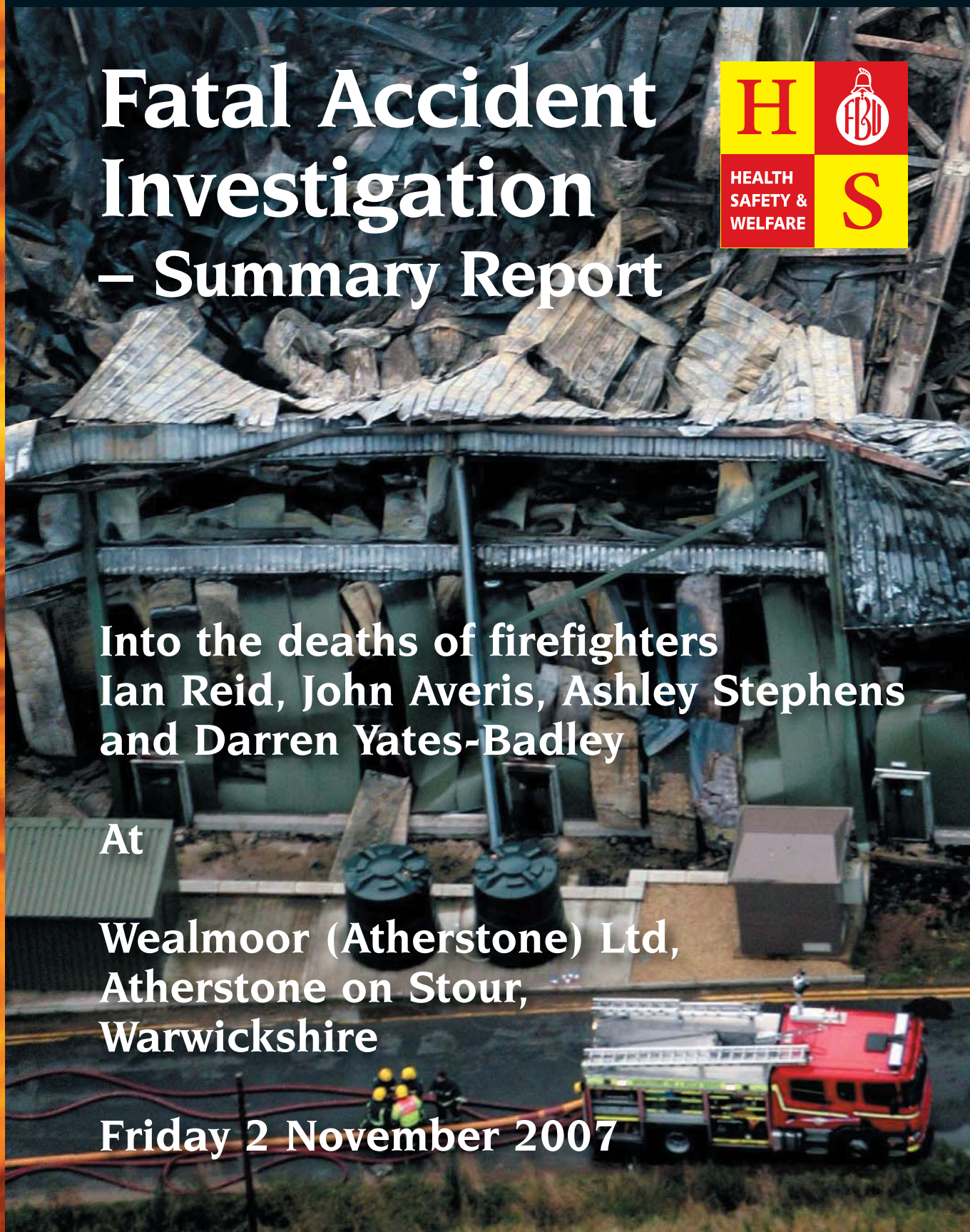
The Fire Brigades Union

Fatal Accident Investigation – Summary Report

HEALTH SAFETY & WELFARE



Into the deaths of firefighters Ian Reid, John Averis, Ashley Stephens and Darren Yates-Badley

At

Wealmoor (Atherstone) Ltd, Atherstone on Stour, Warwickshire

Friday 2 November 2007

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1) Introduction
Matt Wrack, FBU general secretary

Firefighters Ian Reid, John Averis, Ashley Stephens and Darren Yates-Badley died at a fire in Atherstone on Stour, Warwickshire on 2 November 2007, the worst incident of multiple firefighter fatalities in the UK since the 1970s.

The tragic deaths of these four firefighters in Warwickshire – together with other deaths in Strathclyde, North Wales, Hertfordshire, and Dumfries and Galloway – made 2007 an unprecedented year for firefighter deaths in recent times. Eight firefighters died on duty in 2007 alone, the worst year since 1985.

Since then firefighters have died at operational incidents in Central Scotland in 2008, Lothian and Borders in 2009, Hampshire in 2010 and Greater Manchester in 2013. The trend in firefighter deaths was downwards until the turn of the century. From 1997 until 2002 there was not a single recorded firefighter death at a fire anywhere in the UK.

However there has been an alarming upturn in recent years. Firefighter deaths at fires rose sharply in the years 2003-2007, and there have been further deaths since. This suggests that lessons are still not being learned. Alarmingly, it appears that there are factors which contribute to such tragedies but which are being repeated at subsequent incidents.

This is the summary report of the Fire Brigades Union's investigation into the incident that occurred at Atherstone on Stour, Warwickshire on 2 November 2007.

The purpose of the FBU investigation was to establish the causes of the death of the four firefighters by analysing the strategic planning of Warwickshire Fire and Rescue Service prior to the incident and the operations and techniques used during the incident.

The FBU has a duty, as the union which represents firefighters throughout the UK, to investigate the causes (direct or underlying) behind any such incident in order to learn from it and attempt to prevent any reoccurrences. Firefighter safety and the 'safe firefighter' concept are at the core of the FBU's thinking and have been generally welcomed and accepted by the wider fire sector and politicians alike.

This summary report consists of key extracts taken from the FBU's serious accident investigation (SAI) into the Warwickshire incident. The FBU has produced a very detailed full report, outlining the sequence of events, evidence collection, analysis and conclusions.

We want ministers in all four governments in the UK, as well as chief fire officers, fire authority members and other politicians, to focus on learning the lessons from the Warwickshire deaths. The FBU wants those key decision makers to take action on our recommendations, to ensure that the events are never repeated.

FBU officials will be seeking meetings with key stakeholders to discuss our report and what can be done to improve firefighter safety. Our members do not go to work to die. Firefighters assess the risks and take carefully planned action to rescue people, to deal with the various incidents we face and to make communities safe. We have the right to demand the best possible procedures, training, equipment and resources to enable us to do our job safely, effectively and professionally. That should not be too much to ask.

I would like to thank the FBU's accident investigation team, Peter Goulden, Marcus Giles and Steve Laugher for their conscientious work, as well as FBU executive council's health and safety specialists for their input. I am also grateful for the support and solidarity shown by FBU members in Warwickshire and across the UK, and thank all those FBU officials who have contributed to the investigation process.

M. Wrack

Matt Wrack
General secretary

2) Synopsis

Date:

2 November 2007.

Time:

The sequence of events covers actions and events – including the mobilising and the incident operations – that occurred between 17:36 when the first call was received by mobile phone from an employee of Wealmoor to Gloucestershire Fire and Rescue Service, until approximately 21:10 when the last breathing apparatus (BA) team withdrew.

Location:

The incident was at Wealmoor (Atherstone) Ltd, Hangars 1 and 2, Atherstone Industrial Estate, A3400 Shipston Road, Atherstone on Stour, Warwickshire. The area of the property involved in the fire consisted of ground and first floors of sandwich panel construction. It was used as a vegetable packing warehouse with approximately 135 employees (95 production staff and 40 office staff).

The nearest fire station to Atherstone on Stour is 4.2 miles by road at Stratford upon Avon. Property fires within Warwickshire Fire and Rescue Service area have a predetermined attendance of two pumping appliances unless previously identified as a special risk or persons reported. This had neither, so two pumping appliances were mobilised.

Warwickshire Fire and Rescue Service is predominantly a rural brigade with 19 stations, four of which are wholetime shift stations, three day crewing stations and 12 retained stations. Stratford upon Avon has one wholetime appliance, one retained appliance and one high volume pump unit.

Incident type:

Crews were attending Incident No 32952, a fire in a large commercial property in the storage/packing area on the first floor.

Safety event:

A team of four breathing apparatus (BA) wearers, for reasons unknown, got into difficulties within the fire compartment (storage/packing area) raising a BA emergency.

Deceased:

Watch manager Ian Reid	Age 44 years
Firefighter John Averis	Age 27 years
Firefighter Ashley Stephens	Age 20 years
Firefighter Darren Yates-Badley	Age 24 years

3) Sequence of events

This is a brief summary of the events of a complex incident, with many simultaneous activities being carried out. A full account of the incident can be found in the FBU's full serious accident investigation report into this tragic incident.

