, Practical Firemanship I, 1945) and the fire authority responsibilities to 'prevent and mitigate damage' (the Fire Services Act 1947) (Dennett 2007:16).

DRAs emerged in a more systematic way in 1997 after Blaina and were built into various parts of firefighter training linked to hazards, systems of work and controls (HM Fire Service Inspectorate. Fire Service Manual Vol2:1999). The manual assessed risks as follows - 'Firefighters will take some risk to save saveable lives. Firefighters will take a little risk to save saveable property. Firefighters will not take any risk at all to try to save lives or property that are already lost'.

The 1998 Dynamic Management of Risk at Operational Incidents was produced by the Home Office as part of their health and safety guidance for the Fire Service. The management was described as the continuous identification of hazards, assessing risk, taking action to eliminate or reduce risk, monitoring and reviewing, in the rapidly changing circumstances of an operational incident. The process was not considered 'stand alone' and was the last level of three levels of risk management used by FRSs. In order to provide an acceptable level of protection at operational incidents, brigade health and safety management had to operate successfully at three levels - strategic, systematic, and dynamic.

These stages were pertinent to all the incidents examined in this report and all the fatalities appear to have been avoidable if strategic and systematic action had been taken prior to the fires.

In 2002 the HSE noted the Home Office publication Dynamic Management of Risk at Operational Incidents defined dynamic management of risk as "the continuous process of identifying hazards, assessing risk, taking action to eliminate or reduce risk, monitoring and reviewing in the rapidly changing circumstances of an operational incident". However, the extent to which there can practically be a continuous review on the fireground or, as some guidance indicates, a regular review needs clarification. A continuous review could mean that all the time is spent on review at the cost of effectively managing the incident. The Home Office goes on to explain that strategic (for example policies, resources, etc) and systematic (risk assessments, safe systems of work, etc) levels of management must already be in place. A key element is the requirement for an incident debrief (or post-incident review) to feedback appropriately to the systematic level. There seems to be some evidence of brigades failing to carry this out properly. Some brigades had introduced 'tick lists' for the most commonly encountered hazards at an incident.

These approaches were still embodied in the Incident Command Fire and Rescue Manual (Vol 2 Fire Service Operations. 2008 3rd ed p66) with regard to risk assessments where it was noted that it may be 'suitable to commit appropriately equipped and trained personnel into a hazardous environment for the purpose of saving life, it may be unsuitable in a similar situation where it is known there are no lives to be saved'.

Psychologists have advocated the recognition-primed decision making (RPD) approach as best for firefighters Incident Commanders but strategic commanders and those with more time should use other methods where there is time to evaluate options (Flin in Fire Service Manual 2008. Appendix 3 pp108-113). How all the elements of a GRA and DRA then effectively feed into ARAs on the fireground is perhaps less clear.

Unlike Judge McKay in the Atherstone case, DRAs may not be viewed by firefighters as 'common sense' - which may not be common and is not always sense - and requires structure, analysis, training and rigour if it is to work effectively. The techniques used by UK fire services in the mid 2000s were reviewed in some depth and found to be valuable but limitations included the fact that they are 'inextricably linked with decision-making' that is often 'instinctive' and experiential and usually produced by a small number of fire officers (Tissington and Flin 2005). There are two sides to this particular coin. Firefighters have repeatedly flagged in the interviews that experience of firegrounds and fires is critical to firefighter safety.

Firefighters may be sceptical about aspects of the DRA.

Well I mean I'm not, I'm not a great supporter of dynamic risk assessments, I think there is a kind of complete lack of understanding about what dynamic risk assessment is.. The risk assessment and safe systems in the work is something that Brigades have to spend more time doing and developing and again that comes down to the training. I had this discussion after high rise flat fatalities and people were saying at government level they were trying to design a new standard operating procedure for high rise buildings. The conversation went something like: "Well OK the fire appliance turns up what's the first thing the crews should do?" There were managers arguing that the first thing that should be done by the officer in charge is they do a dynamic risk assessment and if they find that the lift is broken then they have to do another sort of dynamic risk assessment. OK what do you do? My argument was that that there is nothing dynamic about that, you should have a procedure in place .There (are) certain risks. First off you've got access to multi storey flats. It's either going to be a lift or it's going to be by stairs and the stairs are either going to be blocked or they're not going to be blocked. Your lift is going to be working or it's not going to be working and your riser which is supplying the water is going to be working or it's not going to be working. So there's all of those things you could pre-plan for. The lifts working OK, well this is what we do and you don't need to think about those other bits and pieces. If you turn up and the riser is not working OK, this is what we do. Not this idea of the default is a dynamic risk assessment is then leaving it to chance. Whereas I think if people were okay we have the officers think through well what can go wrong here and I don't know if somebody can tell me something we haven't thought of that can go wrong..... I think there is very little in terms of the experience in the Fire Service that is going to be new. In none of these incidents that have caused fatalities, can I see anything that is new and that the Fire Service hasn't known about". ff6.

Those beyond the fire service also use dynamic risk assessments based on the Home Office and Fire Service guidance from 1998. The English Health Protection Agency is a case in point where DRAs are used ‘when the situation at the site changes beyond the scope of the general assessment (and where) with good pre-work assessment, use of the dynamic system will be limited’ (Allen 2012:5). When fires occur, circumstances may change on site and so DRAs will be needed. The HPA noted workers need to know the boundaries within which they are working with ‘dynamic situations’. This did not appear to happen with the DRAs where several firefighter fatalities happened.

The guidance provided in the fire service manuals and operational guidance on risk assessments is very relevant to several of the incidents. However, there is a permanent tension between having sufficient detailed and technical information available to make an accurate risk assessment and being able to absorb and apply such information at the scene of a fire when much is happening. The 2007 Atherstone fire trial judge was critical of the mass of information available on fire safety that could not possibly be absorbed. In practice, the pre-fire stage should ensure that necessary information about risks is available to inform the production and application of SOPs and strategic decision-making and underpinned by a systematic approach. Identification of fire hazards and risks present at a fire, and resources and equipment needed to fight it, link back to the generic risk assessments. The flexible stage would then entail far less information overload and permit the dynamic risk assessment to come into play at the fireground along with the necessary tactical decision-making.

The Incident Command Fire and Rescue Manual Vol 2 Fire Service Operations. 2008 3rd ed. incorporated the Home Office approach of strategic, systematic and dynamic responses to incidents and analytical risk assessments. It deals with the command and control doctrine and leadership, competence at strategic level, incident management and decision-making, as well the Incident Commander’s role at operational and tactical levels, lines of command, briefing and information, communications, cordon control, debriefing, post-incident considerations, resilience and risk management and the role of the safety officer plus competencies generally. How this information and guidance is translated into action on the fireground is the central challenge and was for several of the fatalities mentioned here.

Outsiders believed that agreed core values within the fire service should deal with risk. These would provide ‘shared understanding’ and ‘boundaries’ and avoid mixed messages that create uncertainty and without formally agreed values, management would not know they had the same view towards safety as others in the service (Allen 2012:20). This is where problems emerge in some but not all brigades: principles may well be shared but confusion sometimes appears to be present about both adequate preparation and priorities at the fireground linked to values.

Samurcay and Rogalski in 1988 (in Tissington and Flinn in 2005) found that the origins and purpose of DRA were unclear even though the approach was widely used. They realised no experimental testing had been done on the approach and that firefighters were unlikely to comply with an imposed risk assessment.

Problems may exist when firefighters work in rural and remote areas and there are particular challenges for part-time firefighters:-

“That comes through the dynamic risk assessment and everybody hates that. But you do put the onus on people to make their own decisions without really any guidance at all because it’s that whole (attitude). “Well if you can’t deal with that situation then you are obviously not competent at your job because you have to look at the risk here. And you had to decide how to mitigate that risk. And you have to put in place a plan to deal with the incident you’ve got and if you can’t do that then we’ll need to put you somewhere else and you need to do something else””. ff 2.

“I think Galston, the incident in Galston is the perfect example where the Service used dynamic risk assessment as a control measure as opposed to being a risk assessment process and because the individuals that were in charge of that followed the guidance to the letter there was no rescue carried out and the woman died and that’s, for me it absolutely outlines the dangers of dynamic risk assessment”. ff3.

And another view was:-

“Now we’ve got parts where you are not going to get nine people, one pump on an Island for example or one pump where the next backup is twenty, twenty five minutes away, so what do we do for that? Well currently we don’t do anything for that in theory they train on a Tuesday or a Wednesday night to a standard operating procedure that requires nine people and if their pager goes they can only get five or six, what do we do? Now up until recently that has just been brushed under the carpet but we, you know, we are starting to really poke at that that you need to put something in place to provide a safe system of work because the areas where you can’t provide your standard procedure are generally the areas where the risk is lower, its remote and its rural so the number of occasions when they are doing this. So, you know, they are part time and they are on the retained duty system, so their experience is less, so they are going into something that they are facing possibly for the first time in a long time without the backup. Then we say to them “but don’t worry about it you can do dynamic risk assessment and use the safer person concept” but we haven’t really trained them on how to do a dynamic anything and we certainly haven’t trained them on how to be, you know, on individual safety and they are having to work with this system across here using half the people”. ff2.

Analytical Risk Assessments

The Analytical Risk Assessment contains' a formalised' assessment of hazards, their risks and the likelihood and severity of risk. It also contains an assessment of existing control measures and any additional control measures introduced as appropriate as well as confirming the DRA and tactical mode was/is correct. Finally it informs the ongoing DRA process (HMG Fire Service Manual 2008:p96).

If risks can be eliminated by using a defensive mode or ground monitors or reduced by for example reducing time exposed, outcomes in the fatal incidents would have been different. If a safety officer is designated, then they can 'survey operational sectors, confirm validity of initial risk assessment and record as appropriate, collate and record ARA, liaise with sector safety officers, exchange information, act as extra pair of eyes, liaise with IC or operational commanders. They will identify risks, initiate corrective action, maintain safe systems of work, ensure all personnel are wearing appropriate PPE, monitor physical condition of personnel, regularly review, and record an ARA' (4.12).

The firefighters interviewed felt that ARAs did not necessarily work or work well.

"There is no evidence that any of these things were getting done through the incidents that firefighter fatalities have occurred. There are no records afterwards, that anybody was doing any kind of analytical or any kind of risk assessment and recording it during the incidents. Now people might have been doing it in their head but that is very difficult then to evidence because you go back to people and say, "what did you base your decision on?" Well "I think it was this and that" and pretty traumatic things have happened and it's difficult for people always to remember exactly why they did a particular thing so I certainly think there'sa great need for people to be recording information which also I think helps in the whole training process. There are a couple of Brigades in London that have a system. I'm not sure how widely used it is, but they have basically monitoring officers. So they will have officers who go along there to an incident that don't have a necessarily command and control responsibility. But what they are there is almost a Safety Officer so they can look to see the manager who is in charge to see if they think there is something they have missed. They are able to step in and say "hang on here have you thought about..." which I think is ...almost a sort of mentoring, learning process. So you've got someone who is outside the pressure of the incident because it's not necessarily their responsibility but they are there to be supervising and being able to stand back. You might have sent people to the right place but have you looked to see what equipment they are taking...". ff6.

The LFB 'monitoring officers' described above carried out somewhat different functions to those of the typical fire service 'safety officer' at the scene of the fire.

Making sense of those experiences and being able to use them effectively at fires is perhaps the additional element that is needed linked to analysing fires and ensuring bad practice and experience do not shape later fireground decisions. UK fires in 2006-2007, 2009-2010 and 2013 reveal there are still many risk assessment challenges. Questions remain as to how risk assessment activity feeds into effective risk management approaches and whether DRAs could compensate for and address earlier, bigger external and GRA failures. A flawed GRA could invalidate decisions taken in a DRA but the problems created might not emerge on the fireground for some time even with ARAs and could be lethal.

Retained firefighters, some were involved for example in the Atherstone Fire and at Limavady, face a particular range of challenges that may play into safety.

“I think there is a big question and it comes back to this training again as well is that there is a fundamental difference between whole time firefighters and retained firefighters and if we don’t address that then we are burying our head in the sand because retained firefighters will face the same sort of big risks and to expect them to be training two or three hours a week it’s just not realistic. And the range of skills that they are required to have to maintain, where you might only have one hundred calls a year and two of those might be fires of a significant nature you aint getting the experience. There are solutions in terms of an increased number of hours in training. But it’s expensive and it’s probably unrealistic in the current financial climate that we are going to expect the Fire Authorities to say “OK, well I’m putting in more money for retained firefighters” On top of that you’ve got administrative work that gets done in those three hours as well so your probably looking realistically at maximum of two hours a week training”. ff6.

