

Fatal Fire Investigation



Report of the Hampshire Fire and Rescue Service investigation into the deaths of Firefighters Alan Bannon and James Shears in Flat 72, Shirley Towers, Church Street, Southampton, SO15 5PE, on Tuesday 6 April 2010



**HAMPSHIRE
FIRE AND
RESCUE
SERVICE**

Foreword

The primary duty of all fire and rescue services is to save life. In Hampshire this responsibility is central to how we operate such that the people we select and train, the equipment we buy and use, and the procedures we follow are focussed on that defining obligation.

This report details the response to a fire which led to the deaths of two of our colleagues. The facts of the report and particularly the actions of all HFRS staff are framed by that duty to save life. On the night of 6 April 2010 many lives of the public were at risk in Shirley Towers, Church Street, Southampton, a 16 storey high rise block of residential flats. The scene faced by fire crews that night was frantic and frightening such that the efforts to tackle this difficult and dangerous fire required the courage, stamina and skill of all those involved.

As an organisation we have dedicated considerable resources to this report, both in honour of our colleagues and also in a genuine desire to learn from these events. We have then ensured this learning has been turned into tangible actions in order to improve the way we tackle such incidents. We hope this will assist others, as well as ourselves, in understanding what caused the loss of Alan Bannon and James Shears and to do all we can to prevent such tragedies occurring in the future.

John Bonney
Chief Officer
Hampshire Fire and Rescue Service

8 April 2013

Cover: Fig 1: Photograph of the rear of Shirley Towers showing fire in progress on the ninth floor, taken from Vincent Road (Source: Hampshire Fire and Rescue Service)

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Section 1: Main Report

Chapter 1: Investigation Structure and Methodology

1.1 Introduction and Scope of the Investigation

- 1.1.1 This report summarises the Hampshire Fire and Rescue Service (HFRS) investigation into the deaths of Firefighters James Shears and Alan Bannon whilst tackling a fire in Flat 72, Shirley Towers, Church Street, Southampton, on the evening of Tuesday 6 April 2010.
- 1.1.2 The report outlines the structure of the HFRS investigation and the associated terms of reference developed in conjunction with Hampshire Constabulary (HC) and the Health and Safety Executive (HSE).
- 1.1.3 Contained within the report is a detailed chronology of the key actions and events during the incident.
- 1.1.4 From an analysis of the incident the report details the significant conclusions and the associated findings and recommendations.
- 1.1.5 Following the completion of the Coroner's Inquest on 10 July 2012, the Coroner, Mr Keith Wiseman, recorded a verdict of death by misadventure for Firefighters James Shears and Alan Bannon. The narrative accompanying this verdict and the contents of the subsequent Coroner's 'Rule 43' letter are also contained within this report.

1.2 Accident Investigation

- 1.2.1 The police are required to determine the circumstances surrounding any death in the workplace in order to inform HM Coroner's inquest. Accordingly HC formed Operation Carrageen to conduct the investigation. The aim of the investigation was to determine if any criminal offence had been committed and, in accordance with their protocols, was passed to their Major Crime Unit.
- 1.2.2 HC were assisted by officers from London Fire Brigade (LFB) and the West Midlands Fire Service (WMFS). LFB conducted the investigation into the cause, origin and development of the fire. An extract from the LFB report can be found as Appendix H.
- 1.2.3 WMFS provided technical advice to HC to assist them in their investigation.
- 1.2.4 Assistance from LFB and WMFS was at the request of HFRS.

- 1.2.5 The Management of Health and Safety Regulations 1999, Regulation 5, Approved Code of Practice, Monitoring, Paragraph 36(b), requires employers to ensure they adequately investigate the immediate and underlying causes of incidents and accidents to ensure that remedial action is taken, lessons are learnt and longer term objectives are introduced. Accordingly a HFRS Accident Investigation Team (AIT) was formed to investigate all pertinent factors and issues relating to the incident.
- 1.2.6 The HFRS AIT comprised:
- Assistant Chief Officer R Ratcliffe
 - Group Manager M Johns
 - Group Manager C Stephens
 - Mr P S Webb
 - Mrs E Manser
- 1.2.7 Advice on critical incident investigation was provided by East Sussex Fire and Rescue Service following their recent experience at the Marlie Farm fatal fire.
- 1.2.8 The HFRS AIT investigation was divided into four main phases as follows:
- Phase 1 of the HFRS accident investigation gathered, recorded, copied and logged information relevant to the incident.
 - Phase 2 ran concurrently with Phase 1, and constructed a comprehensive record of what happened at the incident and how it happened. This process involved the use of the Sequential Time Elapsed Plotting (STEP) process to record events, actions and movements of all HFRS personnel on site. The timeline for the investigation covered the period from the time of first call (20:10) to the time the casualties were passed into the care of South Central Ambulance Service (22:59). This approach is in line with HSG 65 and HSG 245 guidance.
 - Phase 3 established why the events occurred and associated risk control measures. This process was informed by Phases 1 and 2. To assist with this phase the AIT adopted the Noordwijk Risk Initiative Foundation 'Management Oversight and Risk Tree (MORT)' analytical logic diagram methodology.
 - Phase 4 was the production of an investigation report incorporating an action plan incorporating findings and recommendations for implementation.

1.2.9 As the HFRS AIT investigation proceeded, a number of safety critical operational practice issues emerged. These issues included operational procedures, communications, breathing apparatus (BA) procedures, incident command and control, and operational policy and directives. Once established and proven, these emerging issues were passed to the Organisational Improvement Steering Group (OISG). The OISG was formed to consider and act on issues identified by and referred from the AIT ahead of the publication of their report and to take action to address them as part of continuous improvement. This group's work is scheduled for completion by the end of March 2015.

1.2.10 This OISG is chaired by a senior officer and comprises:

- Area Manager (Service Delivery Response)
- Area Manager (Service Delivery Protection)
- Head of Training
- Health and Safety Manager
- Member of AIT as appropriate
- AIT Admin Support

1.3 Terms of Reference

1.3.1 The Terms of Reference for the HFRS AIT can be found as Appendix B.

1.3.2 The Terms of Reference for Operation Carrageen, the HC Investigation Strategy Agency terms of reference, can be found as Appendix C.

1.4 Memoranda of Understanding (MoU)

1.4.1 The MoU between HC Investigation Team and the HFRS AIT can be found as Appendix D.

1.4.2 The MoU between the HFRS AIT and the Fire Brigades Union (FBU) Accident Investigation Team can be found as Appendix E.

1.4.3 In addition, an MoU was agreed between HC, LFB, WMFS and the HSE.

1.4.4 These MoU were key to establishing clear roles and areas of responsibility and to minimise or prevent duplication of process.

Chapter 2: Location and Building

2.1 Incident Pre-Planning

National Legislation

- 2.1.1 The Fire and Rescue Services Act 2004 (FRSA 2004), Section 7(2)(d), requires all fire and rescue services to make arrangements for obtaining information needed for the purposes of extinguishing fires and protecting life and property in their area.
- 2.1.2 Fire and rescue services comply with this requirement by sending local fire crews to visit properties that present the greatest risk or potential loss, to gather information to enable pre-planning in the event of an emergency. The regularity of visits for information updates is generally risk assessed to determine frequency.

HFRS Policy

- 2.1.3 HFRS policy is detailed within Service Order 7/8/10 and complies with this requirement by sending local fire crews to visit properties that present the greatest risk or potential loss to gather information to enable pre-planning in the event of an emergency.
- 2.1.4 The programme of visits for information updates is risk assessed to determine frequency.
- 2.1.5 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 FRSA 2004, Section 7(2)(d) 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 pre-determined attendance (PDA) appliances.
- 2.1.6 At the time of this fire, HFRS was in the process of replacing all hard copies of the Operational Plan with electronic Site Specific Risk Information (SSRI) in accordance with national recommendations. The plans for Shirley Towers had not been modified and put onto this system but the information provided in hard copy was still up to date and accurate.
- 2.1.7 Due to the complexity of the building, the Operational Plan provided a diagram which showed which floor each flat was on, the position of its entrance door and the fire escape door. It also therefore showed whether the flat was an 'up' flat, ie, went up two floors from the front door, or 'down' flat going down two floors from the front door. This knowledge is key to fire fighting tactics in particular in choosing the most appropriate entry point.
- 2.1.8 The Operational Plan also shows the layout of the tower block and the floor layout of the flat.

2.2 Incident Location

- 2.2.1 Shirley Towers is situated in Church Street, Shirley, Southampton, SO15 5PE. It has a rear access via Milner Court. It is a 16 storey high rise residential block constructed in 1967 (see Fig 1). It was constructed using the REEMA construction process (this utilises a reinforced concrete frame with room sized pre cast concrete panels bolted to the outside). As the individual residences cover three floors they are technically best described as maisonettes, however they are marked as flats and the residents refer to them as flats. It has 150 flats with an occupancy of between 350-400.



Fig 2: Map of Shirley Towers and surrounding area

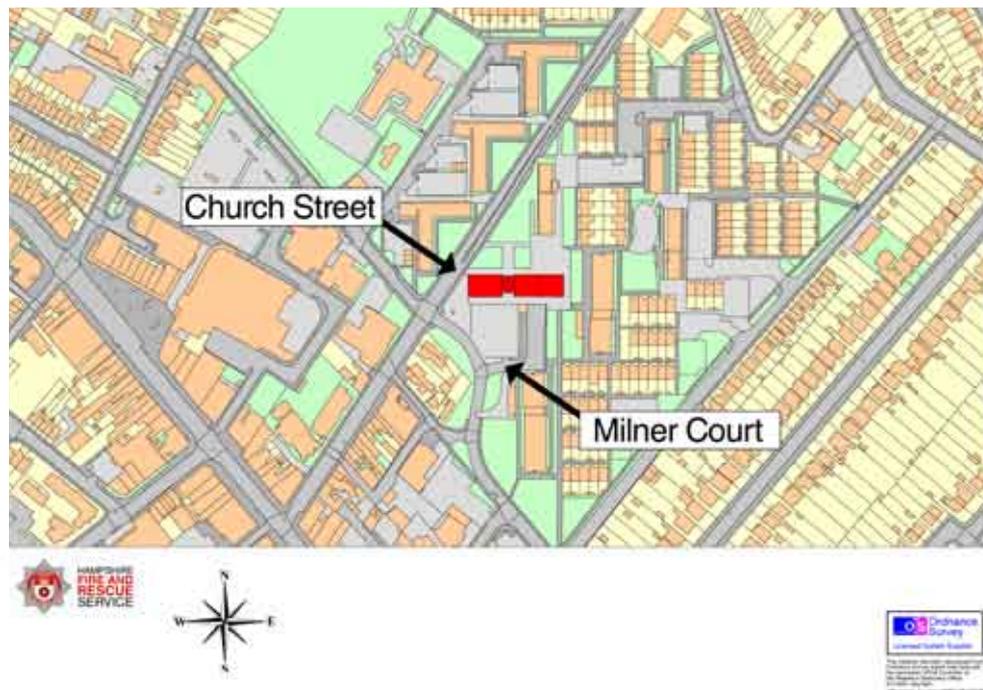


Fig 3: Ordnance Survey map of Shirley Towers and surrounding area

2.2.2 Water supplies for the incident were obtained from a hydrant situated in Church Street adjacent to the front entrance of Shirley Towers. Twin lines of 70mm hose were used to supply water from the hydrant to the dry riser inlet (Fig 4).

2.2.3 The dry riser in Shirley Towers has outlets on alternate floors, eg, fifth, seventh and ninth floors. Following the incident the dry riser was independently tested and a minor leak noted from the drain valve on the ground floor. This leak had no significant effect on the performance of the dry riser and its ability to provide fire fighting water supplies to the upper floors.



Fig 4: Post incident photograph of dry riser inlet with 2 x 70mm supply hoses connected (Source: Hampshire Constabulary)

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

2.2.5 The fire originated in the lounge of Flat 72 on the ninth floor.

2.2.6 The 'MOSAIC' lifestyle profile model examines the socio-economics, the lifestyle and behavior of consumers in given areas. This model is used by HFRS to assist in risk identification. At the time of the fire Flat 72, Shirley Towers was classified as Mosaic Group F Type 38 (2010 Classification). This type of classification suggests that the occupants are 'People living in social housing with uncertain employment in deprived areas'. Group F is comprised of many people who are struggling to achieve the material and personal rewards that are assumed to be open to all in an affluent society. Few hold down rewarding or well paying jobs and, as a result, most rely on the council for their accommodation, on public transport to get around and on state benefits to fund even the bare essentials. The lack of stability in many family formations undermines social networks and leads to high levels of anti social behaviour among local children.



Fig 5: Location of Redbridge Fire Station relative to Shirley Towers (Distance 0.9484 miles)

2.3 Location of Flat 72 within Shirley Towers

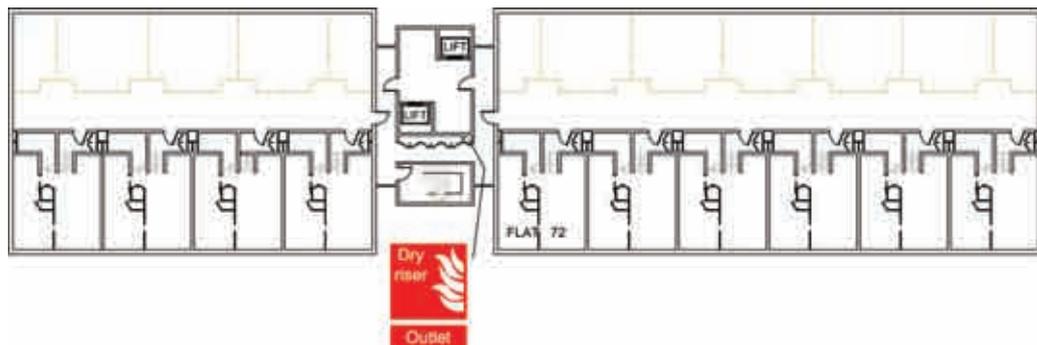


Fig 6: Location of Flat 72 (ninth floor) within Shirley Towers (only up flats shown)



Fig 7: Layout of Shirley Towers showing the seventh (Bridgehead) and ninth (Fire) floors

2.4 Layout of Flat 72

- 2.4.1 The design of Shirley Towers is unusual for those not familiar with the layout. The layout of the flats is best described as a scissor design, with individual flats situated across three floors. Entrances to adjacent flats lead either upwards (up flat) or downwards (down flat) from the front door. An up flat has an emergency exit two floors above the entrance. The emergency exit door is on the opposite side of the corridor to the entrance.
- 2.4.2 Flat 72 is an up flat and has its entrance on the ninth floor with an emergency exit on the eleventh floor (whereas a down flat accessed from the ninth floor will have its emergency exit door below on the seventh floor). Flat numbering has no obvious relation to the floor number.
- 2.4.3 The southern side of Shirley Towers (as shown on the front cover) contains only the lounge and kitchen windows with the opposing (northern) side containing the bedroom windows.
- 2.4.4 Following a previous fire, all flats were individually marked with an arrow to denote whether they were up or down flats (see Figs 10 and 26).

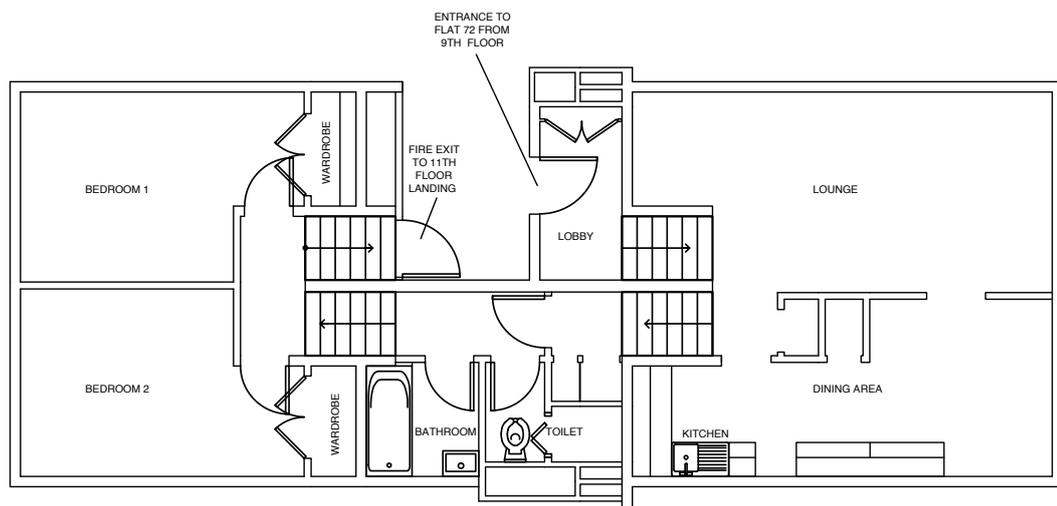


Fig 8: Plan of Flat 72, Shirley Towers. Note: Access to lobby is on the ninth floor with the fire exit emergency door exiting on the eleventh floor

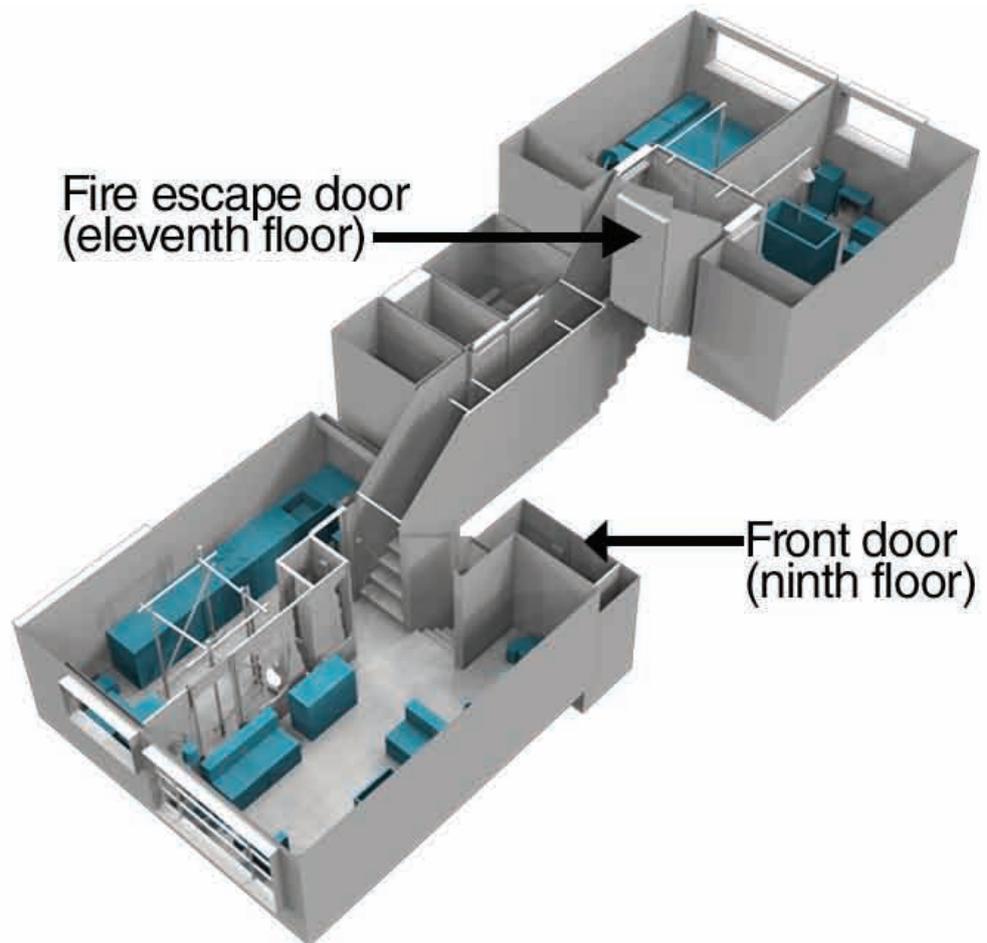


Fig 9: Three dimensional view of Flat 72.



Fig 10: Post incident photograph of flat sign denoting (by arrow) that Flat 72 is an 'up' flat. Note the relatively minor smoke damage (Source: Hampshire Constabulary)

Chapter 3: Summary of Main Events

- Note: A more detailed chronology is provided at Appendix A.
- 3.1 On 6 April 2010 at 20:10, a 999 call was received by Hampshire Fire Control reporting a fire in Flat 72 on the ninth floor of Shirley Towers, Church Street, Southampton.
 - 3.2 The PDA was mobilised, with the first fire appliance booking in attendance at 20:14:29.
 - 3.3 On arrival, a dynamic risk assessment was conducted and the Incident Commander (IC) sent an assistance message requesting a total of six fire appliances.
 - 3.4 The Bridgehead was set up on the seventh floor, two floors below the fire.
 - 3.5 Red Team 1 consisting of two BA wearers, Firefighters (Ffs) Holland and Ryan, entered Flat 72 taking with them a Thermal Imaging Camera (TIC), a radio and one hose line, consisting of three lengths and connected to the dry riser on the seventh floor.
 - 3.6 Red Team 1 began to search for the fire using a right hand search. Conditions were reported as being not too hot but very smoky with zero visibility.
 - 3.7 Another hose line consisting of three lengths was run out but from the fifth floor dry riser. This jet was too short to use as a safety jet.
 - 3.8 Red Team 2 consisting of two BA wearers, Ffs Bannon and Shears, entered Flat 72, also with a TIC and radio, but without a hose line, to assist Red Team 1 with hose management.
 - 3.9 After entering Flat 72 the teams had to climb seven steps to enter the lounge.
 - 3.10 Red Team 1 did not locate the fire (located in the lounge) before turning right and climbing another short staircase to the bathroom and toilet level. From here they continued up another short flight of stairs to the bedroom level. Whilst in the bedrooms Red Team 1 opened the windows to try to ventilate smoke from the flat to aid visibility.
 - 3.11 As Red Team 1 left the bedrooms they met Red Team 2 coming up the stairs. As the two crews briefly communicated at this location the temperature rose rapidly to an unbearable level.
 - 3.12 At 20:40 external closed circuit television (CCTV) footage shows a severe fire in progress in the lounge.
 - 3.13 Both teams realised the need to exit the flat urgently but were unable to make their way down the stairs due to the heat coming up the staircase. Red Team 1 decided to escape via the eleventh floor fire escape door.

- 3.14 Following this brief conversation between Red Teams 1 and 2 on the bedroom floor landing area, all contact was lost with Red Team 2 until their recovery.
- 3.15 Ff Holland of Red Team 1 made his way to the fire escape door and emerged into the eleventh floor corridor. On realising that his teammate, Ff Ryan, had not joined him, Ff Holland turned and located Ff Ryan at the top of the stairs leading to the fire escape door, entangled in fallen cables.
- 3.16 Ff Holland assisted Ff Ryan in escaping from the cables and both men exited through the fire escape door into the eleventh floor corridor. Both men suffered burns to their hands and were taken to hospital for treatment.
- 3.17 A BA emergency was declared and notified to Fire Control.
- 3.18 Numerous emergency BA teams attempted to locate and rescue Red Team 2 from Flat 72 but were beaten back by excessive heat. Fallen cables hanging down further hampered efforts.
- 3.19 Both members of Red Team 2 were eventually located using a TIC. Ff Bannon was lying in the doorway to bedroom 2, Ff Shears was lying in the doorway to bedroom 1.
- 3.20 Both members of Red Team 2 were carried, with difficulty, through fallen cables out of Flat 72 into the ninth floor corridor where emergency medical treatment was provided to Ff Bannon. Ff Shears was quickly moved to the lift lobby for treatment. Both firefighters were fatally injured by exposure to excessive heat.

Chapter 4: Initial Response

4.1 Fire Control and Mobilising

- 4.1.1 Section 9(3)(c) of the Fire and Rescue Services Act 2004 states 'An order under this section may make provision as to what a fire and rescue authority must or may do for the purposes of a function conferred under this section, and may in particular require or authorise a fire and rescue authority - to make arrangements for dealing with calls for help and for calling personnel.'
- 4.1.2 New entrants to HFRS Control are initially placed on a three week training course to ensure they have a comprehensive understanding of computer systems, equipment operation and the policies and procedures appertaining to mobilising operations.
- 4.1.3 On completion of the initial training course, the new entrant is placed under the guidance of an experienced member of Control for between four to six months to ensure the individual is fully competent before carrying out the duties of a Control Operator unsupervised.
- 4.1.4 Fire Control Training Notes state that the task of the Control Operator is to 'Gather information from the caller to determine the nature and exact location of the incident'. Once sufficient information has been obtained from the caller the operator must mobilise resources in line with the specific (to the incident) PDA.
- 4.1.5 Fire Control have a number of local performance indicators (LPIs) which measure their performance standards. These LPIs measure the percentage of calls answered in 10 and 30 seconds and the average call handling time.
- 4.1.6 HFRS Fire Control received its first 999 call to Shirley Towers at 20:09:42. The caller gave details of the address, the flat number, the floor on which the flat was situated and that he could see flames in the front room. The caller was not asked if persons were known to be in the flat. This call finished at 20:10:21 (duration 39 seconds).
- 4.1.7 This call was monitored by the Watch Supervisor.
- 4.1.8 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.

4.2 Speed and Weight of Response

- 4.2.1 At the time of the incident, the PDA for an incident in Shirley Towers was five fire appliances, a Special Equipment Unit, an aerial appliance and two officers.
- 4.2.2 This PDA had been upgraded on the 14 December 2009 (Service Bulletin 70/09) from three fire appliances, an aerial appliance, a Special Equipment Unit and one officer. The revised PDA represents an additional two fire appliances and an officer over the previous PDA.

- 4.2.3 To fulfil the requirements of the above PDA the nearest fire stations and appliances mobilised to the incident were:
- Redbridge - Water Tender Ladder (WL) and Aerial Ladder Platform (ALP)
 - St Marys - Water Tender Ladder (WL), Water Tender (WT) (x 2) and Special Equipment Unit (SEU)
 - Totton - Water Tender (WT)
- 4.2.4 At the time of the incident all the above appliances (with the exception of the ALP) were available and on station and were mobilised by Fire Control. The First Response Vehicle (FRV) and the ALP are dual crewed appliances. This means that only one of these appliances is available at any one time. At the time of the call the FRV was out on station ground and was recalled to station to transfer crews over, and so allow the ALP to respond to Shirley Towers.
- 4.2.5 HFRS sets a target attendance time of eight minutes on 80% of occasions to all emergency calls. The attendance time is taken from the time the call is received to the time the first resource arrives at the incident.
- 4.2.6 The first appliance attendance (Redbridge WL) to this incident was made at 20:14:29 hours - an attendance time of four minutes eight seconds.

4.3 Water Supplies

- 4.3.1 On the evening of the fire, attempts to open the dry riser cabinet on the ninth floor were made by attending crews and the warden of the flats. All attempts proved unsuccessful necessitating forced entry later in the incident.
- 4.3.2 The first jet was run from the seventh floor outlet via a short length through a controlled dividing breeching, this line consisted of three lengths of 45mm hose and was sufficient to reach every part of Flat 72.
- 4.3.3 The second jet was run directly from the fifth floor outlet to a dividing breeching on the seventh floor. Two further lengths of hose were added which allowed this line to reach as far as the top of the entrance stairs of Flat 72. Later during the incident a third jet was run from this dividing breeching (seventh floor).
- 4.3.4 The first length of hose between the outlet and the dividing breeching consisted of a 45mm length of hose which would have rendered subsequent additional lengths hydraulically inefficient, effectively the first line of 45mm hose was divided into two 45mm lines. Procedures dictate that the first short length should be a 70mm diameter hose.
- 4.3.5 As the incident escalated two further jets were used, Jet 4 was run from the dividing breeching connected to the seventh floor dry riser outlet and Jet 5 was run directly from the ninth floor dry riser outlet.