At approximately **17:20** on Friday 2 November 2007, the fire alarm panel activated at Wealmoor (Atherstone) Ltd indicating that a detector had operated in zone 11 – the food storage/packing area. An employee telephoned the engineering manager and he returned to the site. When he arrived the premises were being evacuated but he could see no evidence of fire so he silenced the alarm. Within 10 to 12 seconds the alarm reactivated.

The engineering manager then went to investigate the food storage/packing area, found a small pallet of packaging material on fire, emptied a 6 litre foam fire extinguisher and used a carbon dioxide extinguisher to try putting the fire out. He then went outside to get the assistance of some warehouse staff and together they returned to the food storage/packing area to find the flames from the pallet were now reaching the ceiling. They withdrew and decided to call the fire service.

At **17:35**, 15 minutes after the fire alarm panel had activated, Gloucestershire Fire and Rescue Service (GFRS) received a call reporting a fire at Hangars 1 and 2, Atherstone Industrial Estate, Atherstone on Stour, Warwickshire. GFRS established from the caller that it was a building on fire and that normal operations at the premises were the washing and packing of vegetables for supermarket retail outlets. Contact with the caller was terminated, but a mobile phone number was available. At **17:37** GFRS informed Warwickshire Fire and Rescue Service (WFRS) of the incident. However, GFRS did not pass on to WFRS all of the information received. Hangar 1 was also locally known as Bomfords.

The original part of the building was a World War 2 aircraft hangar which was extended in 2000 by its then owners Bomfords Ltd doubling the size of the original hangar. In 2005 Bomfords Ltd refurbished the existing building and began construction of a further extension of a large steel-framed building, increasing its overall size to approximately 150 metres by 69 metres.

The local authority building control never issued a completion certificate for the extension although this is not unusual. During the construction of the extension Bomfords Ltd went into administration (June 2007).

In August 2007, Wealmoor (Atherstone) Ltd purchased the business and was the owner at the time of the incident. The interior of the extension was still incomplete.

The new extension was of a steel frame sandwich panel construction. It had two levels with some wall and ceiling partitioning on both levels created using Eurobond 100mm Rockwool sandwich panels. The first level floor constructed of 38mm chipboard fixed to C section floor joists which were fixed to the steel beams. This created a 500mm void between the floor levels. All sandwich panel joints on ceilings and walls were finished with plastic cover strips to comply with hygiene regulations. In the office areas some timber stud partitioning with plasterboard walls were used.

At **17:41**, 21 minutes after the fire alarm panel first activated and 6 minutes after the call reporting the fire was received by GFRS, two appliances from Stratford upon Avon (351 wholetime water ladder and 352 retained water tender) were mobilised for a building on fire at Hangars 1 and 2.

The first crew arrived (351) at the incident at **17:51** – 31 minutes after the fire alarm panel first activated and 16 minutes after the initial fire call was made to the fire and rescue service. The lighting and weather conditions were dark and dry and the temperature was approximately 5°C. The only artificial lighting was that shed from the internal premises and provided by the appliance's own lighting systems.

On arrival the watch manager (WM) became the incident commander (IC) and he was faced with a large property with internal lights on and no obvious external signs of fire. He was met by the engineering manager, who told him that there was a pallet full of cardboard on fire on the first floor and that there weren't any people inside the building. The engineering manager also told the watch manager that the power and ventilation fans had been isolated and that he had attempted to extinguish the fire with a six litre foam extinguisher and a two kilogramme carbon dioxide extinguisher which were left by the doors to the fire compartment.

The watch manager and a firefighter (FF) accompanied the engineering manager into the building via the premises' public entrance (which later became Entry Control Point Red) and ascended the stairs on the right hand side which took them to the first floor. Then they passed through an office (the reception area) and a set of double doors opening onto a long corridor and turned right. The corridor contained two sets of fire

doors and was illuminated by internal lighting systems. At this time the corridor was clear of smoke, but smoke was observed at the end of the corridor issuing through the gap between a third set of double doors, which were the entrance to the lift lobby area and fire compartment. The engineering manager gave no information on the distance to the fire from the lift lobby area double doors.

The distance to the pallet on fire was later discovered to be approximately 73 metres from the lift lobby area double doors. It transpired that the fire loading in the storage/packaging area was far greater than a single pallet. The pallet on fire was one of 22 pallets, located together to the rear of the storage/packaging area and containing labels, cartons, and punnets and wrapping film. The property cleaning materials, some furniture and old computers from another site owned by Wealmoor were also stored in this area. Had this information been given to the watch manager at this time it would have provided an indication of the size of the compartment and the potential hazards.

When he returned from the corridor near to the lift lobby doors the engineering manager omitted to inform the watch manager and FF of the alternative first floor fire exit to their left. If this fire exit had been used as the initial entry point crews would have been approximately 40 metres closer to the fire compartment with a less congested route. This entrance was later used by crews from Hereford and Worcester Fire and Rescue Service (HWFRS) which became BA Entry Control Point Green.

Three firefighters connected both appliance hose-reels (combined length totalling 120 metres) from the water ladder pump (351) and were assisted by the retained crew (352 now being in attendance) to drag the hose-reel up to the first floor via the same public entrance and staircase which the watch manager and the engineering manager had used previously.

The watch manager decided to commit two firefighters donned in breathing apparatus (BA) with the extended hose-reel. BA team 1 were committed to the fire compartment, and were designated as Red 1. The watch manager – without wearing BA himself – accompanied BA team Red 1 to the corridor leading to the fire compartment on the first floor. En-route he briefed the team that there was a pallet on fire and that they were to locate and extinguish the fire.

BA team Red 1, took the hose-reel and proceeded along the corridor, which at the time was clear of smoke, through two sets of double doors, which had been previously propped open with fire extinguishers. When they reached the end of the corridor they were faced with a further set of double doors leading to the lift lobby area and they observed wispy smoke emerging through the doors around the edges.

Through the door, BA team Red 1 found there was zero visibility and proceeded on their hands and knees. Progress was extremely slow and they had to keep returning together to the lift lobby double doors to pull more hose-reel into the fire compartment. One of the firefighters in the BA team found a pallet to prop the doors open to stop the hose-reel becoming jammed in the doors. Unable to locate the fire, BA team Red 1 requested the thermal imaging camera. The camera was brought up to the first floor by the watch manager where part of the way down the corridor he met BA team Red 1. When the BA team used the camera within the fire compartment, the screen appeared to be blank. Both team members checked this, although when panning, and in the process of passing the camera between them, one of the firefighters recalled seeing a flash of red on the screen when facing the double doors. The BA team estimated that they had managed to travel about 5-10 metres inside the compartment on their hands and knees, and because they were becoming low on air they decided to exit the building.

Meanwhile outside, the engineering manager had informed the watch manager of a large water tank on the far side of the building containing approximately 16000 litres of water.

Between **18:19** – **18:30** – approximately one hour after the fire alarm panel was first activated – two firefighters from the retained crew of 352 were instructed to form the second BA team (Red 2). They were instructed to take the two 60 metre lengths of hose-reel from the water tender 352, connect them (to make a 120 metre length) and lay a second extended hose-reel to the right hand side of the corridor up to the doors of the fire compartment and not to enter. They were then instructed to liaise with BA team Red 1 when they emerged and, following passing over of information, they connected their additional hose reel to the original hose-reel (extending to make a 240 metre length of hose-reel) and attempted to locate the fire. The firefighters in BA team Red 2 said that this occurred just outside the fire compartment and that they were told to "*take care it's hot in there*".

BA team 2, Red 2 advanced into the compartment on their knees, and gas cooled as they progressed. Water droplets came down. Again nothing could be seen on the thermal imaging camera. BA team 2, Red 2 then advanced about three or four yards and when the firefighter gas cooled there was no return of water droplets which made him think it was either a very large room or it was hot. He then gave four long pulses with still no water droplets returned. BA team 2, Red 2 were concerned and felt that something was not quite right. One firefighter told the other: *"Just soak it, so I did and we were hit with a wall of heat which made me fall to my belly."* With this intense heat and the base of the smoke layer now down to shin height Red 2 decided that the conditions had changed significantly and collectively decided to withdraw.

18:26 The watch manager made up for a third pump: *"as we are having difficulty locating seat of fire due to size of premises."*

18:29 Station Manager (SM) confirmed that he was proceeding to the incident.

Given the information from the previous BA team, the watch manager again asked the engineering manager about the layout and size of the fire compartment, as the BA teams were having difficulty locating the fire. The engineering manager then indicated from the outside where the compartment started and paced the area out along the building.

Firefighters from BA team 1, Red 1 also spoke to the engineering manager about the layout of the fire compartment. That discussion highlighted the complexity of the building. If the distances given by the engineering manager were accurate it meant that BA teams still had at least 35-40 metres to travel to the seat of the fire once inside the fire compartment.