Retained firefighters may be presented with particular challenges in rural areas. Again, different parts of the UK have adopted different strategies to dealing with this, following fatalities linked to the rural and remote challenges.

“it’s about rural proofing our fire cover as well which historically we weren’t doing that you know all your best cover, your all time cover in (urban areas). And nobody else had anything but eventually we have started on the back of work that we did way back in 1984 we started to roll out a series of stations. We collectively are very conscious of the rural aspect of providing that cover because that’s where I mean all our fatalities have all been rural based and you need to think well why is that? Because a lot of its retained based and then you start, so it’s about, you know, trying to do things then to protect your firefighters. I mean if there was a fire in (a rural area) there would be whole time firefighters there not just retained and we’ve done things about that so have lessons been learnt. Those sorts of lessons have been learnt by the FBU and senior management, you know”. ff4.

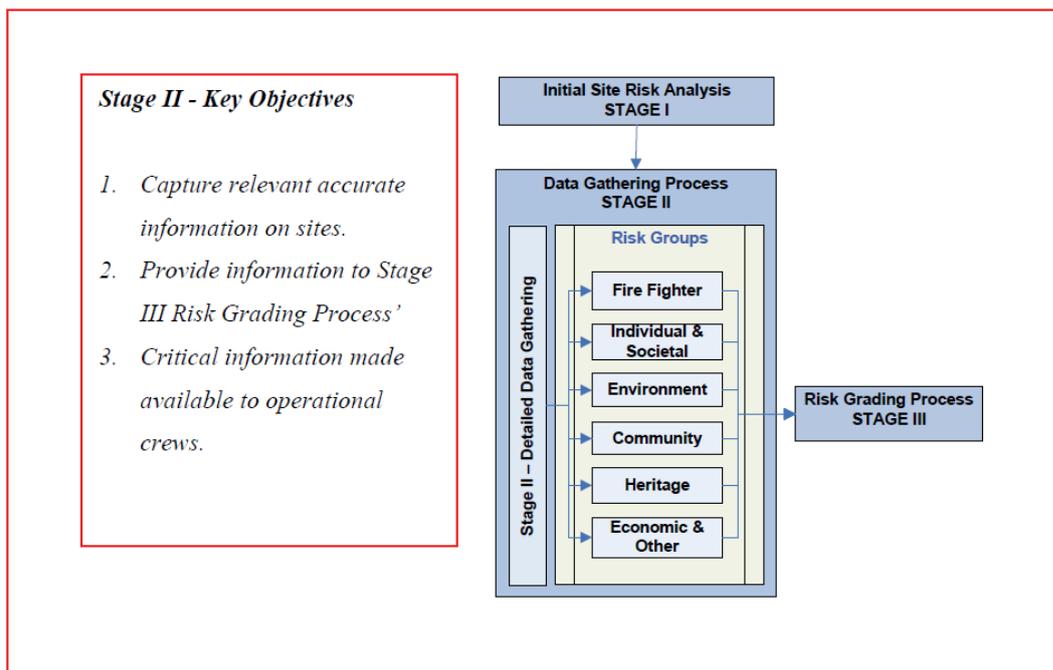
and

“When I joined we had six stations (in the city) and one in (a more rural area) and we’ve now got two in (the more rural area) and we’ve got seven in (the city) if you count the other one and we’ve got another seven which have a whole time element to it and they have one pump. You’ve got another seven on top of that that have another whole time element and we are hoping to get another three on top of that again. So we’ve vastly improved the service of full time right through the organisation and a number of retained stations have opened up as well...”. ff5.

Operational risk information systems

These may provide a useful framework for informing risk assessment and risk reduction decisions assuming they have been full tested and apply across brigades where incidents involve large numbers of firefighters. The systems may be optional and this then begs questions about their effectiveness. The Atherstone incident illustrated some of the real and potential problems about information and procedures on training, BA and search practices in different brigades.

FIGURE 4: PORIS STAGE II – DATA GATHERING PROCESS



The LFB decision-making model used in the Fire Service Manual of 2008 involves gathering and thinking about relevant information with regard to events, tasks, resources and risks. From this flows identification of objectives and plans. These are then used to communicate and control outcomes which are then evaluated and acted upon. The psychological factors affecting the use of this approach may be considerable and do not immediately identify the role of training and experience in the process at all.

Actions should feed back into the process at the beginning of the loop but a key question must be: 'do they'? From the incidents examined in this report, stages prior to the fireground in terms of higher level management or lack of it, experience or lack of it, and training or lack of it, will already have shaped much of the decision-making environment. These things can then affect how the fire is tackled along with important questions about information, resources, and risk and benefit assessments. But the organisational environment can damage or even scupper tactical 'safe firefighting' frequently at stage one.

The matrix provided in the guidance does provide the basis for assessing incidents ranging from Blaina in 1996 to Manchester in 2013. However, the considerations and risk controls column (Appendix B 2 below) do not. For whatever reason, many of the firefighters at most of the sites where firefighter fatalities occurred between 2004 and 2013 were unfamiliar the site although SOPs and GRAs did exist for several of the incidents. The division between significant and catastrophic risks therefore appears very arbitrary.

Appendix B(2): Firefighter severity life / health

Level	Severity	Considerations and risk controls
Catastrophic	Exposure to hazards could result in very large numbers of emergency responders being impacted with significant number of fatalities, large number of personnel requiring hospitalisation with serious injuries with long term effects.	Most responders will be unfamiliar with the site and / or the complex and / or unique risk controls in addition to the standard operating procedures and / or generic risk assessments required to prevent exposure.
Significant	Exposure to hazards could result in a significant number of emergency responders being impacted with one or more fatalities, multiple serious or extensive injuries and significant numbers requiring hospitalisation.	Most responders will be familiar with the site and / or the complex and / or unique risk controls required in addition to the standard operating procedures and / or generic risk assessments required to prevent exposure.
Moderate	Exposure to hazard resulting in death or serious injury is unlikely but could result in emergency responder's impacted requiring medical treatment and hospitalisation.	Mainly standard operating procedures and / or generic risk assessments with the possibility of some additional risk controls with which most responders will be familiar to prevent exposure.
Minor	Exposure to hazards resulting in death or serious injury is unlikely but could result in less serious minor injuries requiring first aid treatment.	Most responders will be familiar with the Standard Operating Procedures and / or Generic Risk Assessments required to prevent exposure.
Insignificant	Exposure to hazard resulting in injury is unlikely.	Most responders will be familiar with the standard operating procedures and / or generic risk assessments required to prevent exposure.

Operational risk information management systems should be relevant, timely and accurate. They should bring together the outputs from existing and established systems and develop and support a common approach to the strategic and dynamic analysis of risk. They should determine the appropriate application of resources and processes to address those risks which impact on the firefighter, other emergency responders, members of the public and the environment. Such systems should be able to ensure that many of the common problems encountered at several of the incidents described earlier in this report were avoided. Whether the necessary information can be gathered and the technologies necessary to deliver it be developed has yet to be established.

Recommendations on risk assessment, risk management and related matters

- Risk assessment and risk management approaches generally embedded within legislation, related official guidance and fire service and brigade documentation need to be reviewed again. This should be in the light not just of single incidents but all the fatalities. Clarity, applicability, comprehensibility, accessibility, utility and user-friendliness on the fireground of risk documentation should be re-assessed. Where necessary tools and documentation they should be revised so that they are fit for purpose;
- In the light of firefighter concerns about the particular problems with analytical risk assessments, ARAs should be reviewed along with the role of fireground 'health and safety officers'. In this context, the LFB development of monitoring officers should be fully evaluated and rolled out more widely if effective;
- Operational risk information systems, if supported by relevant and accurate information may provide a UK-wide means to improve risk assessment and risk management. However, systems need to be fully tested for effectiveness and compatibility across the UK before they are introduced;
- Risk assessment, risk management and its application in practice may present particular problems for retained firefighters and firefighting in rural and remote areas. These potential problems should be more openly recognised and the best solutions available to address them should be discussed across the UK.

LOCAL GOVERNMENT AND THE LOCAL GOVERNMENT ASSOCIATION ENGLAND (LGA) AND OTHER SIMILAR BODIES IN THE UK

“My experience would suggest that most fire authorities leave everything ...to the Chief Officer and he is obviously employed to advise them on those matters. But I think sometimes there is a lack of understanding of their responsibility under the IRMP. Now they get away with that because there are no checks.There’s not that body lying behind that to say “we can come and check your IRMP” ... It’s quite clear at the moment that risk plans are being made on the basis of budget. You occasionally hear a Chief Police Officer saying, “you’ll end up with more crime, very rarely you hear a Chief Fire Officer saying “I can’t run my Service with any less money. I’m going to have to shut Fire Stations and people will die”. Very rarely you hear that because they are a different kind of breed of politician if you like in my opinion. And unless the local authorities are held to account then I don’t know. My understanding for example is that there are Fire Authorities who build into their risk plan that they will get an improvement notice served on them by the Health and Safety Executive and they might even get a prosecution but that’s a chance that they are prepared to take because it can save them a lot of money”. ff6.

Local government funds the various county and geographical fire brigades across the UK. Central government sets and controls significant parts of local authority spending. So the relationship between central and local government is critical to the staffing and resourcing of fire services and impacts on firefighter safety directly. In England the Local Government Association (LGA) works on cross-authority policy and agreements. Elsewhere in the UK other bodies perform similar functions. Historically these umbrella groups have contributed to a range of initiatives affecting firefighter safety working with the CFOA from the FRSs. For example, the CFOA/ LGA 2009. Operational Assessment (OpA) was floated in 2009 and, between 2009 and 2012, 30 such assessments with external peer challenges were completed.

With considerable public expenditure cuts working their way through, threats to both public safety and firefighter health and safety – the two are inextricably intertwined because what hits one, affects the other – are growing. Particular local authorities have proposed huge retrenchment programmes without providing good quality evidence of their impacts on public and firefighter safety. This is currently the case in London with cuts in fire station numbers, appliances and staff. Yet the lessons to be learnt from several of the fatality and some of the near miss incidents discussed in this report relate to speed of pumps reaching fires, the numbers of well-equipped firefighters available to fight fires safely and the speed of back-up in reaching firegrounds. In 2012 the CFOA/LGA Operational Assessment and Fire Peer Challenge Toolkit was produced.

The document notes “In the new policy landscape with the abolition of the inspection and regulatory regime and the national performance framework, there is a shift towards local accountability for performance and self-regulation. This fits well with the governance of FRAs, and the sector led approach to improvement”. These sort of initiatives are likely to present major threats to both public and firefighter safety. It may also mean that changes like those proposed in London will escape effective oversight and assessment and could lead to increase public and firefighter safety risks.

Recommendations

- Local authorities and their umbrella bodies should carry out good quality and rigorous occupational health and safety impact assessments of any proposed cuts in fire services. These assessments would include the economic consequences of cuts in the same way that regulatory impact assessments assess costs of regulations and proposed regulations;
- Local authorities should re-assess the requirements needed for a safe fire service that will protect both the public and its own firefighters and make adequate budgetary provision to meet those requirements in the light of recent firefighter fatalities;
- If public expenditure cuts prevent local authorities fulfilling these requirements, then local authorities and bodies such as LGA may need to challenge such cuts and ensure that their electorates and their employees are fully informed about the implications of the cuts to the public and fire safety;
- LGA etc should evidence how they do and will audit and do and will prioritise firefighter safety effectively as well as public safety in their respective FRSs;
- Through LGA, etc and other public bodies, local authorities should be prepared to produce a UK-wide consolidated annual report on firefighter fatalities, injuries and diseases unless this is already done by national governments or HSE. The reports could be based on those from Brigade Chief Fire Officers (CFOs) who should produce a public consolidated brigade report each year on firefighter fatalities, injuries and significant near misses and actions that have been taken to improve firefighter safety documenting any good practice;
- The ‘self-regulation’ model for checks on local authority fire services created by central government and adopted by local government should be abandoned as it has failed to prevent several of the firefighter fatalities discussed in this report. There should be a move back in all four countries to formal regulation and national inspections of fire brigades drawing on a reconfigured CFRA office and, where necessary, re-established and independent HMIFs.

ROLE OF FRSs

These vary enormously across the UK and in England are bodies funded by and accountable in the first instance to local authorities. They are headed by Chief Fire Officers who also have a Chief Fire Officer's Association (CFOA). It is not possible to establish from FRS web pages or the CFOA web page the extent to which reports on firefighter fatalities at fires from various bodies are circulated and discussed. It is assumed they are because various FRS board minutes contain references to such reports but the extent to which all FRSs act upon recommendations cannot currently be established.