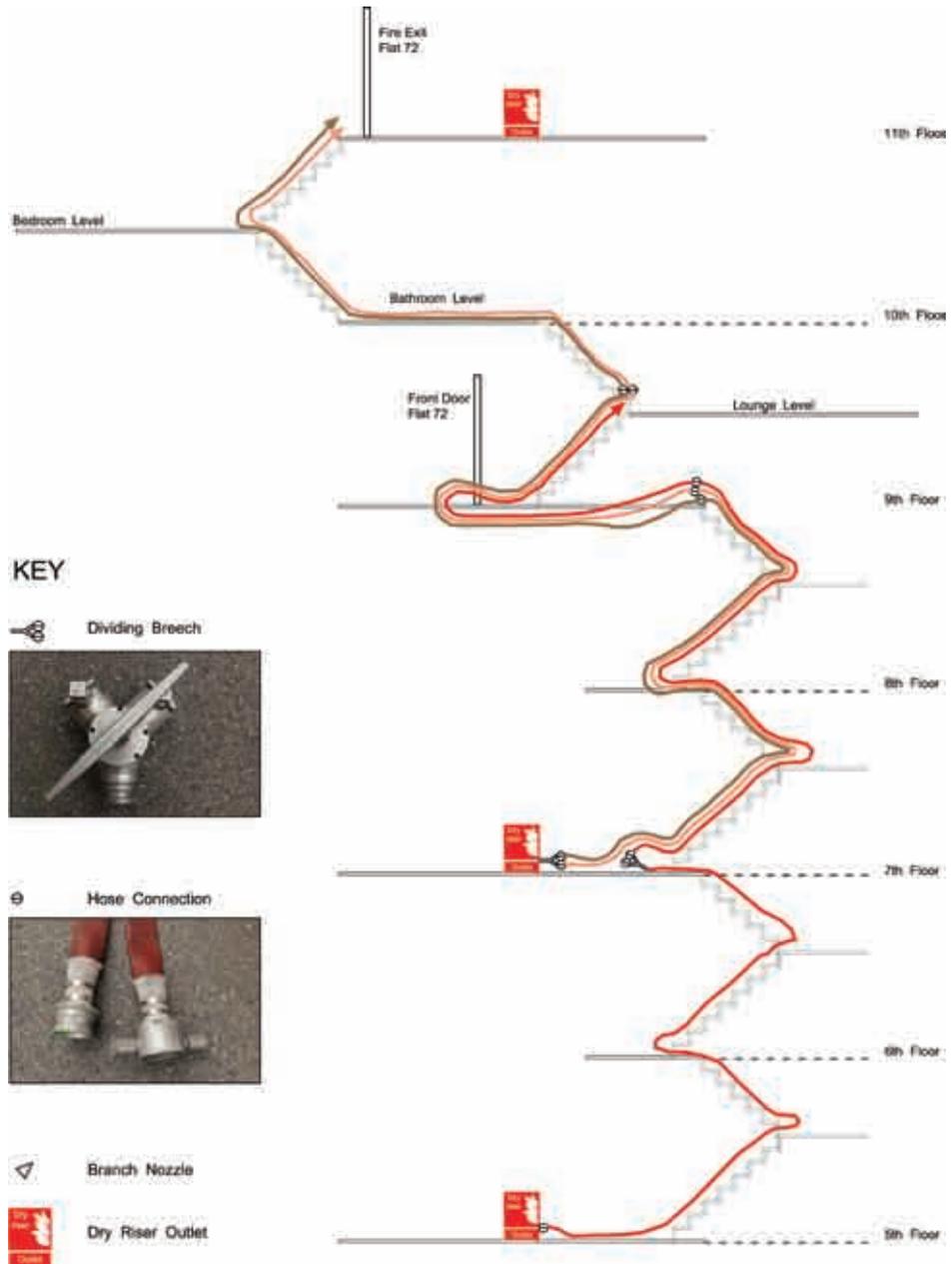


Fig 11: Elevation of Shirley Towers showing layout of first three jets.

Chapter 5: Fire Service Operations

5.1 Incident Command Structure

- 5.1.1 The Department for Communities and Local Government (DCLG) provides guidance for incident command to fire and rescue services in their publication 'Fire and Rescue Manual, Volume 2, Fire Service Operations, Incident Command, Third Edition 2008'.
- 5.1.2 The manual defines the duties of the IC as the person responsible for securing and controlling fire and rescue service resources on the incident ground. It provides advice for the IC with regard to structuring an incident. The Incident Command System (ICS) provides a framework that assists with the management of resources at an incident. It enables the IC to delegate responsibility for a range of tasks and functions during what may be a stressful, rapidly developing situation whilst remaining very much in control. The main elements of the standard ICS framework are:
- A clearly defined and visible chain of command.
 - Management of the span of control of key commanders.
 - Appropriately shared responsibility and authority, with a clear definition and understanding of roles and responsibilities.
 - A consistent and predictable pattern of sectorisation.
- 5.1.3 At the time of the Shirley Towers fire, HFRS policy was detailed within Service Order 7/2/1/1 and Policy Directive 7/5/13 and fully aligned with national guidance.

5.2 Breathing Apparatus

- 5.2.1 HFRS BA policy and procedures are based on Home Office Technical Bulletin 1/1997 'Breathing Apparatus' (TB 1/97). This nationally agreed guidance sets out procedures that should be adopted by fire and rescue services at all incidents.
- 5.2.2 HFRS internal policy is defined within Service Order 7/7 (issued November 2008), which is in turn supported by Policy Directive 7/7. Service Order 7/7 represents a reproduction of the technical content of TB 1/97 with HFRS local variations incorporated into its content.
- 5.2.3 HFRS uses self contained compressed air BA sets, similar to those used by every UK fire and rescue service. HFRS BA sets are manufactured by Draeger. The air provided from the cylinder provides for a nominal working duration of 35 minutes but this duration is dependent on the physical effort expended by the wearer and the resultant air consumption. It is made very clear to all BA wearers that hard work will reduce working duration. This fact is reinforced during BA refresher training.
- 5.2.4 The BA sets used by Ff Bannon and Ff Shears were inspected by the Health and Safety Laboratories after the incident and were shown to have operated correctly throughout the incident. No defects with the BA sets were reported by any of the BA wearers involved in this incident.

- 5.2.5 Fire and rescue services follow national procedures designed to monitor BA teams operating in risk areas. When BA is worn a BA Entry Control Officer (BAECO) is designated to monitor the teams. The procedure requires setting up a BA control board at a suitable entry point into the risk area.
- 5.2.6 The tally provided by each wearer is placed into a BA control board by the BAECO who also writes the location the wearer is operating in and any other useful information (eg, task, hazards, updates on progress, conditions) in a 'remarks' area.

5.3 Equipment

Radios

- 5.3.1 Two types of radios were in use by HFRS at the time of the incident.
- 5.3.2 Main scheme (VHF) radios are fitted to all fire appliances to enable an effective communications link between the vehicle and Fire Control.
- 5.3.3 Hand held radios (UHF) are also provided for communications between operational personnel on the incident ground. These provide four commonly used channels to provide communications for different functions such as BA, command, command support, etc. At the time of the incident three hand held radios were supplied with every fire appliance with more available on special appliances such as the SEU.
- 5.3.4 All communications relating to BA are conducted on Channel 6. Every BA team is equipped with a radio as is the BAECO.
- 5.3.5 For command, the IC and all sector officers communicate with each other using these radios. The Bridgehead sector would also need to maintain contact with the pump operator supplying water for fire fighting.
- 5.3.6 The handheld radios are relatively low power and operate over a short distance which is adequate at most incidents, although large concrete structures such as high rise buildings do sometimes cause reception difficulties. There is no evidence that there were radio transmission problems at this incident. After the incident the radio carried by Ff Shears was fitted with a charged battery and found to be fully functional.
- 5.3.7 The radios are operated by pressing a switch to transmit. Ff Ryan was the radio operator for BA Red Team 1. After burning his hands during the rapid temperature rise inside Flat 72, he has stated he was unable to operate his radio to communicate with the BAECO.

Thermal Imaging Camera (TIC)

- 5.3.8 Generic Risk Assessment 3.1, Fighting Fires in Buildings, Section 3.5.3 states “the use of thermal imaging cameras will considerably increase the safety of firefighters when working in smoke logged buildings”.
- 5.3.9 A TIC shows the temperature difference between items in view and is not affected by smoke or a lack of light. Particularly during a fire, items gain heat at different rates, eg, metal and wood. Even in very dark and smoky conditions it would show hotter areas in a room, particularly a fire. The TIC is ideal for locating fires and casualties.
- 5.3.10 TICs are carried on most front line appliances in Hampshire including the first attending appliances. TICs were taken into Flat 72 by the first two BA Teams, Red 1 and Red 2, but were not used.

5.4 Fire Fighting Techniques

- 5.4.1 Guidance provided to fire and rescue services nationally in recent years regarding extinguishing fires has been provided by Fire Service Manual, Volume 2, Fire Service Operations, Compartment Fires and Tactical Ventilation (published 1997). The current tactics concentrate on safe entry into the compartment, maintaining a safe working area while accessing the fire by cooling the gas layers above and immediately in front of the firefighters and cooling the remaining fuel supplying the fire before applying water to the fire. These techniques have been taught and used almost exclusively since the loss of two firefighters in a fire in Gwent in 1996.
- 5.4.2 HFRS personnel are trained in ‘branch’ techniques during Compartment Fire Fighting Training carried out at HFRS Training Centre on a three yearly basis. Firefighters practice these techniques on their fire station and are assessed six monthly to ensure their technique is correct as part of their BA training and assessments.
- 5.4.3 The training provides three phases of activity and is designed to enable firefighters to enter a hot compartment safely, maintain a safe working environment as they access the fire and then extinguish the fire. The technique uses the minimum quantity of water required and is practiced in a metal container. It is emphasised that excessive use of water creates steam which quickly deteriorates conditions sometimes making conditions within the container untenable.

5.5 Ventilation

- 5.5.1 National General Risk Assessment 3.2, Version 2, September 2008, and the Fire Service Manual, Volume 2, Fire Service Operations, Compartment Fires and Tactical Ventilation, contains guidance on ventilation. The manual defines ventilation as “The removal of heated air, smoke and other airborne contaminants from a structure, and their replacement with a supply of fresher air”. The purpose of ventilation during a fire is to release the products of combustion from the compartment so as to prevent them causing further fire growth. Useful side effects of this are that, if the air-flows are properly managed, air temperatures will be reduced and visibility will be increased, making the firefighters’ job easier. However the firefighter should be aware that the increased air supply may cause the fire to intensify.
- 5.5.2 The manual states:
- Page 10 “If it is decided that a compartment needs to be ventilated and once the method of ventilation has been selected by the officer in charge.”
- Page 22 “In the majority of instances, tactical ventilation should not be used until the fire has been located.”
- Page 24 “If the officer in charge decides that ventilation will be initiated.”
- 5.5.3 Service Order 7/7 Breathing Apparatus, para 2.1.4 states “When firefighters are hampered in reaching a fire because the route they have to follow is smoke-logged the IC may decide to employ tactical ventilation“. Para 2.1.5 states “Prior to ventilation BA crews must be informed of the IC ventilation tactics as internal conditions may change. Therefore adequate communications are essential”.
- 5.5.4 Module B Breathing Apparatus (Tactical Ventilation) states that tactical ventilation should only be carried out by trained personnel under strict supervision.
- 5.5.5 Ventilation training is covered in the 2007/2009 Work Place Assessment (WPA) which covers the requirement and standards for BA at all levels including Flexible Duty System (FDS) officers (level 2 and 3). This includes ventilation and fire behaviour in the backdraught and flashover training (bi-annually) and ventilation (annually).
- 5.5.6 The DVD used in HFRS on-line training (which supports WPA 3.6) states, “Before authorising ventilation, the officer in charge must have developed a plan.”

5.6 Communication Procedures

- 5.6.1 At every incident one appliance is designated as the Contact Point for Fire Control at the incident. All messages to and from Fire Control go through this radio, all other main scheme radios are turned off to avoid interference. The Command Point for the IC is always at the Contact Point and all messages sent from the incident ground are sent with the ICs authority and name.
- 5.6.2 There is a standard message procedure to ensure concise and accurate messages are sent. The IC is expected to update Fire Control every 20 to 30 minutes from the scene. The radio system is not secure and can be listened into by people outside the fire and rescue service with the correct equipment. To provide contingency and, if necessary, security, a mobile telephone is also available on every appliance.
- 5.6.3 Officer vehicles are not fitted with radios, so officers use mobile telephones to communicate with Fire Control until they book in attendance at the incident. After this point they will use the radio systems set up at the incident ground.
- 5.6.4 All main scheme radio messages and telephone messages received by Fire Control are timed and logged to specific incidents.
- 5.6.5 UHF hand held radios are also provided to enable a local network of communication at the incident ground. These radios have four commonly used channels, with set channels allocated to specific functions. The allocation has been revised since Shirley Towers but at that time channels in use were:
- Channel 1 - General incident ground
 - Channel 3 - Command team
 - Channel 5 - Command support
 - Channel 6 - BA communications
- 5.6.6 These radios provide all on scene communications. Each BA team carries a radio to communicate with the BAECO. Each Sector Officer (operational) is allocated a radio to communicate with the IC and each Sector Officer (functional) is allocated a radio to communicate with the Command Support Officer (CSO). Particularly at larger incidents the system has to be controlled to manage the radio use and this is organised by the CSO and the Incident Command Team (ICT) who arrive with the Command Units.
- 5.6.7 To provide contingency and if necessary, security, a mobile telephone is also available on every appliance.

5.7 Training

- 5.7.1 Learning and development policy within HFRS is supported by the Integrated Personal Development System (IPDS). In 2001, the IPDS was adopted by fire and rescue services following its approval by the Central Fire Brigades Advisory Council (CFBAC) as the national training strategy for the service. IPDS is currently managed nationally by the Sector Skills Council Skills for Justice who provide workforce development solutions for organisations in the justice and community safety sector. IPDS has assisted fire and rescue services in the definition of training and development of their staff within a nationally agreed framework of National Occupational Standards (NOS) which in turn form part of the National Vocational Qualification (NVQ) network.
- 5.7.2 HFRS deliver training matched to the requirement of IPDS and Service Order 9/1 details the general policy for training and development within the Service. The Human Resources and Training function provides appropriate initial, refresher and continuation training and development for all personnel with the Training Department structured to develop policy, forecast training needs analysis, programme resources, co-ordinate training delivery and to provide audit, support and quality assurance for staff.

5.8 Fallen Cables

- 5.8.1 Following the Harrow Court fire (Hertfordshire 2005) HM Coroner wrote to the DCLG under the provisions of Rule 43 of the Coroner's Rules. The letter referred to five items, one of which was the danger from falling fire alarm cables and the recommendation that cable supports should be non-combustible.
- 5.8.2 DCLG replied to the effect that Approved Document B now restates the guidance in the Building Standard for fire detection and fire alarm systems for buildings (BS 5839-1 2002) that methods of cable support for cables used in fire alarm systems should generally be non-combustible.

Note: The recommendations and actions described above refer only to cables associated with fire detection and alarm systems.

- 5.8.3 As a result of the Harrow Court fire recommendations, BS 5839-1: 2002 and A2:2008, Paragraph 26, included three clauses relating to fire alarm cabling:
- (A2) Commentary: Unless cables are supported in such a manner that they remain supported for the duration similar to that for which the cable itself can survive a fire, early failure of the circuit might occur because of strain on terminations as a result of collapsing cables.
 - Recommendations, (f) Note 9 (A2): Experience has shown that collapse of cables, supported only by plastic cable trunking, can create a serious hazard to firefighters, who could become entangled in cables.
 - Note 2 (A2): Serious shortcomings in cable support that could result in (b)(5) collapse of a significant length of cable in the event of fire should also be regarded as a major non-compliance.

Chapter 6: Welfare Arrangements

HFRS Personnel

- 6.1 As details of the incident became clearer and the names of those fatally injured were confirmed, measures were taken to return the St Marys crews to home station and place them off duty. Welfare Officers were mobilised to St Marys to assist and support the crews.
- 6.2 Following the incident at Shirley Towers, a four stage post incident welfare plan was quickly established to ensure that all employees either directly involved at the incident or those who were on the periphery received appropriate support.
- 6.3 Stage 1 - Acute psychological first aid: This entailed identifying and contacting all staff that had attended or been involved in the incident. Stations were visited to provide verbal and written information. External trauma specialists were engaged.
- 6.4 Stage 2 - Psychological support: All staff were offered debriefs to defuse emotions. Managers were offered peer support sessions with external facilitators.
- 6.5 Stage 3 - Post traumatic growth: This involved identifying staff that needed further support. Workplace options leaflets were sent out to staff and the need for additional training requirements assessed.
- 6.6 Stage 4 - Follow up: This stage involved psychological risk assessments, preparation for key dates and events and an evaluation of the process and the lessons learnt.

Bereaved Families Liaison

- 6.7 As soon as the identities of the two deceased firefighters were confirmed, a joint visit by representatives of HFRS and HC was arranged to inform the next of kin.
- 6.8 Where a death in the workplace occurs it is normal practice for the police to appoint a family liaison officer to act as a single point of contact with the bereaved families. HC appointed such a liaison officer.
- 6.9 HFRS also appointed a family liaison officer for each family. Group Managers (GMs) provided support to the families and assisted them in the planning of the funerals. At the request of the families both funerals were conducted with full fire and rescue service honours.
- 6.10 Family liaison officers supported the families until completion of the Coroner's inquest.

Chapter 7: Coroner's Inquest

- 7.1 On Monday 18 June 2012, HM Coroner for Southampton City and the New Forest District, Mr K Wiseman, convened an inquest into the circumstances appertaining to the deaths of Alan Bannon and James Shears.
- 7.2 The inquest sought to establish the name(s) of the deceased and when, where and how they came by their death(s). Inquest rules require that where a death occurs in a workplace the inquest will be heard by a jury.
- 7.3 The inquest closed on the 10 July 2012 with the jury returning a verdict of 'Death by Misadventure' with the following narrative:
- "Firefighters Alan Bannon and James Shears died from sudden exposure to initially intense heat from 20:38 to 20:41 and thereafter to excessive heat while dealing with a fire in a flat on the ninth floor of the high rise tower block Shirley Towers.
- Obvious precautions to prevent the fire from occurring were not taken. In addition operational conditions for all firefighters involved became extremely difficult and dangerous and this significantly contributed to the deaths of the firefighters.
- Numerous factors have been identified as being relevant in the chain of causation which could have affected the eventual outcome and where appropriate will form the basis of recommendations to improve safety in the future."
- 7.4 On 4 February 2013, and under the provisions of Rule 43 of the Coroner's Rules, Mr Wiseman wrote to the following:
- Sir Ken Knight, Chief Fire and Rescue Advisers Unit (CFRAU), with responsibility for disseminating these recommendations to every fire and rescue service in the UK.
 - Eric Pickles MP, the Secretary of State for the DCLG, with responsibility for considering any legislative changes required to implement any of these recommendations,
 - Brandon Lewis MP, Parliamentary Under Secretary of State for the Fire and Rescue Service, with responsibility for disseminating these recommendations to every fire and rescue service.
 - Mark Prisk MP, the Minister of State for Housing (and Local Government), with responsibility for disseminating these recommendations to every social housing provider in the UK.

A copy of the Rule 43 letter can be found at Appendix O.

Chapter 8: Significant Conclusions

- 8.1 During the HFRS investigation a number of issues were identified that contributed to the events leading to the deaths of Firefighters Bannon and Shears. The impact of these issues ranged from minor to significant. Those issues viewed by HFRS as most significant are detailed below.
- 8.2 Following the HSE investigation, a detailed letter was sent to HFRS (see Appendix M) setting out matters the HSE wished HFRS to consider to prevent a reoccurrence of a similar incident. A summary of the actions identified, and the completion date of actions taken to address these recommendations, can be found at Appendix N. For the avoidance of duplication the matters set out within those Appendices are not repeated below.
- 8.3 **Conclusion 1:** Failure to gather and include vital information in mobilising message: Some important information received from the first 999 caller providing details of the fire location was not passed to the responding resources. This omission led to:
- The IC assuming that Flat 72 was on the seventh floor and planning to set up the Bridgehead on the fifth floor instead of the seventh floor. In fact, by mistake and contrary to the instructions of the IC who gave instructions for the Bridgehead to be positioned on the fifth floor, the Bridgehead was set up correctly on the seventh floor but throughout the incident most personnel were confused about the actual floor they were on.
 - The initial crews not being informed that flames had been observed in the lounge leading them to search the flat to locate the fire.
 - Confirmation was not sought from the caller that all persons were out of the flat.

Please refer to Finding 3.1 and Recommendations 3.1.1, 3.1.2 and 3.1.3.

- 8.4 **Conclusion 2:** Failure to locate and extinguish the fire before moving above it: The first BA crew that entered Flat 72 did not locate the fire in the lounge or extinguish it before ascending the stairs to the upper floors. Despite carrying a TIC they chose not to use it. The second BA crew did not report locating the fire and ascended the stairs following the hose line of the first BA crew. This omission led to:
- The initial crew not locating the fire in the lounge before ascending to the upper floors.
 - The fire being left unchecked and developing significantly below the ascending crews.
 - Both crews including the second crew who were not carrying any fire fighting media, being exposed to intense heat from the developing fire below them.

Please refer to Finding 2.5 and Recommendations 2.5.1 and 2.5.2.

- 8.5 **Conclusion 3:** Unauthorised ventilation of Flat 72: The first BA crew opened windows in the bedrooms above the lounge to aid ventilation. This act would have allowed the passage of heated air to flow upwards (and past the second crew) and exhaust out of the open window.

Please refer to Finding 2.13 and Recommendations 2.13.1 and 2.13.2.

- 8.6 **Conclusion 4:** Declaration of a BA emergency: Following a loss of communication with Red Team 2, Red Team 1 arrived back at BA Control in a distressed state at approximately 20:46. These factors should have prompted the initiation of a BA emergency. Communications with Red Team 2 could not be re-established and subsequent teams indicated a developing fire.

Red Team 2 'time of whistle' was noted as 21:01. Red Team 5 reported by radio hearing an Automatic Distress Signal Unit (ADSU) at 21:08 hours at which time a BA emergency was instigated. The delay in instigating the BA emergency meant that (assuming air consumption matched projections) the cylinder of Ff Shears' BA set would have expired three minutes later and almost certainly before assistance could be rendered.

Please refer to Finding 4.4 and Recommendation 4.4.1.

- 8.7 **Conclusion 5:** Fire resistant cable supports: Surface mounted electrical cabling was encased in plastic trunking which failed when exposed to heat so releasing the cables. These cables then became a hazard to firefighters. Ffs Bannon and Shears were both entangled in cables when located. The Harrow Court Fire Rule 43 letter only made recommendations regarding fire resistant cable supports for fire alarm cabling.

Please refer to Finding 2.8 and Recommendations 2.8.1, 2.8.2 and 2.8.3.

- 8.8 **Conclusion 6:** Protocol when cables fall or are likely to fall: BA crews encountering fallen cables had no means of self extrication, eg, insulated cutters. Cables fell between the cylinder and the BA set back plate making it extremely difficult to remove without assistance. Since the incident HFRS has incorporated a strap on the cylinder cover to reduce the risk of cabling becoming trapped between the cylinder and back plate. Insulated cutters have also been issued to every BA set.

Please see Finding 2.8 and Recommendations 2.8.1, 2.8.2 and 2.8.3.

- 8.9 **Conclusion 7:** Signs for assisting in fire situations: Following a previous fire, individual flats were marked to denote their number and whether the flat was an up flat or down flat. The markers were positioned at the top right hand of the flat door. During this incident, and as a result of heavy smoke logging, the signs were totally obscured rendering them ineffective.

Please refer to Finding 2.17 and Recommendation 2.17.1.

Section 2: Findings and Recommendations

Introduction

This section details the findings and recommendations of the AIT. These are divided into eight groups with specific detail for each itemised heading under individual recommendations.

As the HFRS AIT investigation proceeded, a number of issues emerged. Once established and proven, these emerging issues were passed to the Organisational Improvement Steering Group (OISG) for action. Those issues forwarded and resolved are marked with an asterisk *. Those items forwarded to OISG but awaiting resolution are marked as #. The timings in brackets are the times the issue appears in the chronology.

A multi agency 'Gold' level group was established in response to the incident (led by HC). This group consisted of representatives from HC, HFRS, HSE and Southampton City Council (SCC). This group considered strategic issues outside of the investigation process including matters of public and firefighter safety such as the risk from fallen cables and spalling of concrete. These two risks were submitted to CFRAU for wider national circulation.

These findings and recommendations do not seek to imply criticism of any individual or their actions, but focus on procedures and practices to improve safety on the incident ground.

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1 Personal Protective Equipment (PPE)

1.1 Wearing of Appropriate PPE

Finding

CCTV images showed a number of HFRS personnel not wearing full personal protective clothing during the incident, notably helmets and in some cases fire tunics. Service Order 7/4/1 requires the wearing of PPE at incidents to provide wearers with protection from the prevailing hazards. The absence of helmets at this incident is of particular concern because it was a high rise incident with debris and glass falling from the ninth and eleventh floors. A radio message from Command 1 (command and control vehicle) to the Ground Floor Command Support at 21:25 identified the hazard of falling debris, and requested that it be factored into the risk assessment.

Evidence source: Southampton CCTV and HFRS Command 1 tape.

Recommendation 1.1.1

That all personnel should be reminded of HFRS policy regarding the need to wear their full PPE at incidents or on the drill ground. Supervisory officers have a duty to ensure all personnel wear the appropriate PPE.

1.2 Shrinkage of Firefighters' Gloves

Finding

Following the incident it was identified that some firefighters' gloves had shrunk in size, in some cases by as much as a third, which prevented them from being re-worn. The structural integrity of the gloves was not affected by the reduction in size.

Evidence source: HSL report and AIT note for file.

Recommendation 1.2.1

That the manufacturer be appraised of the situation and asked to comment. All personnel be reminded of HFRS policy regarding the need to routinely and regularly monitor and inspect the condition of their fire fighting gloves both for structural integrity and correct size and record this check within their PPE log book.

Recommendation 1.2.2

That UK fire and rescue service procurement officers are informed of this effect, with a view to their consideration in any future glove procurement process.

1.3 Identification on the Fire Ground

Finding

When viewing CCTV images, considerable difficulty was encountered in the identification of some personnel. The faces of personnel were often hidden or obscured by helmets and the collar mounted station identifying lapel badges obscured by the wearing of tabards, BA sets and/or the carrying of equipment.

Evidence source: Southampton CCTV.

Recommendation 1.3.1

That consideration should be given to improving the individual identifiers on personal protective clothing, for example by adding station and/or personnel numbers on the back of the fire helmet.

1.4 Recognition of Temperatures in Fire Compartments

Finding

It became apparent during the investigation (and indeed from other incident debrief reports) that during the incident, temperatures rose rapidly to the point that the safety of firefighters was endangered.

Evidence source: Steki's debrief report.

Recommendation 1.4.1

That consideration should be given to providing firefighters with a method of identifying ambient working temperatures.

Recommendation 1.4.2

That HFRS should review its operational training with regard to procedures for dealing with working in excessive temperatures.

2 Operational Procedures

2.1 Identification and Use of Fire Lift

Finding

CCTV footage showed that there was some misunderstanding about which of the two lifts had been designated as the fire lift. This confusion led to some personnel using the non designated lift. During the incident a firefighter was assigned to act as the lift operator for the designated fire lift, however, this firefighter did not remain with the lift for the duration of the incident. The lift was absent from the ground floor for significant periods of time. Due to confusion over which floors the fire and the Bridgehead were situated on, the lift operator had been instructed not to proceed higher than the fifth floor. (CCTV footage shows the lift unoccupied and stationary on the fifth floor for extended periods). During the incident it was noted that all personnel taken aloft by lift, many of whom were dressed in BA, were dropped off at the fifth floor and required to gain access to the Bridgehead on the seventh floor via the stairway.

Evidence source: Southampton (Shirley Towers) CCTV 047R and 048R.

Recommendation 2.1.1

That consideration should be given to 'marking' the designated fire lift appropriately during high rise incidents and including this procedure in a revision of Service Orders. Further consideration should be given to providing a magnetic sign to be placed in the lift adjacent to the operating buttons on which the Bridgehead floor is clearly indicated.

Recommendation 2.1.2

That consideration should be given to designating a lift operator equipped with direct communications to the Sector Officer Ground Floor (Command Support) and the Sector Officer located at the Bridgehead (Command Support).

Recommendation 2.1.3

That the procedures for using lifts at high rise incidents should be reinforced and these procedures practised to ensure they are fully embedded.

2.2 Use of Thermal Imaging Camera (TIC)

Finding

TICs are used to detect heat differentials and can identify these through smoke. The use of a TIC assists firefighters to speedily locate casualties, the fire and any hot spots. Procedures dictate that the first crews committed should take a TIC with them to assist with casualty location and fire attack. The first crew committed to this incident did carry a TIC but did not use it to locate the fire. Post incident interviews revealed that some firefighters were of the opinion that TICs were only to be used for casualty location. Post incident trials revealed that TICs can be used to locate fallen cables.

Evidence source: HFRS witness statement Y1 (61).