The actual distance from the lift lobby doors to the fire was approximately 73 metres.

The engineering manager drew three plans for crews on that night (all different) but omitted the lift lobby area and the four-hour fire wall and also gave the incorrect location and distance of the fire. At no point did he offer the dimensions of the compartment or the additional pallets (fire loading).

At approximately **18:30** BA team 2, Red 2 exited the building after about ten minutes in the fire compartment and showing signs of anxiety.

A firefighter from BA team 1, Red 1 recognised the signs of anxiety exhibited by both firefighters from Red 2, and approached one of the firefighters to try and calm him down. Initially the firefighter thought that they had returned for a piece of equipment. However, once he had established that this was not the case, he instructed the firefighter to remove his BA facemask.

The reason given by, BA team 2, Red 2 for their early withdrawal was that they were low on air due to laying out the hose-reel before being committed into the fire compartment. They also stated that they were: *"unable to locate the fire and that the room was still hot"*.

The watch manager decided he was going to commit a further BA team and started to see who was available from the crews at the incident. With the information that they had gathered, BA team 1, Red 1 firefighters volunteered to go back in. The watch manager initially said no to the firefighters due to their previous wear. However, once he had checked that they were both fully fit for the task, they were committed for the second time. The team were designated Red 1 again.

The watch manager and firefighter from the second appliance (352) having completed their 360° reconnaissance advised the watch manager in charge that: *"Other than smoke issuing from fan apertures, there appeared to be no other physical signs of the fire developing in other parts of the building."*

At approximately **18:34** the original BA team 1 were recommitted and identified as Red 1 again. They were given the same brief as previously. Both firefighters also believed that they were better equipped with the knowledge from their previous entry. The team retraced their steps to the first floor and located the hose-reel left by Red 2 at the top of the stairs in the reception area. The firefighters had formulated a plan from the information that they had received from the engineering manager. Once inside the lift lobby area, they were going to deviate slightly left in a diagonal direction until they reached the wall 5 metres inside the lift lobby area. Then they would turn right along the wall until they reached the opening in the four-hour fire wall. This method would be repeated to reach the end of the 9-metre wall which leads to the fire on the plan drawn by the engineering manager. They believed that the fire would be approximately 10-15 metres past that wall (although it has been established since that the engineering manager was wrong about the location of the fire). With this plan in mind, they thought that the objective was achievable. However, their main concern was preventing the team from becoming lost.

The watch manager in charge followed BA team 3, Red 1 up to the first floor and noted that: "*The smoke at this point had spread approximately half way down the corridor towards the reception area, but it was still possible from a crouched position to see within a few metres of the fire compartment.*"

BA team 3, Red 1 entered the fire compartment and found that there was thick black smoke down to the floor which became even hotter once they had passed the rear lift lobby wall. The BA team 3, Red 1 could hear things falling from the ceiling. One of the firefighters helmet torch became entangled in cables, believed to be from the lighting systems, which were hanging down. These were surface mounted in plastic conduits. It took quite some time to free the firefighter from the cables. The conditions were so poor he couldn't see where the cables were coming from, but he saw something white floating in front of him which he believed to be a light fitting. They both experienced an increase in temperature at this point. The second firefighter stood up to step over the cables and could feel a further increase in temperature. Back on their knees they took the same route as before. The firefighters reached a triangular shaped structure, which was hot; they radioed the Breathing Apparatus Entry Control Officer (BAECO) for information about its identity. The firefighters described the conditions: "*My ears were slightly burning through my flash-hood and my hands starting to scald in wet gloves.*"

The BAECO asked the engineering manager what the hot triangular object was and for any other information. The engineering manager stated that: "I *don't know of anything that could be triangular, I think there may have been a pallet truck up there but I'm not sure.*"

As there was no additional information available to assist the BA team 3, Red 1 and with the conditions deteriorating, the firefighters decided to withdraw and at approximately **18:50** – approximately an hour and a half after the fire alarm panel activated – they exited the building, leaving the hose-reel in the reception area and still not having located the fire. During the debrief with the watch manager night shift, the firefighters stated that it was the hottest fire that they had been to for years and that there was zero visibility inside the fire compartment.

At **18:34** the relief crew from the night shift from Stratford booked in attendance to relieve the day shift crew.

The two watch managers (day shift and night shift) both agreed that the incident should progress to Command Level Two (5 pumps plus 1 for command support, and a fire cover officer).

At **18:37** the third pump 371 Alcester (retained Water Ladder) booked in attendance.

The watch managers began the formal handover of information. However, watch manager day shift remained in charge whilst watch manager night shift assisted with the allocation of tasks for the oncoming appliances and the organisation of crews. When the Alcester pump arrived, watch manager night shift instructed the watch manager that he wanted two BA wearers. The watch manager also requested the two hose-reels off the Alcester pump and to connect this hose-reel line into 351.

FF Stephens and FF Yates-Badley from Alcester crew volunteered to wear BA.

The engineering manager also told the watch manager day shift of an alternative access point that would require entry through the ground floor to open the double fire exit doors which could only be opened from the inside. The watch manager and the engineering manager went and looked through the transport office window into a large area known as 'goods out'. This large room was clear of smoke with no signs of fire. They entered from a roller shutter door to the left of the loading bays into an open area known as the 'goods out area'.

They progressed diagonally to the right through the goods out area and opened the fire doors which were approximately 18 metres to the right hand side of the existing entry point.

The watch manager day shift requested the attendance of a water bowser, which contained 5,400 litres of water, as it was unclear if the onsite water supply would be available or suitable. The water consumption on the fire ground was not excessive and it appeared that the water from the appliances in attendance was coping with demand. No fire hydrant had been set into; the nearest two fire hydrants were located on the A3400 Shipston Road, one 260 metres (13 lengths of hose) away across a field with the hydrant post showing a 75mm water main, and the other on the junction with the access road some 915 metres (45 lengths of hose) away, with the hydrant post showing a 90mm water main.

At **18:48** 401 Wellesbourne (retained Water Ladder) booked in attendance.

The watch manager night shift instructed watch manager from Wellesbourne to provide two hose-reel lengths to 351 and two BA wearers which were to be the BA emergency team, and to instruct the rest of the crew to find the emergency water supply behind the building in the woods.

Water from 401 Wellesbourne pump was provided to 351 Stratford.

18:49 The watch manager night shift sent a further assistance message: Command Level 3 (eight pumps plus control unit with pump to support it) the control unit was off the run.

18:50 WFRS fire control contacted Hereford and Worcester Fire and Rescue Service's fire control centre, requesting the attendance of one appliance as part of the pre-determined attendance for the Command Level 3. Hereford and Worcester Fire and Rescue Service's policy states that a minimum of two appliances and a station manager will be mobilised for any cross-border working. This is to ensure HWFRS's own safe systems of work are implemented and fully resourced, this is what they mobilised to the incident.

At approximately **18:51** the watch manager night shift formally took over as incident commander.

At **18:51** the station manager booked in attendance; he observed: "I *noticed light grey smoke issuing from the eaves but nothing that gave me any major concern. There was enough evidence to confirm that there was a fire of some degree inside the building*".

18:51 341 Shipston on Stour (retained Water Ladder) booked in attendance.

The watch manager night shift requested a further BA team (BA team 4) to be of four wearers for hose management due to the long travel distance to the scene of operations. The BA team consisted of WM Reid and FF Averis from Stratford, and FF Yates-Badley and FF Stephens from Alcester.

They were the fourth BA team to be committed and were also designated with the call sign Red 1 (BA team 4, Red 1) and recorded the entry time of **18:53** on the entry control board. The watch manager night shift briefed the BA team to: "*Carry out a right hand search of the fire compartment and tackle the fire and use the original hose-reel which had been left at the top of the stairs in the reception area*".

18:55 361 Bidford on Avon (retained Water Ladder) booked in attendance.

Before BA team 4, Red 1 entered, a firefighter from BA team 1 had a discussion with WM Reid about the conditions and layout inside the building. The firefighter drew a sketch plan of the layout on laminated sheets of paper from a command support pack. This indicated the premises' doors, corridors, the partitioning walls inside the fire compartment and the cables that were hanging down from the ceiling, which the firefighter had got caught up in.

At **18:58** 291 Leamington Spa (wholetime Water Tender) booked in attendance and a group manager was mobilised to attend the incident.

Meanwhile, a firefighter recognised additional water was required and started to ferry appliances from the holding area so that the water from the on board tanks could be used.

At approximately **19:00** the station manager took command of the incident from the watch manager night shift. He instructed the on-site water tank to be located and examined to see if it could be used to provide water. The tank was located in the woods but the type of connections was found not to be compatible with the fire service connections.

At approximately **19:07** BA team 5, also called Red 2, consisting of another mixed crew from two different WFRS stations were committed with a call sign Red 2. Their brief, provided by the watch manager night shift, was to enter the building with a second hose-reel and carry out a left hand search upon entering the fire compartment.