Northern Ireland (NIFRS) has its own chief fire officer with areas and districts and a set-up where, due to the recent history of the country, co-operation and collaboration between all the emergency services functions very effectively. These special circumstances have also ensured that resources for firefighting have been available and substantial in the country when needed but moves in 2014/15 to a rolling annual budget may well threaten that position.

Elsewhere in the UK, opinions vary about the effectiveness of the chief officers. They have a key role, and should have related responsibilities in establishing risk management strategies and policies linked to resources and technical developments and their operationalisation. These structures and environments are then critical to firefighter health and safety and failings in them explain several of the firefighter deaths at fires.

"It's the Chief Fire Officer in the Brigade (who) is told there's the amount of money you've got to go and run the Brigade. I've got incidences just now where Firefighters are working 96 hours straight but they are on a Fire Station for 96 hours. Now it's in breach of Working Time Regulations and they (CFROs) are relying on individual opt outs and they offer a small amount of money too as an enticement and people are signing up for it. So, but he's reporting back to his Fire Authority "oh yeah, yeah, I'm, I've got 24 hour cover in that Station, don't worry and this is the shift system and we've got their agreement it's all okay". I said "we'll see if somebody gets killed then it will be a different matter". ff6.

FRSs were given the role of producing IRMPs in 2003. FRSs have responded in many ways to incidents, to HSE and other bodies' activities on the risks to firefighter at fires. An interesting response, for example, came from the Essex County FRS (ECFRS) which was not involved in any of the fatal incidents mentioned in this report nor in any of the HSE inspections at that time. In 2011, the fire authority actively discussed a Health and Safety Update linked to the National HSE Consolidation Report and the ROSPA Quality Safety Audit of the ECFRS. The authority was aware that "little or no proactive inspection of the FRS had been carried out for a number of years": probably reflecting the national position. This again begs the question about what HSE and other overseers or regulators had been doing in FRSs.

The ECFRS concentrated its discussion on the HSEs focus on competence assessment for firefighters at all levels including management and development of a proportionate approach to risk assessment. This entailed looking at BA and compartment training, core skills and incident command training, and the provision of risk critical information. A recurrent theme in the interviews from several of the firefighters interviewed was that officers were being appointed in some parts of the UK without, in their view, the necessary incident command and control training.

The ROSPA audit looked at management systems and risk management implications for the ECFRS and the legal implications of not addressing any problems identified. It may be that other FRSs engaged in similar audits and reviews but there are no national sources that can confirm this. A fragmented UK picture emerges of responses to the firefighter fatality incidents especially in terms of addressing 'environmental' root causes and underlying structural and procedural problems.

With the public sector cuts, chief officers have been required to cut their own budgets and have been placed under significant pressure to reduce spending on critical activities that affect firefighter health and safety. In some instances, chief officers have been asked to cut firefighter training - in one instance relating to firefighter breathing apparatus training. One chief officer called the bluff of the 'cutters' and indicated this could be done but if a court case arose with regard to BA training failures, the funder would need to answer to the courts. These proposed cuts were then dropped.

Concerns were expressed by several firefighters about how brigades investigated near misses and serious injuries at fires that did not lead to fatalities. For example FBU prompted reporting of incidents with cables in one brigade but although six were 'remembered', only two near misses were reported. The contrast with fatal investigations in terms of resources, time and personnel utilised was stark. Firefighters perceived reluctance on the part of the brigades to acknowledge problems because this would highlight cuts and deficiencies in training and equipment. Instead there was also a perception that brigade managers focused on human factors rather than systemic failings.

"So there is this resistance to be open and honest and critic, self-critique your actions at an incident. I think that prevents an awful lot of the minor things that could have the potential to go very badly wrong be addressed because it gets kind of hidden. There is really the focus on positives if you come back and say "well that went well" it really is a case of "well that was fine, good, carry on. That's what you're supposed to be doing". If there is a negative it tends to be played down because people are fearful". ff1.

The opportunities to work out better prevention strategies may be missed because of cultural and managerial attitudes from above.

“The Fire Service is severely bad at reporting near misses just as a rule. It’s not the fact they haven’t recognised it. It’s just by the time they actually remember it a week has passed and they can’t be bothered. Just going over the bad practice stuff, people don’t like criticising their colleagues so I know within my own organisation and it tends to be hot and cold. We have hot debriefing because as soon as a large event occurs then key information in relation is collected and all the attendees are invited to some sort of debrief. It’s an open forum so it’s not particularly critical of people’s behaviour, just pointing out where actions could be better or actions were missing or whatever. So it tends not to be individuals unless it’s a specific training need and therefore they are identified with individuals separately. Hampshire have now introduced something called an incident monitoring or evaluation officer and it’s their job to actually audit most incidences they can attend so it will also be the role of the Station Manager or a Bridge Manager if they attend an incident to come down for a sort of incident audit”. ff8.

Firefighters also had views about the HSE inspection of several brigades published in 2010 and the peer reviews that individual brigades were carrying out.

“There has been no follow up from the HSE 2010 (inspections) to say “OK well what have people done about those”? So that was left back to the Service and I don’t think the Service has a good inspection regime. They don’t have anybody really available at the moment to inspect. They are doing peer, peer reviews is the only thing that really gets done at the moment and I don’t think that that’s either independent enough or critical enough so it doesn’t seem to be effective. The recommendations I mean the Rule 43 Letters I think after Harrow Court, we identified working with the HSE. The Rule 43 Letters weren’t even being distributed. So therefore the Rule 43 Letter that was served on Hertfordshire wasn’t circulated to every other Brigade in the country. So working with HSC and working with then the Chief Fire and Rescue Advisers we said “look, you get it sent to every Brigade”. They agreed that’s what they would do from now on. Every time they got a Rule 43 Letter they would issue it on a sort of circular so that people could say well, “there’s a Rule 43 that’s been issued there”. I’m not sure there is a good enough mechanism for ensuring that lessons learned are acted on and that’s down to inspection and review”. ff6.

In 2014, the recognition that some brigades might have high occupational health and safety standards to protect firefighters at fires did not necessarily influence all other UK brigades.

“I don’t think the service is learning. I suppose the only place where there is any learning going on at the moment is a national body looking at what they call Operational Guidance now. There are several different levels of this. The Operational Guidance Board used to be part of the Department of Communities in the local government and they used to run it. Since the last election again well it started to shrivel but it was at least taken over by a consortium of London Fire Brigade, the Chief Fire Officers Association. I think the Fire Protection Association are in there as well. What they are doing is the National Operations Guide - good. They do GRAs. So they will take each of the generic incidents that the Fire Service goes to and they will write a risk assessment. Then produce a load of control measures that would address those risks. They just push them out there and say: ‘there you go that’s the National Operational Guidance’ and it’s really all about here’s the risk and here’s the things you can do about it”. ff7.

Recommendations

- Examples of good practice in investigating and/or addressing health and safety that exist in all four countries should be systematically rolled out more quickly and widely;
- The role and workload of both firefighters and fire officers needs to be urgently re-assessed in terms of the prioritisation of myriad, increasing and sometimes conflicting tasks that may impact directly and indirectly on occupational health and safety;
- FRSs should re-assess the nature, scope and application of systems affecting firefighter safety especially with regard to the respective weightings given to behavioural and safe systems of work and effective high level risk management. This should help to further inform assessments and re-assessments of the workings and fit of generic risk assessments (GRAs), dynamic risk assessments (DRAs), analytic risk assessments (ARAs) and related standard operated procedures (SOPs);
- Greater emphasis should be given to how defensive firefighting decisions are or are not taken in the light of recent incidents, the key principles of fire risk management and the impact of HSEs’ ‘Heroism’ and ‘striking the balance’ outputs;
- FRSs should urgently review the extent to which they have fully implemented Rule 43 letters and incident reports on firefighter fatalities at fires in so far as they have the authority to do so and document their findings;
- All FRSs should review or revise specific aspects of their policies and procedures on firefighting where incident reports indicate this is necessary including information and training for control room staff;
- FRSs should also where necessary re-assess external factors that have contributed to past firefighter fatalities. These would include the need for sufficient fire stations and sufficient trained and experienced firefighters with the right equipment and control rooms able to provide and receive accurate and rapid information on the location, state and progress in fighting fires;

- FRSs should also, where necessary, address more specific factors that contributed to previous firefighter fatalities and ensure they address the health and safety of those on the fireground. This would include for example
 - ensuring there is relevant, realistic , revised and regular training including the means to ensure relevant ‘comprehensive’ experience - where possible - for firefighters on incident command, fire and building science, standard operating procedures, GRAs and how they influence SOPs , DRAs and ARAs, risk management, BA usage, control and monitoring and other equipment training and experience, compartment and other search patterns, working in high temperatures and its effects, water supply to fires and to firefighters etc;
 - These factors may be viewed as the ‘bread and butter’ of the fire service but it is very clear from examining past firefighter fatalities that have occurred that they are not.
- FRSs and support bodies should ensure there are more effective approaches to bridging the theory/practice/experience gaps for fire officers in training and review activities. This was particularly pressing in incident command and control as a number of the firefighter fatalities had occurred sometime after firefighters had reached the fireground;
- Better mechanisms and practices are needed across the UK to improve and prioritise FRSs’ investigations of fatal incidents to ensure they are as transparent and collaborative as possible. Currently the position is patchy.

LEGAL MATTERS - THE COURTS, INQUESTS, FATAL ACCIDENT INQUIRIES (FAIs), CORONERS AND THE POLICE INCLUDING THE CROWN PROSECUTION SERVICE (CPS) (ENGLAND AND WALES) , THE CROWN OFFICE PROCURATOR FISCAL’S UNIT (SCOTLAND) AND THE DIRECTOR OF PUBLIC PROSECUTIONS (NORTHERN IRELAND).

Based on investigations by the police and HSE, the CPS or Crown Office may prosecute, under the 1974 Health and Safety at Work etc Act and the Corporate Manslaughter and Homicide Act 2007 (which applies to corporate liability and not individuals) and related regulations and legislation, owners of premises involved in fatal fires, local authorities and FRs that run the fire services and in some circumstances individual fire officers. For example in the Marlie Farm incident 2006, the owners were found guilty of manslaughter; in the Atherstone Fire of 2007, the local authority was convicted of offences but the fire officers were acquitted on charges of gross negligence AND manslaughter. HSE advice has recently been updated to take into account the unique role of some emergency service workers at the scenes of fires.

The CPS has now produced a statement of principle relating to ‘heroic acts by police officers and firefighters. This reads as follows: “The CPS recognises that, in performing a heroic act, a police officer or firefighter may breach section 7 of the Health and Safety at Work Act etc. 1974 (HASAWA), in that they failed to take reasonable care of their own safety. In those circumstances, and where the safety of others is not put at risk, public interest would not be served by taking forward a prosecution under section 7 of the 1974 Act”. (Last updated 7th November 2013).

Much will therefore depend on assessing the risks and the circumstances and the capacity of officers to determine that the safety of others is not put at risk. The CPS further adds: “although it is very unlikely that an officer would be investigated in such circumstances, prosecutors may be asked by investigators to consider whether such a "heroic act" such as this should be subject to prosecution under section 7 HASAWA if a case is referred to them by investigators. Each case must be considered on its own merits and prosecutors will apply the Full Code Test set out in the Code for Crown Prosecutors, and they should also apply the following considerations”.

Solicitors and barristers may represent FRs, FBU, Central and local Government. In several of the incidents involving criminal and civil law matters, legal cases have resulted in both major delays in completing investigations of incidents and in rolling out interim and urgent recommendations for action. Whilst documents and guidance issues by several bodies on dealing with deaths at work emphasise the need for matters to be dealt with as speedily as possible, the practice for whatever reasons has been poor. Improved protocols and procedures for fatal accident investigations have failed to resolve the problem.

Investigations of fatalities may be time-consuming and difficult from a legal perspective across the UK. Proper preparation of cases is clearly very important and may be lengthy. However, ways and means of speeding up the legal process are urgently needed. Delays of five, seven and eight years have occurred with regard to firefighter fatalities at fires and some case going back eight years have not been fully settled. For example Marlie Farm happened eight years ago, Atherstone seven years ago and the Balmoral Bar Fatality occurred five years ago and that case has just reached court. This should be considered unacceptable for families of those firefighters killed and also for those injured. In Scotland efforts are being made to speed up fatal accident inquiries that cover fatalities at work. In England in some cases, coroners are being pressed to hold inquests more quickly and in a more transparent fashion. According to Families Against Corporate Killing (FACK), what is needed are speedier processes, more resources and political will to ensure investigations, prosecutions, FAIs and Inquest occur in reasonable time.