Recommendation 2.2.1

That personnel should be reminded of the need to carry and use the TIC wherever hazards are likely. It is further recommended that training exercises, incorporating the use of TICs, are used to embed their use at incidents where visibility is poor.

2.3 Familiarisation and Pre-planning

Finding

The construction of Shirley Towers (one of three of its design in Hampshire) is unusual and complex and can lead to disorientation for those not familiar with the design. The layout of the flats can best be described as a scissor design, with individual flats situated across three floors. Entrances to adjacent flats lead either upwards (up flat) or downwards (down flat). An up flat has an emergency exit two floors above the entrance, eg, Flat 72 has its entrance on the ninth floor with an escape door situated on the eleventh floor, whereas a down flat accessed from the ninth floor will have its escape door on the seventh floor. Flat numbering bears no relation to the floor number.

Following a previous fire, all entrances to flats were marked individually to denote whether they were an up or down flat.

Understanding the flat/floor layout and the unusual design is critical to an IC when deciding the correct floor on which to establish the Bridgehead.

It is apparent that initial deployment of crews was made without precise knowledge of which floor the fire was on (the first caller provided full and accurate fire location information to Fire Control) and therefore the correct floor on which to establish the Bridgehead. This information was not passed to responding resources.

Evidence source: HFRS witness statements and HC video of scene.

Recommendation 2.3.1

That for the three tower blocks with this unusual design, Fire Control include flat, floor and escape door information on the Command and Control database. This will permit this important information to be passed to the attending resources and will ensure that attending ICs are aware on which floor the lowest access point to each flat is located. This will also enable Fire Control to provide more accurate fire survival advice to residents and identify the residents' location relative to the fire and pass this information on to the IC.

Recommendation 2.3.2

That HFRS should review its procedures for ensuring personnel are familiar with potential property risks they might encounter.

Recommendation 2.3.3

That the IC establish precisely the lowest access level to the incident and from this the most appropriate floor for the Bridgehead before deploying crews.

2.4 Fire Fighting Jets**Finding**

The Bridgehead was set up two floors below the incident, ie, on the seventh floor, with the incident on the ninth floor. Initially Red Team 1 attempted to set into the dry riser on the ninth floor but were unable to open the dry riser door. Accordingly the first hose line consisting of three lengths was set into the dry riser outlet on the seventh floor. The second line, also of three lengths, was set into the dry riser on the fifth floor - this second line was designated as the safety jet, but was of insufficient length to be of practical use.

Red Team 2 ran a line of hose from the dry riser on the fifth floor, which reached to the ninth floor. Red Team 2 approached the affected flat but on discovering that their hose line was not long enough to gain full entry, left the jet outside the flat. They then followed their brief of hose managing Red 1 and entered the flat.

Evidence source: HFRS witness statements.

Recommendation 2.4.1

That personnel are reminded to keep hose lines as short as possible to ensure they work at optimum efficiency. Precise and accurate information regarding the location of the fire should be sought before setting into the dry riser at the most appropriate floor.

Recommendation 2.4.2

That personnel should be advised of the need to ensure sufficient hose is laid out to permit safe access to the incident. Where, for whatever reason, there is insufficient hose available, consideration should be given to not entering the incident until the line has been extended.

Recommendation 2.4.3

That all personnel be reminded of HFRS policy that a safety jet must be available and in position before a fire fighting team is committed to the fire compartment. It is vital that this jet is of sufficient length to reach every part of the premises in question.

2.5 Fire Fighting and Search and Rescue**Finding**

The initial crews entering Flat 72 did not locate or extinguish the fire in the lounge before turning right and ascending the stairs to the bathroom and the bedrooms beyond. The fire developed in the lounge behind them and spread to the adjacent kitchen.

Evidence source: HFRS witness statements and external Southampton CCTV.

Recommendation 2.5.1

That HFRS should review 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.
- Choosing the most appropriate and methodical search patterns, eg, area by area, room by room or floor by floor.
- In the specific case of scissor designed flats, procedures and training should ensure that up flats are searched to the left and a right hand search adopted for down flats, unless other specific considerations apply. This will ensure full coverage of the lounge and kitchen areas.

Recommendation 2.5.2

That personnel should be reminded of HFRS policy regarding the importance of keeping the BAECO fully informed of their whereabouts whilst committed to the incident. This is particularly important where a change of level is being contemplated by BA Crews. This should be emphasised during training.

2.6 Provision of Operational Risk Information

Finding

Operational risk information is available to responding crews in either a Premise Inspection Card (PIC) format (hard copy on appliances) or in the new Site Specific Risk Information (SSRIs) files accessible via a Mobile Data Terminal (MDT) in the appliance cab. In his statement CM Clark stated that he had sought information from the MDT but found that information relating to Shirley Towers had not yet been added, there was then insufficient time to access the PIC before arrival at the incident.

Evidence source: HFRS witness statements.

Recommendation 2.6.1

That ICs are reminded of HFRS policy regarding the importance of obtaining all relevant information on the risk/premise being attended.

Recommendation 2.6.2

That operational training regularly incorporates the use of the risk information carried on appliances, so embedding its use at incidents.

2.7 Forced Entry of Residents' Flats

Finding

Control tapes reveal that Fire Control were aware, from conversations with residents via telephone, that HFRS crews were breaking into flats by forcing entry.

Evidence source: HFRS control tape 12.

Recommendation 2.7.1

That HFRS crews checking the safety of residents should try and ascertain if there is anyone in the flat before forcing entry. Similarly Fire Control, who are in contact via telephone with residents, should advise them to open the door when the HFRS crew knock on the door. This will save valuable time and prevent unnecessary damage.

2.8 Displaced Cables from Surface Mounted Plastic Trunking

Finding

During fire fighting operations it was noted that surface mounted plastic cable trunking (installed in Shirley Towers post original build) had softened or melted as a result of the fire in Flat 72. This trunking carried a variety of cables and was present in every room of the flat and also in the common areas of the building. Where the trunking had softened or melted it allowed the cables laid within it to fall free. Where the trunking had crossed doorways the displaced cables had fallen across the doorway often forming an impenetrable barrier. The cables are unlikely to have been very visible in the smoky conditions prevailing during fire fighting operations. Post incident trials have shown that cables are visible with the use of a TIC.

Evidence source: HC video of scene, HFRS witness statements and HFRS near miss reports.

Recommendation 2.8.1

That HFRS should contact local housing authorities (and private landlords where deemed appropriate) and share with them the potential problems such installations can bring in the event of a fire. HFRS should request from them the following:

- The location of all buildings where surface mounted plastic cable ducting has been installed.
- A programme of works to install fire resistant cable ties to prevent cable displacement in the event of a fire.
- An agreement to remove redundant trunking and cabling where technology means they are no longer required (eg, replacement wireless installations).

Recommendation 2.8.2

That HFRS should ensure that personnel are aware of the likelihood of encountering such installations and training programmes undertaken to practice procedures for dealing with displaced cabling. Training exercises should include the use of TICs.

Recommendation 2.8.3

That HFRS should consider making representations to seek amendment to BS 7671:2008 the IEE Wiring Regulations and/or the Building Control Regulations to require external cabling to be secured with metal cable ties to prevent detachment in the event of fire.

Recommendation 2.8.4

That HFRS should consider the issue of insulated electrical cutters to BA crews to ensure wearers have the equipment to hand should they become entrapped in fallen cables. Investigations should be undertaken to assess options to prevent fallen cables from becoming entangled in BA sets.

2.9 Spalling of Reinforced Concrete Roof Structures

Finding

During the course of the fire, several large pieces of the reinforced concrete roof structure in the kitchen were noted to have broken loose and fallen to the floor. This phenomena is known as spalling and is a well known feature of reinforced concrete in fire situations. Normal fire fighting tactics for addressing this hazard are for firefighters to position themselves in the doorway, or other safe location, and to hit the ceiling with a jet. This serves to hasten any spalling and remove the hazard of concrete falling on the firefighters post entry.

Evidence source: HC video of fire scene.

Recommendation 2.9.1

That firefighters are reminded of HFRS policy regarding safe entry procedures and practical training exercises undertaken to embed these practices.

2.10 Presence of Asbestos in Premises

Finding

Following the incident at Shirley Towers, HFRS was informed by SCC Health and Safety Adviser that asbestos was present in the structure. It was felt that the risk would have been negligible during fire fighting operations and immediately after the incident because the water applied to the flat would have damped down any loose fibres.

Evidence source: SCC Health and Safety Adviser.

Recommendation 2.10.1

That HFRS should review the SSRI it holds on Shirley Towers (and similar structures).

2.11 Resuscitation Equipment

Finding

HFRS operational procedures do not include the provision of emergency resuscitation/air provision equipment for use by BA wearers carrying out rescues. The first BA emergency team entered the flat having been tasked with rescuing Red Team 2. They did not take with them any means of providing an air supply to the missing firefighters despite their entry to the flat being several minutes after Red Team 2's projected time of whistle.

Evidence source: HFRS witness statements.

Recommendation 2.11.1

That HFRS should review its policy, procedure and equipment for rescuing persons from irrespirable atmospheres.

2.12 Acquisition of Information at Incident Scene

Finding

Information detailing the fire floor, the nature and location of the fire was passed by the initial 999 caller to Fire Control, however this was not included in the mobilising messages to the first attending appliances.

On arrival the IC requested that the warden take them to two floors below the Fire Floor. Despite this request, the warden took them to the Fire Floor and as the IC exited the lift on the ninth floor (Fire Floor) the warden pointed out the occupier of the affected flat, Mr Hoffman.

The IC had the opportunity to question Mr Hoffman and elicit further information pertinent to the incident, eg, were there any persons left in the flat, where was the fire, what did the fire involve, etc? This opportunity was missed.

Notwithstanding any information passed by Fire Control, the IC, supported by his/her crew, should elicit all pertinent information from those at the scene before deciding his/her strategy and committing resources.

Evidence source: HFRS witness statements.

Recommendation 2.12.1

That HFRS should reiterate to ICs the importance of gathering all pertinent information (and validating information passed in the mobilisation process) at the incident scene prior to deciding a strategy or committing resources. The occupier of the premises is likely to be a key information provider.

Recommendation 2.12.2

That HFRS should ensure training exercises are conducted that demonstrate the importance of gathering information at the scene prior to the allocation and deployment of resources.

2.13 Ventilation at Fires**Finding**

National Generic Risk Assessment 3.2, Version 2, September 2008, Fire Service Manual, Volume 2, Fire Service Operations, Compartment Fires and Tactical Ventilation, and HFRS Lecture Pack R 3.6, Ventilation, provide guidance on the issues governing ventilation at fires. They state that ventilation of a fire scene should only be conducted on the instruction of the IC. Where crews already committed feel it necessary to carry out ventilation, Service policy states that they must seek permission of the IC before carrying out any ventilation.

The initial crew (Red Team 1) committed to Flat 72 were tasked with locating and extinguishing the fire. Ascending the stairs within the flat they reached the bedroom level (the highest point of the flat) and had not located the fire (which unbeknown to them was burning in the lounge and kitchen below them).

Red Team 1 took the decision to open the windows in both bedrooms. They did not request permission from, or inform the IC of this action. In their statement they accepted that this was contrary to policy.

Evidence source: Fire Service Manual Volume 2, Fire Service Operations, Compartment Fires and Tactical Ventilation, HFRS Lecture Pack R 3.6, Ventilation, HFRS witness statement Y1 (59).

Recommendation 2.13.1

That HFRS should review its policy and procedures to ensure guidance on the carrying out of ventilation by firefighters is clear and unambiguous and covers all forms of ventilation conducted by firefighters, ie, positive pressure and natural.

Recommendation 2.13.2

That all personnel should be reminded of HFRS policy regarding inherent dangers of unauthorised/uncontrolled ventilation at fires. Training exercises should incorporate the use of ventilation practices and the conditions for its usage.

2.14 High Rise Incidents - List of Equipment to be Carried Aloft

Finding

The first crew attending Shirley Towers carried with them certain equipment in a High Rise Bag. Service Order 7/4/1 Para 2.1 (First Pump Duties of Crew) lists the equipment that should be taken to the Bridgehead. Several significant items were omitted in the equipment carried aloft including breaking in tools, an axe, a line and a first aid kit.

Evidence source: HFRS witness statements.

Recommendation 2.14.1

That an aide-memoire is included on the appliance to remind crews what equipment should be taken aloft. This could be a simple list on the vehicle or perhaps a listing sewn onto the high rise bag itself.

2.15 Gas Cooling Using Pulse Spray

Finding

During the incident BA fire fighting teams were presented with a developing fire within the flat. A number of teams (who were initially concerned about creating worsening conditions by generating steam) tried to control conditions using a 'pulse spray' approach. This approach continued despite a crew trapped above them and other crews attempting to proceed up the stairs to rescue them.

Pulse spraying is a tactic adopted to cool hot gases and reduce the likelihood of a flash over. It involves the use of short pulses of water in spray form being deployed into the area just below the ceiling.

This application of extinguishing media is not directed at the fire itself which will continue to grow generating heat, hot gases and smoke. This generation can increase as long as fuel and oxygen are present in sufficient quantities. In Shirley Towers, this generation increased considerably to the point that life could not be sustained in the areas above the fire.

Despite frustration that the pulse spray approach was having little effect on the fire, crews did not change this tactic.

Evidence source: HFRS witness statements.

Recommendation 2.15.1

That HFRS should review the tactical use of pulse spraying and its place in fire fighting strategy.

Recommendation 2.15.2

That HFRS should review the training provided to personnel, particularly that given as part of the compartment fire behaviour training, to ensure it provides personnel with clear options for fire fighting.

2.16 Deployment of Personnel into Hazardous Locations**Finding**

The Bridgehead was established as the forward control point for committing resources to the incident. The BA Entry Control Point is situated here and fire fighting teams in BA are committed through this. During the incident a number of personnel were deployed into high risk areas as lone workers.

Individuals proceeded beyond this point up to the fire floor level and above, without adequate safeguards, eg, records of their deployment location, BA and communications equipment. The deployment of lone workers into hazardous environments is of particular concern.

Evidence source: HFRS witness statements.

Recommendation 2.16.1

That ICs should be reminded of the dangers of lone workers and other personnel being committed without adequate safeguards into hazardous areas.

2.17 Marking of Flats**Finding**

Following a previous fire, individual flats were marked to denote their number and whether the flat was an up flat or down flat. The position of the markers was at the top right hand of the flat door. During this incident, and as a result of heavy smoke logging, the signs were totally obscured rendering them ineffective.

Evidence source: HFRS witness statements.

Recommendation 2.17.1

That HFRS should consider the locations of such markings and, in liaison with the Local Authority, consider their relocation nearer to the ground level.

2.18 Maintenance of Fire Resisting Structures around Flats

Finding

During fire fighting operations, crews were instructed to locate, and force open if necessary, the fire escape door to Flat 72. Incorrect intelligence led them to force open several front doors in their attempts to locate the correct door. These operations were carried out during the incident and at a time when the residents had been instructed to stay in their flats as part of the 'stay put policy'. Forcing the doors to the flats compromised the fire resisting construction provided by the doors and led to smoke and gases entering several flats. Had residents still been present within these flats their safety may have been compromised.

Evidence source: HFRS witness statements.

Recommendation 2.18.1

That all personnel should be reminded of the need to maintain the integrity of the fire resisting construction surrounding individual flats. Where a need develops that requires a forced entry to a particular flat, great care must be exercised to ensure it is the correct flat/door before breaking in.

2.19 Use of Positive Pressure Ventilation during Fire Fighting Operations

Finding

During the escalation of the incident the use of PPV was initiated in an attempt to secure escape routes for personnel and occupants in the building above the ninth floor. PPV was subsequently established within the eleventh floor corridor giving access to Flat 72 escape door. Issues arising from this action include:

- No clear plan of action was established and communicated to the Command Team and other personnel likely to be affected by PPV operations.
- No dedicated command structure was established to manage PPV operations.
- PPV was established without the creation of adequate ventilation ports, effectively pressurising the eleventh floor corridor and flats accessing that corridor. A number of the flats had their front doors broken into by firefighters allowing the ingress of smoke into the flats.
- Use of PPV before the fire was extinguished (in 'offensive' mode) or effectively controlled resulted in 'offensive' use, although this was not the planned scenario.
- An operating PPV fan was moved into the eleventh floor corridor without notifying teams working within, worsening conditions and severely restricting communications.

Evidence source: HFRS witness statements.

Recommendation 2.19.1

That HFRS review its use of PPV in an 'offensive' mode and reinforce the agreed policy.

3 Communications

3.1 Acquisition of Information from 999 Callers

Finding

Fire Control Training Notes state that the task of the Control Operator is to: “Gather information from the caller to determine the nature and exact location of the incident”. It is important that this is done as quickly as possible, while at the same time ensuring that sufficient information is gathered to enable crews to locate the incident.

The first 999 caller to HFRS reporting the fire at Shirley Towers informed Fire Control of the correct flat number, the floor the flat was situated upon and that he could see flames in the lounge. This initial call was taken by a Control Operator and monitored by the Supervisor.

Critical elements of this initial call were not passed to the attending IC/other appliances, specifically, no mention was made of the floor or where the fire had been seen.

Fire Control did not ask the caller any supplementary questions such as whether there were any persons known to be in the flat.

Despite several communications with Control, including an early make up, the information passed to Control from this initial 999 call was not passed on to the IC.

Control remained confused regarding the Fire Floor throughout the incident, and this became an issue every time information was requested by attending or mobilised officers.

Evidence source: HFRS control tape and HFRS witness statements.

Recommendation 3.1.1

That it is vital that all pertinent information regarding the incident elicited from the caller(s) should be recorded as a Control ‘information asset’ and arrangements put in place to ensure information is shared between Control Operators and updated as more information becomes known. Consideration could be given to the provision of a large display screen in Control (perhaps twinned in the Command Suite) for display of information relating to large scale incidents.

Recommendation 3.1.2

That all pertinent information relating to the incident should be passed to the IC at the earliest opportunity.

Recommendation 3.1.3

That Fire Control should review their procedures for obtaining important information from 999 callers. Consideration should be given to providing a (electronic) checklist for Control Operators as an aide-memoire to the information they should seek from callers.

Recommendation 3.1.4

That call handling is recognised as a key skill for Fire Control and should be incorporated in regular training and assessment.

3.2 Provision of Fire Survival Advice**Finding**

Fire Control will provide callers with fire survival advice where they feel the caller is in a hazardous situation and requires advice on how best to safeguard themselves whilst they await the arrival of HFRS. The Control tapes indicate that five members of the public were provided with such advice, one call lasting in excess of one hour and 20 minutes. This individual was on the fifteenth floor (with the fire not spreading vertically) and the tape suggests that this person was not in danger or distress. At the time this protracted conversation was being conducted Fire Control were experiencing very high work loads and having to recall staff to assist.

Fire Control Operators are provided with a standard procedure for providing survival advice for flats in blocks over four floors. This advice is very generic and some of the advice given by the operators was not suitable for the design of Shirley Towers. An informed knowledge of the building would have enabled more precise advice to have been given. The current procedure for Control suggests that the calls can be terminated after an explanation to the caller if the volume of calls being received requires this.

Evidence source: HFRS control tape.

Recommendation 3.2.1

That Service Delivery should examine the guidance on fire survival advice and ascertain if a generic guidance document is applicable to the scissor type flats.

Recommendation 3.2.2

That Service Delivery should review the criteria for providing fire survival advice and, where the caller is not in danger, consideration should be given to closing down the call.

3.3 Rescue of Persons Receiving Fire Survival Advice

Finding

Shirley Towers has a 'stay put policy' for residents in the event of a fire. This policy is utilised where previous risk assessment has decided that residents would be safer staying in their flat than attempting escape. Adoption of this policy meant that there were potentially significant numbers of people in the flats.

The occupants of five flats (situated on floors 9, 11 and 15) received fire survival advice and throughout the period in which advice was being given the residents were repeatedly told that the fire and rescue service was on its way. Several residents sounded very distressed and in need of urgent assistance. Despite the apparent urgency of reaching these residents, no specific rescue plan was undertaken until some time into the incident. On several occasions Fire Control contacted the various Contact Points to suggest physical contact with the most vulnerable residents but recordings suggest these had an unsatisfactory outcome.

Evidence source: HFRS control tape.

Recommendation 3.3.1

The IC, where Fire Control are in contact with concerned residents, should liaise closely with Control to assess the level of risk to individual residents. Where Control feel that the risk is significant, eg, from fire spread or smoke percolation, they should inform the IC who can develop a strategy to ensure early rescue is undertaken.

3.4 Use of Mobile Telephones at Incidents

Finding

Mobile telephone records covering the incident show that significant communications and key messages between officers and Fire Control were made with the use of mobile telephones. Custom and practice has meant that mobile telephones have become the communication of choice for some officers. Communication by mobile telephone:

- Largely prevents the recording of the content as would be the case if communications were made via the Incident Support Unit(s). This can lead to the loss of information.
- Is personally focussed and the information not shared with other personnel.
- May lead to sensitive personal data being passed to non HFRS personnel. This has the potential for victims' families hearing details of their loss from an unofficial source.

Evidence source: HFRS mobile telephone records, HFRS witness statements and fire control tape.

Recommendation 3.4.1

That the use of mobile telephones for important operational communications should be discouraged (other than in exceptional circumstances such as where other communication systems have failed or there is an overriding need for confidentiality).

Recommendation 3.4.2

That all personnel should be reminded of the importance of not passing sensitive personal information to friends and family from the fire ground.

3.5 BA Set Data Readings**Finding**

The Bodyguard device fitted to the BA sets was commonly understood to measure temperature, air consumption, cylinder contents and operation of the ADSU. Detailed review of the data downloaded from the device was often prevented because of an inherent software failure that provided corrupted data. Other noted shortcomings include, for example, temperature readings that bear little practical relationship to ambient temperatures, and any operation of the ADSU prevents the collection of any further data.

Evidence source: Draeger BA set data record.

Recommendation 3.5.1

That HFRS consider what physiological information they require to be collected for BA wearers and then to assess if the current equipment is capable of providing this type of data and in sufficient detail and accuracy.

3.6 Silencing of Fire Alarm**Finding**

The fire alarm in Flat 72 operated on detection of the fire and was not silenced for several hours. These alarms emit a very loud audible alarm that can mask the operation of ADSUs, disrupt conversations and interfere with radio messages. In addition the noise can confuse or disorientate personnel and the public.

Evidence source: HFRS witness statements.

Recommendation 3.6.1

That the IC should ensure that such alarms are silenced as soon as practicable after arrival and after residents have been warned of the incident.

3.7 Informative Messages

Finding

The early transmission of an informative message is vital for senior officers not in attendance at the incident to gauge the need for deploying additional resources. The first informative message from this incident was sent at 20:51 (37 minutes after the arrival of the first appliance), this after repeated prompts from Fire Control.

Evidence source: HFRS control tape.

Recommendation 3.7.1

That ICs should be reminded of HFRS policy regarding the need to ensure that a comprehensive informative message is sent at the earliest practical time. Fire Control should review their practice for messaging prompts.

3.8 Verification of Fire Ground Information from 'Non Control Point Sources'

Finding

Control tapes show that significant pieces of information were passed from non fire ground Control Point sources to Fire Control, for example, at 21:12 notification of the BA emergency was apparently initiated by Command 2 (this whilst 54 Echo Uniform was still the Contact Point) and not from the IC. The danger of routing information in this way is that the information may not have originated from the IC who may be unaware of a significant piece of information. Similarly the fire ground Control Point may also be oblivious to what information has been passed.

Fire Control staff have confirmed that there is no current procedure for checking fire ground information from non Control sources.

Evidence source: HFRS control tape.

Recommendation 3.8.1

That all personnel should be reminded of HFRS policy stating that communication from the fire ground to Fire Control must be via the agreed fire ground Control Point on scene.

Recommendation 3.8.2

That HFRS should implement a procedure within Fire Control to ensure any fire ground information received from sources other than the IC is validated as soon as possible.

3.9 Inappropriate Communication Procedures

Finding

The Control tapes indicate that some communications with Fire Control were inappropriate, eg, officers not yet mobilised to the incident contacting Control for details. The form of address between callers and Control was less than formal with the standard greeting generally “hello mate”. This familiarity was also evident in personal radio communications. The use of first names was widespread which can lead to some confusion.

Evidence source: HFRS control tape.

Recommendation 3.9.1

That, in accordance with HFRS policy, personnel using radio communications should use the correct terminology, including the correct term of personal address, for example “From Group Manager Dollery...”

Recommendation 3.9.2

That the correct use of radios and standard terminology should be practised during training.

3.10 Hand Held Radios

Finding

The hand held radios used by HFRS may not always operate effectively in high rise buildings. These radios are also used by BA wearers to communicate with the BAECO. At this incident communications proved difficult necessitating the need to use other forms of communications, notably mobile telephones. The problem of poor radio communication in structures such as high rise buildings or ships is well known. Post incident testing of radios by HC showed that they were operating effectively.

There were instances throughout the incident of some key personnel not having radios, eg, the second BAECO.

Evidence source: HFRS witness statements.

Recommendation 3.10.1

That HFRS should review the effectiveness of its hand held radios and how any loss of communications should be a factor when considering the declaration of a BA emergency.

4 Breathing Apparatus Procedures

4.1 Availability of Breathing Apparatus Control Board

Finding

HC video shows a number of BA board entries marked on the wall of the seventh floor. These entries were made as a result of insufficient BA control boards being available at the point of entry and the need to commit additional BA crews.

Evidence source: HC video and HFRS witness statements.

Recommendation 4.1.1

That personnel be reminded of the need to take sufficient BA control boards to the point(s) of entry. The newly issued High Rise Service Order 7/4/1 stipulates this. This should be emphasised during training.

4.2 Overwriting of Breathing Apparatus Control Board

Finding

Seizure of the BA control board for the initial crews deployed reveals that the BA tally information was not overwritten on the board by the BAECO. Overwriting the tally details is deemed good practice to ensure accurate records can be maintained even if individual tallies become temporarily dislodged from the board.

Evidence source: HFRS witness statements, HC photographs and exhibit.

Recommendation 4.2.1

That personnel be reminded of the need to overwrite tally details on BA boards whilst crews are committed into incidents. Supervisory Officers should monitor BAECOs to ensure this practice is adhered to.

4.3 Instigation of Stage 2 Procedure

Finding

Service Order 7/4/1 which covers High Rise Incidents states that Stage 2 BA control procedures should be introduced as soon as resources allow. This stage of BA control introduces a number of measures necessary for a large incident. These measures include for example, the role/level of the BAECO and the provision of an emergency crew.

Despite the policy outlined above, the complexity of the incident and the large number of breathing apparatus wearers deployed, Stage 2 BA control was not implemented.

Evidence source: HFRS witness statements.

Recommendation 4.3.1

That ICs be reminded of the need to instigate BA control Stage 2 procedures as soon as practicable at incidents as designated in HFRS Service Order 7/7 Breathing Apparatus (Para 1.5.2).

Training exercises should be conducted to practice this procedure to ensure it is fully embedded.

4.4 Initiation of a BA Emergency

Finding

Service Order 7/4/1 High Rise Buildings, requires that the Bridgehead be located at least two clear floors below the incident floor. The BAECO will normally be sited at the Bridgehead and instigate a BA emergency if any of the following criteria apply:

- BA wearers fail to appear before time of whistle.
- Operation of an ADSU by BA wearer.
- Any exceptional circumstances that suggest to the BAECO that the BA wearers may be in difficulty, eg, building collapse.

Ff Bannon's time of whistle was 21:06 and Ff Shears' time of whistle was 21:01. In calculating the time of whistle (the team exit time) the BAECO would default to the earliest time for both wearers (21:01).

The manual operation of Ff Shears' ADSU at 20:52 and Ff Bannon's operating automatically (on the detection of no movement) at 21:00, was not heard by either the BAECO or any other personnel on the Bridgehead several floors below. Despite the time of whistle calculations suggesting a crew return time of 21:01 the BA emergency was not declared to Fire Control until 21:08.

Whilst the loss of personal radio communications is not in itself a trigger for instigating a BA emergency, the loss of communications should act as an indication that the BA team may be in difficulty. Personal radio communications are known to be difficult in high rise buildings and, because of this, any loss of communication may not have automatically led to an increase in concern for the safety of the BA team.

Evidence source: HFRS witness statements, Southampton CCTV, HFRS Control and Command 1 tapes.

Recommendation 4.4.1

That personnel be reminded of the HFRS policy for initiating a BA emergency, in particular the time of whistle calculation time. Such scenarios should be incorporated in routine training exercises. Supervisory Officers should monitor these arrangements to ensure strict adherence.