19:10 294W wholetime Leamington Spa Water Bowser booked in attendance.

19:10 292 Leamington Spa (wholetime Water Ladder) booked in attendance.

After searching the canteen area on the left off the corridor, BA team 5, Red 2 went through the double doors into the lift lobby area. The smoke was down to floor level with zero visibility and the heat was described as being: "*intense*" and: "*a punch on the nose*" also: "*like an oven*" by BA team 5, Red 2. The crew manager leading the team noticed a hose-reel already going through the double doors and then off to the right. Whilst gas cooling by the double doors, the crew manager could hear BA team 4, Red 1 communicating with each other at about 45° in front of him. The

communicating sounds gave the crew manager the impression that everything was as it should be with the BA team 4 Red 1 at that time.

About 2-3 metres inside the compartment BA team 5, Red 2 were unable to pull sufficient hose-reel to continue into the fire compartment. The firefighter who had the hand-held radio tried to contact the BAECO for more hose-reel, but he received no reply. He also commented on the conditions being hot and the confusion of hearing several messages from unidentified voices. The team returned to the corridor to pull some more hose-reel through. It appears that there had been a problem with hose management somewhere in the corridor. This became apparent later in the incident when other BA teams encountered similar difficulties. The firefighter who was number three in the BA team 5, Red 2, noted that: "D*ue to the density of the smoke he could not even see the* FF *who was number* 2 *and who in reality was barely a few feet in front of him*".

Returning to the fire compartment the crew manager entered the compartment and travelled about four or five feet and carried out a Dynamic Risk Assessment due to the fact gas cooling appeared to be having no effect on the level of heat and smoke and he could hear large objects falling down. The crew manager considered the reasoning behind crews being committed inside and decided it was not worth the risk. He spoke to firefighter number 2 in the team, they were both taken aback by the heat and decided it was worthless to proceed any further.

The BAECO tried to contact BA team 4, Red 1 via the hand-held radio. He received a garbled message that he could not understand. He went to the watch manager night shift who was standing nearby and communicated his concerns. The watch manager took the radio from the BAECO and tried to contact BA team 4, Red 1 who responded "*emergency, emergency*". This was the last radio communication received from BA team 4, Red 1.

The station manager was informed by the BAECO of the BA emergency and instructed the watch manager night shift to redirect BA team 5, Red 2 in order to assist BA team 4, Red 1.

The BA emergency message was received by fire control at **19:14:51** – approximately 22 minutes after BA team 4, Red 1 had been committed.

BA team 5, Red 2 returned to the double doors to communicate their decision to withdraw but they heard the BA emergency prior to sending their message they reconsidered their decision and re-entered the compartment to assist BA team 4, Red 1, leaving 2 members of the BA team to manage the hose-reel by the double doors.

With their backs to the door facing into the compartment, they could hear BA team 4, Red 1. From their original location BA team 4, Red 1 appeared to move across in front of them from right to left at a distance of several metres, although this is approximate as they could only hear the BA team and not see them because of the conditions in the compartment.

The crew manager and firefighter number 2 grasped the hose-reel and proceeded along the left hand wall. They were shouting: "R*ed 1*" and spraying water in the direction of the noises to try to attract their attention. The crew manager also waved his torch and shouted.

After about 10 metres the crew manager and firefighter of BA team 5, Red 2 ran out of hose-reel. They returned to the other two BA team members by the double doors and attempted to pull some additional hose-reel but to no avail. The crew manager and firefighter once again set out on a left hand search from the double doors with the same amount of hose-reel, with the crew manager continuing to wave his torch and shout.

A few metres along the left hand wall a firefighter (since identified as WM Reid) appeared out of the smoke. He was bent over but on his feet stumbling towards them about to hit the floor. The crew manager stated in court: "I *put my right hand onto his left shoulder and scooped him up and got him up and got him onto the left wall, the reference wall. I turned around to the wall with the intention of getting him out as a casualty; he was bent double facing the doors. He then rushed off towards the doors*".

WM Reid somehow gathered momentum and made his way along the wall past the two firefighters who were hose managing by the double doors and disappeared through the doors. The two firefighters did not see in the smoke-logged corridor which direction WM Reid went.

The crew manager and firefighter knew that other BA wearers were in a similar location as they could hear one or two distress signal units (DSUs) activating in the distance. So he and the firefighter decided that they would continue along the left hand wall. As they proceeded, they were banging the wall, shouting and waving their torches. At the same point they ran out of hose-reel but nevertheless decided to continue along

the reference wall. The crew manager realised what they were doing increased the risk to them.

With their BA sets becoming low on air and hearing no further noises from the remaining firefighters of BA team 4 or sounds from the DSUs, the crew manager and firefighter reluctantly decided to withdraw. They reported that they had left the hose-reel where it was for two reasons: "*Firstly as a means for the remainder of the* BA *team* 4, *Red* 1 *to withdraw, should they be able to locate it. The other reason was that they were too knackered to bring it out*".

Making their way back down the corridor towards the reception area, BA team 5, Red 2 came across BA team 8, Red 4. The firefighter leading the team out asked BA team 8, Red 4 if a firefighter had passed them. A firefighter from BA team 8, Red 4 replied "*no*". The firefighter from BA team 5, Red 2 said "H*e must be somewhere between where they were and the fire compartment*". BA team 8, Red 4 continued along the corridor and passed through the second set of double doors. At this point either the hose became snagged or it was at its full extent. They could hear a DSU sounding, so they decided to split the team into two teams of two. Two firefighters remained with the 45mm jet, whilst the other two firefighters continued along the corridor until they came to another corridor which went off to the left just before the double doors into the lift lobby area. They proceeded a short distance down this corridor, where they found WM Reid: "T*here was no air left in* WM *Reid's cylinder by looking at his gauge, and the fact that the* BA *set low-pressure warning whistle was not operating. The face mask was still covering his face, his fire helmet was dislodged and they could see no sign of him breathing*".

The two firefighters then began dragging WM Reid from the incident.

At **19:25** the BA Main Control Officer (BAMCO, a station manager) booked in attendance. He reported to the station manager in command of the incident that he would be unable to carry out BA Main Control duties until the BA pod arrived. Instead he was tasked with assisting with the BA entry control point. Between **19:25** and **19:35**, the station manager (BAMCO) assessed that the BA situation was not "*looking like a good situation*".

At **19:26** BA team 5, Red 2 exited the building and collected their BA tallies.

19:28 was the predicted time of whistle for the missing BA team 4, Red 1 – approximately fourteen minutes after the BA emergency message was received by fire control.

At **19:31** the mixed crew of wholetime and retained (day crewing system) Evesham pump booked in attendance.

At **19:32** the Warwickshire group manager and the retained Pebworth pump from Hereford and Worcester booked in attendance. The Pebworth crew were instructed to set up a second BA entry control point at the subsequent entrance door used earlier by the engineering manager and the watch manager with the shorter travel distance to the lift lobby double doors.

Also at **19:32** 261 wholetime Rugby appliance booked in attendance.

At **19:36** the BA pod booked in attendance.

There is some confusion as to the hand-over of incident command from station manager to group manager during this period and some difficulty was experienced in maintaining water supplies for BA crews.

At between approximately **19:34** – **19:37** an emergency BA team – BA team 9, Green 1 even though they entered from BA entry control point Red – were about to enter the building but were delayed as BA team 8, Red 4 had exited with WM Reid. Frantic attempts were made immediately to revive WM Reid by the entry point door.

BA team 9, Green 1 then entered the building and made their way down the main corridor where they could hear the sound of activating DSUs. They continued into the fire compartment experiencing: "*Really thick smoke and heat as if like going into an oven*".

At **19:40** BA team 10 were committed to lay a guideline and search for the missing firefighters. For some reason they were also given call sign Green 1 even though they had entered from BA entry control point Red.

The incident continued to develop, the conditions in the fire compartment deteriorated, water supplies for BA crews were problematic, further BA teams were committed and command and control appeared to be confused.

At **19:42** 381 Studley (retained water ladder) booked in attendance.

Between **19:52** – **20:00**, the station manager briefed the group manager, including that three members of BA team 4, Red 1 were missing on the first floor.

At approximately **19:55** – **20:00**, BA team 11, Green 1 were the first BA team to enter through the second BA entry control point set up by Hereford and Worcester, which they were told to call Entry Control Point Green. They were delayed whilst awaiting a hose reel to be set up.

At **19:56** the chief fire officer booked in attendance.

Between approximately **19:56** and **20:10**, BA team 12 were committed. They were delayed by a loss of water.

At **19:59** the group manager made pumps 12.

At **20:01** the group manager made pumps 16.

At **20:02** WM Reid was taken by ambulance to hospital.

At **20:10** the station manager (BA Main Control Officer) established BA Main Control. He believed: "*There was only one entry control point in operation before* BAMC *was set up and the second entry control point* (H&W) *was designated* White *and he believes that they were in stage* 2 BAECO *procedures*."