In the UK inquests and FAIs investigate deaths of firefighters. They may also in some circumstances produce reports and 'rulings' (Rule 43) – effectively recommendations - that are applicable nationally to a range of bodies with a role in either setting standards or controlling hazards that may affect firefighters and others. In England the chief coroner assumed responsibility for the Prevention of Future Death Reports, the Rule 43 reports prior to this date, following the implementation of powers under the Coroners and Justice Act 2009 in 2013. Obtaining rule 43 letters prior to 2008 has also proved problematic. Some but not all inquests on firefighters have in the past resulted in Rule 43 letters being issued but the incidents discussed in this report indicate that more could have been usefully issued perhaps linked to some sort of review mechanism when it is clear past rules were only partially adopted or ignored by FRSs.

One firefighter was certain that Rule 43 letters were not the way to communicate findings.

“I don't think that the Coroners letter is the right tool for publicising the recommendations too. There needs to be another mechanism now because they cannot require anybody to make any checks all they can do basically is offer its observations with the risk that if you don't follow it, you will get a slapped wrist next time if it reoccurs. I don't think that that is having the impact that it should have. If there is a public body or an enforcing body or any other big organisation involved then there should be almost a state enquiry. Then they will have the power of the state rather than recommending it will be a requirement to do and presumably the Chief Officers will be in line for the chop”. ff8.

There are problems with the time inquests and fatal accident inquiries (FAIs) may take partly because inquests cannot be held if there are criminal investigations relating to murder, and corporate and individual manslaughter underway and partly because verdicts may be delayed for a variety of other reasons. Sometimes inquests are denied after there have been court cases and related investigations as happened with the Atherstone deaths of 2007. With no inquest in this case, no Rule 43 letter could of course be issued requiring parties involved to respond and flagging up matters of importance beyond the local area.

This is to be regretted as is the distress caused to the families of the deceased who lack proper resolution of the causes of death. If coroners' verdicts are delivered without unnecessary delay, they will often be of value to all those involved with firefighter health and safety in future prevention of injury planning.

The role of the police in carrying UK-wide investigations work-related deaths has not been well researched and little has been published on this topic. Again firefighters involved in fatalities had mixed views about the police. As one noted:-

"The Police were kind of in a completely alien way to what we were used to. They tell you what they want and you ask what you want and they say "OK. Thanks for that" and they give you nothing. We did get bits and pieces from the Police. We had a good relationship with them. We were involved right from the start with the way they conducted interviews, the way that the, the environment they were conducting them in and the facilities that they were going to provide recording or watching the videos remotely, transcript information. We always tried to get access to that and we were never successful but, but, we were there right from the very start before the interviews started and pretty much to the end". ff2.

Others were even more critical:-

"I wonder about how much we should cooperate with the cops to be perfectly honest because we are bending over backwards to help the cops but why would we bother? Because actually they haven't produced a single conviction that leads to improvements in the Fire Service for our members or leads to improved compensation or anything else I think that they perhaps need to be subservient to the Health and Safety Investigation rather than the other way round". ff6.

The police role proved most problematic at Atherstone in 2007 where prepared cases against fire service line managers but not senior managers. They failed to find the arsonists who started the fire. They did not take action against either the owners or planners although evidence indicated their acts or omissions affected both the course of the fire and the vulnerability of the firefighters. Further problems emerged when the police seized FRS reports that shed light on health and safety issues that affected firefighters after the fire.

“In liberal democracies, policing is inherently contradictory, since the law must guarantee the stability of a social order that is based on unequal relations of property and at the same time seek to uphold formal equalities in law. This is where the real difficulty lies in challenging the contributory negligence of the victim or in understanding that safety crimes are based upon the pursuit of economic interest in a system of unequal power relations. The reconstruction of senior management as potential criminals, or the idea that the dangerous conduct of victims might be the result of workplace pressures, rather than incompetence, apathy or laziness, requires a developed understanding of unequal power in the workplace and how workplace routines are mediated by power relations”. (Alvesalo and Whyte 2007:72 and see Snell and Tombs 2011).

They may conduct investigations with the HSE and their work will inform both criminal proceedings and coroners and other lawyers in Scotland.

Based on their experiences, some firefighters proposed a different arrangement with the police and other agencies.

“I think there is a desperate need for a memorandum and understanding between ourselves and the Police and all the various between ourselves and the enforcing authorities. It’s badly needed. We get inconsistency as to how the Police and the HSE operate in different parts of the country when these events happen”. ff3.

Recommendations for the courts, coroners and police

- ‘As justice delayed is justice denied’, there should be a speeding up of processes relating to inquests, fatal accident inquiries and trials for workplace fatalities along with more resources and political will to pursue such cases;
- Improved, expanded and increased training and briefings by CPS and other appropriate bodies is needed for UK police forces on manslaughter and corporate manslaughter and related laws that may apply when firefighter fatalities occur;
- This should focus on building constructive relations with all parties involved, including FBU and avoiding confrontational, vexatious and incorrect investigations that have occurred in past incidents. There are examples of good and bad practice in police handling of fire fatalities and good practice should be rolled out;
- There should be a review of the effectiveness of Coroners’ Rule 43 letters and their limited take up by some fire brigades. Such a review may wish to consider better means to roll out recommendations and monitor their uptake.

ROLE OF THE HEALTH AND SAFETY REGULATOR AND ENFORCER: THE HSE

HSE has the primary and vital role in investigating work-related fatalities and other serious incidents across Great Britain. However, the HSE has not itself instituted any legal proceedings following the investigation of fatalities to firefighters between 2002/03 and 2012/13. Although HSE has investigated such incidents, they have done so in conjunction with the police “who have retained primacy in these cases”. Any resulting prosecution action was therefore decided by the Crown Prosecution Service (CPS) in England and Wales or the Crown Office and Procurator Fiscal Service (COPFS) in Scotland” (HSE Correspondence FOI request – 2013110278. 27th January 2014).

HSE could prosecute employers for other offences under health and safety legislation and have issued enforcement notices in the past to fire services. Certain data are collected by HSE across the three nations relating to such events and published by the HSE Statistics staff. There is, however, a lack of transparency with regard to accessing some of these data. Reports on firefighter fatalities do not appear to be automatically within the public domain. In some instances, this is unavoidable and relates to court proceedings, but in many cases, there seems to be no good reason for secrecy. Indeed, the need to rapidly learn the lesson of firefighter fatalities should require such access to be rapid and full.

The resources and staffing of HSE have been steadily eroded over several years and its capacity to carry out active inspections and support prosecutions has been significantly weakened across the UK (Watterson and O’Neill 2012). Their reduced geographical presence also has an impact and may be especially important in rural and remote areas.

“I courted a good relationship with my local HSE and so I spent a lot of time knocking on their door and dropping in for coffee. The difficulty these days is they are not there and the office is empty or even has been sold off. So they are working out of some office building in the middle of town rather than having their own office”. ff8.

The heavily-cut HSE has a nationally reduced role in UK occupational health and safety regulation, inspection and enforcement. Its oversight of health and safety in the fire services also appears to be diminished and remains opaque. Dissemination of investigations of fatal firefighter incidents and related matters drawing out wider national implications is poor especially when contrasted with the 1990s and does not compare with best international practice.

“Personally part of the problem is also the watering down of any enforcement body such as the HSE. So the HSE these days appear to only criticise or give observations for breaches. Whereas previously they would have issued improvement notices and enforcement action and actually given that either to the firefighter or the Chief Fire Officer or Prime Minister or even the Secretary for the Department of Local Government. But these days they just get flimsy notice saying “your Service needs to improve” and nobody seems to be taking any responsibly for failure”. ff8.

The tripartite functioning of HSE on fire safety is also obscure. There are strong arguments for a dedicated and properly resources HSE group dealing with fatalities, injuries, near misses and the occupational health of emergency workers including firefighters. The current HSE emergency services section appears to lack the staff, resources and time to perform such a function. With regard to the fire service as a whole, a HSE consolidated report exists on only eight inspections of FRSs conducted in 2009/10 and published in 2010. The report also considered HSE’s own operational work with FRSs and with various stakeholders. It is unclear what other work has been done by HSE on firefighter health and safety since 2010 as there are apparently no other published reports beyond the one for the London Fire Brigade.

The views of the firefighter interviewed about the HSE were mixed. Some thought they were useful and other considered they lack rigour.

“To be fair to them to start with they are understaffed and they haven’t got enough staff to do what they would like to do and therefore the role they play is they only investigate after fatalities and serious injuries. They only very infrequently come into Fire and Rescue Services to carry out audits and when they do they are generally useful. I must admit I do read some of their reports that they have done and find them a little bit too forgiving and a little bit too believing of what they are told by Chief Fire Officers but at least they are independent”. ff7.

“Well, we’ve got no real experience of the HSE investigating any near misses in the Fire and Rescue Service. Mostly the response we get at local level when these are reported ... is “well that’s being dealt with in the Fire Service” and “OK, well we’ll note that for future”. It’s very difficult and I think that the HSE resources have been squeezed so much that we are not the most dangerous for the environment. Following the firefighter fatalities between 2004 and 2008, I was involved in sort of campaigning to get that (HSE cross-brigade investigation. We were saying to them “right look, you know, this is pre 2000 and post 2004 and these changes are happening and this is what’s going on and you need to look at this. We eventually convinced them that they should go and do these, this group of inspections. My feeling at that time was that they would have liked if they had had the resources to look at more and to do more work but they just didn’t have the resources”. ff6.

The HSE has a web site on fire services covering resources, statistics, reports and publications but it provides no specific reports there on fatality investigations. The topic does not appear to be a priority. Yet the HSE did fund a research project on managing sickness attendance within the fire service that should have been a much lower priority than preventing fatalities, injuries and occupational diseases. The 2010 consolidated report of inspections is on the web.

Numerous specific problems therefore emerge with HSE. For example valuable HSL work on firework explosives prior to the Marlie Farm fatalities in 2006 could have been circulated more widely. HSE could have checked that county FRs had made it available to firefighters. A more recent request to HSE for information about firefighter fatalities illustrates the problem (November 2013). The HSE region covering Bethnal Green, London and Harrow Court, Herts was unable to identify the firefighter fatalities in these two places in their information systems based on year and place of fire.

HSE have produced some useful guidance on a range of acts, regulations and codes that relate in general terms to health and safety of firefighters. The 1999 2nd edition of the Guide to Reducing Error and Influencing Behaviour (HSG 48) has some relevance to FRs and to the incidents discussed in this report. It specifically addresses the need to design workplaces for people which is important in terms of the conditions on firegrounds that firefighters may encounter. Even more important for the job of firefighting is the emphasis on risk assessments and managing influences for example with regard to shift work and fatigue which links to heat stress and workload on the fireground.

Human factors, briefly mentioned earlier in the report, are often identified by employers and psychologists as key causes of fatalities and can lead to a neglect of structural and management causes of injuries and fatalities at work. The HSE defines human factors as those that: 'refer to environmental, organisational and job factors, and human and individual characteristics which influence behaviour at work in a way which can affect health and safety'. Human factors fall into three aspects: the job, the individual and the organisation. Each factor has an impact on people's health and safety-related behaviour. In 1989 the Health and Safety Executive published HSG 48 'Reducing Error and Influencing Behaviour' (current edition 2009) stressing most 'accidents' (sic) were due to human error.

HSG 48 in 2009 noted: "Many accidents are blamed on the actions or omissions of an individual who was directly involved in operational or maintenance work. This typical but short-sighted response ignores the fundamental failures which led to the accident. These are usually rooted deeper in the organisation's design, management and decision-making functions. Over the last 20 years we have learnt much more about the origins of human failure. We can now challenge the commonly held belief that incidents and accidents are the result of a 'human error' by a worker in the 'front line'.

Attributing incidents to 'human error' has often been seen as a sufficient explanation in itself and something which is beyond the control of managers. This view is no longer acceptable to society as a whole. Organisations must recognise that they need to consider human factors as a distinct element which must be recognised, assessed and managed effectively in order to control risks".