Recommendation 4.4.2

That the Service consider the introduction of suitable telemetry to ensure that any operation of an ADSU is immediately relayed to the BAECO regardless of location.

4.5 Use of Breathing Apparatus Wearers

Finding

During this incident, CCTV showed that several personnel made more than one entry wearing BA after a significant climb up from the Bridgehead several floors below. The entry control records show that the rest period between deployments was often less than 15 minutes.

A recent three year research project, funded by the Fire and Rescue Service Research Training Trust, and contained in Fire Research Technical Report 18/2008¹, suggests that with rest periods of less than 15 minutes between deployments, firefighters are unable to recover fully and consequently experience a greater level of physiological strain during subsequent fire fighting activities. Heat stress can reduce performance on working memory tasks and reaction time. The ability to make correct decisions can also be reduced.

Rehydration was also noted to be important in lowering body temperatures and replacing fluid loss from sweating.

Evidence source: Southampton CCTV and HFRS witness statements.

Recommendation 4.5.1

That personnel committed to wear BA are provided with sufficient time to fully recuperate between deployments. The nature and location of the incident will be a factor in deciding this, for example, at a high rise incident where personnel are required to walk up several flights of stairs carrying equipment or dragging hose, the recuperation period will be longer.

Recommendation 4.5.2

That consideration be given to the introduction of a specialist response vehicle to support the recovery of personnel and reduce their body temperatures and consequential stress levels.

¹For fire fighting, 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 1000ml of 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 and redeployments.

Recommendation 4.5.3

That the current method of rehydrating firefighters at incidents with bottled water should be reviewed to assess the option of providing isotonic sports drinks and rehydration powders.

4.6 Fluctuations in Air Consumption by Breathing Apparatus Wearers

Finding

The current method of calculating the duration of a BA set is by dividing the contents (in litres) by 40. This calculation gives the total duration in minutes of the cylinder, from this is deducted the safety margin of 10 minutes which in turn provides the working duration.

This calculation is based on a nominal consumption of 40 litres a minute and takes no account of an individual's physical fitness (as a general rule, a physically fit individual will consume less air than someone larger or less fit) or the arduous nature of the work undertaken.

In recognition of this potential fluctuation in consumption BAECOs are reminded by the BA control board which clearly states that 'hard work will reduce duration'.

Where a BA crew is being committed the lowest cylinder pressure is used to calculate the time that all members of the crew should retire to the BAECO.

The only method for a BAECO to update their calculations is for BA crews to regularly take gauge readings and to relay these to the BAECO - there is no provision in the current Service Order 7/7 recommending this practice.

Whilst there is no suggestion that initial duration calculations should be amended, any additional air consumption information relayed from the crews to the BAECO can only assist in improving the understanding of the BAECO (and through him/her the IC) about the conditions being experienced by the crews, for example, an indication of excessive consumption might prompt early deployment of an emergency or relief crew whereas information that consumption was less than that projected might allay fears if a crew were a few minutes over their departure time from the incident.

Evidence source: HFRS witness statements.

Recommendation 4.6.1

That HFRS consider amending its BA Service Order and teaching to include the practice of BA wearers relaying gauge readings back to the BAECO on a regular basis.

4.7 Effectiveness of Automatic Distress Signal Units

Finding

ADSUs are a component of the Bodyguard apparatus fitted to HFRS BA sets. They are designed to provide an audible alarm and are rated at between 102 and 112 decibels measured at 250mm. Because of the location of the alarm on the shoulder strap it is possible that a BA wearer in distress may lie on the ADSU and muffle the alarm. The alarm provides no directional guidance to rescue crews. The sound emitted is similar to that made by other alarms, eg, smoke detectors, freezer warning, etc, and can therefore be confusing to crews.

Because of the distance between the crews and the Bridgehead, the alarm would not have been audible to them and the alarm would not have been raised. Only other crews working in the same proximity would have been able to hear the alarm.

Evidence source: HFRS witness statements.

Recommendation 4.7.1

That HFRS research other methods of signalling BA wearer distress. The opportunity should be taken to examine methods of providing the BAECO, and rescue teams, with directional information to speed the rescue process.

4.8 Briefing and Debriefing of BA Crews

Finding

Red Team 1 were committed to the incident without a full and comprehensive brief as to what actions they were to undertake, the team themselves deciding that they would undertake a right hand search. This was not done in the presence of the BAECO. The brief for Red Team 2 was also less than comprehensive and also not conducted in the presence of the BAECO. This resulted in the BAECO not having a clear and concise understanding of where crews were being deployed and their allotted tasks. Service Order 7/7 Para 1.3.3 (which is based on Home Office Technical Bulletin 1/1997) requires the Incident Commander to ensure that effective briefing and debriefing takes place. Para 1.4.5 states that it is the responsibility of the BAECO where practicable to ensure BA wearers are briefed prior to entry to the risk.

This became more important when Red Team 2 were reported missing and little precise information was known about their whereabouts.

When Red Team 1 reported back to the BAECO they did so in a blackened condition with burnt hands and in a distressed state. Their appearance coincided with rising concern over the whereabouts and safety of Red Team 2. Despite these 'unusual circumstances' no one sought to either debrief them or seek information on Red Team 2.

Evidence source: HFRS witness statements.

Recommendation 4.8.1

That, in accordance with HFRS policy, the IC, sector officers and BAECOs must ensure a comprehensive brief regarding the strategy for adoption is provided to all crews before they enter an incident. The briefing should be in the presence of the BAECO who can record pertinent details on the BA entry control board.

Recommendation 4.8.2

That, in accordance with HFRS policy, the BAECO is responsible for ensuring all teams exiting the incident are debriefed to obtain all pertinent information, for example, information relating to conditions, areas of search, etc. This information should be recorded on the BA board and, if important, passed immediately to the Sector Commander.

4.9 Communication Between BA Teams**Finding**

Red Team 1 had been instructed not to enter the flat until they were joined by a further team. As soon as Red Team 1 saw the second team by the lobby door, they entered the flat. At this point the teams were only four metres apart. No communication took place between the teams.

In not waiting the few seconds required for Red Team 2 to join them, Red Team 1 prevented the exchange of important information such as search strategy to be adopted and use of jets.

Evidence source: HFRS witness statements.

Recommendation 4.9.1

That personnel be reminded of the importance and benefits of effective and robust communication between crews. This should be practised during training.

4.10 Condition of BA Control Boards**Finding**

Evidence examined during the investigation suggested that BA control boards in use were not in a clean state.

The current boards require tallies (with chinagraph pencil writing) to be pushed into a tight 'slot' at the left side of the board, with the result that chinagraph residue is deposited on the inaccessible face of the BA board.

This situation is exacerbated by the use of chinagraph pencil on the board itself which means that when entries are rubbed off the board, a black residue remains that can affect the clarity when the board is next used, particularly in hours of darkness. This is particularly noticeable under the first section marked 'identification'.

Evidence source: BA boards.

Recommendation 4.10.1

That HFRS investigates what changes to construction could avoid this contact between the completed face of the tally and the BA board. The Service should research and provide a suitable solvent that can be used to clean the board after use.

4.11 Provision of Thermal Imaging Camera for use by Emergency Team

Finding

Current Service policy does not require the provision of a TIC at the Entry Control Point (ECP) for use by an emergency team. The use of a TIC at an incident where visibility is compromised will greatly assist the user in locating casualties.

Evidence source: HFRS witness statements.

Recommendation 4.11.1

That the Service review its BA policy and consider the provision of a TIC at the ECP for use by an emergency crew.

4.12 Supervision and Support of the BAECO

Finding

Incidents involving the use of BA require a very high degree of supervision and control to ensure wearer safety. The responsibilities of the BAECO are numerous and complex. Standard BA control procedures state that complex incidents should have Stage 2 BA control in operation and that the BAECO should be a minimum of a Crew Manager (CM).

Evidence source: HFRS witness statements.

Recommendation 4.12.1

That Supervisory Officers monitor the performance of the BAECO and if necessary provide additional resources to support and assist him/her in carrying out their duties.

4.13 Provision of Communication Equipment for the BAECO

Finding

The second BAECO was not in possession of a personal radio when the BA board was set up. This omission meant that the second BAECO was not in contact with any of the BA crews committed through his entry point. Furthermore, as the board had been set up some distance from the first board, he was not in contact with the other BAECO.

The implications of this are that the second board was working in isolation.

Evidence source: HFRS witness statements.

Recommendation 4.13.1

That personnel are reminded of the importance of having a personal radio with them when undertaking the duties of BAECO. Supervisory officers should monitor communications at the BA control entry point.

4.14 Recording of information on the BA Control Board

Finding

Photographs of the impounded BA control board (first board used) reveal that vital information relating to the incident had not been recorded on the board. Missing information includes the equipment the teams were carrying, eg, TIC, fire fighting equipment, etc, the brief/tasks allotted to the team and team location.

This omission means that the BAECO, and any supervisory officer, did not have access to important information.

Evidence source: HFRS witness statements, photographs of impounded BA board.

Recommendation 4.14.1

That all personnel likely to undertake the duties of a BAECO are reminded of HFRS policy regarding the importance of recording pertinent information (relating to committed BA crews) on the BA control board.

4.15 Adequacy of BA Board to Record Details of Incident

Finding

Examination of the existing issue of BA board reveals a space for recording remarks that measures 100mm wide by 45mm deep. Into this space the BAECO has to record all pertinent details regarding the team listed above. Using what is often a blunt chinagraph pencil restricts the actual information that can be recorded in the space provided.

A similar space is available to record the location of the team.

Evidence source: Examination of existing (2010) BA entry control board.

Recommendation 4.15.1

That HFRS review the current board design and consider a next generation board that incorporates more available space for the BAECO to record important information, eg, with a hinged flap which doubles the available size of the board. (AIT understand that at least one other fire and rescue service already uses a board using this design).

4.16 Relief of BA Crews Prior to their Time of Whistle

Finding

A number of BA crews engaged on fire fighting operations reached the time at which they should have withdrawn from the incident before relief crews had arrived to replace them. In at least one case, a crew engaged on fire fighting remained well into their time of whistle because no-one had arrived to replace them. They felt that had they retired, as procedures dictate, the fire would have developed in an uncontrolled manner so endangering the missing crew.

Evidence source: HFRS witness statements.

Recommendation 4.16.1

That, in accordance with HFRS policy, BAECOs maintain communications with BA crews and monitor their air consumption. They must ensure BA teams are relieved at the scene of operations in sufficient time to allow their return to the ECP prior to their 'time of whistle'. Ultimate responsibility for ensuring a safe system of work rests with the IC.

Recommendation 4.16.2

That BA crews are reminded of HFRS policy regarding the necessity of withdrawing from the scene of operations and returning to the ECP before their low pressure warning whistle operates.

5 Training and Competence

5.1 Personnel Training Records

Finding

Review of individual training records showed that some personnel were recorded as having undertaken/received considerable amounts of training, on a wide range of subjects, on a single shift.

Evidence source: Personnel training records.

Recommendation 5.1.1

That the Training Department review the procedures for:

- The recording of training activities.
- The process for checking and validation of training records by supervisory officers.

5.2 Interpretation of Information as Part of the Dynamic Risk Assessment Process

Finding

Some personnel entering Shirley Towers risk areas were presented with several significant indicators as to the risk. The evidence reviewed by the AIT identified that it appears that the term 'Dynamic Risk Assessment' (DRA) is sometimes utilised without acknowledging the relevance of the DRA process and its practical application.

Evidence source: HFRS witness statements.

Recommendation 5.2.1

That HFRS review the use, understanding and application of DRAs operationally within the Service. Effective use of DRAs should be practised during training and their usage on the incident ground monitored by supervisory officers.

6 Incident Command and Control

6.1 Functional Command Communications

Finding

The Command tapes indicate that there were numerous occasions when the Command Support Officers (CSO) were unable to locate command officers at the incident. CCTV shows officers moving in and out of the building and on differing floors. Some officers chose not to have a personal radio which made contact extremely difficult. The CSO had to make several radio requests to gain access to some officers.

Evidence source: Southampton CCTV and HFRS Command 1 tape.

Recommendation 6.1.1

That officers ensure they have a personal issue radio when on the fire ground; reliance on accompanying personnel with radios can cause communication difficulty if the parties become separated.

Recommendation 6.1.2

That officers at incidents should ensure the Control Point knows their location at all times. Wherever possible the IC should remain at the Control Point.

6.2 Incident Command Qualifications

Finding

The initial Bridgehead Commander was not trained or assessed in incident command level 1. The first and second ICs had received training and previous assessment at level 1 and 3 competence respectively but at the time of the incident their qualifications had lapsed pending further assessment.

Evidence source: HFRS training records.

Recommendation 6.2.1

That HFRS conduct a review of the status of officer incident command competence and the currency of their qualifications.

Recommendation 6.2.2

That HFRS conducts urgent training and assessment of any unqualified officer to the appropriate level of incident command competence.

Recommendation 6.2.3

That HFRS reviews its procedures for ensuring all personnel required to take command of an incident, are trained and assessed to maintain competence and qualification.

6.3 Accurate Record of Contact Point and Current Officer in Charge

Finding

As incidents escalate, the level of control and IC will change. This incident resulted in the Control Point initially being set up in Redbridge's WL before transferring to the SEU then moving to Command 2 and then finally to Command 1. These transfers of Command Point were not always notified to either Fire Control or supervisory officers on the fire ground. This caused some confusion and subsequent delays in the passing of information.

The transfer between the SEU to Command 2 and then Command 1 took place within 12 minutes at a critical time during the incident.

Similarly, as the IC changed, Fire Control were not always informed of the change of command. Command tapes suggest that, on occasions, the on-scene Control Point were not aware of who the current IC was.

Evidence source: HFRS control tape and Command 1 and 2 tapes.

Recommendation 6.3.1

That, in accordance with HFRS policy, the IC ensures any alteration to the on-scene Command Point is notified to Fire Control as soon as it is in operation. Responsibility for this communication can be delegated to the CSO. Fire Control must ensure that all Control staff receive this information at the same time to avoid the possibility of individual Fire Control operatives attempting to communicate with different Control Points.

Recommendation 6.3.2

That, in accordance with HFRS policy, ICs ensure that, as they take over command of the incident, this is notified to Fire Control, the on-scene Command Point and all functional officers at the scene.

Recommendation 6.3.3

That HFRS review the Command vehicle mobilisation policy so that the Command 1 vehicle is sent to known escalating incidents rather than the (current) practice of always mobilising Command 2. Such a change would reduce the handover process between command vehicles and the potential for errors, omissions or delays such handovers may cause.

6.4 Briefing of Officers and Appliances En Route to Incident

Finding

Fire Control are required to pass all relevant information to officers and appliances en route to incidents, to assist in the officers' pre-planning process. Historically, officers had radios fitted to their cars which allowed them to receive messages from Fire Control and monitor radio traffic between Fire Control and the fire ground. The recent removal of these radios from officers cars has made the passing of information to responding officers difficult. Control tapes show that, despite requests for information from officers en route to, and those in attendance at, the incident important information was not passed to them.

Officers sent on relief duties were not informed of the firefighter fatalities prior to their arrival at the incident. This omission had the potential for an embarrassing or distressing situation.

Evidence source: HFRS control tape and email from Service Delivery 26 January 2011.

Recommendation 6.4.1

That Service Delivery/Fire Control review their methodology for passing information to officers and appliances en route to incidents. This includes forewarning them of any sensitive issues ahead of their arrival at the incident.

As part of this review it is further recommended that a system be introduced within Fire Control to ensure that identical and current information is passed to all recipients.

6.5 Booking Mobile To and In Attendance at Incidents

Finding

Effective command and control of incidents requires that the location of resources (appliances and officers) is accurately recorded at Fire Control and the on-scene Command Point. A number of officers do not appear to have booked mobile to, or in attendance at, the incident.

Evidence source: Fire Control tape and Command 1 and 2 tapes.

Recommendation 6.5.1

That officers are reminded of the importance of accurately informing Fire Control (or the on-scene Command Point) about their movements or location.

Recommendation 6.5.2

That Fire Control review their procedures for monitoring the movement and location of resources.

6.6 Transfer of Information Between On Scene Command Points**Finding**

Fire Control tapes show that some important information was not transferred between Command Points as the incident escalated. There are procedures in place governing such transfers.

Evidence source: Fire Control tape and Command 1 and 2 tapes.

Recommendation 6.6.1

That personnel are reminded of HFRS policy regarding the importance of transferring information between Command Vehicles as the incident escalates and Command Point changes.

6.7 Recording of Information in the Control Log**Finding**

The names of the two firefighters conveyed to hospital (and subsequently pronounced deceased) were passed to Control but a decision was taken not to enter this in the Control Log. This information could not then be retrieved and this had the effect of having to duplicate the casualty identification process and so delay the time at which the families could be informed.

Evidence source: HFRS witness statements.

Recommendation 6.7.1

The Incident Control Log is a secure document and is used to record all important details of incidents. It is recommended that Control staff are reminded of the need to use this format to record all important details including those of any casualties.

6.8 Implementation of Search Sector**Finding**

ICS guidance states that more than one internal sector may be required to ensure that the Sector Commander's spans of control are not exceeded.

During this incident the Bridgehead Sector Commander was primarily responsible for fire fighting but undertook additional responsibility for the rescue and evacuation of residents remaining in Shirley Towers and forced ventilation of the escape corridors.

In these circumstances it may have been beneficial to establish a dedicated Search Sector to deal with the control of other issues.

Evidence source: HFRS witness statements and ICS Guidance Manual

Recommendation 6.8.1

That HFRS review its ICS policy and guidance to ensure there is specific reference to the implementation and resourcing of a Search Sector.

7 Mobilising Procedure

7.1 Pre-determined First Attendance

Finding

On 14 December 2009 Service Delivery Bulletin 70/09, was issued which increased the PDA (this term means the agreed level of resource attendance that is sent to a first call to a particular premise) to high rise premises. The PDA to Shirley Towers was increased from three fire appliances, plus a SEU, an aerial appliance and one officer to five fire appliances plus a SEU, an aerial appliance and two officers. Notification of this upgraded PDA was circulated to all personnel prior to its introduction.

When the IC made Pumps 6 (in effect one additional fire appliance) he stated that he did so in recognition that the PDA had recently been changed and that as this was his first high rise incident following that change, he wanted to ensure that Control sent the required number of appliances.

Evidence source: HFRS witness statement, Service Delivery Bulletin 70/09 and Fire Control tape.

Recommendation 7.1.1

That HFRS review its methodology for ensuring its staff are in receipt of the most up to date information with regard to mobilising standards.

8 Organisational Policy and Procedures

8.1 Health and Safety Near Miss Reports

Finding

Service Order 8/2/1 Injuries, Near Miss, Dangerous Occurrences and Occupational Diseases (Safety Events) states that a Near Miss Report FM/8/2/1 is to be completed and submitted in respect of a near miss. These reports are used to identify issues and any potential shortcomings in procedures, equipment or PPE. Unfortunately 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.

Evidence source: HFRS Health and Safety Adviser.

Recommendation 8.1.1

That HFRS review its guidance on when and how near miss reports are to be submitted and ensure all personnel, especially officers in charge, are aware of the importance of submitting these reports. Supervisory Officers should ensure where there are any near miss occurrences, that a comprehensive report on what happened is submitted.

8.2 Service Orders

Finding

As part of the investigation process the currency of Service Orders was checked to assess their accuracy. The current listing for the revision of Service Orders suggests that a significant number of them are beyond their revision date. The AIT are not confident that this listing is accurate.

Evidence source: Service Order revision programme held by Central Services.

Recommendation 8.2.1

That the revision dates for all Service Orders are reviewed and prioritised for urgent review and revision.

Recommendation 8.2.2

It is further recommended that individual Service Orders are allocated to a post within the holding directorate, for example Service Delivery: Area Manager (Response). This post holder to become responsible for ongoing review and revision of the specific Service Orders allocated to their post.

8.3 Debrief Reports

Finding

During the investigation there was concern that some important issues raised by the Shirley Towers incident had been encountered at previous incidents and not fully addressed as part of the original debrief process. This is not a suggestion that debriefs are not held, indeed there is strong evidence that they are.

Evidence source: HFRS incident debrief reports.

Recommendation 8.3.1

That the current methodology for conducting incident debriefs should be reviewed to ensure that all pertinent findings from the debrief are robustly addressed and any remedial actions taken are fully auditable.

8.4 Archiving of Reports into Significant Incidents

Finding

During the course of this investigation the AIT team encountered difficulty in obtaining copies of previous reports into significant incidents.

Recommendation 8.4.1

That HFRS review its policy and procedures for archiving significant incident reports.

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Section 3: Appendices

Appendix A

Chronology of Events

Notes

- Critical elements of this chronology were shared with HC, HSE and the FBU and the timings and content agreed prior to the Coroner's inquest.
- Unless otherwise stated, all times attributed to Control are those at which point the message commenced.
- The term 'Fire Control tape' refers to the electronically timed mechanism (Freedom) for recording communications received by, and transmitted from, HFRS Fire Control.
- The term 'Southampton CCTV' refers to timed closed circuit television recordings taken by SCC.
- The term 'Command Log' refers to the timed electronic recordings taken of communications into and out of the HFRS Command vehicles.
- Draeger data refers to the information recorded by the 'Bodyguard' apparatus fitted to BA sets. This data can be downloaded post incident and records set usage times, cylinder pressure, air consumption and how and when a distress signal unit is operated. It also records a temperature reading. It is not clear what specific temperature reading this relates to, but what is certain is that it does not relate to ambient (surrounding) temperature.
- 'Estimated Time' is the time attributed to a non timed occurrence that best fits within the events that have known and accurate timings from accredited sources eg, Fire Control Tape or CCTV.
- Timings are recorded in hours and to the nearest minute (and seconds where confirmed).
- All photographs are displayed courtesy of HC. They were taken some time after resolution of the incident and their placement in the report is not indicative of conditions at a particular time. All diagrams have been produced by HFRS unless otherwise annotated.

Time	Occurrence
20:09:42	<p>HFRS Fire Control (Temporary Control Watch Manager (WM) M Carpenter) receive the first 999 call to Shirley Towers². The caller gave details of the incident, including the flat number, the floor and that they could see flames in the “front room”. Receipt of this call was monitored by Control WM Hayden. Fire Control received 26 calls regarding this incident.</p> <p>Comment: The Control Operator did not seek any additional information from the caller, such as whether there were any persons known to be in the flat. At the inquest he stated that as the caller was a neighbour he assumed everyone was out of the affected flat. The caller was not requested to stay on the line (in case additional enquiries were necessary). Please refer to Finding 3.1 and Recommendations 3.1.1, 3.1.2 and 3.1.3.</p>
20:11	<p>Fire Control mobilise the PDA³ of five Fire Appliances (53⁴ WL, 54 WL, 54 WT, 54 ST, 46 WT), a SEU (54 EU) and two officers to the incident. An ALP (53 ALP) also forms part of the PDA to this type of incident.</p> <p>Comment: Details of the floor on which the fire was reported were not included in the mobilising turnout sheet sent to the appliances making up the PDA, or relayed to officers mobilised to the incident. No mention was made of the 999 caller seeing flames in the lounge. Please refer to Finding 3.1 and Recommendation 3.1.2.</p>
20:11:08	<p>Fire Control contact 53 FRV by radio and order them to return to home station (Redbridge) so that the ALP can respond.</p> <p>Comment: The FRV and the ALP are dual crewed appliances. This means that only one of these appliances is immediately available at any one time. At the time of the call the FRV was out on station ground and was recalled to station to transfer crews over, and so allow the ALP to respond to Shirley Towers.</p>
20:11:50	<p>Burning debris observed falling from lounge window and landing around rear entrance.</p> <p>Comment: Throughout the incident several firefighters were observed not wearing full personal protective clothing - notably helmets. Please refer to Finding 1.1 and Recommendation 1.1.1.</p>

²The time recorded shows the moment Fire Control answered the 999 call. Full receipt of the message, ie, when all details have been received, took place at 20:10:21 = a call duration of 39 seconds.

³The PDA is the standard number of Fire Appliances initially sent to a specific category of fire/incident.

⁴Fire Appliances are designated by their station number, eg, 53 is the station number of Redbridge Fire Station, and the type of Fire Appliance, eg, WL is a Water Tender Ladder. A full glossary of terms can be found as Appendix K.

20:12 Small droplets of burning material falling to ground.

20:12

Estimated Time En route to the incident CM Clarke (OiC 54 WL) checks for any SSRI in the MDT in the cab of the Fire Appliance. There was none. In his statement he said that he would have looked for a PIC but arrived at the incident before he had time to do so.

20:13 CCTV camera not focussed on flat.

20:13

Estimated Time En route to the incident, WM Reddish (OiC 53 WL) refers to a small plan of Shirley Towers (that he carried on his person) and confirms to the crew that it is an 'up' flat. As they approach via Church Street, WM Reddish sees flames at a window in Shirley Towers, he notes that the fire was not shooting out. He tells the crew that they have a "going job"⁵.

Comment: In their statements, Ffs Holland and Ryan (Red Team 1), state they couldn't see the flat from their positions in the back of the appliance but hear the comments from WM Reddish "that we have a going job", they both make the assumption that the window has failed and that this has reduced the likelihood of a backdraught. CCTV footage indicates the window had not failed at this juncture, but was in an open position.

20:14 Fire clearly visible in lower left hand window of lounge. Smoke and burning particles are emitted from the open upper window in the lounge.

20:14:12

GM Pinchin books mobile to incident via mobile telephone. He asks Fire Control if there is any update on the call. Fire Control respond that "there is nothing at all - just awaiting the appliances to book in."

20:14:29

The first appliance, a WL (53WL) from Redbridge, with WM Reddish in charge, books in attendance at the incident via mobile telephone having failed to get a response via the appliance radio. On arrival, WM Reddish walks around Shirley Towers and confirms an obvious fire and flames at the window but that the fire was not shooting out. He instructs the driver (Ff Elst) to send a 'make up message', requesting six fire appliances, he states that they have a fire believed to be on the seventh floor.

Comment 1: The first 999 caller to Fire Control stated that the fire was on the ninth floor, when WM Reddish mentioned that he believed that the fire was on the seventh floor Fire Control did not correct him. They did go on to say that they (Fire Control) were receiving numerous calls to the ninth and thirteenth floors as well. Please refer to Finding 3.1 and Recommendations 3.1.1 and 3.1.2.

⁵A 'going job' is a commonly used term in the fire and rescue service to denote a fire in progress.

Comment 2: The PDA to high rise incidents had been upgraded with the issue on the 14 December 2009 of Service Delivery Bulletin 70/09 to include five fire appliances instead of three. The make up message sent had the effect of requesting one additional fire appliance, ie, from five to six. Please refer to Finding 7.1 and Recommendation 7.1.1.

WM Reddish asks Control if there are persons reported? Control respond that they have no reports of such.

Comment 1: The opportunities to ask the 999 callers (including the initial caller) if persons were known to be in the flat were not taken up by Fire Control. Please refer to Finding 3.1 and Recommendations 3.1.1, 3.1.2 and 3.1.3.

Comment 2: Mobile telephone records and the Fire Control tape show a number of important messages were sent via mobile telephone. Please refer to Finding 3.4 and Recommendation 3.4.1.

Instructions were given to charge the dry riser⁶.

20:14:52

In a further conversation with Fire Control via mobile telephone, WM Reddish states that he believes the fire to be on the seventh floor.

Comment: The fire was actually on the ninth floor. The flat number had been included in the turnout message and there were a number of information sources available to the IC that would have assisted him in identifying the flat floor from the flat number provided. These include fixed signage in the lobby, the PIC carried on the appliance and liaison with the flat warden. Please refer to Finding 2.3 and Recommendations 2.3.1, 2.3.2 and 2.3.3.

20:15

Fire, burning freely, is clearly visible in the lower left hand window of the lounge. Smoke and burning particles are emitted from the open upper window in the lounge.

⁶A dry riser is a vertical pipe or a system of pipes and valves that extend to the upper storeys of a multi-storey building. In case of fire, the fire and rescue service can connect their water supply directly to the dry riser, providing near-immediate access to water on all floors of the building (Shirley Towers has outlets on alternate floors where there is access to flats). Dry risers are a highly effective way to deliver water quickly to a building's higher storeys to control a fire. In Britain, dry riser installation is controlled by the 2000 Building (Minimum Standards) Regulations, which state their installation is mandatory in most buildings with floors over eighteen metres above ground level.