At **20:12** the group manager sent an informative message that: "*Building used as warehousing, approximately* 200*m x* 300*m, fire in roof area, attempts being made by crews to source a reliable water supply, three firefighters unaccounted for,* Oscar *offensive mode*."

At approximately **20:37** – **20:51**, BA team 13, Green 2 were committed. Two of the team entered the fire compartment area: "*…crawling on their hands and knees towards the sound of the* DSUs *due to the heat where they found two firefighters opposite to the entrance of the lift. The casualties were both on their backs with one slightly over the other and their torches still illuminated, the* BA *set gauges showed zero, both still had their face masks and helmets on. There was no firefighting media with the casualties and no debris around them.*"

At **20:51** BA team 13, Green 2 informed BAECO that they had located two casualties – this almost an hour after BA team 4, Red 1 had been committed and more than half an hour after the BA emergency had been declared. The BA team felt the casualties and found them to be "stiff". They considered the casualties to be dead and should be left as the area was a potential crime scene. They were too low on air to remove the casualties from the building. As they were withdrawing they became concerned at the noises they were hearing from the building that seemed to be coming from above them. As they were leaving the lobby area the rumbling sound became louder: "*It sounded like a collapse…*"

Two further BA teams – 14 and 15 – were committed by the group manager to attempt retrieval of the casualties but after entering they withdrew themselves due to the deteriorating conditions.

At **21:10**, the deputy chief fire officer sent an informative message confirming his assuming command and "*details as before, eight* BA *in use, search being carried out on first floor, two casualties have been located and being brought out, one person still unaccounted for, location of fire not yet identified,* Oscar *mode*."

At **21:14** an amendment was sent: "*Three persons still unaccounted for.*"

At **21:22** a further informative message was sent from the deputy chief fire officer: "*Following dynamic risk assessment based on information from* BA *crews, internal floors and ceilings are in danger of collapse, all* BA *teams withdrawn, water supply now located, water relay being set up using* HVP, Delta *mode*."

The bodies of the three remaining firefighters – FF Averis, FF Yates-Badley and FF Stephens – were recovered four days later.

Timeline

17:20	Fire alarm panel activated
17:37	Call to Warwickshire Control
17:51	1st pump (WT) in attendance
17:54	2nd pump (RDS) in attendance
18:26	Make pumps 3
18:37	3rd pump (RDS) in attendance
	Command level 2 message 5 pumps plus one pump for command support
18:48	4th pump (RDS) in attendance
18:49	Command level 3 message 8 pumps plus control unit
18:55	5th pump (RDS) in attendance
18:58	6th pump (WT) in attendance
19:10	7th pump (WT) in attendance
19:14	BA emergency declared + 2 pumps
19:31/32	8th and 9th pumps Evesham (mixed crew) and Pebworth (RDS) from Hereford and Worcestershire in attendance
19:32	10th pump (WT) in attendance BA emergency pump
19:42	11th pump (RDS) in attendance BA emergency pump
19:59	Command level 4 message 12 pumps

4) Evidence collection

The evidence collected to support the above sequence of events and which informs the report recommendations has been obtained and collated from the following documents:

- Police witness statements.
- Notes taken by FBU officials at Police/Health and Safety Executive interviews with FBU members.
- Tape recordings of Police/Health and Safety Executive interviews with FBU members.
- Witness Statements and supplementary evidence provided to FBU Serious Accident Investigation team.
- Warwickshire Fire and Rescue Service (WFRS) individual statements "G1".
- Notes made by individual incident attendees following the incident (contemporaneous notes).
- WFRS printed incident message log.
- WFRS audio log of incident.
- WFRS individual training records.
- Photographic evidence.
- Building plans.
- WFRS policies and procedures.
- National Guidance documents for the Fire Service.

A joint investigation was carried out by Warwickshire Police, and the Health and Safety Executive. Hereford and Worcester Fire and Rescue Service lead in dealing with the fire investigation/cause of fire.

In addition to legal representation, FBU officials were also present at all the police interviews with FBU members, except interviews carried out by the police immediately following the incident on the 3 and 4 November of Hereford and Worcester crews. A large number of firefighters were interviewed on two or three separate occasions. All interviews were tape recorded by the police and the FBU.

5) Analysis

5.1 What happened?

Evidence from the pathologist's report established the cause of death:

- Ian Reid – smoke inhalation and asphyxia.
- John Averis, Darren Yates-Badley, Ashley Stephens – conflagration, including all possible consequences of fire death, e.g. asphyxia, inhalation of smoke, heat exposure, injury from debris etc.

5.2 How did it happen?

Warwickshire Fire and Rescue Service (WFRS) were mobilised to a pallet on fire in a building on Atherstone on Stour industrial estate.

WM Reid, FF Averis, FF Yates-Badley and FF Stephens were BA team 4, Red 1 who were committed from Entry Control Point Red.

The BA team were briefed to "Carry out a right hand search of the fire compartment and tackle the fire".

They progressed to the lift lobby area on the first floor of a non-combustible sandwich panel building 150m x 69m with a hose-reel.

The compartment had a complex layout, it was hot and heavily smoke logged. The fire had been burning for approximately 90 minutes before they were committed.

The team entered the compartment and for some unknown reason they became separated from the hose-reel due to worsening conditions within the compartment and were unable to find their way out.

A member of BA team 4, Red 1 raised a BA Emergency, but it is unknown if this was before they left the hose-reel.

WM Reid was brought out of the building by a subsequent BA emergency team.

Two other members of BA team 4, Red 1 were located at 20:51 but were unable to be recovered.

The three remaining firefighters were recovered four days later.

5.3 Why did it happen?

There are many layers of causes ranging from the specific actions of individuals at the scene to strategic decisions made by senior managers and the fire and rescue authority years before the event.

National Frameworks are written for the fire and rescue service by the Secretary of State under powers described in Section 21 of the Fire and Rescue Services Act 2004. The National Frameworks 2004-5, 2005-6 and 2006-08 contained guidance on the role and the detail that should be contained in an Integrated Risk Management Plan (IRMP).

The IRMP is the overarching document that should describe the systematic process for strategic planning and the delivery of an efficient, effective and safe fire and rescue service. It is therefore the IRMP that will be considered first in the examination of the causes and findings.

The next layer of the causes and findings below the IRMP includes specific organisational issues such as the collection of operational risk information, Incident Command System, training etc. However the suitability of the IRMP must be examined first because the IRMP should encompass the specific managerial issues. If the IRMP process had been followed through properly by WFRS, specific issues such as those stated previously would have been identified as inadequate and policies would have been put in place and resources allocated to deliver improvement.

Warwickshire Fire and Rescue Authority (WFRA) published IRMPs in 2004 and 2007. They contained strategic objectives, but little in the way of planning. What they noticeably failed to consider was to plan for the delivery of "business as usual" and for 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 in WFRS the IRMP process had been followed correctly in line with the FBU's 'The Framework Document: How to construct an IRMP/RRP', 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 IRMP process should have considered many of the issues that now form part of the causes and findings listed below:

- National Framework
- IRMP
- Risk information
- Incident Command System
- Dynamic Risk Assessment
- Breathing Apparatus
- Water supplies
- Operations
- Fire development and firefighting actions

However, the causes and findings that contributed to the outcome must be measured against the basic training individuals received, the development programme, monitoring and audit processes in combination with the actions that occurred that evening. Individual performance can only be assessed against standards set by WFRS policies and service orders, which must conform to national standards/guidance including the periods of assessment.

5.3.1 National Framework

When Warwickshire Fire and Rescue Authority (WFRA) constructed their IRMPs they should have taken account of the current fire and rescue service National Framework and its associated guidance. WFRA plans paid limited cognisance to government guidance despite this being a requirement of the frameworks. When Warwickshire's control unit was 'off the run', no arrangements were put in place to share the control units of neighbouring authorities.

However the Warwickshire IRMPs failed to set out the authority's assessment of local risk to life in the first place. The business needs of the service therefore couldn't be driven by the IRMP, there could be no setting out of the competencies required by staff and the HR strategy could not reflect the needs set out in the IRMP because no needs were set out. It is therefore little surprise that WFRS was ill prepared to deal with the fire at Wealmoor (Atherstone) Ltd.

Integrating IRMP into the business planning process and incorporating the whole planning process, service delivery and the review cycle is not simply a 'burden' that was placed on fire and rescue services. WFRS has the role of protecting the public and their property. Fire and rescue services put the lives of their staff at risk when they undertake that role. IRMP is not a burden on WFRS. It is a vital planning tool that ensures that the service works safely, efficiently and effectively while maintaining the competence and safety of its employees.

5.3.2 IRMP

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. WFRS were given the freedom to set their own standards not only in terms of attendance at emergencies, but in terms of training, equipment, and a multitude of other things that were previously directed from the centre. This had to be agreed with WFRA, who have the responsibility for providing a fire and rescue service. However rather than allow this removal of control to result in a free-for-all, the Office of the Deputy Prime Minister (ODPM) used the Fire and Rescue Framework for England to say that WFRS had to produce an IRMP and what government expected from it. The 2006-2008 National Framework stated these expectations of IRMP.