HSE uses a variety of legislative, technical, advisory and policy documents to assess the work of FRSs and, since the Bethnal Green fire of 2004, for example has drawn heavily in its inspections of FRSs on HSE HSG65 'Successful Health and Safety Management' (HSE. The Management of Health and Safety at the London Fire Brigade: Report of the Inspection by HSE. August-December 2010). This report, far more useful than the consolidated generic report the HSE produced, concentrated on training and competence of firefighters, breathing apparatus and related procedures, compartment training, incident command and control competence, and risk critical information provision to inform decision-making. Consultation on health and safety matters between the FRS senior management and the FBU was noted by HSE to be disputed and problematic and HSE further noted that there was a perception at station level that the flow of information up and down the brigade was inadequate especially with regard to line managers' suggestions for improvement that included more effective line rescue training developing skills to use electronic information.

Most significantly HSE found that the firefighters they interviewed during the course of this inspection "were not generally aware of the issues and learning points that arose from the fatal fire in Bethnal Green Rd" though they were aware that water management and ventilation training had been emphasised since the incident along with weight of attack and use of 45mm main jets in basement fires (p7:paragraphs 40 and 41). There were also deficiencies with regard to training trainers for crew managers already in post for two or more years and firefighters, supervisory officers and some managers had additional concerns about the quality of some training in terms of length of time wearing BA and simulated conditions. And HSE found that watch and crew managers had concerns about assessing BA competence of firefighters when they might have less knowledge and experience and wear BA less frequently than the firefighters they assessed (pages 9-10:paragraph 56).

Further points were raised about the eighteen firefighters in 2010 who had not undergone initial real fire training and about the apparent lack of experience of heat in training chambers and too familiar environments used in 'internal training areas when search training was conducted. In the light of the Atherstone fire in 2007, this is surprising. That such issues and deficiencies should still have occurred 6 years after the Bethnal Green fire raises some important questions about how the LFB was being run in terms of policies and practices and how it prioritised firefighter safety.

The HSE support for a review of BA/real fire training that was under way in LFB in 2010 appears somewhat belated when the UK firefighter fatalities at fires in 2003, 2004, 2005, 2006, 2007 and 2009.

Even issues of rapid deployment were still problematic in LFB in 2010 and fourteen years after the Blaina fatalities, evidence existed of informal means of rapid deployment where a second appliance was not present to establish Stage 1 procedure before deploying BA wearers. These issues could be further compounded by the findings of the HSE inspectors that there was some confusion about the role of incident commanders and the BAECO in briefing and debriefing BA wearers at incidents. In the light of events surrounding firefighter fatalities at fires between 2003 and 2009, this was a matter of significant concern and HSE specifically highlighted 'the lack of accurate and up-to-date information' as a failure in the Bethnal Green Rd incident (page 15: paragraph 94). They omit to mention that similar problems had emerged beyond London in 2005, 2007 and 2009.

The Buncefield Incident of 2005 resulted in no firefighter fatalities but could have proved catastrophic to all emergency service workers. When investigated by HSE with regard to COMAH, it drew almost no direct and specific discussion of or references to firefighter health and safety (HSE. The Buncefield Incident 11 December 2005. The final report of the Major Incident Investigation Board Volume 1 and Volume 2a and b. 2007/2008).

HSE has played an important role in developing policies and high level actions on firefighter safety based on their understanding of the 1974 Health and Safety at Work etc Act. Firefighters protect public safety in hazardous situations such as fires by necessarily putting themselves at different degrees of risk. HSE produced a document in 2010, after discussion with and general agreement from employers and trade unions involved on "Striking the Balance between operational and health and safety duties in the Fire and Rescue Services".

This document in parts confuses the employers' role with the employees. HSE "recognises that firefighters and managers face difficult moral dilemmas and have to make decisions in what are sometimes extremely hazardous, emotionally charged and fast moving situations". Problems emerge in working out what is meant by a culture that is 'sensible, proportionate and thought-through'.

How this is to be implemented and by whom remains unclear. Similar problems apply when working out how exactly good health and safety management systems can 'enable staff to take appropriate care for their own, their colleagues' and the public's health and safety'; and how it is possible to assess fire service actions with regard to health and safety management systems, procedures and incidents.

Some firefighters thought the 'Striking the Balance between operational and H&S duties in the Fire and Rescue Services' documents had had little impact among fire crews:-

" I can see that and I can see what its intentions are but ask a firefighter at a Station what Striking the Balance is and they won't have a clue. They won't be able to point to anything that has come as a result of striking the balance being published. So it's recognised and I think that it should make Services think again but I'm not convinced that it has"? ff3.

Others felt the policy did not work particularly well because of the weight still given to DRAs.

"People were aware it. (Firefighting) was a sort of dirty and dangerous job and that, for me it still drives the responsibility down to this kind of safe person concept. So, you have an individual who is responsible for their own safety and I think that in some ways they will be criticised if they do and criticised if they don't. I mean you take the classic of Police Officers either being prepared or not prepared to jump into fast moving water to save a child. You know, they will be criticised, if they don't jump in. If they do jump in they are probably going to drown. So where is the balance in that? Well the balance is they die a hero. So, I think that the danger of that sort of striking the balance was that continued reliance on dynamic risk assessment, safe person and taking the responsibility away from the organisation to make sure their workers are safe and behave safely". ff6.

The HSE document, 'Heroism in the fire and rescue service' (HSE nd), issued in 2013 states "It is also important to recognise that firefighters should not be expected to put themselves at unreasonable risk, even in the face of sometimes unrealistic public expectations".

It further adds that: "HSE views the actions of firefighters as truly heroic when it is clear that they have decided to act entirely of their own volition in putting themselves at risk to protect the public or colleagues and there have been no orders or other directions from senior officers to do so and when their actions have not put other firefighters at similar high risk". Perversely it then provides a case study of the Atherstone fire where there was no risk to the public and notes that "the team of four firefighters made their decisions based on their comprehensive training" and further that all (the four dead firefighters) were "fully aware of the risks and agreed on their actions without instruction or pressure from officers". If training was comprehensive and the four firefighters were fully 'risk aware' it is difficult to understand how the fatalities occurred.

Some of the firefighters interviewed had a different analysis of these HSE documents and how the HSE explained firefighter fatalities.

One noted:-

“We are probably talking about different things then because you are suggesting that that HSE document says you can do something to save saveable life without fear of prosecution on the basis that all the processes and procedures are in place. Well I know that they are not in place and that’s why I think that that’s a damaging publication. But for me the HSE came out with a document about Heroism in the Fire Service that gives people, puts the moral pressure on people to do something outside the procedures and if they don’t have the right crews”. ff2.

And another observed:-

“What it’s for (Heroism in the Fire Service). It’s for the Police Officer who decides to chase a burglar across the roof of a warehouse and on their own they can decide to put themselves in that situation and be a hero or not. Firefighters do not do that, firefighters never act alone so how can a firefighter carry out an act of individual heroism when they always wear breathing apparatus in pairs. If a Policeman falls through the roof of a factor and breaks his leg well the ambulance service will just come and take him to hospital. If a firefighter falls through the floor of a burning house, other firefighters have got to go into that burning house to rescue them so everything you do puts somebody else at risk in the Fire Service. As a result it’s completely meaningless to the Fire Service”. ff7.

And yet another felt that:-

“The more dangerous your workplace the more controlled it needs to be. I think one of the things that has happened over the last few years is we’ve gone away from this idea that used to be called practical firemanship. It was, because you had, it was very practical, it was sensible things and you did things like building construction. Now some of these properties that we’ve had discussions about today if a fire breaks out in them you are not saving nothing. What you are going to do is going to save that property because they are designed to be thrown up quickly and there is nothing really. There is no intrinsic structure to them. It’s sheets of metal and once that melts and collapses. That’s it gone. So how much are you going to commit to the prospect of something? I mean we maybe know that most business that have a fire don’t reopen. So are you going to commit crews into that knowing that the chances are that if it’s jobs those jobs are gone and if its that’s business that business has gone? Is that worth a firefighter? I would say absolutely never. If there is somebody in that building and you think that there is somebody in that then how far do you go? I think if you spoke to most firefighters they would go as far as they thought they could possibly go that’s humanly possible to go to save that life. How do we deal with that? How do we manage that? I think we’ve got to get people back to thinking about it in a very practical sensible way and not just sitting listening to, you know, modules of input and modules of text and ticking boxes because they’ve completed this”. ff1.

Better surveillance by HSE of FRSs post 2004 could have ensured that recurrent failures of FRSs pre-fires, during fires and post-fires were addressed.

The views of firefighters about HSE vary from one part of the country to another and from one incident to another. When fatalities occurred, the firefighters found the HSE to be supportive in some areas and not in others. Prior to one fatality, the FBU had invited HSE in to look at their brigade:

“So we asked HSE to come in and have a look at that and they did and they came in and we sat and talked to them and they went and sat down and spoke to the Service. Their response was disappointing from our point of view because as I said they took everything that the Service said on face value and said “they’ve told us that that they have this, this, this and this and so we content that they’ve got that and so we are not going to do anything, we are not going to take any action”. ff2.

Another firefighter involved with the HSE after a fatality observed:-

“I mean the information I gained from our relationship with the HSE Inspectors was that they don’t necessarily produce reports”. ff3

Recommendations

- HSE should ensure there are sufficient staff and resources available to oversee the work of the fire services properly with regard to the health and safety of firefighters;
- HSE should review its current guidance and reports on firefighter health and safety;
- Data indicate that enforcement action by HSE is very limited, although quite possible, in the light of serious health and safety breaches by brigades. HSE should review its enforcement policy in the light of recent employer failures to safeguard firefighters. It is unlikely that governments will introduce new or more stringent laws on fire safety in the near future but HSE should enforce existing laws better;
- HSE should set up a new and regular inspection programme of FRSs to check that the findings of previous fatality reports and other evidence of hazards to firefighters – safety and health - are being fully implemented across the UK. This should be planned and extend beyond a simple paper and tick box exercise;
- HSE should provide clear and publicly available (not informal) guidance to employers and employees on the priority that should be given to firefighter health and safety by employers;

- HSE reports on firefighter fatalities should be made available as fully, quickly and publicly as possible along the US lines for all to benefit from the information and analyses provided;
- Future research by HSE should target major upstream threats and risks to firefighter health and safety and not marginal human resource topics;
- HSE should draw on the extensive documentation of firefighter fatalities that it has on file to extend and improve its advice to UK FRSs. Currently HSE does not appear to have a coherent picture of the key elements causing fatalities but only a fragmented view.

ROLE OF PROFESSIONAL ASSOCIATIONS, BODIES AND TRADE UNIONS

The Chief Fire Officers Association (CFOA)

CFOA has produced a wide range of circulars and position papers and worked closely with bodies such as the LGA to look at operational assessment of FRSs across the UK... Relatively few of the circulars between 2009 and 2013 dealt directly with firefighter health and safety although some address issues surrounding for example fire precautions at explosives sites, labelling of acetylene cylinders and BA telemetry. One position statement between 2010 and 2013, a period in which four English and Scottish firefighters died in fires, addressed firefighter health and safety directly linked to HSE policy statements and noted “there is still some further clarity required regarding the expectation placed on employers by the Health & Safety at Work Act balanced against the operational reality of the FRS which needs to be fully recognised and understood” (CFOA Position statement. Firefighter Health and Safety (March 2013).

In 2007, following the Atherstone fire of that year, CFOA called for both proper fire suppression systems in commercial buildings and a review of how sprinklers are used in buildings. In 2011 they produced a position statement on the ‘operational doctrine’ that applied to England, Wales and Northern Ireland but not Scotland. The doctrine provided a framework for ensuring the health and safety of firefighters in operational situations and was supposedly “underpinned by the safe person concept which seeks to control operational risks through equipment (including information), safe practices and competent people”.

The development of standards, facilities, equipment, training and SOPs (whether developed/delivered at a national, regional or local level) were regarded as integral components of operational doctrine but assessing the application and effectiveness of SOPs across a range of very different FRSs is a huge undertaking. The doctrine relates to operational rather than generic employer duties. There is much debate about how such an approach tackles systems and management failures and how it addresses issues of resources and threats from the physical environment. The doctrine was floated before the Shirley Towers and Manchester fatalities of 2010 and 2013: the former raised major questions about structures, materials, training and risk assessment.

However, some English regions have begun to tackle the problem of diverse SOPs themselves: for example in the South East of England and these efforts are viewed positively by some FBU members.