- 20:15
Estimated Time CM Clarke, on hearing the assistance message, instructs his crew regarding their individual duties.
- Comment: With the exception of CM Clarke, none of the responding crews mention that they sought information from either PICs or SSRI records carried on the appliance. These records contain current risk information specific to Shirley Towers and should have been utilised as an early reference to support incident tactical planning. Please refer to Finding 2.6 and Recommendations 2.6.1 and 2.6.2.
- 20:15
Estimated Time Red Team 1 (Ffs Holland and Ryan) gather the equipment required for a high rise incident plus a TIC and a personal radio.
- Comment: The High Rise Service Order (7/4/1) details the equipment to be taken aloft by each crew attending a high rise incident. Red Team 1 did not gather the full list of equipment required. Please refer to Finding 2.14 and Recommendation 2.14.1.
- 20:16** **Fire is clearly visible through the lower left hand window of the lounge. Smoke and burning particles are emitted from the open upper window of the lounge.**
- 20:16
Estimated Time Whilst approaching the incident Ff Shears looks out of the vehicle window and tells the crew that they have a “proper job”.
- 20:16
Estimated Time WM Reddish believes that the warden told him that the fire was on the seventh floor.
- 20:17** **Fire is visible in Flat 72, it is growing in intensity. Droplets falling from the lounge window.**
- 20:17 WM Reddish asks the warden to take him and the other crew members to two floors below the fire floor.
- 20:17:16 A second appliance, the WL (54WL) from St Marys books in attendance. CM Clarke contacts WM Reddish by radio and instructs him to stay on the ground floor and manage the responding resources.
- 20:17:57 SEU (54EU) from St Marys books in attendance
- 20:18** **A small fire is visible behind the bottom left window of the lounge. Black smoke emissions are blowing in a westerly direction. Burning particles are falling to the ground.**

20:18 Despite WM Reddish requesting the warden to take them to two floors below the fire floor, the warden takes them to the Fire Floor (ninth floor). WM Reddish thought he had been taken to the seventh floor. WM Reddish, Ffs Bryant, Holland and Ryan and the warden exit lift on the ninth floor (the floor on which the fire was situated).

As they exit the lift, the warden points out the occupier of Flat 72 (Mr Karl Hoffman). Whilst Ff Holland sees the occupier, WM Reddish does not mention this. In his statement he says that he asked the members of the public gathered in the lobby to the flat if any of them were the occupiers and none responded.

Ff Bryant states that she believed that it was the occupant's sister that was present. Giving evidence at the Inquest, Elizabeth Thompson (Kirsty Hoffman's mother) stated that she was near the flat when the firefighters emerged from the lift.

Comment 1: Throughout the incident many personnel mistakenly believed the fire to be on the seventh floor and the Bridgehead to be on the fifth floor.

Comment 2: The opportunity to question the occupier (or mother) and elicit more information was not utilised. Please refer to Finding 2.12 and Recommendations 2.12.1 and 2.12.2.

20:18:06 The ALP from Redbridge (53 AL) books mobile to Shirley Towers.

20:18:28 A third fire appliance, the WT (46WT) from Totton, books in attendance.

20:19 Fire is growing slowly behind the bottom left window of the lounge. Black smoke emissions are blowing in a westerly direction.

20:19
Estimated Time WM Reddish, Ffs Bryant and Ryan descend the stairs to the seventh floor. Ff Holland stays to roll out two lengths of hose in the ninth floor lobby.

20:19
Estimated Time Ffs Cherry and Perraton are instructed by CM Clarke to commence an ICS log.

20:19 A second crew (Red Team 2) comprising of Ffs Bannon and Shears (St Marys) are sent to the Bridgehead.

Comment: The fire lift was unavailable, so Red Team 2 used the non fire lift to gain access to the upper floors. Please refer to Finding 2.1 and Recommendations 2.1.1, 2.1.2 and 2.1.3.

- 20:20 Ffs Bannon and Shears exit the lift on the fifth floor.
- 20:20
Estimated Time WM Reddish instructs his crew to start running hose from the seventh floor dry riser outlet to the lobby on the ninth floor via a dividing breeching.
- 20:21 The fire is increasing in intensity behind the bottom left window in the lounge. Black smoke emissions blow upwards and to the west.**
- 20:21 Area Manager (AM) Kettle telephones Fire Control and is informed that the fire is on "Floor 9". He asks for an update on an informative message.
- Comment: Fire Control inform AM Kettle of the correct Fire Floor - other resources in attendance and mobile to the incident were not passed this information. Please refer to Finding 3.1 and Recommendations 3.1.1 and 3.1.2.
- 20:21
Estimated Time Ff Bryant, as the designated BAECO, asks WM Reddish where to set up the entry point. She is told to set up in the outer lift lobby of the seventh floor.
- 20:22 The fire is increasing in intensity behind the bottom left window of the lounge. Black smoke blows upwards.**
- 20:22:02 A fourth fire appliance of the PDA arrives at Shirley Towers, the WT (54WT) from St Marys books in attendance.
- 20:22
Estimated Time WM Reddish requests CM Clarke to join him on the fifth floor.
- Comment: There was some confusion about floor numbering and it is probable that WM Reddish wanted CM Clarke to join him at the Bridgehead, which was actually situated on the seventh floor.
- 20:22
Estimated Time Ff Ryan assists in running one length of 45mm hose from the seventh to the ninth floor and assists in setting into the dry riser. Ff Bryant begins to run hose⁷ from the seventh floor up to the ninth floor and passes the coupling to Ff Holland.
- 20:22:11 Redbridge's ALP (53AL) books in attendance at Shirley Towers.
- 20:22:50 The fifth appliance of the PDA, the WT, second one (54ST) from St Marys, books in attendance at Shirley Towers.

⁷This first fire fighting line consisting three lengths of 45mm hose, is run from the dry riser outlet on the seventh floor via a dividing breeching.

- 20:23 The fire continues to grow behind the bottom left window of the lounge. Thick black smoke blows upwards.**
- 20:23 CM Launchberry and Ff Bennett leave the lift on the fifth floor carrying one length of 45 mm hose each and meet another firefighter (this was a member of Red Team 2 - either Ff Bannon or Ff Shears) who asks Ff Bennett to connect the hose line to the dry riser outlet (fifth floor).
- Comment: This resulted in a second line of hose, of 3 lengths, being run from the fifth floor. This was insufficient to gain full entry to Flat 72.
- 20:24 The fire continues to grow behind the bottom left window of the lounge. Thick black smoke blows upwards.**
- 20:24
Estimated Time As Ff Bryant returns to the Bridgehead she sees another team running hose from the fifth floor. (This was Red Team 2 - Ffs Bannon and Shears). She then receives a request to turn on the dry riser valve on the seventh floor - she states that at this time there was only one hose connected to this via a dividing breeching.
- 20:25 The fire continues to grow behind the bottom left window of the lounge. Thick black smoke blows upwards.**
- 20:25
Estimated Time Ff Bennett is requested to return to the fifth floor to open the dry riser outlet. CM Launchbury was observed by Ff Bryant and Ff Bennett in the seventh floor stairwell connecting and charging a length of hose from the dividing breeching on a single length line run from the fifth floor.
- 20:26 The fire becoming less visible as thick black smoke emissions increase.**
- 20:26:37 Ffs Bates and Hitchcoe together with CM Clarke exit the lift on the fifth floor. Ff Hitchcoe stated that he believed this to be the Bridgehead level.
- 20:26
Estimated Time WM Reddish briefed two BA wearers (Red Team 1) to take their hose, to enter the flat and fight the fire. Red Team 1 comprised of Ffs Holland and Ryan (Redbridge). The team had instructions to take a fire fighting jet with them. They also carried a radio and a TIC.
- Comment 1: Despite the first 999 caller providing accurate information regarding the location of the fire, this information was not passed on to the IC (WM Reddish). Please refer to Finding 3.1 and Recommendation 3.1.2.

Comment 2: BA control was set up at this point operating on Stage 1 procedures. Control were not informed of the stage of BA control in operation. HFRS Service Orders dictate that Stage 2 BA control should be implemented at the earliest opportunity. Please refer to Finding 4.3 and Recommendation 4.3.1.

Comment 3: Red Team 1 were not briefed at the ECP as to the methodology of search. Ff Ryan states that he believed the flat was empty of occupants. The BAECO was not present at this short briefing and was unaware of the tactics to be adopted. Please refer to Finding 4.8 and Recommendation 4.8.1.

20:26

Estimated Time Ff Bryant (BAECO) sets up BA board in the seventh floor outer lift lobby and takes a radio from CM Launchbury.



Fig 12: Post incident photograph showing location of first BA control board on the seventh floor (Source: Hampshire Constabulary)

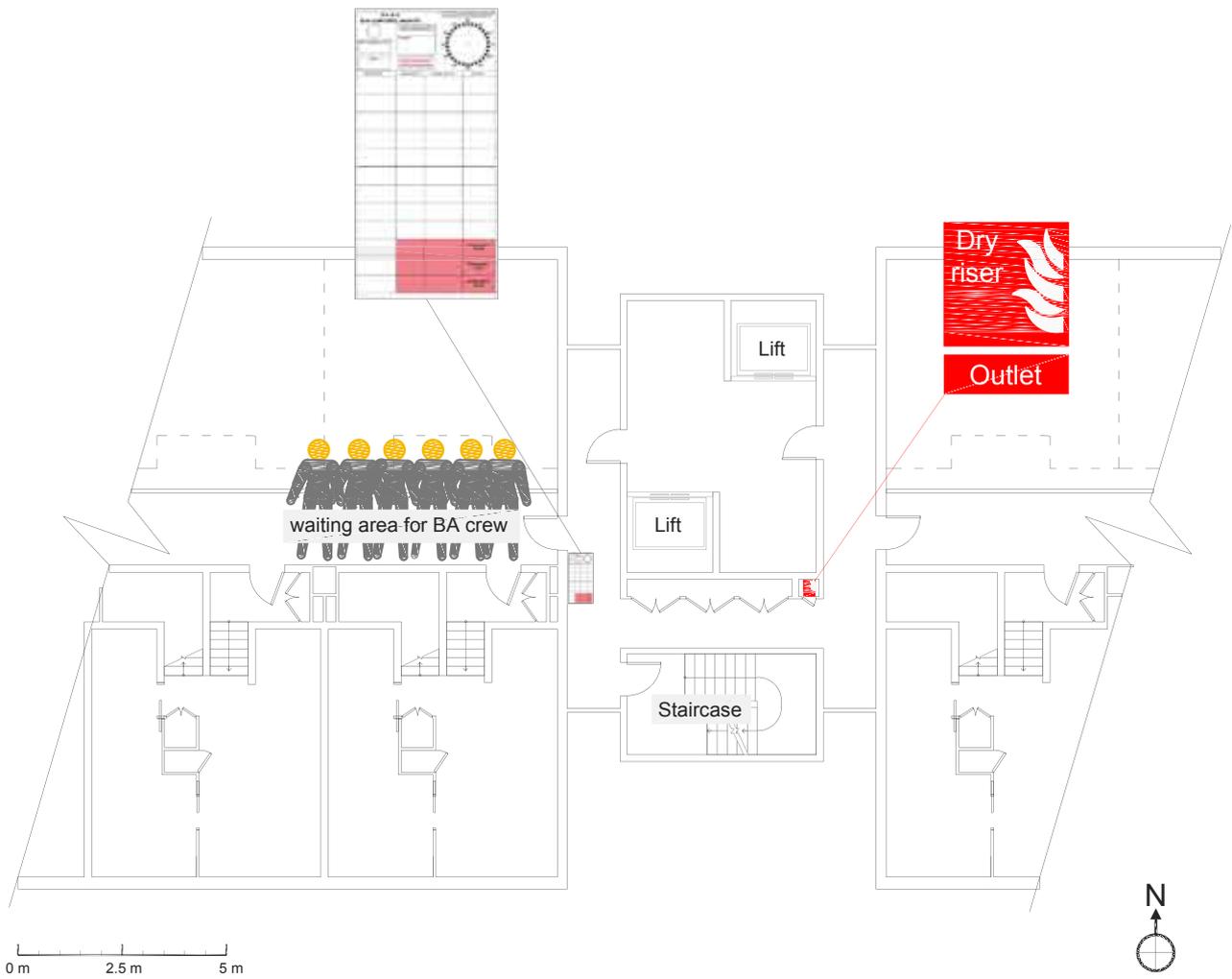


Fig 13: Plan of seventh floor lift lobby area showing location of BA board and dry riser outlet

- 20:27** **The fire becomes less visible as smoke emissions increase.**
- 20:27:46 Fire Control requests informative message from Redbridge's (Stn 53) WL.
- 20:28** **The fire appears to be growing in intensity emitting large volumes of thick black smoke.**
- 20:28
Estimated Time CM Clarke meets WM Reddish on the seventh floor and overhears him tell the BAECO (Ff Bryant) to instruct the two crews (Red Team 1 Ffs Holland and Ryan and Red Team 2 Ffs Bannon and Shears) not to enter until they both have water.
- Comment: Red Team 1 were not given a comprehensive brief, with no detail of a plan or the tactics to be adopted. The crew did not question this lack of detail. Please refer to Finding 4.8 and Recommendation 4.8.1.



Fig 14: Post incident photograph of ninth floor showing sign displaying floor and flat detail (Source: Hampshire Constabulary)



Fig 15: Post incident photograph showing close up of sign on ninth floor
(Source: Hampshire Constabulary)

- 20:28 Red Team 1 (Ffs Holland and Ryan) don their BA masks and go under air⁸.
- 20:28:12 GM Pinchin arrives at the front of Shirley Towers and books in attendance via mobile telephone.
- 20:29 The fire is visible behind the entire bottom left hand window of the lounge with flames flickering up to the upper window level.**
- 20:30 The fire is visible behind the entire bottom left window of the lounge with flames flickering up to the upper window level. Smoke emissions blow upwards and to the west.**
- 20:30
Estimated Time Ffs Holland and Ryan (Red Team 1) complete a radio check and are committed to the incident through the BA ECP. The BAECO (Ff Bryant) asks Red Team 1 their brief and is told “we are just going to Flat 72”.

Comment 1: It is vital that the BAECO has a comprehensive understanding of where and what, each crew under their control are engaged upon. This is usually facilitated by the IC briefing the crew in the presence of the BAECO. This was not done when Red Team 1 were committed to the incident. According to the BAECO (Ff Bryant) she received no brief re search patterns, etc, from either WM Reddish (IC) or the BA team leader. Please refer to Finding 4.8 and Recommendation 4.8.1.

Comment 2: Photographs of the BA control board suggest that it was not in a clean state. A dirty board can lead to illegible or hard to read entries; this has potentially serious implications. Please refer to Finding 4.10 and Recommendation 4.10.1.

⁸The term ‘go under air’ describes the process whereby a firefighter becomes reliant on the breathing apparatus for the supply of respirable air.

Comment 3: Photographs of the BA control board show that a minimal record of deployments, activities and movements was maintained by the BAECO. Please refer to Finding 4.14 and Recommendation 4.14.1. Please refer to Finding 4.15 and Recommendation 4.15.1.

Comment 4: Photographs of the BA control board show that BA tally information was not overwritten on the BA board. Please refer to Finding 4.2 and Recommendation 4.2.1.

20:30

Estimated Time CM Clarke is briefed by WM Reddish before taking over as Sector Commander at the Bridgehead. WM Reddish and CM Clarke agree to commit a third BA crew and keep a fourth as an emergency crew.

20:31

The fire is visible behind the entire bottom left window of the lounge with flames flickering up to the upper window level. Smoke emissions blow upwards and to the west.

20:31

Estimated Time Red Team 1 (Ffs Holland and Ryan) together with WM Reddish proceed to the ninth floor corridor.

20:31

Estimated Time Red Team 2 (Ffs Bannon and Shears) don their BA masks and go under air⁹, they have with them a TIC and a radio. The BAECO (Ff Bryant) is not briefed by WM Reddish on the action plan for the BA crews. Red Team 2 enter via the BA ECP, the BAECO (Ff Bryant) asks them their brief and is told “we are going to back up Red 1”.

Comment 1: BA control procedures dictate that the lowest individual cylinder pressure of a team member is used to calculate the time of whistle for all team members, this is the time that the team should have left the risk area and returned to the BA ECP. Time of whistle calculations are based on a standard wearer air consumption of 40 litres a minute. BA control boards state clearly that “hard work reduces duration” and where crews are involved in heavy or arduous work, eg, dragging hose up stairways, the duration of the BA set will be reduced. There is no method to calculate this fluctuation in consumption other than for BA crews to take regular gauge readings to monitor their air consumption and to relay these readings back to the BAECO. Please refer to Finding 4.6 and Recommendation 4.6.1.

⁹Post-incident data readings show that their BA sets started up at 20:30 with cylinder pressures of 200 and 180 bar respectively. Using standard duration tables Red Team 2 should have left the risk area and returned to the BAECO by 21:01.

- 20:31
Estimated Time Ffs Bates and Hitchcoe are instructed by CM Clarke to run out a 45mm line of hose from the seventh floor to the ninth floor. They do not charge this hose line.
- 20:32** **Fire is visible behind the entire bottom left window of the lounge with flames flickering up to the upper window level. Smoke emissions blow upwards and to the west.**
- 20:32
Estimated Time Red Team 1 (Ffs Holland and Ryan) access the first line of hose (consisting of three lengths run from the seventh floor dry riser outlet). WM Reddish, who has accompanied them to the ninth floor, instructs them not to enter the flat until Red Team 2 (Ffs Bannon and Shears) are with them. Red Team 1 tell WM Reddish that they would conduct a right hand search pattern¹⁰.
- 20:32
Estimated Time Ff Holland (Red Team 1) notices that the jet (run from the fifth floor) is too short to be fully taken into the flat, it could however be used as a covering jet. In his statement Ff Holland says he knows that it takes three lengths to reach the furthest point of the furthest flat and that if others want to use it they will have to extend it.
- Comment: Ff Holland did not inform the BAECO (Ff Bryant) of the need to extend the jet, consequently following crews found that their designated jet was of insufficient length to gain full entry to the flat.
- 20:32
Estimated Time Prior to entry Ff Holland looked through the letterbox to determine conditions and noted thick black smoke - he relayed this information to Ff Ryan.
- Comment 1: Ff Holland (Red Team 1) decided he would do a right hand search and shouted this to WM Reddish. Ff Holland believes WM Reddish acknowledged. There is no evidence that this information was passed to the BAECO. Command and control of incidents, including the strategy for searching a building, is the responsibility of the IC. It is vital that the BAECO is fully briefed on the search strategy to be employed. This briefing normally takes place at the ECP prior to the BA crews being committed to the incident. Please refer to Finding 4.8 and Recommendation 4.8.1.

¹⁰The term 'search' pattern is used to describe the route a BA team will take once in a building, so a right hand search means that once in the flat, the team will turn to the right and maintain contact with the right hand wall. Search patterns are carried out methodically to a programmed system detailed by the OiC prior to the search beginning. Where the search is focussed on locating a fire or casualty, the detailed brief will include that requirement.

Comment 2: In his statement to HC, Ff Holland correctly described the indicators of a potential flashover, yet when faced with exactly those conditions took no preventative action prior to entering the flat. Please refer to Finding 5.2 and Recommendation 5.2.1.

20:32 Red Team 2 (Ffs Bannon and Shears) are briefed by WM Reddish to hose manage the first team who were the fire fighting team and to take their hose to the door of the flat. He also told them if they are required to enter the flat to continue hose managing that they could take their hose with them and that this would be replaced with another jet. They begin their ascent up the stairs to the ninth floor (Fire Floor).

20:33 **Fire is visible behind the entire bottom left window of the lounge with flames flickering up to the upper window level. Thick black smoke emissions blowing upwards and to the west.**

20:33
Estimated Time As Red Team 2 (Ffs Bannon and Shears) enter the ninth floor corridor, Red Team 1 (Ffs Holland and Ryan) enter Flat 72. They do not wait for Red Team 2 to join them and do not communicate with them prior to entry.

Comment: Red Team 1 (Ffs Holland and Ryan) entered the flat before Red Team 2 had reached them at the entrance. This meant that no communication took place between them and that neither crew knew what the other crew's brief was eg, specific task, method of search, etc. Please refer to Finding 4.9 and Recommendation 4.9.1.



Fig 16: Post incident photograph of ninth floor. The second door on the right is the entrance to Flat 72. The white panel doors on the left are the fire escape doors to other flats. Note the relatively minor smoke damage. (Source: Hampshire Constabulary)

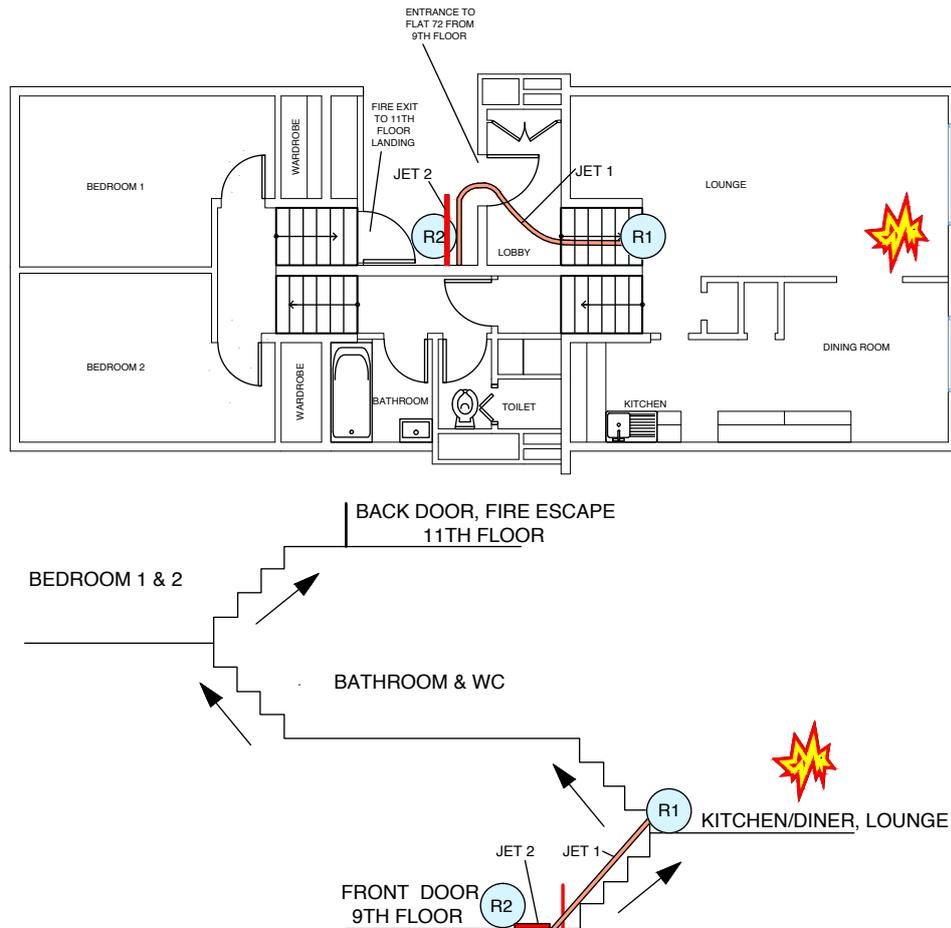


Fig 17: Plan and elevation of Flat 72 showing location of fire fighting crews at initial entry circa 20:33. Note: R1 and R2 refers to Red Teams 1 and 2 respectively.

20:33:57

St Marys SEU (54EU) confirms that it is now the contact point for the incident.

Comment: This confirmation of contact point was only made after Fire Control requested it - it should have come automatically from 54 EU once they were ready to become the contact point. Please refer to Finding 6.3 and Recommendation 6.3.1.

20:33

WM Reddish returns to ground floor and exits by front entrance to meet and brief oncoming officers.

20:34

The fire is obscured by heavy smoke emissions blowing to the west.

20:34

Estimated Time

Prior to taking over incident command, GM Pinchin receives a handover brief from WM Reddish.

- 20:34:27 The Chief Officer contacts Fire Control and requests an update. Fire Control inform him that it is “Make Pumps 6” and incorrectly, “that the fire is on the seventh floor and that they are not aware re persons reported”.
- Comment: Information passed to the Chief Officer from Fire Control was incorrect regarding the fire floor. Please refer to Finding 3.1 and Recommendations 3.1.1 and 3.1.2.
- 20:34
Estimated Time CM Clarke states that he hears a message from one of the two¹¹ committed teams requesting assistance with hose management.
- 20:34
Estimated Time Ff Hitchcoe speaks to Ff Shears from Red Team 2 in the doorway of the flat who is requesting assistance with hose. Ff Hitchcoe follows the hose line back to the dividing breeching and notes that there is no more hose available to pull through.
- 20:35** **The fire is visible and growing in intensity. Heavy smoke emissions (under pressure from flat) blowing to the west.**
- 20:35:12 Fire Control receive the first call¹² from a resident in Shirley Towers requesting advice on what they should do.
- Comment: Fire survival advice was given to several people on different floors and often over extended periods. One conversation lasted 1 hour 22 minutes. Please refer to Finding 3.2 and Recommendations 3.2.1 and 3.2.2.
- 20:35
Estimated Time Ff Ryan stated that Red Team 1 pulsed water to cool the gases before they entered the flat. Red Team 1 (Ffs Holland and Ryan) enter the lounge area (location of fire). Ff Holland stated that conditions were very good and that it was not hot. Fire was not visible so Ff Holland switched his torch off to see if there was a glow (from the fire) but there were no signs of fire - just thick smoke. Ff Ryan carried a TIC but did not use it whilst in the flat. Red Team 1 had chosen to undertake a right hand search and on entering the lounge, turned right and ascended the stairs to the bathroom landing. The change in level was not reported to the BAECO.

¹¹This is almost certainly Red Team 2 (Ffs Bannon and Shears).

¹²Throughout the period of the incident Fire Control received numerous calls, some of which prompted the provision of fire survival advice.

Comment 1: In his statement Ff Ryan says that he knew from experience and knowledge of Shirley Towers that by doing a right hand search they would go straight upstairs to the bathroom without going into the lounge or kitchen. The fire originated in the lounge near to the window and was not extinguished by the first crews before they ascended the stairs to the upper floors. Please refer to Finding 2.5 and Recommendations 2.5.1 and 2.5.2.

Comment 2: The crew had with them a TIC but chose not to use it. Ff Holland stated that he did not like relying on a TIC and preferred to use his own senses. Please refer to Finding 2.2 and Recommendation 2.2.1.

Comment 3: Standard BA search procedure requires BA teams to check with BA control prior to changing levels. Red Team 1 chose not to adhere to this procedure. In his statement Ff Holland said that he chose not to inform the BAECO because the number of flights of stairs meant that they would always be on the radio. Please refer to Finding 2.5 and Recommendation 2.5.2.



Fig 18: Post incident photograph from lounge level down stairs to entrance lobby. (Source: Hampshire Constabulary)

- 20:36 The fire appears to flicker, partially obscured by smoke.**
- 20:36 Red Team 2 (Ffs Bannon and Shears) approached the affected flat but, on discovering that their hose line was not long enough to gain full entry, left the jet outside the flat. They then followed their brief of hose managing Red Team 1 and entered the flat.
- 20:37 The fire appears to flicker with flames visible behind both bottom windows of the lounge.**
- 20:37 Red Team 3 (Ffs Bates and Hitchcoe) don their BA masks and go under air at 20:36. They are then committed to the incident through the BAECO (Ff Bryant). They are instructed by CM Clarke to undertake hose management for Red Teams 1 and 2.

20:37

Red Team 1 (Ffs Holland and Ryan) carry out a gauge check on the bathroom landing. Ff Holland has 136 bar and Ff Ryan has 139 bar. Ff Ryan reports back to the BAECO (Ff Bryant) that they have 130¹³ bar remaining. Ff Bryant informed that Red Team 1 (Ffs Holland and Ryan) have changed levels.

Comment: Photographs taken of the BA board show very little detail regarding the whereabouts/location of the crew recorded. Should an emergency situation arise, such as occurred at this incident, the BAECO would rely on this information to brief emergency crews prior to deployment. Please refer to Finding 4.15 and Recommendation 4.15.1.