It should therefore be possible to find the strategic planning for all of the above within WFRS' planning leading up to November 2007, described within the pages of the IRMPs for the preceding years.

ODPM produced guidance to explain what it meant by an IRMP. If the guidance is examined in detail, it is clear that an IRMP fulfils the function of a business plan. The reason for this type of structure is obvious. Fire and rescue services were being given the freedom to function without externally imposed standards or direction on detailed management issues, so it was incumbent upon them to take over those roles themselves in a structured, 'businesslike' way through

a process that followed tried and tested business planning principles.

IRMPs are typically written by fire and rescue service managers, but they are actually 'signed off' by the fire and rescue authority. WFRS published an IRMP in 2004 to cover the periods 2004/05 and 2005/06 and another in 2007 to cover the period 2007/08 to 2009/10. As far as the FBU is aware, there was no IRMP to cover the period 2006/07. The 2007 IRMP alone cannot be used as a source to describe the position of WFRS in November 2007. At the time, the 2007 IRMP was a three year plan which had only been running for eight months. In order to fully understand the strategic planning of the organisation it is necessary to consider the 2004 plan as well. These two plans together describe three and a half years of planning carried out by WFRS and signed off by the fire and rescue authority preceding the fire at Wealmoor (Atherstone) Ltd.

If WFRS had followed government guidance when writing their IRMPs in 2004 and 2007, somewhere in those plans should be an explanation of how they identified Wealmoor (Atherstone) Ltd as a risk. How the effectiveness of current preventative and response arrangements were evaluated and how opportunities for improvement were identified. There should also have been a determination of the resources that were required to meet these policies.

In summary, the 2004/06 IRMP promises the public of Warwickshire very little other than a series of explorations, investigations and reviews that should, may or could happen. There is virtually no prioritisation and the resources required to deliver on its proposals are not discussed.

"Action plans" are supposed to be the short term implementation plans for the content of the IRMPs, but Warwickshire's 2004/05 and the 2005/06 action plans do no such thing.

- It might be expected that "priorities" identified in an IRMP should be actioned first. But matters that are described as "Priorities" in the 2004 to 2006 IRMP are not even mentioned in the 2004/05 Action Plan
- 7 of the 44 actions identified as necessary by the 2004 to 2006 IRMP were not planned to be delivered by either the 2004/05 or the 2005/06 Action Plans.

The significance of ignoring commercial property as a risk at the early stages of the process was that strategies for safe intervention at commercial property fires were all but ignored.

In 2007, WFRA published a document that said on its front cover that it was the 2007 to 2010 IRMP for the service. However the content bore no resemblance to ODPM guidance on the content of an IRMP. That is, it did not describe how the service would fulfil its role in a structured businesslike way. It did not fulfil the function of a business plan.

If WFRA had followed government guidance and produced a true IRMP in either 2004 or 2007, they would have identified existing and potential foreseeable risks to the community. This would have included the potential to have to respond to warehouse fires. Following the government guidance a true IRMP would also have involved evaluating the effectiveness of current preventative and response arrangements. In doing so, WFRA would have identified the fact that their fire and rescue services risk information system, their command and control training and their BA training were inadequate, knowledge and recording of the built environment was poor.

Finally, the fire and rescue authority would have identified opportunities for improvement and determined policies and standards for prevention and intervention and they would have determined resource requirements to meet these policies and standards. However instead of producing structured businesslike documents that took over the functions devolved to them from government, WFRS produced documents on behalf of their fire and rescue authority, which said "IRMP" on the front cover but which actually contained high level strategic objectives and vision statements that were never translated into service delivery.

Other legislation and guidance that should have been complied with at the time to assist the fire authority in the production of a risk management plan were The Health and Safety at Work Act 1974 and The Management of Health and Safety Regulations 1999. The events of 2 November 2007 at Atherstone on Stour serve as a stark reminder of what can happen if a fire and rescue authority does not follow the process of creating a suitable and sufficient IRMP.

5.3.3 Risk Information

Gathering of risk information is critical to the safe management of an incident. On the night of 2 November 2007 information on Wealmoor (Atherstone) Ltd, Hangars 1 and 2, Atherstone on Stour had not been gathered and utilised by WFRS with sufficient detail to provide safe systems of work for responding crews.

The Operational Assurance Service Assessment carried out in 2006 identified that WFRS had not fully populated the Fire Service Emergency Cover (FSEC) model with data covering all commercial premises, therefore it was not possible to deliver a risk assessed IRMP. A lack of a robust system had been identified during the Operational Assurance Service Assessment where a high risk premises was identified and risk information had not been transferred to the central data base meaning that some crews attending the premises would not possess all the updated risk information.

The OPDM produced health and safety guidance for fire and rescue services and part of that guidance was Volume 3 of the Guide to Operational Risk Assessment which included generic risk assessments (GRAs). The intention of these GRAs was to inform the local risk assessment process.

There is no evidence available that WFRA acted on this information on the risks associated with large volume buildings and put suitable and sufficient control measures in place to ensure the safety of employees.

A previous incident on 20 April 2007 at the premises identified a number of fire safety issues, which the watch manager reported to the Stratford Area Risk Team. A fire safety inspection was carried out and identified sandwich panel construction. This information should have triggered service order OTI 03.16.06, identifying a risk and implementing further procedures, which ultimately, would have generated risk information which would have been available on appliances and station premises risk folder. The moment that that inspection was completed WFRS knew everything that they needed to know about the design of the building and the risks to firefighters that it entailed. Any 'blame' that might have rested with the design of the building was immediately transferred to WFRS at that point.

Sandwich panel construction would also have been included as additional information on the turnout sheet as a hazard, also identifying the operational risk assessment applicable to the hazard. With this information all crews attending the incident would have been aware of the hazard before arriving.

5.3.4 Incident Command System

In 2007 the WFRS Incident Command System was operating to Fire Service Manual, Volume 2, Fire Service Operations, Incident Command, second edition. Operational Intelligence available en-route and at the incident ground from occupier was poor and misleading.

Mr. Tenney (Engineering Manager for Wealmoor (Atherstone) Ltd) omitted to inform or provide plans of the premise to the watch manager of the alternative first floor fire exit until approximately fifty minutes after crews had arrived. This exit would have positioned crews approximately 40 metres closer to the fire compartment with a less congested route. WFRS personnel received continued incorrect information from Mr. Tenney throughout the incident. He had worked at the premises for two years and was part of the project team who managed the building of the extension, where the fire first started, that was completed in April 2007. At no time did Mr. Tenney correct any of the misinformation that he delivered on the night.

There was ineffective communication across all areas of the incident ground resulting in lost information and self deployment. Command support functions were not operating effectively. There appears to be no structure and poor communication on sectorisation.

At 20:38, there were sixteen pumps in attendance and 95 personnel including the chief fire officer on the incident ground and yet still no water supply secured and Command Support function not resourced correctly.

5.3.5 Dynamic Risk Assessment

Concern in recent legal cases is that fire and rescue incident commanders' decision making has been brought into question and left them vulnerable to potential prosecution. The problem here is not with the legal system expecting perfect results but with the fire and rescue service nationally incorrectly assuming that these assessments of risk by individuals are suitable and sufficient to comply with their duties and provide legal protection for the organisation, thus

placing a legal burden on the individual employees making dynamic risk assessments.

Dynamic Management of Risk at Operational Incidents was first published in 1998. This document was produced by the Home Office as part of their health and safety guidance for the fire and rescue service. The process was described 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."

This process is not 'stand alone' and is the last level of three levels of risk management used by fire and rescue services. The guidance provides this descriptor: "In order 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."

Dynamic Risk Assessment was used on the night for the vast majority of decision making by all of the incident commanders (as no written risk assessments up until the end of offensive operations on the night have been located, and the firefighter running the command support function has stated not writing or receiving any) and not just the three who faced prosecution.

On first arrival at an incident, even a well-trained, experienced incident commander with adequate operational risk information will only have very limited information about the specific incident that they are faced with. So making an accurate risk assessment will be impossible. What is actually happening is that an individual is making an assessment of risk, to enable the selection of the correct safe system of work to be introduced. On occasion an individual, when making the early assessment of risk, will be wrong. The wrong course of action will be selected without sufficient control measures to reduce the risk. Firefighters or members of the public may be injured or worse.

5.3.6 Breathing Apparatus

It is evident that inexperienced BA wearers were nominated and allowed to be committed into the risk area to attack the fire. This was not challenged by anyone on the night. There was ineffective briefing and debriefing of BA teams, BA wearers and insufficient passage of information and recording of actions. There was confusion on naming and numbering of entry control points (ECPs) and BA teams.

There was insufficient understanding of the effects of recommitting BA wearers with minimal rest period between BA wears. Numerous BA teams were committed some of these teams comprised of BA wearers from different stations unknown to each other and not numbering off before entering the fire compartment. BA teams were entering and leaving the fire compartment with no firefighting media.