“When the fire controls were going to regionalise the Fire Services in the South East of England it’s all under consortium and they said if we are going to have one common control then we should have common procedures so that our control operators always know what they are talking about to whichever, so whichever Brigade they are talking to they are using the same sort of terminology. So they started developing common operational procedures but even when the regional controls project died those Brigades carried on. They’ve grown into this consortium and it now covers about half of England and what they are doing is they are writing practical operational guidance for Fire and Rescue Services in their consortium. I went down to visit them at their headquarters which is still in Surrey a couple of weeks ago. I was pretty impressed with what they were doing because they were looking at, they were not only writing tick box lists to do with fires which I’m not a big fan of but what they were talking about was information sharing. So there would be attached to this guide there would be information about fires in agricultural buildings. So there would be an information sheet that you could read and learn from about chemical about agrochemicals and how they burn and whether or not they can detonate. If anybody who is a member of the consortium goes to a fire that was particularly big and there was learning. They can write it up on a pro forma, send it off to the consortium and it gets circulated round all the brigades so everybody can say “well that’s interesting, you know I ought to do things differently”. Fire Brigades and middle managers doing good work rather than somebody at the top of the Fire Service saying “we need to do this, we need to work together”ff7.

Resources and their use are critical elements to protect firefighter safety and the difference between policy statements, established procedures and SOPs can be significant. With some of the firefighter fatalities described in this report, having and deploying the right resources at the right time and for the right fire locations/incidents affected outcomes.

“A lot of the mind-set is to put the fire out with the least amount of resources where there seems to be something in it that we almost train in this culture that if I make pumps four I’m going to get criticised by my peers, if I make pumps six I’m going to get criticised by my peers, you know. We had, we had one individual I remember and he used to make up quite deliberately for incident command which is exactly what you are supposed to do he needed a second commander and he made up and got another pump and he got pelters from his colleagues. “What are you turning us out to this”? but we’ve got that mind-set is. I’m not suggesting that that went through the individuals mind it’s just I think it’s subconscious I’ve got enough here I’ll manage”. ff1.

The CFOA saw operational procedures as only part of risk control measures and were clear that the Fire Minister should retain responsibility for the Strategic Risk Assessment that defines the role of fire and rescue services and that generic risk assessments are also the responsibility of the Fire Minister, examples include compartment fires and liquid fuel fires. These areas were critical to some of the firefighter fatalities. CFOA also considered that the Chief Fire and Rescue Advisors Unit (CFRAU) should advise the Minister on strategic risks and should support the generic and specific assessment to manage the hazard. It is unclear what role the CFRAU had and has and how effective it is although such a body should be critical, through information, advice and analysis, to preventing future firefighter fatalities. A number of firefighters thought that the Unit was under-staffed and concerned primarily with national resilience – especially dealing with terrorism and flooding and not with the more mundane fire and rescue service functions including firefighter health and safety.

The CFOA in conjunction with the Local Government Association in 2012 produced the Operational Assessment and Fire Peer Challenge toolkit based on earlier work in 2009 also with the Chief Fire and Rescue Adviser. The approach is based on self- assessment with ‘external peer challenge’, linked to IRMPs, and argues health and safety of FRS staff is a high priority. This is demonstrated in the document by a whole section with several pages on health and safety based on FRSs plans, policies, procedures, training and practices and their evaluation linked in advanced FRSs to effective data and information systems and competent staff who reduce risks. If such a toolkit ensured effective operations, then many of the problems identified in the fatality at fires incidents would be remedied but there are two major concerns: (1) to what extent is the paper exercise able to demonstrate effective practice and (2) if the process relies heavily on IRMPs, the absence of occupational health and safety from so many of these do not bode well for effective action.

In 2013, the CFOA produced guidance on dealing with ‘Death in the Workplace’ that consolidated a good deal of information on methods of investigating fatalities as well as the role of various agencies although much of the legal information in terms of investigation would not apply to Scotland. A number of sections have some relevance to this report. The investigation section indicates what might be covered and includes “history and previous near misses or incidents -consider national events” (p25). If all fatality reports had done this and several do not, the lessons from the firefighter fatalities might have been picked up much earlier and applied to prevent such events in the future. Details are also provided about Rule 43 decisions in English corners’ courts (p31). Again, the fatal incidents section of this report indicates mechanisms for ensuring national action on recommendations and a better recognition by coroners of when it would be useful to issue a Rule 43 – currently it is under-used – would be helpful.

It would be appropriate and timely if the CFOA could now produce a report on what national and general lessons can be learnt from the recent spate of firefighters' deaths – both fatal incidents and deaths due to occupational diseases – to prevent future deaths. This should perhaps have preceded the report on dealing with firefighter deaths in the workplace. This is especially the case as 'Death in the Workplace' makes the following observation in its introduction that: "a death in the workplace is caused by a series of events, actions or inactions that, occurring in sequence, result in a tragic outcome. As such, it is rarely foreseen and almost never prepared for" (p4).

What the fatal incidents analysed earlier, however, establish is that the effects of a lack of information (about sites and buildings), planning, people, training, equipment, risk assessment and risk management can be fatal, can be foreseen and can often be prevented if prepared for properly. Highlighting processes to ensure preventive actions are taken as early as possible and communicated as widely as possible would be a useful addition to this CFOA guide.

One CFOA member, the Deputy Chief Fire Officer for Essex, has argued that reducing firefighter deaths is linked to integrating health and safety fully into firefighting policy and practice (Jones 2008). He found the 'number of structural fires in the UK has fallen significantly in the last 10 years but, notably the number of deaths of firefighters (although statistically small) has not tracked that decrease' (p6) and argues for better use of near miss statistics. Unlike many analysts, he considers the UK has progressed on occupational health and safety when evidence shows budgets, resources and staff have been cut and occupational disease prevention neglected. He stresses the value of the safe person concept for firefighters but rightly links it to organisational responsibility as well as personal responsibility. The safe person concept does not explain many of the fatal incidents discussed in this report but organisational failures do. Jones views "advocating tactics that present more caution and take cognisance that new building types may dictate new techniques is valuable" (p9). Again this would be supported by evidence available in several of the incidents.

On 1st October 2011 HSE was one of eight official signatories to the national Work-Related Death Protocol (WRDP). The Protocol was agreed with HSE, the Association of Chief Police Officers, the British Transport Police, the Local Government Association, the Welsh Local Government Association, the Crown Prosecution Service, the Office of Rail Regulation, the Maritime and Coastguard Agency and the Chief Fire Officers Association. The Protocol sets out the principles for effective liaison between all interested parties in relation to work-related deaths in England and Wales. In particular it deals with incidents where, following a death, evidence indicates that a serious criminal offence (other than a health and safety offence) may have been committed.

It addresses issues concerning general liaison and is not intended to cover operational practices of the signatory agencies. The protocol drew on certain underlying principles: “an appropriate decision concerning prosecution will be made based on a sound investigation of the circumstances surrounding the work-related deaths; the police will conduct an investigation where there is an indication of the commission of a serious criminal offence (other than a health and safety offence) and the relevant enforcing authority will investigate health and safety offences. There will usually be a joint investigation, but on the rare occasions when this is not appropriate there will still be liaison and co-operation between the investigating parties; the decision to prosecute will be co-ordinated and made without undue delay; the bereaved and witnesses will be kept suitably informed; and the parties to the Protocol will maintain effective mechanisms for liaison”. It is too early to judge how the protocol is working and whether it will affect prosecutions relating to fire fatalities, other than arson, where health and safety is involved.

Recommendations

- The CFOA in conjunction with LGA etc should produce a public annual report on firefighter fatalities, injuries and near misses and actions that had been taken across all FRSs to improve firefighter safety documenting any good practice;
- This could be based on consolidating information that would always be included in an improved IRMP for each FRS and should include a commentary on any fatal incidents that have occurred in the year.

ROLE OF THE FIRE BRIGADES UNION (FBU)

The union that represents the majority of firefighters, whole time and retained, has significant resources and a number of staff working on firefighter health and safety issues across the UK and at both national, regional and brigade level. It has researched the question of firefighter fatalities over many years including funding the 2008 Report with LRD on this topic. Currently it is running a firefighter fatality campaign and makes available a wide range of related publications, circulars and news briefings on its web pages including some very detailed reports on particular incidents. These incident reports cover most but not all the fatalities discussed here. They repeatedly identified common failings in the incidents, many of which remain to be fully addressed in 2014. Whilst there may be a host of common factors in fires, the very specific nature of the recurrent problems identified in the firefighter fatalities reports are the ones that cause alarm.

These include problems discussed above with the national framework, IRMPs, Risk information, disclosure and updates, training on incidents and refreshers and updates, 'real' fires and use of equipment, communication and procedural issues especially standard operating procedures, Incident Command and Control Systems, Dynamic Risk Assessment, Breathing Apparatus (BA) and water supplies. Other topics that emerged were, operations and fire development and firefighting actions, accident reporting and recording and even some wider fire safety matters linked to building materials and alarm systems and fire assessments of particular buildings in particular areas (FBU Findings of the Investigation into the Bethnal Green Fire 2004; FBU Atherstone Fatal Accident Report 2007:p24; (Fire Brigades Union Executive summary on the Harrow Court Fire 2005). In several incidents, there were also problems for FBU investigators because employers failed to co-operate with safety representatives under the relevant regulations.

The union has been examining IRMPs and publishes guides to the process on the web. Their analysis is that IRMPs are flawed and often do not contribute appropriately to improving firefighter safety. Unusually for a trade union, it produces a substantial and detailed Guidance on Serious Accident Investigation (nd) for its safety representatives, which is well received by several members interviewed, who may have to deal with researching firefighter fatalities at fires. This guide has helped to shape several firefighter fatality incident reports on some of the incidents reviewed in the earlier section. These reports look at immediate causes including premises, materials, procedures and people and underlying causes such as planning failures, problems with risk assessment, organisational issues, monitoring and review. They may also include sequence of events and causal analyses along with fault tree analysis.

The guidance probably explains why the FBU pays particular attention to pre-fire factors and is so concerned about monitoring post-fire actions across the UK to ensure lessons have been learnt.

The guide compares favourably with the Investigation Manual first issued in 1997 and revised in 2010 that examines similar subjects and contains lengthy sections on preparation and planning and interviewing witnesses. The FBU guide is more practical and user –friendly with a tool kit and may be supplemented in the future by a bespoke education course designed by the TUC and FBU.

In addition, this report contains firefighter observations on a range of problems that contributed to firefighter fatalities at fires. Under the Management of Health and Safety at Work Regulations 1999 (Regulation 14 (2)), the following applies. 'Every employee shall inform his employer or any other employee that employer with specific responsibility for the health and safety of his fellow employees (a) of any work situation which a person with the first mentioned employee's training and instruction would reasonably consider represented a serious and immediate danger to health and safety'. And (b) 'of any matter which a person with the first mentioned employee's training and instruction would reasonably consider represented a shortcoming in the employer's protection arrangements for health and safety'. How the courts, HSE and FRSs view these regulations has not been fully clarified but the FBU members continue to point out failing in risk assessments and such things as training following fatalities.

There are challenges too for the FBU in dealing with firefighter fatalities partly due to the same legal constraints after incidents that apply to other. Fatalities are investigated at a brigade level and will come under the auspices of different FBU officials. It appears that the papers relating to the incidents are then kept by each national officer. A consolidated data base for fatalities, serious injuries and near misses within FBU national office would be of value, if it does not already exist, to draw out all the relevant regional and national findings from such events as speedily as possible. It may be that the legal department already has a similar data base?

Some of the firefighters considered the FBUs investigation handbook as a good starting point for dealing with serious incidents - 'very good for minor events and injuries' - but were aware from their own experiences that investigating a firefighter fatality was a huge undertaking and challenge.

"Because of the enormity of a fatality and all of the complexities of that and the different agencies that are involved it's just a starting point. You are just overwhelmed with information and people. We tend to burn out our lay officials just because the stress and I don't know the emotions and all the rest of it". ff8.

The FBU has done more than most unions to support their representatives in such situations, set up teams, and obtain training, support and information for them but the task remains daunting and the personal toll often very great. These are incidental but can be powerful negative impacts of deaths at fires on firefighter investigator wellbeing and health. Governments and brigades should do even more to try and prevent near misses, serious injuries and deaths at fires.

Recommendations

- If it does not already exist and can be created relatively easily and cheaply, a centralised FBU data base for all firefighter fatalities, injuries and near misses (and perhaps reported occupational diseases) could usefully be established. If HSE, CFRA, DCLG and FRSs improve their data bases, this should make the FBU task of compiling such a data base much easier. It may also be able to draw on FBU members' own reports of injuries and near misses which will act as a useful check on the accuracy of the official statistics;
- There is some merit in extending further the training and support for those FBU members conducting fatality investigations with a view to building up capacity in the number of reps able to conduct investigations in each region;
- There may be some benefit to be gained from extending links with European as well North American and Australia firefighter unions and exploring further how these unions and countries compare with the UK in terms of resources and procedures available on firefighter health and safety.