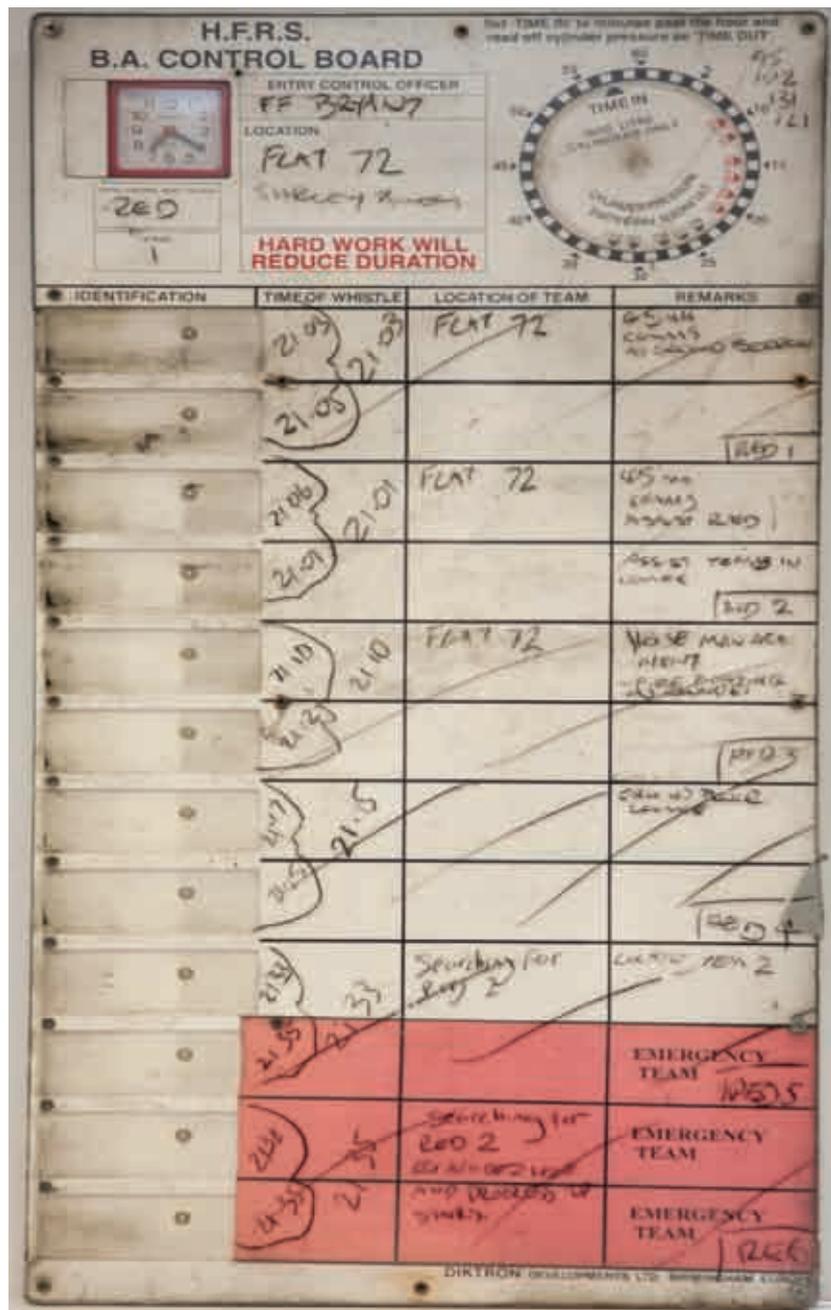


Fig 19: Post incident photograph of first BA board in use (Source: Hampshire Constabulary)

¹³Service procedures dictate that the lowest of the team gauge readings should be rounded down to the nearest 10 bar.

20:38 **CCTV shows a large fire development, the fire can be seen behind all of the lounge windows. Smoke emissions blow to the west.**

20:38

Estimated Time Red Team 1 (Ffs Holland and Ryan) search bedrooms 1 and 2 and open windows in both bedrooms without any referral to the IC.

Comment: In his statement Ff Holland said that he believed the main lounge window had ventilated and so his actions of opening the windows in bedrooms 1 and 2 to let the smoke out and clear the room and improve visibility would not have exacerbated the fire situation. He acknowledges that Service procedures required him to seek permission from the IC before carrying out ventilation but chose not to do so on this occasion. At this juncture Red Team 1 were at the highest point of the flat and, having searched the bedrooms, had not located the fire. It is reasonable for them to suppose therefore that the fire must have been below them in the rooms that had not been searched, ie, the lounge and kitchen. Please refer to Finding 2.13 and Recommendations 2.13.1 and 2.13.2.



Fig 20: Post incident photograph of Bedroom 1 showing bedroom window (Source: Hampshire Constabulary)



Fig 21: Post incident photograph of Bedroom 2 showing bedroom window (Source: Hampshire Constabulary)

- 20:38
Estimated Time GM Pinchin takes over as IC following a briefing by WM Reddish. GM Pinchin instructs WM Reddish to send an assistance message¹⁴ to make pumps 10 and inform Control that they are in incident mode 'Oscar'¹⁵. WM Reddish is then tasked with setting up ground floor Sector Command.
- 20:39 Lounge totally involved in fire. Flame emissions out of upper windows in the lounge blowing west.**
- 20:39
Estimated Time GM Pinchin confirms this change of role to CM Clarke and informs him that his priority is to evacuate Shirley Towers before commencing fire fighting. CM Clarke tells him that crews have already been committed but that they are having difficulty with communications.
- 20:39
Estimated Time Ff Ryan (Red Team 1) radios the BAECO that they have searched the second bedroom and are going downstairs. CM Clarke (at the Bridgehead) was informed by the BAECO (Ff Bryant) that Red Team 1 report that there was no sign of fire but heavy smoke logging.
- 20:39
Estimated Time As Red Team 1 (Ffs Holland and Ryan) emerge from Bedroom 2 they meet Red Team 2 (Ffs Bannon and Shears) on the bedroom landing.
- 20:39
Estimated Time BA Teams Red 1 and 2 note a rapid and significant rise in temperature. Ffs Holland and Ryan describe it as a "wet heat - like steam". Ff Ryan in his statement said it felt as if the ends of his gloves had burnt away. (Ff Ryan's gloves retained their integrity throughout the incident.)
- 20:40 The lounge windows appear to fail, there is a large fire development with flame emissions from Flat 72. Debris is visible falling to the ground.**

¹⁴Assistance messages, or make up messages as they are known, are used by ICs to request additional resources at the incident. The number of appliances included in the message is the total number of appliance the IC requires at the incident, eg, a request to make pumps 10 may only require Control to mobilise an additional two appliances if eight have previously been mobilised.

¹⁵Incident mode 'Oscar' refers to an offensive mode of fire fighting. This means active measures were being taken to tackle the fire by personnel committed to a hazardous area.

20:40
Estimated Time CM Clarke overhears a radio message reporting excessive heat and says in his statement that he believes that it originated from Red Team 1 (Ffs Holland and Ryan). During the Inquest CM Clarke stated that he was unsure how he heard this message but it was either via the radio or by word of mouth. Red Team 1 and Red Team 3 (Ffs Bates and Hitchcoe) both state that they did not send this message. The BAECO (Ff Bryant) says that she did not hear this message. CM Clarke instructs the BAECO (Ff Bryant) to instruct crews (Red 1 and 2) to withdraw and fight the fire from the doorway.

Comment: If this message had been transmitted via radio it would have been transmitted on the BA Channel 6 and CM Clarke must have overheard this message from either the BAECO's radio or that of a nearby BA crew member awaiting deployment.

20:40
Estimated Time The BAECO (Ff Bryant) loses radio communication with Red Team 1. She informs CM Clarke who instructs her to keep trying to contact them.

Comment: The loss of hand held radio communications in high rise incidents is not uncommon. CM Clarke may have factored in the frequency of such failures in not deciding to initiate a BA emergency. Please refer to Finding 3.10 and Recommendation 3.10.1.

20:40
Estimated Time Ff Bates (Red Team 3) whilst managing hose in the stairway overheard the BAECO (Ff Bryant) try unsuccessfully to contact Red Team 1 (Ffs Holland and Ryan) by radio.

20:40
Estimated Time Ff Holland tells Red Team 2 (Ffs Bannon and Shears) to go back downstairs but Ff Shears says it is too hot to descend.

20:40
Estimated Time Red Team 1 (Ffs Holland and Ryan) go downstairs to bathroom, encountering fallen cables as they proceed.

Comment 1: These were the first firefighters to become entangled in fallen cables. These cables had been released from surface mounted plastic cable trunking which had softened and melted as a result of the fire. Please refer to Finding 2.8 and Recommendations 2.8.1, 2.8.2, 2.8.3 and 2.8.4.

Comment 2: Despite several firefighters mentioning that fallen cables had been an issue for them during the incident, few of them submitted a post incident 'near miss report' detailing the circumstances, and these only after prompting. Please refer to Finding 8.1 and Recommendation 8.1.1.

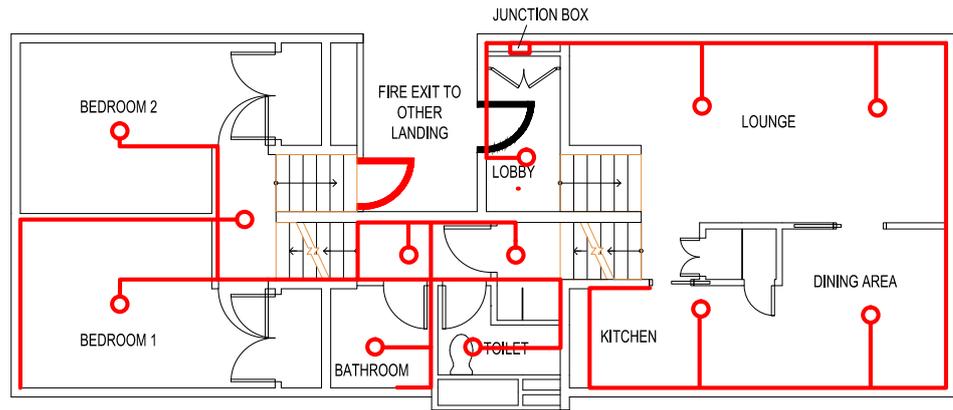


Fig 22: Plan view of Flat 72 showing wiring diagram.



Fig 23: Post incident photograph looking up stairs from lounge window towards bathroom level. (Source: Hampshire Constabulary)

20:40

Estimated Time

Station Manager (SM) Spencer-Peet informs the IC (GM Pinchin) that he is the CSO. GM Pinchin reassigns him to other duties, ie, to look after the welfare of a pregnant woman reported on the fifth floor. He is then instructed to take responsibility for people remaining in Shirley Towers.

Comment: The pregnant woman was in fact on the fifteenth floor and when she was not located on the fifth floor no effort was made to validate the information regarding her location.

20:40:41

Assistance message sent from the IC, GM Pinchin, "make pumps 10".

Comment: The Fire Control tape has no record of GM Pinchin formally taking over command of the incident. Whilst there is no doubt that he booked in attendance, Fire Control were not informed that he had formally taken command of the incident. Please refer to Finding 6.3 and Recommendations 6.3.1 and 6.3.2. Please also refer to Finding 6.5 and Recommendations 6.5.1 and 6.5.2.

- 20:41 A large fire development with flame emissions from Flat 72. Debris is visible falling to the ground. Thick black smoke emissions blowing to the west.**
- 20:41
Estimated Time GM Deacon discusses with GM Pinchin, the evacuation policy and the absence of a general alarm system for evacuation.
- 20:41
Estimated Time Red Team 1 (Ffs Holland and Ryan) enter bathroom for shelter and Ff Ryan inadvertently nudges Ff Holland who puts his hands in the bath which was half full of water.
- 20:41 Red Team 4 (Ffs Hicks and Sawdon) don their BA masks and go under air. They are briefed by CM Clarke to enter the flat and follow Red Team 1's (Ffs Holland and Ryan) search pattern and locate Red Team 2 (Ffs Bannon and Shears) and make sure that they are withdrawing.
- Comment 1: The only information known about Red Team 1's location was from their earlier radio message that they had gone on a right hand search and two subsequent radio messages that they had moved upstairs and searched the second bedroom.
- Comment 2: Red Team 4 did not carry with them a TIC. Please refer to Finding 4.11 and Recommendation 4.11.1.
- 20:42 Large fire development with flames covering windows of flat above. Thick black smoke blows upwards.**
- 20:42
Estimated Time Red Team 3 (Ffs Bates and Hitchcoe) arrive at door to Flat 72, they note that the door is open and on entering the flat see a developing fire. They decide to change their allotted task of hose management to one of fire fighting by using the charged short line run out by previous crews and left outside Flat 72. This change of task was not communicated to the BAECO.
- Comment: Red Team 3 (Ffs Bates and Hitchcoe) did not charge their line of hose and instead used a line that they knew to be too short for a full entry into the flat although this was sufficient to prevent the fire spreading from the lounge area.

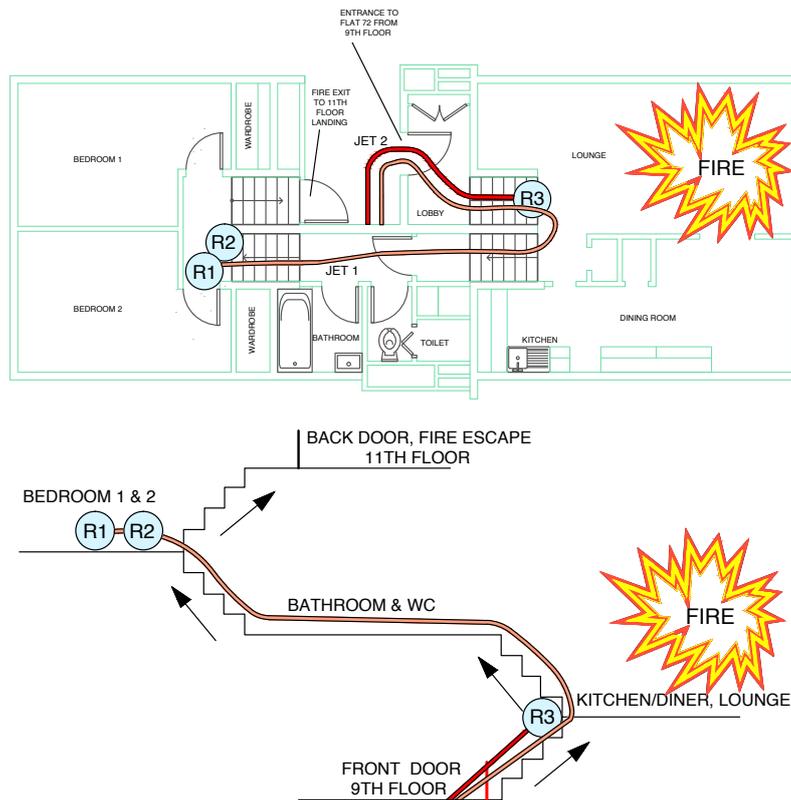


Fig 24: Plan and elevation Flat 72 showing location of fire fighting crews at 20:42.

20:42 Red Team 4 (Ffs Hicks and Sawdon) are committed to the incident through BAECO (Ff Bryant).

20:42
Estimated Time Red Team 1 (Ffs Holland and Ryan) leave the bathroom and ascend the stairs to bedroom landing looking for stairs leading upwards to the eleventh floor escape door. They encounter more fallen cables.

20:42
Estimated Time CM Clarke requests via radio that the ground floor send up more BA boards and additional BA crews. He also requests a fourth line of hose (to be run to the ninth floor).

Comment: BA control boards have twelve spaces for tallies to be inserted, nine of these spaces are for committing crews and the remaining three spaces are for deploying emergency teams. At this point there were four two person teams committed which left one space on the board. (Minimum size of a BA team is two).

20:43 **A water jet is observed coming out of Flat 72 lounge window. Fire is pulsing with lots of thick black smoke.**

20:43

Estimated Time As Red Team 3 (Ffs Bates and Hitchcoe) reach the lounge level they see a line of hose going up the stairs to the right (towards the bathroom).

They pulse spray¹⁶ the fire in the lounge, this was a deliberate decision so as not to produce steam which might endanger crews working above them. The branch setting was initially on jet. The smoke levels had descended to approx three quarters down from the ceiling.

Comment: Red Team 3 did not attempt to contact Red Teams 1 and 2 and inform them of the developing fire below them or inform the BAECO of the developing fire and that crews were working above it. Please refer to Finding 2.15 and Recommendations 2.15.1 and 2.15.2.

20:43

Estimated Time GM Deacon is instructed by GM Pinchin to take over as Sector Commander for the Bridgehead.

20:44

Fire is pulsing with lots of smoke. Debris is visible falling to the ground.

20:44

Estimated Time Ff Holland leaves Flat 72 via the fire escape door to the eleventh floor. Upon exiting he realises that Ff Ryan is not with him. Turning around towards the escape door, he sees Ff Ryan's helmet through the escaping smoke, he is entangled in cables preventing his final exit from the staircase. At this point Ff Ryan states that he thought he was not going to get out and that he was going to die. Ff Holland assisted Ff Ryan to remove the cables and they both moved into the eleventh floor corridor.



Fig 25: Post incident photograph up fire escape stairs from bedroom level towards eleventh floor fire escape door (open). (Source: Hampshire Constabulary)

¹⁶The practice of 'pulse spraying' is designed to cool the hot gas emissions and reduce the likelihood of a flash over. Pulse spraying does not directly tackle the fire itself, which will continue to develop and generate increasing volumes of heat and smoke to the point that pulse spraying will have negligible effect.

20:45 **Pulse spray is noted coming out of the lounge window. The fire is still large, but is partially obscured by thick black smoke blowing upwards and to the west.**

20:45
Estimated Time Red Team 1 (Ffs Holland and Ryan) descend the stairs towards the Bridgehead on the seventh floor.

20:45
Estimated Time GM Deacon and SM Spencer-Peet arrive at the seventh floor Bridgehead and meet CM Clarke (wearing a Sector Commanders tabard) for an initial brief. GM Deacon tells CM Clarke that he intends to take command but wants to have a look at the situation first. (This is overheard by Ff Bennett.) He says that CM Clarke tells him that he has three teams committed.

At this point four teams had been committed, with Red Team 4 (Ffs Hicks and Sawdon) having been committed three minutes prior to GM Deacon arriving at the Bridgehead.

20:46 **Large fire is pulsing and is occasionally obscured by thick black smoke. Debris is visible falling to the ground.**

20:46
Estimated Time Ff Bennett observes Red Team 1 (Ffs Holland and Ryan) return to the seventh floor in a distressed state, running along the corridor and removing their BA sets. She assists them with first aid in the seventh floor corridor and an adjacent flat.

20:46
Estimated Time Ff Ryan of Red Team 1 does not return to the BA ECP or provide a debrief to the BAECO (Ff Bryant).

20:46
Estimated Time Ff Bates of Red Team 3 talks briefly to GM Deacon in the lobby of the ninth floor and then returns to assist Ff Hitchcoe pulsing with the charged (longer) third line which he uses to replace the short line. GM Deacon states that he looked into the entrance of Flat 72 to ascertain the conditions and to ascertain if it was an up flat.

Comment 1: All flats were clearly and individually marked with signage denoting whether they were an up or down flat.



Fig 26: Diagram of flat marker denoting number and direction of entry (up or down).

20:46

Estimated Time

On his return into the flat Ff Bates of Red Team 3 reports that he heard a loud bang and fire conditions increase rapidly.

Comment: It is possible that the loud bang was a result of the large piece of concrete ceiling section (Bison Beam), measuring approximately 1.5m x 0.4m x 0.3m noted after the fire to have fallen into the kitchen. Other potential causes of the noise include the television exploding or an aerosol rupturing. Please refer to Finding 2.9 and Recommendation 2.9.1.



Fig 27: Post incident photograph of kitchen ceiling showing the fire damage to the concrete beams (Source: Hampshire Constabulary)



Fig 28: Post incident photograph from eleventh floor fire escape door down staircase to bedroom floor level (Source: Hampshire Constabulary)

20:47

The kitchen of Flat 72 is now clearly involved in fire. Thick black smoke continues to blow upwards and to the west.

- 20:47
Estimated Time GM Deacon on the eleventh floor, notes a pungent smell, heat and smoke and opens the corridor door slightly to assess conditions. He notes that the eleventh floor corridor is heavily smoke logged down to ground level and feels “warmth”.
- 20:47
Estimated Time GM Deacon formulates plans to implement PPV on floors 11, 13 and 15, with floor 11 being the priority. This was to assist with the proposed evacuation plan for residents.
- 20:47
Estimated Time Red Team 3 (Ffs Bates and Hitchcoe) involved in fire fighting from the top of the entrance lobby stairs of Flat 72.
- 20:48** **The kitchen of Flat 72 is now clearly involved in fire. The lounge is also involved with flames visible at high level. Thick black smoke continues to blow upwards and to the west.**
- 20:48
Estimated Time Ff Bryant states that Red Team 1 (Ffs Holland and Ryan) are in a blackened state and Ff Ryan is clearly in a distressed state, screaming and shouting about his hands. Ff Bryant states that, due to their condition, she knew it (the fire) was serious. Ff Bennett observes Ff Ryan enter a flat along the corridor from the Bridgehead and out of sight of the BAECO (Ff Bryant), to cool his hands in a bowl of water. The occupier brings out another bowl of water for Ff Holland. On their exit, Red Team 1 (Ffs Holland and Ryan) shouted a warning to the BAECO (Ff Bryant) about the dangerous conditions within the flat and the cables, but did not raise any concerns over the welfare of Red Team 2 (Ffs Bannon and Shears). Neither the BAECO (Ff Bryant), the Sector Commander (CM Clarke) or GM Deacon questioned Red Team 1 about the whereabouts of Red Team 2 (Ffs Bannon and Shears). Indeed the BAECO did not debrief either member of Red Team 1 (Ffs Holland and Ryan). In her statement Ff Bryant said that it wasn't her job to debrief crews - this is incorrect and contrary to the guidance contained within Service Order 7/7, Paragraph 1/4/5.
- Comment 1: Red Team 1 had emerged from the flat in a blackened state and with burns to their hands. The understanding was that Red Teams 1 and 2 were operating in a similar location, however the BAECO and the Bridgehead Commander did not seek further information about the conditions within the flat or the whereabouts of Red Team 2. Please refer to Finding 4.8 and Recommendation 4.8.2.

Comment 2: At this point in the incident a message had been received reporting excessive heat (20:41) and Red Team 1 had withdrawn in a blackened, distressed and injured state, and communications with Red Team 2 had been lost. Despite these worrying developments a BA emergency was not declared. Please refer to Finding 4.4 and Recommendation 4.4.1.

Comment 3: During the incident both members of Red Team 1 sustained superficial burns to their hands from the ambient temperature in Flat 72. They were both wearing HFRS issue fire fighting gloves. Please refer to Finding 1.2 and Recommendations 1.2.1 and 1.2.2. Please also refer to Finding 1.4 and Recommendation 1.4.1 and 1.4.2.

20:48

Estimated Time GM Deacon, on return to the Bridgehead, sees Ffs Holland and Ryan (Red Team 1) with their hands in a bowl of water. He asks them if they are OK.

20:48

Estimated Time The BAECO (Ff Bryant), aware of the condition of Red Team 1, tries (unsuccessfully) to raise Red Team 2 via radio.

20:48

Estimated Time Red Team 4 (Ffs Hicks and Sawdon) enter the flat with the second short line of hose and exchange it with the long line from Red Team 3 (Ffs Bates and Hitchcoe).

20:49

Flame emissions from lounge and kitchen windows with thick black smoke blowing upwards and to the west.

20:49

Estimated Time The BAECO (Ff Bryant) states that she repeatedly informed GM Deacon that she had lost contact with Red Team 2 (Ffs Bannon and Shears). He instructs her to keep trying to contact them.

Comment: It is possible that it was in fact CM Clarke she spoke to.

20:49

Estimated Time GM Deacon meets SM Spencer-Peet at the Bridgehead and asks him to accompany him to the eleventh floor to explain the PPV plan.

Comment: It is unclear if this tactical plan had been discussed and agreed with the IC before commencement.

20:49

Estimated Time

Red Team 4 (Ffs Hicks and Sawdon) with Ff Sawdon leading, progress up the stairs towards the bathroom level but encounter excessive heat with hot air rushing past them. They send a radio message to the BAECO (Ff Bryant) that conditions are too hot to progress past the top stair due to excessive heat. Red Team 4 abort their attempt to locate Red Team 2 (Ffs Bannon and Shears) and exit the flat from the front door taking with them the longer (third) jet.

Comment: At this point in the incident the BAECO (Ff Bryant) had two separate teams (Red Teams 3 and 4) radio back that conditions were too hot to progress, another team (Red Team 1) had withdrawn in a blackened, distressed and injured state, and communications with Red Team 2 had been lost. Despite these developments a BA emergency was not declared. Please refer to Finding 4.4 and Recommendation 4.4.1.

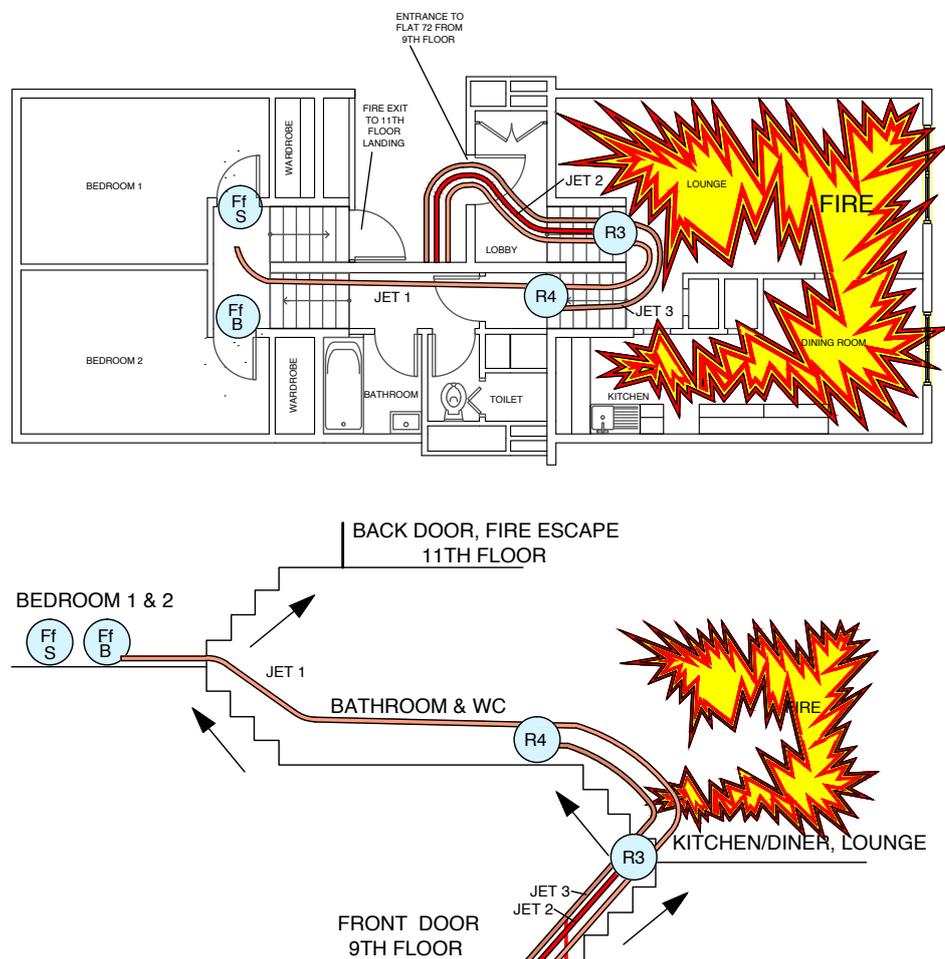


Fig 29: Plan and elevation of Flat 72 showing location of Ffs Bannon and Shears and other fire fighting crews at 20:49.

20:49:15

Chief Officer contacts Fire Control requesting further information. He requests the informative message, who the OIC is and what resources are en route. Fire Control staff were not able to collate and provide this information immediately.

Comment: It is a key requirement that all Control Operators have easy and ready access to important incident information for incidents in progress. Please refer to Finding 3.1 and Recommendation 3.1.1.

20:50 The fire in the kitchen increases in intensity like a blow torch, with smoke emissions upwards and to the west.

20:50:03 54 EU send the first informative message - "From GM Pinchin, 72 Shirley Towers, Southampton. Fire in flat spread over three floors, fire currently on ninth floor, flat well alight, evacuation of tenants in surrounding flats in progress. 10 BA and 2 x 45mm hose in use, mode Oscar, 54EU over".

Comment: This was the first informative message sent from the fire ground and was after prompts/requests for such from Fire Control. Please refer to Finding 3.7 and Recommendation 3.7.1.

20:50

Estimated Time As Red Team 1 are at the ECP, Ff Holland sees a BA team comprising of two firefighters descending the stairs from above, subsequently confirmed as Red Team 4 (Ffs Hicks and Sawdon). In his statement Ff Holland says that he assumed that this was Red Team 2 (Ffs Bannon and Shears) leaving the incident.