There appears to be a lack of coordinated resourcing of BA requirements and gathering of information by Main Control. Also the BA holding area should have moved from the ECPs to BA Main Control. Emergency teams were deployed without any additional equipment. WFRS had purchased 10 sets of Emergency Air Supply Equipment (EASE) but they were not available at the incident. They were stored at WFRS headquarters, were included on the Interspiro Total Care Contract, but were not on the run. This position had been ongoing for several years.

Throughout the incident no Breathing Apparatus Entry Control assistants or communications officers were identified by the incident commanders' risk assessment and put in place. The lack of communication on the limited amounts of the hose-reel available in the lift lobby area left the issue unresolved and therefore hampered BA teams progressing.

5.3.7 Water Supplies

WFRS used a database called Aquarius 3 to hold information on hydrant location, the location of open water sources i.e. rivers, streams and ponds and static water sources i.e. bore holes and static tanks. This information was gathered and provided by area risk managers and the fire safety team and received by the water officer. Aquarius 3 could only be accessed by the water officer during office hours.

Water supplies were given some cognisance. However a sustainable supply was not secured in place until the deployment of the High Volume Pump. This was close to 21:00 hours. The nearest fire hydrants were located on the A3400 Shipston Road, one 260 metres away across a field and the other located on the junction with the access road some 900 metres away. A water relay or shuttle was not secured from either of these hydrants prior to the BA emergency.

The onsite water supplies were a bore hole and a 16,000 litre tanker which proved to be unusable on the night. These should have been identified by the risk information process as to their suitability to assist in firefighting operations. There was no identified individual responsibility for securing a sustainable water supply during the initial stages of an incident from single to multi pump attendances.

Appliances were ferried from the holding area to supply water to the fireground pumps however these appliances were not replenished leading to a diminishing supply on the incident ground. Water usage was not communicated to the Incident or Sector Commanders which led to an impression that water supplies on the incident ground were sufficient.

5.3.8 Operations

The thermal imaging camera displaying a white screen caused confusion, impacting on its operational effectiveness and conditions within the fire compartment.

A covering jet was not deployed prior to BA teams being committed into the risk area and would have proved ineffective if required. It was also supplied from the same appliance as the hose-reels.

Poor hose management leading to congestion and confusion in the main corridor resulting in BA emergency teams not being able to penetrate the fire compartment.

Many personnel on the night operated in smoke inside the risk area beyond BA entry control point. At no point was a forward control point considered or setup with the information gathered about events on the night. This lead to teams and individuals working in the risk area without adequate command and control or protection against the conditions.

5.3.9 Fire development and firefighting actions

There is no evidence that any water was applied to the fire prior to defensive firefighting tactics. At this incident there appeared not to be any unexpected fire behaviour for an industrial storage premises of this type that would explain the tragic outcome of the fire.

Rapid fire growth, which may have occurred at this incident, is becoming more common as building techniques and materials change. However this effect is not being reproduced in training situations thus leaving firefighters exposed to foreseeable risk.

The internal geometry of the Wealmoor (Atherstone) Ltd building was unusual in that it did not comply with Approved Document B to the Building Regulations and what appear to have been insurer required fire protection was incomplete. As such, there was only one means of escape from the first floor storage area where the fire was located (contrary to Approved Document B), and this single means of escape was through an opening in a four hour fire resisting wall that had no doors fitted. But the deaths of the four firefighters cannot be attributed to any of the above because firefighter safety does not rely on building design it relies on adequate firefighter training and appropriate equipment delivered to the incident ground at the right time.

The building sector is calling for ever increasing levels of insulation due to government incentives. This also demands ever smaller numbers of leakage paths through construction joints. Firefighting/fire behaviour training concentrates on small compartments. This does not prepare firefighters for the issues described above.

Gas cooling has become a common practice in the fire and rescue service. The principle being applied is that short bursts of water spray into the hot ceiling gases of a compartment fire cool those gases and thereby reduce the risk of flashover and improve conditions for firefighters.

However it must be pointed out that in a very large compartment on fire, there will be an enormous amount of energy in the hot smoke layer at ceiling height. "Gas cooling" by short bursts of water spray from a hose reel branch is going to have no noticeable effect on the ceiling gas temperature, but it is going to increase humidity in the immediate vicinity of the firefighters who are using the hose reel.

Since humid air is a better conductor of heat than dry air, gas cooling in a very large compartment on fire is not going to cool fire gases, it is not going to reduce the risk of flashover but it is going to worsen conditions for firefighters.

6) Conclusions

6.1 Specific conclusions

6.1.1 IRMP

Fundamentally, the events on that fateful evening of 2 November 2007 were a catalogue of organisational systemic failings. The disaster started with the failure to deliver an effective IRMP prior to the incident, which should have identified Hangars 1 and 2 as a significant risk to firefighters. This responsibility lies not only with Warwickshire Fire and Rescue Authority (WFRA) but with central government to ensure sufficient funding is in place to deliver an effective, monitored IRMP. Risk information/fire plan would also have been available if the IRMP process had been applied correctly. With the correct application of the IRMP process the sufficient funding, risk information and resources required to deal with such a significant risk would have been in place. Subsequently this would have also highlighted the training required to deal with such an incident to bring it to a safe and satisfactory conclusion.

6.1.2 FSEC

Following the Operational Assessment of Service Delivery 2006, Warwickshire Fire and Rescue Service (WFRS) were made aware of areas for improvement with regard to developing a full risk profile of Warwickshire. If this process had been completed and the FSEC database fully populated with current data, the toolkit if used correctly would have contributed to the IRMP process. This large piece of work was several years away from completion due to lack of resources within WFRS.

6.1.3 Training

Training within WFRS was also a significant factor contributing to the failures within the organisation. The areas that were identified were predominantly surrounding the functions that were carried out on the evening of the 2 November 2007. These were risk information, risk assessment, breathing apparatus procedures/command and control and incident command. Quality assurance of the training delivered in WFRS had also been identified as a significant issue.

6.1.4 Risk assessment

WFRS had a service order (03.16.06) that details the procedure for operational premises risk assessment. A building of sandwich panel construction is seen as a significant hazard requiring the minimum of the production of an O2 risk information card or possibly a more detailed fire plan of the premises. This procedure failed on two occasions. Firstly, local building control at planning stage, where all of the hazards aligned with this type of construction should have been identified. Secondly, as a result of a previous incident a fire safety officer carried out an inspection of the premises due to fire safety issues that were identified, during this inspection it was recognised that the building was of sandwich panel construction. Both occasions should have triggered the process detailed in the service order for a premises risk assessment. This process should have also ensured that sandwich panel construction was detailed on the mobilising turnout sheet. All of which was also seen as an area for improvement in the Operational Assessment of Service Delivery 2006 with regard to the passage of information between operational crews and fire safety staff and vice versa. Additionally the assessment also criticised the premises re-inspection programme where it was identified that a random selected premises contained hand written amendments that had not been added to the central database, therefore some crews attending the site may not have possessed up to date risk information.

6.1.5 Recording training

It is unknown if all staff received training on the delivery of service orders or any other written communication as there was no evidence (records) to confirm the delivery of this type of information to WFRS staff. The method of recording training in WFRS was a computerised system called Redkite for Wholetime firefighters. For retained duty system (RDS) staff it was largely a paper-based recording system. Neither system provided a means to ensure the quality of delivery, underpinning knowledge gained and competence of WFRS firefighters. It was also identified that there was no robust process for the recording of training for officers and assessment of continued competence.

6.1.6 BA training

BA training requires a complete overhaul, including identified courses, syllabus content and course duration. For example the initial BA course for RDS staff had been reduced and does not comply with national guidance. Also BA refresher training was sacrificed for the introduction of fire behaviour training thus no longer maintaining core skills. The BA refresher course must be reintroduced as per national guidance and should be delivered as a separate entity to the fire behaviour course. Because of the introduction of Integrated Personal Development System (IPDS), the ideal around this was for individuals to self nominate for mandatory BA refresher courses. This obviously failed as records identified that some staff had not completed BA refresher training for many years.

6.1.7 RDS database

The Operational Assessment of Service Delivery 2006 also stated that the development and maintenance of RDS staff differs significantly to that delivered to wholetime personnel. It also identified that the monitoring, recording and auditing of training activity and assessments of RDS personnel was weak with no central database to demonstrate RDS workforce competence. However, during the investigation it was found that deficiencies in this area also extended to wholetime personnel including officers.

6.1.8 Computer based training

Computer based training was the only method of delivering various functions including Incident Command, which occasionally was monitored during exercises. This system does not provide a robust assessment of underpinning knowledge. Many WFRS firefighters see it as a team event as opposed to individual training and assessment.