OTHER BODIES THAT MAY IMPACT UPON PREVENTION OF FIREFIGHTER FATALITIES

Bodies such as the Fire Officers Association, the Fire Protection Association the smaller trade unions and professional organisations like the Institute of Fire Engineers may produce opinions on and analysis of fatal firefighter incidents. The Fire Service College, sold off by the Government, has a role to play in training and in the past was an important and influential research and advisory body on firefighter safety. It looks unlikely to have such an influential role in the future. Architects and builders are also clearly groups that influence fire safety by their actions.

The role of insurance companies, bodies such as the Fire Industry Association and commercial health, safety and fire consultants may be significant but again has been under-researched. Insurance companies play a part in setting and checking fire prevention and aspects of fire safety and clearly influence actions of property owners and businesses. They will also insure FRSs. It is in their own interest that fires are prevented and the effects of fires on property are minimised. What is of greater concern is that the Adam Smith Institute and other think tanks are advocating a much bigger role for insurance companies in occupational health and safety inspections and private inspection and regulation as a replacement for state regulation has not worked in the USA?

Consultants, if competent, should have a similar effect especially for SMEs but if poor may be a factor in some fires. Two of the incidents explored earlier involve SMEs and it may be worth exploring what the insurance companies and any advisors did in setting standards and auditing them.

THE INTERNATIONAL POSITION ON FIREFIGHTER DEATHS AT FIRES

Making comparisons between different countries on firefighter safety is difficult because of often major differences in staffing, equipment, procedures and policies. The USA has a poor record on firefighter fatalities or at least one that has not improved as rapidly as it was expected to. However, the USA does have better statistics and incident investigation procedures and what seems to be a better information dissemination system. There are also a number of US studies that have recently analysed fatalities in structure fires over the period 1977 and 2009 and major efforts are being made to reduce such fatalities (Fahy 2010). Since 1977, annual US firefighter deaths have dropped by almost two thirds and the annual number of fires in such structures has dropped by 53%. The two trends track fairly closely. The major US cause of fatalities in fires was becoming lost in buildings, structural collapse and fire progression that included explosion, flash over and back draught: similar to several of the UK fatalities described in this report.

The US Government's National Institute of Occupational Safety and Health (NIOSH) investigate all notified firefighter fatalities and now has a data base on such incidents. These provide the means for a broader analysis and researchers regard NIOSH as the key to effective prevention (Hodous et al 2004). Reports of all completed NIOSH investigations are made available on the NIOSH web site. The UK lacks this data base and transparency with regard to making reports available and HSE does not appear to be taking the same active role as NIOSH. The US further identified patterns of construction collapses in fires and questions around training. They stressed a systems approach where all elements of safety needed to come together to be effective (Fahy et al 2010; Estes et al 2011). Such an approach does not concentrate solely or mainly on human error in preventing firefighter fatalities but does require both access to a population-based source of data on firefighter injuries to establish injury characteristics and a 'case-based surveillance system to work out detailed prevention recommendations (Estes et al 2011).

The UK may have the former system although in its current form it is not publicly accessible but it does not have the latter system in place, as the Rule 43 mechanism is very limited in scope and application, just haphazard reports on particular fatalities.

In 2011, a detailed and methodologically rigorous US analysis was conducted of 189 firefighter line of duty deaths drawing on the NIOSH data base for the years 2004 to 2009. NIOSH it should be noted carries out voluntary investigations and does not investigate all fatalities. The US researchers included firefighter deaths at fires in their study which led to a series of recommendations using a fishbone analysis informed by root cause techniques (Kunadharaju et al 2011) (see appendix). The four high order causes of fatalities identified were under-resourcing, inadequate preparation for/anticipation of adverse events during operations, incomplete adoption of incident command and control procedures, and sub-optimal personnel readiness. They were primarily concerned with non-external recommendations.

The role of what might be termed the 'wider environment' is identified but not as a principal focus of the paper and there may be some significant differences as well as similarities between countries in terms of key perceived factors in firefighter fatalities at fires cited in NIOSH reports. For example, recommendations for pre-incident planning and building inspection to aid the development of safe fireground strategies and tactics were cited only 9 times in the 189 fatality reports scrutinised in the US but this could be viewed as a factor in all the UK incidents. In the US updated recommendations on risk assessments by the incident commander were mentioned only 18 times but this could be viewed as factors in all the UK incidents. The US study also probably weights 'cultural' influences and factors in fatalities much more strongly than some researchers and trade unions would do in the UK. The US researchers' recognised that both preparative and operational measures could come together in different ways in incidents but the UK incidents show 'external' factors are critically important in influencing both these elements prior to and during a fire. The US study recognises that external entities and organisations can influence key operational components but whilst these are built into their fishbone incident analysis, this is not the major thrust of their research. What we would view as external factors are also sometimes included within the US fishbone under personnel (staffing) and equipment headings.

In Sweden, firefighters explain their lower fatality rates, in a country where most fires are small fires, as due to building construction where traditional materials are widely used and where nearly all apartments provide 60 minutes of protection before fire will spread to another unit, training and fitness. Also all interior crews always carry a hose line and everyone is required to have a radio and work in pairs (S Pieper. The Swedish perspective on safety. Firefighter Nation. 22nd April 2012).

The differences in crew levels and response times between fire services in Europe may be a factor in some incidents that lead to firefighter injuries. However, UK data are needed before this area can be explored further. The table below does show significant differences across Europe. The number of firefighters available to fight fires in itself is not necessarily a 'safety factor' – as the Atherstone fire illustrates - but insufficient numbers can be, linked to training, available equipment and deployment. France, Netherlands and parts of urban Denmark require six firefighters on pump water tenders and, although their response times for urban fires may be worse than in the UK, it seems likely that such staffing would have helped to avoid firefighter fatalities similar to those in Harrow Court in 2005.

Table 1 Differences in coordination of appliances/manning and response times in EU countries

Country	Required manning level for turnout of a turntable ladder	Required manning level for turnout of a pump water tender	Response time for a fire in urban areas
Belgium	2	From 4 to 6	Turnout within the minute by professionals. Response time 8 to 15 minutes for professionals, and 13 to 20 for volunteers
Croatia	2	4 or 5	15 minutes
Denmark	2	6 in Copenhagen, 4 in smaller towns like Roskilde	Turnout must be within the minute of call acceptance. Response time is 15 minutes
Estonia	2	4	5 minutes in urban areas
Finland	1	4	By region: between 6 and 20 minutes
France	2 or 3	From 6 to 8	Depends on the <i>département</i> . Examples: Ain: 20 minutes; Nord: 15 minutes*.
Germany	2 or 3	4 or 5	8 minutes
Italy	1 or 2	5	Depends on the territorial area but must never exceed 20 minutes. In 2009, the response time averaged 15 minutes in central Italy and 13 minutes in the north and south**.
Netherlands	2	6	8 to 10 minutes
Norway	1 in small municipalities, two in towns and cities	At least 3	Turn-out must be within the minute of call acceptance. Response time should be 10 minutes at most in high risk urban areas; 20 minutes in low risk urban areas; and 30 minutes in rural areas.
Slovakia	2 or 3	At least 5	8 minutes
Spain	2 or 3	5 or 6	Varies by region
Sweden	2	5	11 ^{1/2} minutes

*The prefects of départements tend to lengthen response times to avoid claims

** Ministero dell'Interno. Dipartimento dei Vigili del fuoco del Soccorso Pubblico e della Difesa civile (2009) Annuario statistico del corpo nazionale vigili del fuoco, Roma, p. 54 (Online).

Source: ETUI – EPSU survey 2010 -2011

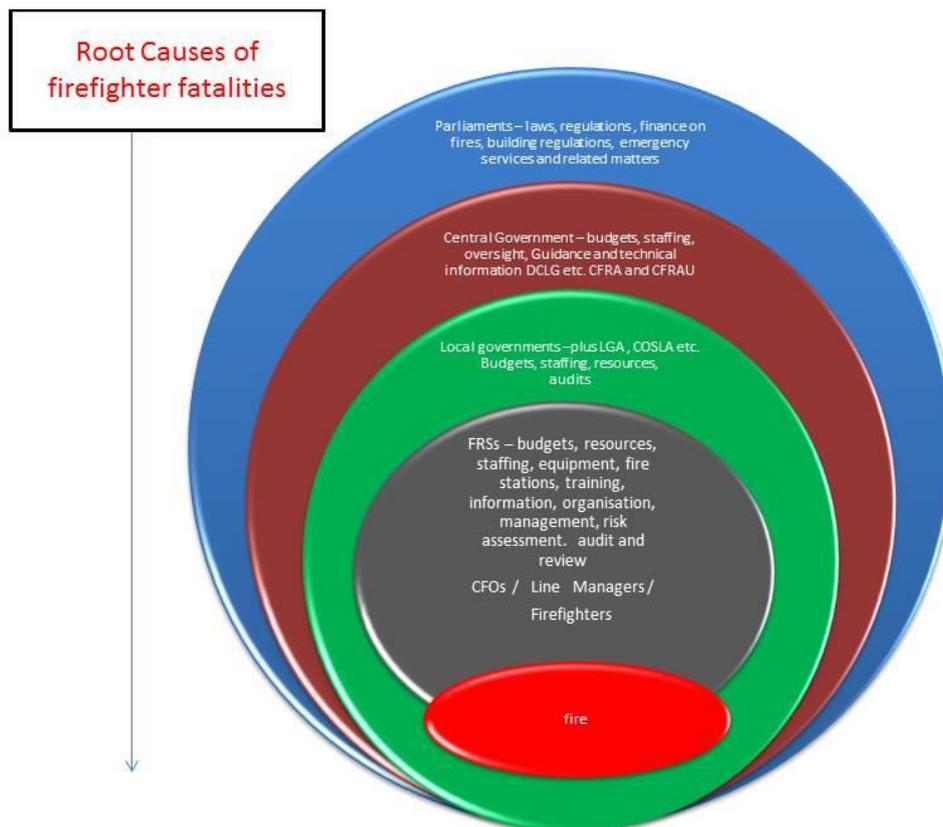
[Source: Scandella 2012. ETUI. P9.]

CONCLUSIONS

Unnecessary deaths happened in avoidable circumstances. Risks were sometimes taken to save property that should not have been. Risk assessment and risk management failed in some way and in some form all the fatalities described here. Lessons were not learnt that should have been. Deaths could and should have been prevented.

“We may risk our lives a lot, in a highly calculated manner, to protect saveable lives.
We may risk our lives a little, in a highly calculated manner, to protect saveable property.
We will not risk our lives at all for lives or property already lost”.
(Home Office 1998:11. Dynamic Management of Risk at Operational Incidents. Health and Safety – A Fire Service Guide)

The principal fires investigated within this report all too often identify the same underlying causes of firefighter fatalities even in very different settings as the fishbone analysis showed. The Venn diagram below provides another way of looking at the bigger picture across all the incidents. The root causes sometimes relate to failures of agencies beyond the control of FRSs, failures of government oversight and some major management failures within FRSs in the context of policies, procedures, practices, resources, staffing, training and so on.



The incident reports prepared by external bodies often identified effective solutions after painfully slow investigations, although sometimes missing institutional and policy causes that underlay the fatalities. All too frequently these solutions have not always been adopted or adopted fully and quickly enough. An analysis of brigade inspection and audit by internal and external bodies and regulation by external agencies indicates critical failures to ensure lessons were learnt from past firefighter at fire fatalities. Such bodies should ensure that effective defences in depth existed for firefighters in all brigades but they did not. Measures in place sometimes proved deficient for a variety of reason and failed to ensuring appropriate action by businesses, by local government and by regulators.

Firefighters themselves recognised many of the key failings that led to fatalities. Management and training were identified both in the literature produced by fire researchers and by several of the firefighters interviewed as a top issue with regard to the fatalities at fires.

“But that’s where it fails on a fundamental level because if the guidance is not there then the training is not there and then everything that supports that guidance fails”. ff2.

For some, this was connected to the time allotted to work tasks and the lack of prioritisation of elements of the firefighter’s job that directly affected their health and safety.

“it’s a bug bear of mine but I think we spend far too much time tippy tapping things into computers and not enough time learning and understanding - that practical side of things”. ff1.

And again:-

“I think maybe we need to have an emphasis on “OK, well how do we do things differently and safer”? Than saying “OK, well, you know, let’s improve the PPE and let’s get people to go into, you know, a deeper fire and...”. ff6.