Comment: This assumption was not correct, the team they spoke to in the flat was Red Team 2 (Ffs Bannon and Shears) and the team they saw descending the stairs was Red Team 4 (Ffs Hicks and Sawdon).

20:50:10 Fire Control contact the Chief Officer to inform him that the IC is GM Pinchin and that AM Kettle is en-route as the incident is now at 10 fire appliances. Fire Control tell the Chief Officer that an informative message is still awaited.

Comment: This call was in response to the information request from the Chief Officer at 20:49:15 hours.

20:50:52 Fire Control receive a call from a resident in Flat 102 on the eleventh floor. During the call she is heard choking and in difficulty. She says smoke is coming through her window. During the conversation the resident is told not to unlock her door but to let the firefighters break it down if necessary.

Comment: This was one of numerous calls (not all of which have been included in this chronology) from residents in some distress. Please refer to Finding 3.3 and Recommendation 3.3.1.

20:50

Estimated Time Red Team 4 (Ffs Hicks and Sawdon) return to the seventh floor Bridgehead - they request permission from GM Deacon (at this point he had not formally taken over as Bridgehead Commander) to gain entry from the eleventh floor to fight the fire and ventilate. They are observed by the BAECO (Ff Bryant).

20:51

Large fireball observed coming out of the kitchen window of Flat 72.

20:51

Estimated Time The request to enter from the eleventh floor is refused by GM Deacon as he didn't want the emergency exit to Flat 72 opened as it would compromise the eleventh floor¹⁷.

Comment: This action was undertaken before GM Deacon formally took over as Bridgehead Commander.



Fig 30: Post incident photograph showing conditions on the eleventh floor after the escape door from Flat 72 was left open. Note the displaced cables. (Source: Hampshire Constabulary)

¹⁷ The emergency exit door to Flat 72 had already been opened by Red Team 1 (Ffs Holland and Ryan) as they made their escape.



Fig 31: Post incident photograph of the eleventh floor landing showing displaced cables (Source: Hampshire Constabulary)

20:51

Estimated Time

Ff Bates (Red Team 3) overhears radio message from BAECO which sounded like “the other teams were out”. He seeks confirmation from the BAECO (Ff Bryant) and states that he receives a positive response from her. He decides to increase the length of the pulse spray. Evidence shows that Ff Bates’ low pressure warning whistle operated at approximately 20:51.

Comment 1: Ff Bates (Red Team 3) remained in the flat fire fighting after his low pressure warning whistle had operated. Please refer to Finding 4.16 and Recommendations 4.16.1 and 4.16.2.

20:52

Large fireball observed coming out of the kitchen window of Flat 72.

20:52

Estimated Time

The BAECO (Ff Bryant) shouts to GM Deacon about the cables and he in turn shouts a warning to Red Team 4 (Ffs Hicks and Sawdon).

20:52

Estimated Time

Red Team 4 (Ffs Hicks and Sawdon) return to Flat 72 front entrance with instructions to fire fight and locate Red Team 2 (Ffs Bannon and Shears). Red Team 3 (Ffs Bates and Hitchcoe) withdraw from the flat when Ff Bates’ low pressure warning whistle operates.

Comment 1: Service Order 7/7 Breathing Apparatus (Para 2.8.4) states that personnel wearing BA must return to the point of entry (BAECO) before the low pressure warning whistle operates.

Comment 2: In his statement Ff Sawdon said that the pulsing technique being used was having no effect on the fire, which was developing.

20:52 The ADSU of Ff Shears (Red Team 2) is operated manually¹⁸. At this point his cylinder pressure was recorded as 74.3 bar. It is not possible to state with certainty who, out of Ffs Bannon and Shears, operated the ADSU¹⁹.

Comment: The possible causes of Ff Shears' ADSU being operated are manual operation by either Ff Shears or Ff Bannon. Please refer to Finding 4.7 and Recommendation 4.7.1. Please refer to Finding 3.5 and Recommendation 3.5.1.

20:53 Huge balls of fire visible coming out of lounge and kitchen windows of Flat 72.

20:53
Estimated Time CM Clarke provides GM Deacon with a general overview of the situation before GM Deacon takes over as Sector Commander of the Bridgehead. He informs the IC (GM Pinchin) of the change in command. He instructs CM Clarke to stay and assist him. He tells CM Clarke that it is an up flat.

Comment: CM Clarke states that he wasn't aware that this was an up flat until told by GM Deacon - this despite the guidance signs located at each flat entrance (see Figs 10 and 26).

20:54 Huge balls of fire visible coming out of lounge and kitchen windows of Flat 72. Flaming debris falls from windows and thick black smoke rises upwards.

20:54
Estimated Time The Bridgehead Commander (GM Deacon) tasks the BAECO (Ff Bryant) to re-deploy Red Team 3 (Ffs Bates and Hitchcoe) and Red Team 4 (Ffs Hicks and Sawdon) to establish communications with, and rescue, Red Team 2 (Ffs Bannon and Shears).

¹⁸ADSUs can be operated in one of two ways, the first is manually. This requires the wearer (or someone else) to press the alarm button. The second is when the unit detects no movement. In this case the unit gives a short alarm to warn the wearer that unless subsequent movement is detected the unit will go into full alarm. The method of operation is recorded in the BA set data readings. Operation of the alarm can only be cancelled with the use of the key which is attached to the BA tally held by the BAECO (Ff Bryant).

¹⁹The operation of an ADSU emits an audible alarm of between 102 and 112 decibels (measured at 250mm). Given the location of Ff Shears in the bedroom of Flat 72 (situated between the tenth and eleventh floors) it is unlikely that the alarm would be heard by anyone at the Bridgehead on the seventh floor. Operation of an ADSU cancels any further data recording. Both members of Red Team 2 were present in Flat 72 at the time the ADSU was manually operated but the AIT are not able to say with certainty who of the two operated Ff Shears' ADSU.

- 20:55** **Huge balls of fire visible coming out of lounge and kitchen windows of Flat 72. Flaming debris falls from windows and thick black smoke rises upwards.**
- 20:55
Estimated Time The IC (GM Pinchin) reassigns GM Oxlade from Audit to Command Support duties.
- 20:55 Red Team 3 (Ffs Bates and Hitchcoe) return to the BAECO (Ff Bryant) on the seventh floor and shut down their BA sets. They inform CM Clarke that there is a fire in the living room and that they have handed over to Red Team 4 (Ffs Hicks and Sawdon). CM Clarke tells them to report to the BAECO to continue their debrief.
- 20:56** **Severe fire in progress within Flat 72. Debris continues to fall. Black and grey emissions are noted.**
- 20:56
Estimated Time CM Clarke observes the Bridgehead Commander (GM Deacon) marshalling BA teams for PPV operation and is told by the BAECO (Ff Bryant) that she still cannot raise Red Team 2 on the radio and that they are five minutes from their time of whistle. He relays this to the Bridgehead Commander and instructs the BAECO to keep trying to contact Red Team 2.
- Comment: The delegated primary role of the Bridgehead Sector Commander (GM Deacon) was to co-ordinate fire fighting in Flat 72. Other demanding issues, such as the rescue and evacuation of residents in the tower block and ventilation, were also taken on by GM Deacon. All of these at the time the BA emergency was occurring. Please refer to Finding 6.8 and Recommendation 6.8.1.
- 20:56
Estimated Time Red Team 3 (Ffs Bates and Hitchcoe) pass information to the BAECO (Ff Bryant). As they are passing this information they see Ff Ryan (Red Team 1) walk past them in a blackened and burnt state. Someone asks him if he is OK - he responds "yeah just my hands".
- Comment: Red Team 3 (Ffs Bates and Hitchcoe) did not question the whereabouts of Red Team 2 (Ffs Bannon and Shears).
- 20:57** **Severe fire in progress within Flat 72. Debris continues to fall. Black and grey emissions are noted.**

- 20:57
Estimated Time The Bridgehead Commander (GM Deacon) instructs CM Clarke to assess conditions on the seventh, ninth and eleventh²⁰ floors and report back.
- Comment 1: Individuals are not usually committed into a lone working position of danger without BA or communications. The Bridgehead was situated on the seventh floor and this instruction suggests some confusion over the floors. Please see Finding 2.16 and Recommendation 2.16.1.
- 20:58 Severe fire in progress within Flat 72. Debris continues to fall. Black and grey emissions are noted.**
- 20:58
Estimated Time CM Clarke is instructed by the Bridgehead Commander (GM Deacon) to establish PPV on the eleventh floor.
- 20:58 Ff Lyons states that she heard the Bridgehead Commander (GM Deacon) calling for BA crews. She and Ff Railton stepped forward. Red Team 5 (Ffs Lyons and Railton) are informed that Red Team 2 were at their time of whistle and that communications had been lost with them²¹.
- 20:59 Huge fire pulses coming out of the lounge and kitchen windows of Flat 72. Grey emissions blow eastwards.**
- 20:59
Estimated Time The BAECO (Ff Bryant) continues to inform the Sector Commander (GM Deacon) that she cannot raise Red Team 2 (Ffs Bannon and Shears) and that they are just a few minutes from their time of whistle. He instructed her to keep trying to get hold of them.
- Comment: BA control board indicates that Red Team 2's time of whistle was 21:01.
- 20:59 Ff Bannon's (Red Team 2) BA cylinder contents expire.
- Comment: The time of whistle had been calculated by the BAECO as 21:06, with expiration of the cylinder, following the ten minute safety margin, at 21:16.
- 20:59:58 Assistance message from the IC (GM Pinchin), "Make pumps 12 for BA, multiple persons reported". This refers to residents of Shirley Towers.

²⁰It is assumed that GM Deacon and CM Clarke were confused about the floor numbering and that CM Clarke in fact ascended to the eleventh floor before descending to the ninth and then meeting GM Deacon back on the seventh floor.

²¹It is not clear who provided this information but it is likely that it was either the Bridgehead Commander (GM Deacon) or the BAECO (Ff Bryant).

- 21:00 Huge fire pulses coming out of the lounge and kitchen windows of Flat 72. The smoke blows eastwards.**
- 21:00 The ADSU for Ff Bannon (Red Team 2) operates automatically²² (non movement).
- 21:00 Red Team 5 (Ffs Lyons and Railton) are committed to incident through the BAECO (Ff Bryant). Although a BA emergency had not been declared at this point they are committed as an emergency team but this was not clearly communicated to them. Ff Lyons requests information on the search pattern adopted by Red Team 2 several times but none was forthcoming. The only location detail entered on the BA board was 'Flat 72'. Ff Lyons tells the BAECO (Ff Bryant) that they are going on a right hand search. Due to their receiving an incomplete brief at the BA ECP, Red Team 5 had initial difficulty in finding their way to Flat 72. Ff Lyons heard the BAECO (Ff Bryant) tell GM Deacon that there were no spaces left on the board, so she would put them in the emergency team spaces.
- Comment 1: It is vital that comprehensive records are maintained on the BA board regarding the location and task allocation of all teams committed. This information is necessary in order to inform subsequent crews.
- Comment 2: It is imperative that all crews (especially those designated as emergency crews) are briefed effectively on the incident detail and location.
- Comment 3: It is the responsibility of the BAECO to ensure that sufficient BA boards are available to enter the number of potential BA wearers. The emergency team spaces should be reserved for entering BA emergency teams only.
- 21:01 Huge fire pulses coming out of lounge and kitchen windows of Flat 72.**
- 21:01 Projected time of whistle²³ for Ff Shears (Red Team 2). Please refer to Finding 4.4 and Recommendations 4.4.1 and 4.4.2.
- 21:02 Steam coming out of the lounge and kitchen windows, this is the first indication of protracted fire fighting action.**

²²ADSUs can be operated in one of two ways, the first is manually. This requires the wearer to press a button. The second is when the unit detects no movement. In this case the unit gives a short alarm to warn the wearer that the unit will soon go into full alarm and if no subsequent movement is detected the unit will go into full alarm. Operation of the alarm can only be cancelled with the use of the key which is attached to the BA tally which is left in the BA entry board held by the BAECO (Ff Bryant).

²³BA control measures dictate that BA wearers should exit the risk area and return to the BAECO before their warning whistle operates. Where this does not occur (as in this case) the BAECO should instigate a BA emergency and inform the Incident/Sector Commander.

- 21:02 Ff Maidment (Control) begins to give fire survival advice to occupants of Flat 92. He completes this advice at 22:12 (1 hour 10 minutes duration).
- 21:02
Estimated Time Ff Sawdon's (Red Team 4) ADSU operates and he and his team colleague Ff Hicks withdraw from the flat.
- 21:03 Clouds of steam obscure flat.**
- 21:03
Estimated Time Red Team 5 (Ffs Lyons and Railton) take a fourth line of hose up to the ninth floor.
- 21:03
Estimated Time Red Team 5 (Ffs Lyons and Railton) meet Red Team 4 (Ffs Hicks and Sawdon) as they exit Flat 72.
- 21:03
Estimated Time The BAECO (Ff Bryant) asks the Bridgehead Commander (GM Deacon) whether they should initiate Stage 2 BA Control. He responds that as they have less than ten wearers she should remain on Stage 1.
- Comment: Service procedures dictate that Stage 2 BA control must be initiated as soon as practicably possible. Please refer to Finding 4.3 and Recommendation 4.3.1. Please also refer to Finding 4.12 and Recommendation 4.12.1.
- 21:04 Steam continues to come from lounge window but the kitchen is still well alight.**
- 21:04
Estimated Time The Bridgehead Commander (GM Deacon) instructs CM James to take a radio to the flat entrance on the ninth floor and establish communications with the teams working inside. He questions CM Wood about the experience of Red Team 2 and is told "they are experienced and reliable". CM Wood is then told to go to the eleventh floor for PPV operation.
- Comment: Individuals are not usually committed into a position of potential danger without BA. Please refer to Finding 2.16 and Recommendation 2.16.1.
- 21:04:27 An assistance message is sent from the IC (GM Pinchin), "Make pumps 14 for manpower, additional 2 officers also required".

- 21:04
Estimated Time The Bridgehead Commander (GM Deacon) sends 4 x BA wearers (but not started up and under air), CM Young, Ffs Beckett, Matthews and Benfield with a brief to prepare for PPV operations to the eleventh floor. They proceed to the eleventh floor to secure the water supply. These were designated as Red Teams 7 (CM Young and Ff Beckett) and 8 (Ffs Matthews and Benfield²⁴).
- 21:05 Steam continues to come from lounge window but the kitchen is still well alight.**
- 21:05:16 Ff Lyons (Red Team 5), whilst moving hose, accidentally operates her ADSU and asks Ff Benfield who is outside the flat and wearing BA (but not under air) to silence the alarm.
- Comment: The key required to operate an ADSU is attached to the BA tally and is left at the ECP in the BA board. That Ff Benfield was able to use his key to silence Ff Lyons' ADSU suggests he had not gone under air and passed through the BA ECP.
- 21:05 Ffs Tan and Richards (Red Team 6) are committed to the incident through the BAECO (Ff Bryant). They are instructed to act as an emergency team²⁵ and to enter the flat, locate Red Team 2 and bring them out. They take with them a radio and a jet. Ff Richards states that they were sent in because an ADSU had been heard. It is believed that this was the ADSU accidentally operated by Ff Lyons (Red Team 5) - see above.
- Comment: Their jet was too short to enter the flat so they exchanged it with the one from the out coming Red Team 4 (Ffs Hicks and Sawdon).
- 21:05:32 Red Team 4 (Ffs Sawdon and Hicks) shut down their BA sets at the BA ECP.
- 21:06 Flames are visible behind the lounge and kitchen windows. Black smoke is blowing upwards.**
- 21:06
Estimated Time SM Spencer-Peet discusses plans for PPV with the Bridgehead Commander (GM Deacon) who agrees the strategy. This is discussed with the IC (GM Pinchin).
- 21:06
Estimated Time Red Team 6 (Ffs Tan and Richards) proceed from the Bridgehead to Flat 72 and meet CM James outside the flat.

²⁴In their statements two of them (CM Young and Ff Beckett) said that they believed that they were being committed as one team of four.

²⁵In his statement Ff Tan does not recall being told he is part of an emergency team.

- 21:06
Estimated Time Projected time of whistle²⁶ for Ff Bannon (Red Team 2).
- Comment: Failure by Red Team 2 (Ffs Bannon and Shears) to return to the BA ECP by their time of whistle should have resulted in a BA emergency being declared. Please refer to Finding 4.4 and Recommendations 4.4.1 and 4.4.2.
- 21:07 Flames are visible behind all flat windows. Black smoke is blowing upwards and to the west.**
- 21:08 Flames are visible behind all flat windows. Black smoke is blowing upwards.**
- 21:08
Estimated Time As Red Team 5 (Ffs Lyons and Railton) enter the flat they hear an ADSU operating faintly (a smoke alarm was operating intermittently and muffling the sound of the ADSU). Ff Railton reported the sound of an ADSU operating to the BAECO (Ff Bryant) by radio.
- Comment 1: No record of this message was found on the BA board. Please refer to Finding 4.14 and Recommendation 4.14.1.
- Comment 2: A number of BA wearers stated that they were confused by the operation of automatic fire alarms sounding similar to ADSUs. Please refer to Finding 3.6 and Recommendation 3.6.1. Please refer to Finding 4.7 and Recommendation 4.7.1.
- 21:08
Estimated Time The Bridgehead Commander (GM Deacon) overhears a message that an ADSU has been heard in Flat 72. He instigates a BA emergency and instructs the BAECO (Ff Bryant) to commit two emergency teams. He then informs the IC (GM Pinchin) that a BA emergency is in progress. CM Clarke and GM Oxlade (CSO) overhear this radio message that a BA emergency is in progress.

²⁶BA cylinders charged to 200 bar contain 1800 litres of air. Air consumption is estimated to be 40 litres of air per minute (this is based on experiments that demonstrate that a person walking at 4mph consumes 37.3 litres of air per minute). Clearly hard work will increase air consumption and reduce the duration of the BA set. Assuming air consumption is in accordance with the BA board projections, the safety warning whistle operates 10 minutes before the cylinder contents expire. Service procedures dictate that BA wearers should return to the ECP before the warning whistle operates. BA control procedures dictate that the lowest individual cylinder pressure of a team member is used to calculate the time of whistle for all team members. In the case of Red Team 2, the lowest cylinder pressure was Ff Shears who was due to return to the BAECO by 21:01. Where a wearer does not return to the ECP (as in this case) the BAECO should instigate a BA emergency and inform the Incident/Sector Commander.

Comment: The sounding of an ADSU was the catalyst for a BA emergency being initiated, there were however, other earlier developments that should have instigated a BA emergency:

- Loss of communications - in this case communications had failed with Red Team 2 after the initial message at 20:34.
- Other pertinent conditions - Red Team 1 had withdrawn in a distressed, blackened state and with burnt hands.
- Crews not withdrawn at time of whistle - Red Team 2's time of whistle was 21:01.

21:08

Estimated Time The IC (GM Pinchin) instructs Command 2 to relay the BA emergency message to Fire Control.

Comment: GM Pinchin was situated next to Command 2 and instructed them to send the BA emergency message despite them not being set up at that moment as the Contact Point for the incident.

21:08

Estimated Time The Bridgehead Commander (GM Deacon) instructs CM Launchbury to take notes of actions taken re the BA emergency.

21:09

Flames are visible behind all flat windows. Black smoke is blowing upwards and to the west.

21:09

Estimated Time CM Clarke, in the company of SM Spencer-Peet, instructs the PPV crew to set up a fan at the entrance to the corridor on Floor 11 and break the window at the far end.

Comment: Siting the PPV fan at this point would have created one of two effects:

- If the exhaust outlet was large enough, the PPV would have created a venturi effect at the exit door to Flat 72 which would have had the effect of sucking out the heat, smoke and fumes from the flat.
- If the exhaust outlet was too small, then the corridor would have been pressurised, and this in turn would have forced air down the (open) fire escape door of Flat 72.

Please refer to Finding 2.19 and Recommendation 2.19.1.

21:09

Estimated Time Red Team 6 (Ffs Tan and Richards) enter Flat 72 and observe Red Team 5 (Ffs Lyons and Railton) at the lounge level.

21:09

Estimated Time The Bridgehead Commander (GM Deacon) instructs the BAECO (Ff Bryant) that the BA control board is to be impounded.

- 21:09
Estimated Time As Red Team 5 (Ffs Lyons and Railton) reach the top of the entrance stairs they note that the kitchen and lounge are well alight. They attempt to gas cool but this has no effect.
- 21:10 Kitchen is well alight but the fire in the lounge appears to reduce.**
- 21:10
Estimated Time Red Team 5 (Ffs Lyons and Railton) attempt to climb the stairs from the lounge towards the sound of the ADSU (Ff Railton is leading with Ff Lyons hose managing). Ff Railton calls out to the missing team before being beaten back by the extreme temperatures. They withdraw to the corridor and make two further attempts. On each occasion they have to withdraw.
- 21:10 The ALP is sited in the rear car park and prepares to get to work in Milner Court.
- 21:11 Kitchen is well alight but the fire in the lounge appears to reduce. Smoke emissions are moving upwards and to the west.**
- 21:11
Estimated Time Red Team 5 (Ffs Lyons and Railton) make numerous attempts to gain progress up towards the bathroom level but are forced back by extreme heat and have to withdraw to the corridor where they meet CM James. They tell him they can hear an ADSU operating. They ask him to request an entry from the eleventh floor because conditions prevent their progress from the ninth floor access. They return to the flat and continue to attack the fire by pulsing (but this has no effect on reducing the intensity of the fire).
- Comment: The tactical use of pulsing does not reduce the development of the fire which at this stage had grown to involve the whole of the lounge and kitchen. Please refer to Finding 2.15 and Recommendations 2.15.1 and 2.15.2.
- 21:11
Estimated Time On their return to the Bridgehead, Red Teams 7 and 8 (CM Young, Ffs Benfield, Beckett and Matthews) are tasked by the Bridgehead Commander (GM Deacon) to enter Flat 72 via the eleventh floor fire escape door and search for Red team 2 (Ffs Bannon and Shears).



Fig 32: Post Incident photograph from lounge up stairs towards bathroom level. Note entrance to kitchen on left. (Source: Hampshire Constabulary)

- 21:11
Estimated Time The Bridgehead Commander (GM Deacon) is informed that the ALP is in position. GM Deacon instructs that it is not to get to work as it might compromise firefighter safety within the flat.
- 21:12 **Kitchen is well alight but the fire in the lounge appears to reduce. Smoke emissions move upwards and to the west.**
- 21:12 Command 2 (despite still not being set up as the Command Point) report that a BA emergency is in progress to Fire Control.
- Comment 1: This message did not originate from the IC but from a vehicle, Fire Control did not challenge the message and/or its origin. The Control tape suggests that little importance was given to this message. Please refer to Finding 3.8 and Recommendations 3.8.1 and 3.8.2. Please also refer to Finding 4.4 and Recommendation 4.4.1.
- 21:12
Estimated Time Red Team 5 (Ffs Lyons and Railton) continue fire fighting, with Red Team 6 (Ffs Tan and Richards) assisting with hose management.
- 21:12:15 Fire Control ask two appliances en route to the incident, 55WT (Hamble) and 48WL (Lyndhurst), if they received the informative message re the BA emergency. Both respond that they did.
- Comment: These appliances were approximately eight minutes away from the incident. Fire Control procedures state that they are to pass this information to on-coming appliances. Several officers mobilised state that they were not informed of the BA emergency until they arrived at the scene.

21:12

Red Team 7 and 8 (CM Young and Ffs Beckett, Matthews and Benfield) don their BA masks and go under air. The BAECO (Ff Bryant) has insufficient space on the BA board so requests that the names of Red Teams 7 and 8 are written on the wall adjacent to the BA ECP. (This is observed by Ff Bennett). The entry time marked on the wall (21:10) does not match the time recorded on BA data record. This report believes the BA data record provides a more accurate time of entry.

Comment 1: The BAECO must ensure that he/she has sufficient BA entry boards for the number of personnel to be committed. Please refer to Finding 4.1 and Recommendations 4.1.1.

Comment 2: The IC should have instigated BA Stage 2 control. Please refer to Finding 4.3 and Recommendations 4.3.1.

Comment 3: The BAECO showed initiative in the circumstances by recording the additional BA crews on the adjacent wall. However, the entries on the wall were incorrect with CM Young's name appearing twice and Ff Benfield's name being missed. There is also doubt over the accuracy of recorded time of entry.

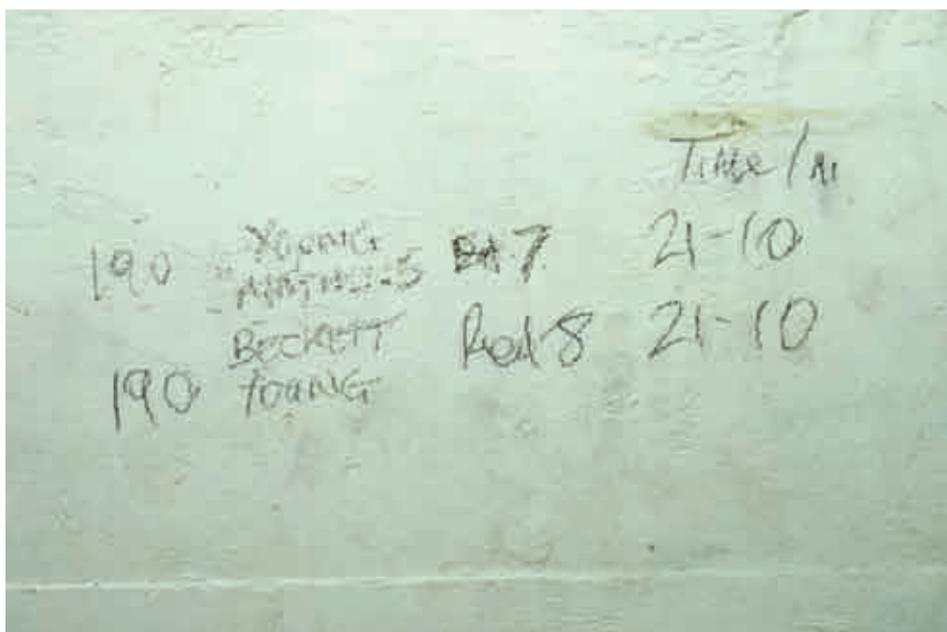


Fig 33: Post incident photograph of wall adjacent to the BA ECP showing entries marked on the wall. Note the absence of Ff Benfield from Red Team 8 and the duplication of CM Young. (Source: Hampshire Constabulary)

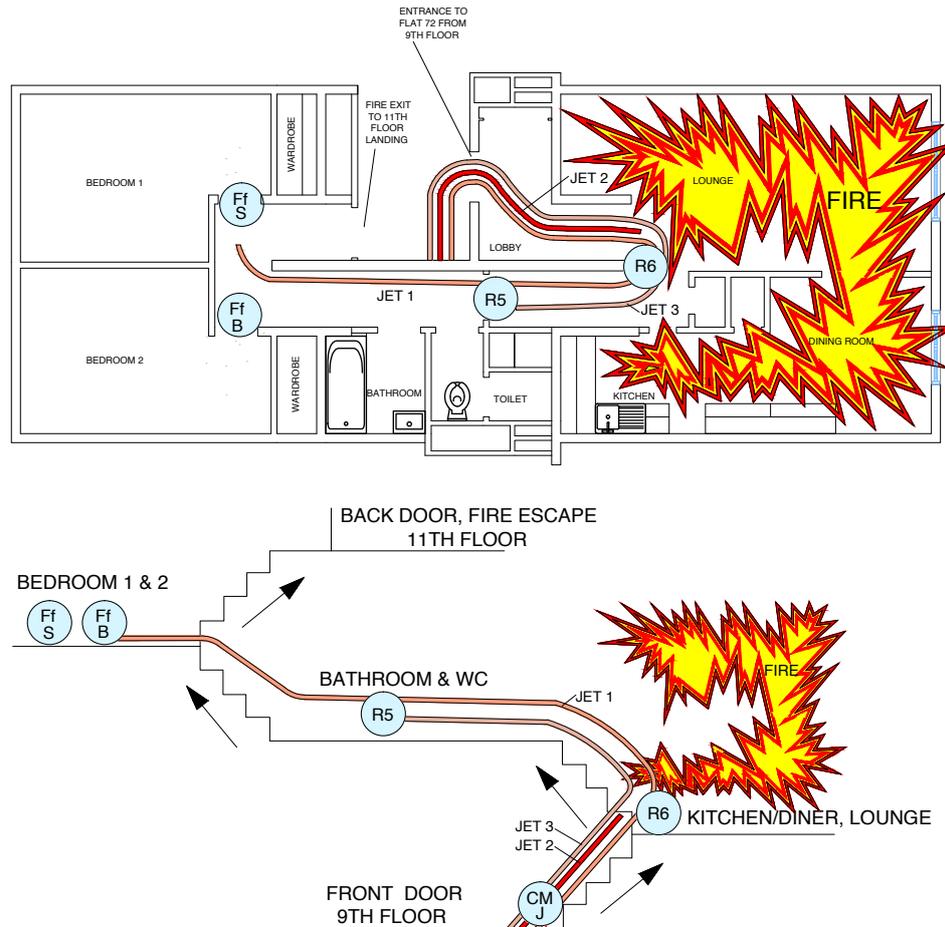


Fig 34: Plan and elevation of Flat 72 showing the location of Ffs Bannon and Shears and other fire fighting crews at 21:13.