6.1.9 Command Support

Command Support also forms an important function with the incident command system. As a result of this, that evening there were significant errors that affected the delivery of command support. In WFRS there is limited training delivered in command support especially in the completion of risk assessments, therefore there was no written evidence recorded of risk assessments during the offensive operations of the incident. The command point had to be moved on a number of occasions from the back of one appliance to another for various reasons with the firefighter carrying vehicle nominal roll and officer fobs in his fire helmet. Furthermore there was no sector commander or dedicated crew identified for the additional support for command support as the incident progressed.

6.1.10 Appliances

The Control Unit had been off the run for a considerable time and no contingency plans had been put in place meant that the BA Pod had to be used for two functions, Command Support and BAMC. One appliance carrying out two functions means that there must be a competent and dedicated crew for each function.

6.1.11 Monitoring

It has already been mentioned that the Operational Assessment has identified areas for improvement regarding training of staff. Workplace assessments at incidents were also criticised with no evidence of monitoring staff performance.

6.2 General conclusions

6.2.1 Serious Accident Investigation process

The primary purpose of the FBU's Serious Accident Investigation (SAI) process is to prevent the serious injury or death of firefighters at similar incidents in the future. This summary report highlights three broad areas:

- IRMP
- Incident Command and Control
- Use of and Command and Control of Breathing Apparatus

6.2.2 IRMP

Every firefighter accepts that there exists an element of risk associated with the work that they are required to

undertake. However what comes with this expectation is a belief that their employer will have done everything within their powers to minimise any potential and foreseeable risk that does exist by carrying out an exhaustive risk analysis, planning and resourcing exercise in the form of an IRMP. The section on IRMP above highlights a number of inadequacies with the IRMP process undertaken by WFRS prior to and at the time of this incident. These recommendations are not exhaustive and further reference should be made to the full SAI report. The FBU believes that the issue of IRMP is one that should not just be the subject of local scrutiny by WFRS alone, but that it should be an area that government, employers and the HSE should take a greater interest in. There is a need for greater scrutiny in regard of the drafting, implementation and adequacy of IRMPs. It seems that too much emphasis is placed on the way the plans are drawn up and far too little on what they actually mean and what they are able to deliver in the form of an effective fire and rescue service.

6.2.3 Incident Command and Control

Assuming that a fire and rescue service IRMP has determined that a particular risk exists and that as a fire and rescue service they have a duty to attend incidents at such a risk, it should go without saying that the service's IRMP should indicate what the expected outcome of that attendance should be. In order for this to be the case it is incumbent on the fire and rescue service to have undertaken the previously mentioned risk analysis exercise in order to formulate a plan and to calculate necessary resources to facilitate the expected outcome. Only by undertaking this exercise can Incident Commanders decide upon fireground tactics and strategy and importantly whether they have sufficient resources available at any time throughout the duration of an incident to meet fire and rescue service expectations. With regard to this particular incident, the quality of information available to the initial incident commander whilst en route and whilst in attendance was inadequate, calling into question not just the IRMP process, but also the operational pre-incident planning process for this particular site. In essence this made effective incident command an impossibility from the outset and the Incident Commanders and crews were effectively set up to fail.

6.2.4 Breathing Apparatus

The vast majority of on duty deaths involving firefighters take place whilst they are wearing BA. It is frustrating that the FBU are too often required to contribute in one form or another to proposals on guidance referring to the use of BA; a number of which we view as a dilution of current arrangements. It stands to reason that whilst current arrangements do not prevent the loss of firefighters whilst wearing BA, any proposed guidance of a less stringent nature would lead to an increase in similar events. This would be totally unacceptable. This is why we have made a number of recommendations that seek to improve the guidance employed in the use of, and control of, BA. Some of these recommendations are applicable to WFRS but equally other fire and rescue services would do well to carry out similar exercises. Some of the recommendations refer to issues which we feel would be best dealt with nationally.

6.2.5 Other concerns

The three areas mentioned above do not form an exhaustive list of topics addressed within the full FBU SAI report, nor do they address all of our concerns in the three particular areas themselves. However they do constitute three key areas of concern where we believe the fire and rescue service is not learning from its previous mistakes. All too often when incidents such as these are dissected, as they always are, do we draw comparisons to other incidents. Until such time as all concerned acknowledge this and make a concerted effort to address the underlying issues, the FBU remains gravely concerned that similar tragic events will take place in the future.

The conclusions and recommendations are based on the information, evidence and documentation that has been made available to the FBU and to the best of our knowledge was accurate at the time of producing this report. We emphasise that any additional information subsequently becoming available could alter the findings of this and any future reports.

7) Recommendations

The FBU's full Serious Accident Investigation (SAI) report into the deaths of four firefighters on 2 November 2007 makes a detailed series of recommendations, divided into ten separate headings to ensure effective operational service delivery:

- National Framework
- Integrated Risk Management Plans (IRMP)
- Risk information
- Incident Command System
- Dynamic Risk Assessment
- Breathing Apparatus (BA)
- Water supplies
- Operations
- Fire development and firefighting actions

In this summary report, three key areas of recommendations have been extracted.

7.1 IRMP

7.1.1 Central government must undertake a review of the IRMP guidance notes as a matter of urgency with all stakeholders fully involved. The outcomes of the review to be published and implemented.

7.1.2 Central government must introduce a robust process of scrutiny that demonstrates that a risk-based approach has been applied to the production of local IRMPs.

7.1.3 DCLG must 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. The FBU should ensure the same issue is raised elsewhere in the UK.

7.2 Incident Command

7.2.1 In 2007 the Warwickshire Fire and Rescue Service Incident Command System was operating to Fire Service Manual, Volume 2, Fire Service Operations, Incident Command, second edition. The fire and rescue service must ensure the best possible operational intelligence is available en-route and at the incident ground from owners and managers of the site.

7.2.2 Communication across all areas of the incident ground must be more effective.

7.2.3 Warwickshire Fire and Rescue Service must review and update S.O. 01.02.21 Incident Command System, in recognition of the importance of communication on the incident ground. This must include risk, task and deployment information. This should be completed within twelve months.

7.2.4 Robust training must be provided in recognition of the importance of communication on the incident ground. This must include risk, task and deployment information to all firefighters and sector commanders.

7.2.5 At all incidents there is always an element of risk and the level of risk must always be balanced against what will be gained. To achieve this, an assessment of the risk must be carried out and this process must continue at regular intervals throughout the incident. Warwickshire Fire and Rescue Service computer-based training lecture package on Command Support details the function of gathering written risk assessments from the incident. Risk assessments must be recorded and risk information passed on to attending crews.

7.2.6 Warwickshire Fire and Rescue Service must review and update S.O. 01.02.21 Incident Command System, in recognition of the importance of risk assessment and the introduction of any relevant control measures on the incident ground and to reflect current fire and rescue service national guidance and best practice. This should be completed within twelve months.

7.2.7 Risk assessment is a management responsibility and therefore must be carried out in line with the Management of Health and Safety at Work Regulations 1999 (MHSWR 1999) and undertaken by crew managers or above.

7.2.8 Robust training must be provided on carrying out a risk assessment on the incident ground to all crew managers and above, and undertaken annually.

7.3 Breathing Apparatus

7.3.1 Agreement needs to be reached on the replacement for TB 1-97. The new policy must ensure no reduction in the various safety measures and safeguards contained within current guidance and should, where possible, improve safety related safeguards.

7.3.2 Whilst WFRS has in place Service Order 05.04.10, a review/audit of this service order needs to be implemented to ensure compliance with the fire and rescue service national guidance and best practise on selection of BA teams leaders and BA wearers. It should further ensure a robust process is in place to demonstrate that all firefighters and incident commanders have gained the underpinning knowledge essential for ensuring that they can carry out their functions safely.

7.3.3 A singular national system for the designation of BA Entry Control Points and the numbering of BA teams should be adopted to remove confusion and improve interoperability between fire and rescue services. Such a system can only be guaranteed with the introduction of robust training, policies and procedures thus allowing firefighters and incident commanders to deliver on a consistent basis. The attainment and maintenance of these skills should be validated on an annual basis in order to ensure the implementation of ongoing safe systems of work.

7.3.4 Where BA wearers are to be re-committed, then such a commitment should be for a specific task only and must have due regard to the fitness of BA wearers.

It is crucial for officers in charge and all BA wearers to recognise the signs and symptoms of heat stress and other thermal-related health and performance issues or conditions i.e. experiencing dizziness, nausea, abdominal pain, or a burning sensation of the skin, illogical decision making, or other unusual cognitive behaviour. The accurate recording of BA wearers names; time of entry and exit, a brief description of the conditions and activity must also be recorded. In view of the serious issues surrounding the re-committing to an incident of firefighters in BA, this issue should be kept under review by all stakeholder. These considerations should take account of developing knowledge regarding the physiological effects of wearing BA in fire situations.

Notes

Notes

Fire Brigades Union
Bradley House
68 Coombe Road
Kingston upon Thames
Surrey KT2 7AE

Tel: 020 8541 1765
Fax: 020 8546 5187

www.fbu.org.uk