“Well after Blaina, this is when brigade x started looking at the fire behaviour and they started doing fire behaviour training and flash over, backdraft and all that. Now that continued for a period of time and then fell by the wayside and it was back to the basic training which was supposed to be in accordance with the Fire Service Circular. That was two days every two years. Brigade x employed a one day every year which was sufficient but before the incident happened it was running at about between forty and sixty percent of the operational firefighters. They were getting breathing apparatus training at a central venue under controlled live fire conditions. So the training is absolutely crucial in preventing any further deaths”. ff2.

Incident command and control was another major concern linked to operational intelligence. The incidents in the report also reveal lethal failings by employers and businesses. What they do not reveal is a picture of over-regulation but the human costs to the firefighters, to the public and indeed to businesses of under-regulation.

Policy developments are often solely concerned with economic cases and frequently do not directly address the health and safety of firefighters or do so in the most superficial way. This gap between proposals about how fire services are run or should be run and the health, safety and wellbeing of those who will provide that service is a major cause for concern. Skewed cost benefit analyses can fail to assess the risks to those on the fireground – firefighters and public – and neglect detailed risk-benefit and hazard analyses. For example using more ‘on call firefighters’ may save income through reducing staffing budgets but it may also increase fatalities and injuries amongst on call and full-time firefighters as well as the public and could increase property damage: sophisticated tools for modelling and assessing such impacts do not appear to have been applied in most such proposals.

The economic costs of failed systems to achieve interoperability appear to have been written off whereas lesser costs to the services that may benefit health and safety appear to be highlighted. Crewing changes may also have positive or negative effects. Resources, staffing equipment, planning, training, management and supervision may be factors too in firefighter fatalities as the earlier sections of this report discuss.

The question of technology and its use is also relevant. Historically there is evidence that in industries like mining, technical advances led to both improved health and safety and diminished health and safety. Miners could exploit seams that were viewed as far too dangerous’ before without lamps and ventilation yet fatality rates rose exactly because they were in more hazardous environments thanks to the technology. Firefighters raised similar points whilst welcoming improved protective clothing and personal protective equipment – with mixed views about the value of TICs – they pointed out that fires now in the past would have been inaccessible. Analysis of fireground injuries, fatalities and near misses linked to the use of better equipment might prove fruitful and lead to new approaches?

Trying to ensure flexibility and local community responsiveness in frameworks may not sit well with effective responses to large fires across several FRS areas: the challenges of such efforts emerge with fires like the Atherstone warehouse and Buncefield. Nor may it necessarily work well with time and money spent on 'red tape' initiatives. For example the failed IT-based national Fire Control Projects apparently cost £82 million (House of Commons Public Accounts Committee minutes 13th May 2013) although efforts to produce common SOPs and interoperability should improve firefighter health and safety. A light Government touch on governance statements is not necessarily guaranteed to improve safety whilst trying to cut deficits and ensure resilience and its often under-researched or unknown consequences. Pooling too may not effectively meet any gaps identified especially in terms of staffing, resources and expertise (p14). Flexibility and resilience may not always compensate for staff and resources on the fireground and may have major health and safety implications for firefighters and the public.

In some areas such as the North West, the local and regional Fire Control project collaboration has been viewed by chief officers as a success in terms of improving firefighter safety. For example this project used: "a computer in a fire engine ...providing risk-critical information for firefighters entering dangerous buildings. Data can be transferred from the control centre to fire engines at the press of a button now, and it appears on a screen, rather than via a voice communication over the radio" (Paul Hancock Q 20 House of Commons Public Accounts Committee minutes 13th May 2013). Less enthusiasm has been shown for national systems.

The latest report on the fire service, 'Facing the Future: Findings from the review of efficiencies and operations in fire and rescue authorities in England' by Ken Knight in 2013 is again oriented towards cost savings and 'business cases' rather than health and safety (p29). Firefighter deaths and health and safety specifically are not mentioned at all and firefighter safety just once. Yet the report has major implications for firefighter health and safety and will or does indirectly impact on some of the recommendation relating to firefighter fatalities in the UK in the last ten years.

Whereas some CFOs have argued for integrating firefighter health and safety into all the fire service does, Knight's proposals effectively disaggregate it. There is no evidence-based consideration of the impact of the changes – for good or ill – or indeed any evidence provided, beyond a throw away comment that firefighters 'are much safer today' than they were (p12). Firefighter fatalities do not bear out this picture and nor would occupational ill-health figures. Efficiency and quality of service to the public are the only topics that are stressed.

Knight notes that “Firefighters themselves are also much safer today, even though they risk their lives to save the public” (p12) but does not explore the implications of his proposals on firefighter health and safety and the fatality figures over the last ten years are ignored. He observes that:” Deaths from fires in the home are at an all-time low; incidents have reduced by 40 per cent in the last decade, but expenditure and firefighter numbers remain broadly the same. This suggests that there is room for reconfiguration and efficiencies to better match the service to the current risk and response context” (p7). However, firefighter deaths in structural fires remain significant and have not dropped at rates that would have been expected. Reducing UK wide budgets and numbers of firefighters could lead to more deaths of both members of the public and firefighters. Firefighters deserve more protection not far less as is likely with government policies now under way.

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APPENDIX 1

FIRE FATALITY INCIDENTS AND REPORTS AVAILABLE

Incident	FRS report	IRMP or draft	FBU SAI report	HSE report	Coroners' Report	Court report
Atherstone, Warwickshire 2007	0 (but paper from CFOA Onions WFRS)	WIRMP 2013-2107	0	0 (HSE Bd minute)	0 (none carried out)	
Bethnal Green 2004		LFB LSP 2010-2013	x	0 (but general LFB report 2010)	X (plus Rule 43)	
Blaina 1996	0	SW FRS Risk Reduction Action Plan	x		0	
Dalry Rd, Edinburgh 2009		SIRMP 2010-2013	x	0	0	
Harrow Court, Herts 2005	X (and recommendations)	HFRSIRMP draft 2014-18	x	0	X (plus Rule 43)	
Limavady NI 2003		NIFRSIRMP 2012	0			
Manchester, Oldham St 2013	0	GMFRS IRMP 2013-2016	0	0	0	
Marlie Farm, East Sussex 2006	x	ESFRSIRMP 2006-2008 and scoping statement for 2009-2013	0	0	0	X
Shirley Towers, Hants 2010	X	HFRS RMP for 2008 - 2014	0	0 (but HSE letter attached to FRS report HSE inspection)	X (plus Rule 43)	

APPENDIX 2

CHECKLISTS ON FIRE FATALITY INCIDENTS AND REPORTS AVAILABLE DECEMBER 12 2013 (1)

Incident	Plans (p) and Building (b) Information And legislation (l)	Back Draught (b) Flashover (f)	Training	Staffing	BA &ECO (e) Comm (c)	Risk assessment GRA (g) DRA (d)	Emergency team
Blaina 1996		b	X	X	E	X	X
Limavady 2003	p & b		X		C	X	
Bethnal Green 2004	p & b	b/f suspected	X	X	ec		X
Harrow Court 2005	p&b		X		e	D	X
Marlie Farm 2006	p&b&l		X			g and d	
Atherstone, 2007	p&b		X		e&c	g&d	
Edinburgh 2009	P	b/f ?			e	g? &d	
Shirley Towers 2010	p&b		X		e		X
Manchester 2013	p&b	b/f?					

CHECKLISTS ON FIRE FATALITY INCIDENTS AND REPORTS AVAILABLE DECEMBER 12 2013 (2)

Incident	IRMP on paper poor 2013	Compartment fire	Tempe and effects and wider fatigue issues?	TIC issues	Search patterns	Site familiarity	UK action on findings poor
Blaina 1996	n/a	X					
Limavady 2003	n/a					x	
Bethnal Green 2004	n/a	?	X		x	x	X
Harrow Court 2005	X	X				x	X
Marlie Farm 2006	X					x	X
Atherstone, 2007		X	X	X	x	x	X
Edinburgh 2009	X	X	X		x	x	X
Shirley Towers 2010	X	X	X	X	x	x	X
Manchester 2013	X		X		?	x	?

n/a = not applicable

CHECKLISTS ON FIRE FATALITY INCIDENTS AND REPORTS AVAILABLE DECEMBER 12 2013 (2)

Incident	Control room issues	Response Times	Speed of (a) Attack (b)rescue	Weight of attack/crew levels	Access to or use of water (a) Hoses (h)
Blaina 1996					
Limavady 2003					
Bethnal Green 2004			a & b	crew	a & h
Harrow Court 2005				x	a & h
Marlie Farm 2006	Police control room	X? 10 minutes	? n/a	? n/a	X
Atherstone, 2007		X 16 minute			X
Edinburgh 2009	X Control room		x		A
Shirley Towers 2010	X Control room		x		A
Manchester 2013					



UNIVERSITY OF STIRLING

Participant Information Sheet January 7th 2014 Version 3

Study Title: UK Firefighter deaths at Fires.

You are being invited to take part in a research study. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish.. Ask us if there is anything that is not clear or if you would like more information. Take time to decide if you wish take part.

What is the purpose of the study?

The purpose of the study is to try and find out (1) what explains recent firefighter fatalities at fires in a variety of settings – industrial, commercial and domestic (2) whether any generalisable conclusions be drawn with regard to the findings from the literature and the fire fighter fatalities explored (3) whether any recommendations can be formulated to a range of bodies such as governments, regulatory agencies, managers and employee bodies - that may reduce the future fatalities.

Why have I been chosen?

You have been chosen because you or your organisation has been involved in the investigation of firefighter fatalities at fires between 2003 and 2013.

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason.

What are the possible disadvantages and risks of taking part?

There should be no adverse effects. If, however, discussing the incidents proves upsetting, we can put you in touch with support services for example in the FRSs or the FBU in your area. Information on these will be available when we meet.

What are the possible benefits of taking part?

The study should help to inform a range of bodies about firefighter fatalities at fires and it is hoped will contribute to prevention strategies.

Will my taking part in this study be kept confidential?

The report will anonymise all the interviews unless interviewees indicate otherwise. Interview transcripts will be kept on a university PC in a room that is locked and the PC is password protected. It will be destroyed after 5 years from the completion of the study according to relevant data protection requirements in force. To the extent permitted by the applicable laws and/or regulations, the interviews and transcripts will not be made publicly available.

the study according to relevant data protection requirements in force. To the extent permitted by the applicable laws and/or regulations, the interviews and transcripts will not be made publicly available.

What will happen to the results of the research study?

A report based on the research will be prepared for the FBU and made publicly available and it is intended to publish the results in a scientific journal

Who is organising and funding the research?

The research is funded by the Fire Brigades Union UK

Who is conducting the research?

Professor Andrew Watterson, OEHRG,

RG Bomont Bldg R 3T11,

University of Stirling,

Scotland FK9 4LA aew1@stir.ac.uk

Tel 01786-466283

Who has reviewed the study?

The study has been reviewed by the University of Stirling School of Health Sciences Research Ethics Committee.

Contacts for further Information

Director of Research, SNMH,

RG Bomont Building,

Stirling, FK9 4LA



UNIVERSITY OF STIRLING

UK Firefighter fatalities at fires project

Interview schedule for semi-structured interviews January 10th 2014 Version 3

Interviews will be conducted with firefighters across the UK.

9 incidents are being investigated involving 16 firefighter deaths and one technician's death. Each incident occurred in different county brigades and different settings and circumstances - although there may be similar policies, procedures and equipment in operation - spread across 4 countries within the UK. So each interview exploring actions taken post-fire will vary.

Questions may include:-

1. Names, location, positions, length of time in post of interviewees, their experiences, involvement in incident or incidents they investigated and their role in investigating those incidents.
2. Their assessment of the major general factors leading to firefighter fatalities.
3. Observations on the extent to which the investigations they conducted (or were aware of) addressed the causes of the firefighter fatality.
4. Opinions on the extent to which the recommendations made in the relevant enquiries have been implemented.
5. Perspective on the role of governmental, police, coroner and criminal investigations into firefighter fatalities (what works/ed, what did not and why).
6. View of impact of legal/regulatory changes on fire fighter safety since 1996.
7. View of role and impact of Integrated Risk Management Plans in FRs on preventing firefighter fatalities
8. View of impacts of CFRA, CFRAU, LGA, DCLG, HSE and FBU on prevention of firefighter fatalities.
9. View of international fire safety standards and where UK stands and any lessons to be learnt from elsewhere in Europe.

AEW January 2014