21:13

Kitchen is well alight but the fire in the lounge appears to reduce. Smoke is moving upwards and to the west.

21:13

Estimated Time

Red Team 8 (Ffs Matthews and Benfield) proceed to the eleventh floor with breaking-in equipment, to locate the fire escape door. En-route they are informed (incorrectly) that the door is the first on the right. They are followed by Red Team 7 (CM Young and Beckett).

21:13

Estimated Time

Ff Lyons of Red Team 5 attempts to ascend the stairs from the lounge, she reaches a door on the bathroom landing and pushes it open. She notices fallen cables and shouts up to Red Team 2 (Ffs Bannon and Shears) before being forced to withdraw due to the excessive heat.

21:14

Flames are visible behind the kitchen window, black smoke is obscuring the view of the lounge window. Smoke is moving upwards and to the west.

- 21:14
Estimated Time Red Team 6 (Ffs Tan and Richards) pull back Red Team 5 (Ffs Lyons and Railton) who are attempting to gain further entry into the flat.
- Comment: After several previous attempts to ascend the stairs towards the missing team, Red Team 5 (Ffs Lyons and Railton) were exhausted and Red Team 6 (Ffs Tan and Richards) were correct in preventing Red Team 5 (Ffs Lyons and Railton) from making a further attempt.
- 21:14
Estimated Time Red Teams 7 and 8 (CM Young and Ffs Beckett, Matthews and Benfield) enter eleventh floor corridor and notice extreme heat and heavy smoke logging.
- 21:15** **Flames are visible behind the kitchen window, black smoke is totally obscuring the lounge window. Smoke is moving upwards and to the west.**
- 21:15
Estimated Time Red Teams 7 and 8 (CM Young and Ffs Beckett, Matthews and Benfield) reach the second door on the right of the eleventh floor and force entry. They note displaced cables and Ff Benfield has to be assisted after becoming entangled. This is found to be an up flat. Ff Matthews notes this is a flush door with no handles.
- Comment: This was not Flat 72 and the actions of the Ffs compromised the fire resistance of the flat unnecessarily. Shirley Towers has a 'stay put policy' for residents which relies on a one hour fire resisting partition around individual flats to ensure occupant safety and well-being. The implications of breaking into the wrong flat are that residents within will have their flat's fire resistance jeopardised with the potential for fire and smoke to enter the flat. Please refer to Finding 2.18 and Recommendation 2.18.1.
- 21:15
Estimated Time Red Teams 5 and 6 (Ffs Lyons, Railton, Tan and Richards) exit flat and meet CM James in the corridor, they tell him that they can hear an ADSU operating. He checks their gauges and instructs Red Team 5 (Ffs Lyons, Railton) to return to the BAECO. Red Team 6 continue to fight the fire.
- 21:15:18 Fire Control receive a call from the residents in Flat 136 on fifteenth floor. Amongst the residents in this flat are two girls and a baby who state that they suffer with asthma and are having difficulty breathing because of the black smoke coming into their kitchen.

Comment: This was one of numerous calls from residents who appeared to be in difficulty. No specific actions were taken to remove these people to safety. Please refer to Finding 3.3 and Recommendation 3.3.1.

- 21:15 ALP gets to work with water spray above fire to prevent fire spread upwards.
- 21:15:45 Command 1 books in attendance at Shirley Towers.
- 21:16 The intensity of the fire reduces. Flames are visible behind the kitchen window, black smoke is obscuring the lounge window. Smoke is moving upwards and to the west.**
- 21:16
Estimated Time Red Team 4 (Ffs Hicks and Sawdon) wearing BA sets (but not started up and not under air) on hearing a request for assistance, immediately respond to the ninth floor where they meet CM James outside Flat 72. They are tasked with hose management. CM James removes the flat's fire alarm sounder which is obscuring the sound of the ADSU.
- Comment: Red Team 4 acted on their own initiative and without permission or direction from either the BAECO or the Bridgehead Commander.
- 21:17 The intensity of the fire reduces, flames are visible behind the kitchen window, black smoke obscures the lounge window. Smoke is moving upwards and to the west.**
- 21:17
Estimated Time Red Team 6 (Ffs Tan and Richards) make repeated efforts to ascend the stairs towards the sound of the ADSU (which they can hear sounding faintly above them). During this operation, Ff Richards gets his cylinder valve entangled in fallen cables requiring the assistance of Ff Tan to remove them.
- 21:17
Estimated Time CM Wood, A/CM Timms and Ff Hickman commence PPV operations on the eleventh floor corridor.
- 21:17
Estimated Time CM James (outside Flat 72) details Ffs O'Rourke and Cole to hose manage and extend one line of hose. He instructs them to pulse spray from the flat entrance/stairs to assist the BA crews. They are not wearing BA.
- 21:18 Thick black smoke obscures all flat windows.**
- 21:19 Thick black smoke obscures all flat windows.**

- 21:19 Command 2 confirm that they are now the Contact Point for the incident.
- Comment: Evidence suggests that a comprehensive transfer of information between the Command Points (SEU to Command 2) was not undertaken. Please refer to Finding 6.6 and Recommendation 6.6.1.
- 21:19 Red Team 5 (Ffs Lyons and Railton) commence shutting down their BA sets. They tell the BAECO (Ff Bryant) that they can hear an ADSU operating.
- Comment: This important detail was not recorded on the BA board.
- 21:19 Command 2 confirms that AM Kettle is in attendance at Shirley Towers.
- 21:20 Flames are visible in the kitchen, black smoke obscures lounge window.**
- 21:20
Estimated Time The Bridgehead Commander (GM Deacon) requests an Ambulance Paramedic to the Bridgehead.
- 21:20
Estimated Time Red Teams 7 and 8 (CM Young, Ffs Beckett, Matthews and Benfield) reach the next door they find and force entry. This is found to be an up flat.
- 21:20
Estimated Time Ff Ingoldsby with BA board and tripod arrives at BA ECP and sets up a second BA board (for clarity he is referred to as BAECO 2). He is briefed by the Bridgehead Sector Commander (GM Deacon).
- Comment 1: BAECO 1 (Ff Bryant) had requested an additional BA board at 20:42. Running out of spaces on her board required her to improvise and mark entries on an adjacent wall. Please refer to Finding 4.1 and Recommendation 4.1.1.
- Comment 2: The complexity of the incident and number of BA wearers should have meant that BA Stage 2 control was initiated. Please refer to Finding 4.3 and Recommendation 4.3.1.
- Comment 3: The BAECO 2 (Ff Ingoldsby) did not possess a radio and was therefore not able to communicate with crews he had committed through the ECP. Their remote locations of the two BAECOs from each other and the absence of a radio for the second BAECO, meant there was no communication between the two BAECOs. This provided potential for confusion both between each other and also with teams committed. Please refer to Finding 4.13 and Recommendation 4.13.1.

- 21:21** **Considerable increase in black smoke emissions from lounge and kitchen. Flames are not visible through smoke.**
- 21:21
Estimated Time DCO Curry arrives at the incident as AM Kettle is receiving briefing from GM Pinchin.
- 21:22** **Considerable increase in black smoke emissions from lounge and kitchen windows. Flames are not visible through smoke.**
- 21:22 Red Team 11 (A/CM Timms and Ff Hickman) start up their sets on the eleventh floor landing and hand their tallies to CM Wood who takes them down to the BAECO (Ff Bryant) on the seventh floor. She subsequently passes these to BAECO 2 (Ff Ingoldsby).
- Comment: Red Team 11 (A/CM Timms and Ff Hickman) start up their sets four floors above the Bridgehead and ECP. The BAECO (Ff Bryant) was therefore not present at their briefing and did not oversee their gauge checks. Whilst noting the urgency of the situation, in order to maintain control of BA crews, it is imperative that all wearers are committed through the BAECO. This ensures that adequate briefings are given to crews before they are committed and that the BAECO has an accurate understanding of where they are working and what tasks they are undertaking. Please refer to Finding 4.8 and Recommendations 4.8.1.
- 21:23** **Considerable black smoke emissions from lounge and kitchen windows. Flames are just visible through smoke in kitchen.**
- 21:23
Estimated Time Red Team 11 (A/CM Timms and Ff Hickman) enter the eleventh floor corridor with a positive pressure fan operating. Because there was no adequate vent for the products of combustion displaced by the PPV, it is recirculated and together with the noise of the fan causes discomfort to the crews within the corridor (Red Teams 7, 8 and 11).
- 21:23
Estimated Time CM Young (Red Team 7) states that he cannot identify the exit doors on the eleventh floor because of the smoke layer obscuring the door signage. CM Young instructs them to ventilate the corridor by breaking the end window. CM Young and Red Teams 7 and 8 (CM Young and Ff Beckett and Ffs Matthews and Benfield) subsequently locate the fire exit door of Flat 72 (Floor 11) and effect entry.
- Comment: The doors were originally marked to facilitate quick and easy identification in the event of an emergency. The current siting of these markings at the top right of the door frame would suggest that they are not in an ideal position. Please refer to Finding 2.17 and Recommendation 2.17.1

- 21:24 Kitchen is still well alight with dense smoke emissions.**
- 21:25 Steam or grey smoke emissions from lounge window, fire in kitchen remains intense.**
- 21:26 Flames in kitchen with flickering flames in lounge both visible through thick black smoke.**
- 21:26
Estimated Time DCO Curry briefed by AM Kettle prior to taking command.
- 21:26
Estimated Time Ff Tan's (Red Team 6) low pressure warning whistle operates and Red Team 6 (Ffs Tan and Richards) withdraw from the flat. They meet CM James who debriefs them in the corridor outside the flat entrance. Red Team 6 (Ffs Tan and Richards) are instructed by CM James to remove their BA masks to aid communication.
- Comment 1: Service policy requires BA crews to report back to the BA ECP before their warning whistle operates. The maintenance of fire fighting is vital and this should have resulted in relief crews being requested in time.
- 21:26 Ffs Hair and Keyworth (Red Team 9) start up their BA sets.
- 21:27 Flames are clearly visible low down in the kitchen, thick black smoke obscures any fire in the lounge. Flaming droplets forced out of the kitchen window.**
- 21:27
Estimated Time Ffs Hair and Keyworth (Red Team 9) are committed to the incident via the BAECO and proceed to Flat 72. They are then briefed to enter the property, taking the stairwell immediately on the right. They are instructed to locate the branch and fight the fire if required but their primary objective was to look for the missing BA team²⁷. They take with them a TIC and a radio.
- Comment: The emergency team tasked with locating the two missing firefighters did not carry a supplementary air supply. Please refer to Finding 2.11 and Recommendation 2.11.1.
- 21:27
Estimated Time Red Team 6 (Ffs Tan and Richards) return to the BAECO 1 and meet Red Team 9 (Ffs Hair and Keyworth) leaving the BA ECP.
- 21:28 Flames are clearly visible low down in the kitchen, thick black smoke hides any fire in the lounge. Flaming droplets are forced out of the kitchen window.**

²⁷ Photographs of the BA entry board show that Ff Shears' time of whistle was calculated to be 21:01, with his cylinder due to expire approximately 10 minutes later at 21:11. Ff Bannon's (calculated) time of whistle was 21:06 with his cylinder expiring approximately 10 minutes later at 21:16.

- 21:28
Estimated Time CM Young checks the gauge reading of Red Team 7 (CM Young and Ff Beckett), Red Team 8 (Ffs Matthews and Benfield) and Red Team 11 (A/CM Timms and Ff Hickman). A/CM Timms has a cylinder pressure of 130 bar. Red Teams 7 and 8 are on a cylinder pressure of 70 bar.
- 21:28
Estimated Time CM Young instructs Red Team 8 (Ffs Matthews and Ff Benfield) to enter the flat with a jet for a quick search. As he does so he notes displaced wiring on the stairs.
- 21:28
Estimated Time CM James, Ffs O'Rourke and Cole continue to fight the fire from the stairway into lounge. They are not wearing BA.
- 21:29 CCTV tape malfunctions.**
- 21:29
Estimated Time Red Teams 9 (Ffs Hair and Keyworth) and 10 (Ffs Bray and Martin) are committed to the incident through the BAECO 2 (Ff Ingoldsby). They are briefed to form a team of 4 and to search for the two missing firefighters (Ffs Bannon and Shears).
- 21:29
Estimated Time CM Young gestures for Red Team 11 (A/CM Timms and Ff Hickman) to enter Flat 72 and search for casualties.
- 21:30 Smoke is forced out under pressure, fire clearly visible in the kitchen with fire just visible through smoke in the lounge.**
- 21:30
Estimated Time CM James sends Ffs O'Rourke and Cole to don BA because of the worsening conditions. After their departure CM James, without BA, continues to pulse spray until conditions deteriorate and drive him from the flat.
- 21:30
Estimated Time Red Teams 8 (Ffs Matthews and Benfield) exit from Flat 72 and together Red Team 7 (CM Young and Ff Beckett) and Red Team 8 (Ffs Matthews and Benfield) make their way to the smoke lobby.
- 21:30
Estimated Time Red Team 11 (A/CM Timms and Ff Hickman) enter Flat 72 via the fire escape door on the eleventh floor.
- 21:30
Estimated Time Red Team 9 (Ffs Hair and Keyworth) enter Flat 72 via the front door, to try and locate Red Team 2 (Ffs Bannon and Shears).
- 21:31 Smoke is now much heavier and thicker, fire in the kitchen just visible through smoke.**

21:31

Estimated Time Red Team 11 (A/CM Timms and Ff Hickman) exit the flat into the corridor and start to make their way back to the BAECO 2 (Ff Ingoldsby). As they leave the flat they are observed by CM Young.

21:31:18

Command 1 confirms that it is now Contact Point for the incident.

Note: This was the second change of Command Point in 13 minutes. The Incident Command Team Leader (D House) tasks Command 2 to deal with incident accountability.

Comment: Evidence suggests that a comprehensive transfer of information between the Command Points (Command 2 to Command 1) was not undertaken. Please refer to Finding 6.6 and Recommendation 6.6.1.



Fig 35: Post incident photograph of lounge from the window back towards staircase from entrance (middle) and the stairs leading up to the bedrooms (left hand side). (Source: Hampshire Constabulary)



Fig 36: Post incident photograph from top of entrance stairs towards lounge window. (Source: Hampshire Constabulary)

- 21:32** **Smoke is now considerably thicker and is being forced out of the lounge and kitchen windows completely obscuring the fire.**
- 21:32 Red Teams 7 and 8 (CM Young, Ffs Beckett, Matthews and Benfield) meet CM Clarke in the lobby of the eleventh floor and commence shutting down their BA Sets.
- 21:32 Red Team 10 (T/CM Martin and Ff Bray) arrive at Flat 72 and make entry joining Red Team 9 (Ffs Hair and Keyworth) who had already entered.
- 21:33** **Thick black smoke totally obscures the fire and the window as it is forced from the flat.**
- 21:33 The BAECO (Ff Bryant) debriefs Red Teams 7 and 8 (CM Young, Ffs Beckett, Matthews and Benfield) and GM Deacon also separately debriefs CM Young.
- 21:34** **Thick black smoke continues to be forced from window, flames are just visible in the kitchen area which is still well alight.**
- 21:34
Estimated Time Red Team 9 (Ffs Hair and Keyworth), the emergency team, using the TIC locate a firefighter in the entrance to Bedroom 2 (this is now known to have been Ff Bannon). When he was located there were cables around the base of his BA cylinder, under the bottom of his helmet at the rear and another possibly around his left bicep. Ff Hair tried to pull him free but the cables went taut and prevented movement. Ff Hair rolled Ff Bannon over on to his front so that he and Ff Keyworth could grab hold of the BA set to drag him free. Ff Hair reports that during this operation he was aware that Ff Bannon's ADSU was operating but that he did not hear a low pressure warning whistle sounding. Red Team 9 (Ffs Hair and Keyworth) report via radio that they have located a member of Red Team 1 and shout for assistance.
- Comment: This was an error as both members of Red Team 1 had left Shirley Towers at this time. The casualty located was Ff Bannon, a member of Red Team 2.

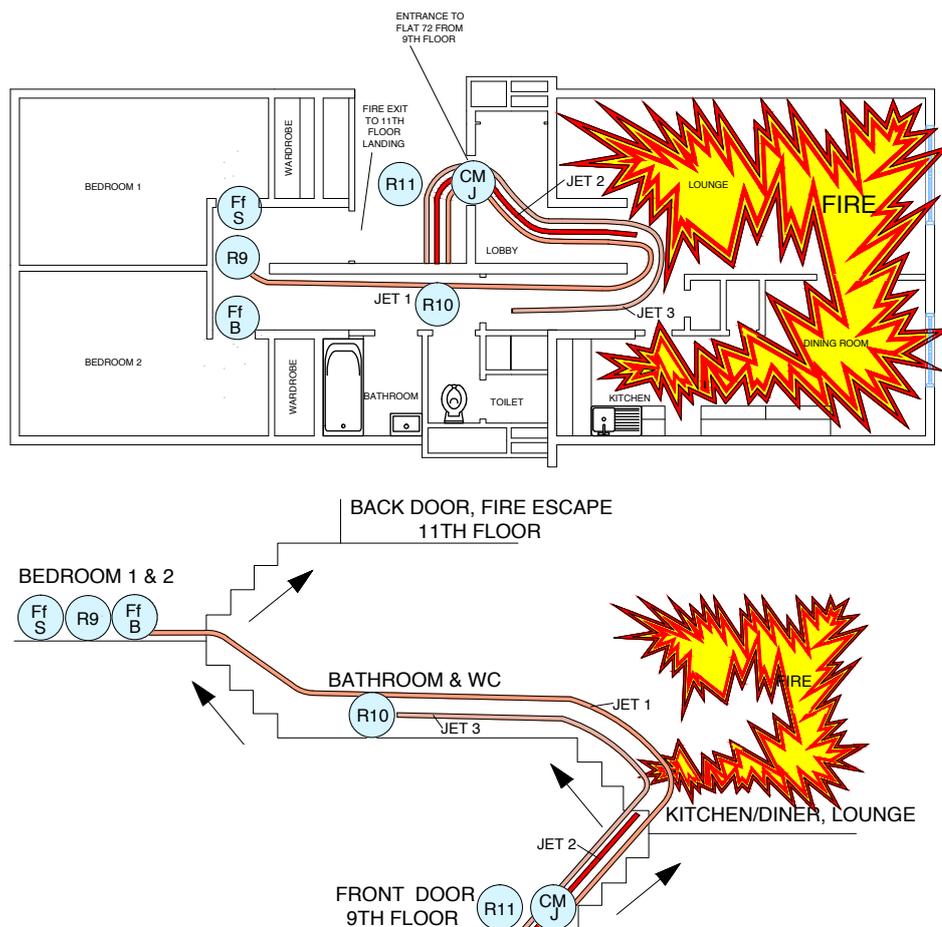


Fig 37: Plan and elevation of Flat 72 showing location of Ffs Bannon and Shears and other fire fighting crews at 21:34.

- 21:34
Estimated Time CM James hears a call for assistance from within the flat and re-enters and climbs the stairs to assist.
- 21:34
Estimated Time As Red Team 11 (A/CM Timms and Ff Hickman) walk down the stairs they hear shouting from Flat 72 that a casualty has been located. They proceed to Flat 72 to assist.
- 21:35
Smoke, slightly thicker, is forced from the lounge window, flames in the kitchen are just visible.
- 21:35
Estimated Time Red Team 9 (Ffs Hair and Keyworth) release the casualty (Ff Bannon) from cables and carry him to the top of the bathroom level stairs where they are met by Red Team 10 (T/CM Martin and Ff Bray) who are responding to their calls for assistance.
- 21:35
Estimated Time Red Team 10 (T/CM Martin and Ff Bray) move to take the casualty, who they note has an operating ADSU, from Red Team 9 (Ffs Hair and Keyworth) and themselves call for assistance.

- 21:35
Estimated Time CM James attempts to assist them but has to withdraw because he is not wearing BA. At this point no personnel are engaged in firefighting.
- 21:35
Estimated Time Red Team 12 (Ffs Hicks and Sawdon) give their tallies to BAECO 2 (Ff Ingoldsby).

Comment: This was the second time Ffs Hicks and Sawdon had been committed as a BA crew. They were previously committed as Red Team 4. Please refer to Finding 4.5 and Recommendations 4.5.1, 4.5.2 and 4.5.3.
- 21:35
Estimated Time DCO Curry, having received a briefing from AM Kettle, takes over as IC. AM Kettle is assigned as the Operations Commander and GM Pinchin is reassigned as the Logistics Sector Commander.

Comment: These changes in incident command were not recorded.
- 21:36** **Fire increases in intensity. Smoke is forced out under pressure and is so thick and black that fire is not visible.**
- 21:37** **CCTV is not focussed on the flat.**
- 21:37
Estimated Time Red Team 9 (Ffs Hair and Keyworth) return to the landing adjacent to the bedrooms and locate a second casualty in the entrance to Bedroom 1 (this casualty was subsequently confirmed to be Ff Shears of Red Team 2). Ff Hair states that there was a cable between the BA cylinder and the back plate and one draped over the cylinder. Ff Hair states that he had to pull the cables down to release Ff Shears. Ff Hair says that he heard Ff Shears ADSU operating but was not aware of any low pressure warning whistle sounding. As Ff Hair was moving Ff Shears he looked up and looking through the fire escape door, saw a glimpse of a PPV fan being wheeled past the eleventh floor fire escape door.
- 21:37
Estimated Time Red Team 10 (T/CM Martin and Ff Bray) pass the first casualty (Ff Bannon) to Red Team 11 (A/CM Timms and Ff Hickman) and CM James and return to assist Red Team 9 (Ffs Hair and Keyworth) who have located the second casualty (Ff Shears).

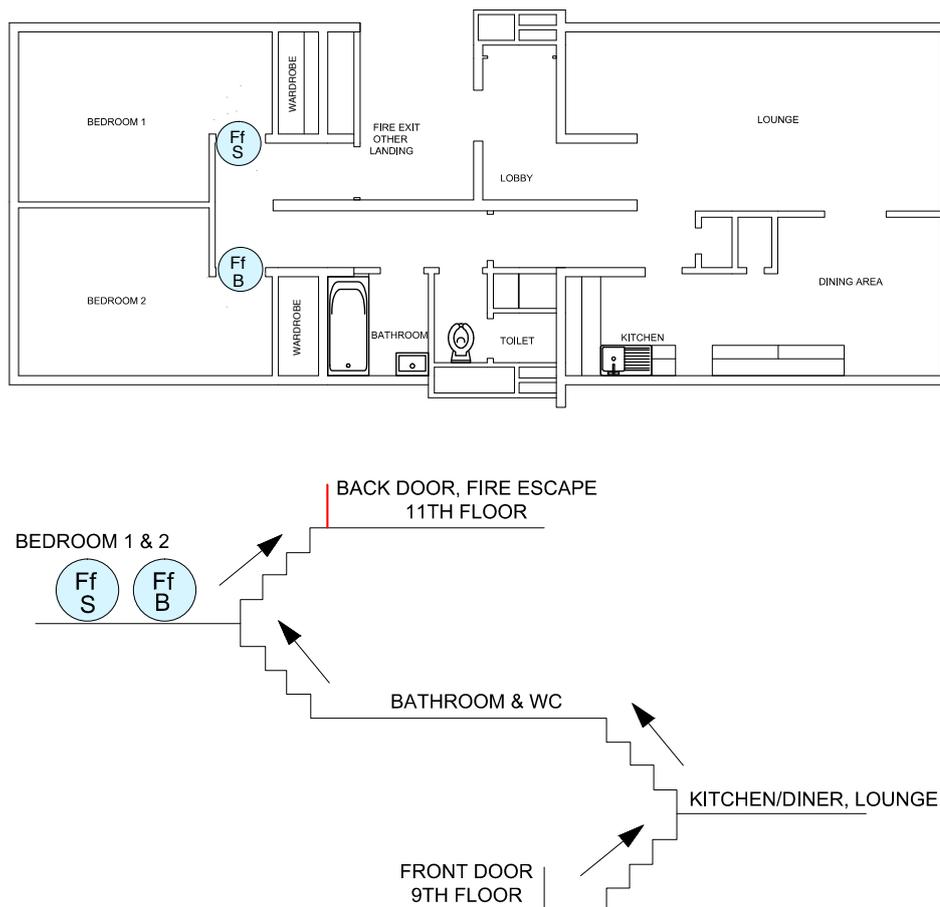


Fig 38: Location (plan and elevation) of Red Team 2 (Ffs Bannon and Shears).

21:37

Estimated Time

Red Team 12 (Ffs Hicks and Sawdon) arrive outside Flat 72 as Ff Bannon is being recovered from the flat.

21:37:50

Assistance message from DCO Curry "Two additional command support appliances and crews required".

Comment: Fire Control have no record of whether or when DCO Curry formally took command of the incident. Please refer to Finding 6.3 and Recommendations 6.3.1 and 6.3.2.

21:38

CCTV is not focussed on the flat.

21:38

Estimated Time

Red Team 9 (Ffs Hair and Keyworth) call Red Team 10 (T/CM Martin and Ff Bray) to take over the removal of Ff Shears. After this was done they began their own exit. During the final exit both Ffs got themselves caught in cables and had to assist each other to release themselves. As they withdrew they noted the temperature rising and saw a fire in progress in the lounge. Ff Hair states that the heat was incredible and describes it as "still going like a train".

Comment: From Ff Hair's statement, it is clear that Red Team 9 had been committed to rescue Red Team 2 (Ffs Bannon and Shears) whilst the fire was still in progress in the lounge and kitchen. In carrying out the rescue of the casualties, Red Team 9 (Ffs Hair and Keyworth) went above the fire at a time when no crews were engaged in firefighting. Please refer to Finding 2.5 and Recommendation 2.5.1.

21:39 Steam emitting from flat windows

21:39

Estimated Time SM Spencer-Peet, CM Clarke and Red Team 12 (Ffs Hicks and Sawdon) receive Ff Bannon at the door to Flat 72 on the ninth floor. Together with CM James they remove Ff Bannon's BA set and fire kit and begin Cardio Vascular and Pulmonary Resuscitation (CPR). CM Clarke radios for a Paramedic but gets no response. They are joined by Ffs Williams and Perraton who assist with the CPR.

Comment: Command tapes show that this message was sent on the incorrect radio channel (Channel 5).

21:39

Estimated Time Red Team 11 (A/CM Timms and Ff Hickman) return to Flat 72 to assist with the rescue of Ff Shears.

21:40 Steam observed emitting from Flat 72 indicating fire fighting operations are in progress. Thick black smoke exits lounge and kitchen windows. Fire in kitchen is just visible.

21:40

Estimated Time SM Spencer-Peet instructs Ffs O'Rourke and Cole to impound Ff Bannon's BA set.

21:40

Estimated Time The Sector Officer Logistics (GM Pinchin) tries to contact both the IC (DCO Curry) and the Operations Commander (AM Kettle) without success.

Comment: Senior command officers were not in contact with the Command Unit and the Sectors. Please see Finding 6.1 and Recommendations 6.1.1 and 6.1.2.

21:41 Steam and thick smoke emit from lounge and kitchen windows, no fire is visible.

21:41

Estimated Time Ff Shears is removed from the flat by SM Spencer-Peet assisted by Ffs Sawdon, O'Rourke and Cole and carried to the lift lobby.

- 21:41
Estimated Time Red Team 9 (Ffs Hair and Keyworth) return to the BAECO (Ff Bryant) and collect their tallies.
- 21:41
Estimated Time The Bridgehead Commander (GM Deacon) checks the details of Red Team 2 (Ffs Bannon and Shears) on the BA board to ensure that the correct information is sent to Control. This message is not sent to the IC or Command 1.
- Comment: It is a standard and established procedure that every, and all, messages from the fire ground are sent from the IC. The reasoning behind this is to ensure that the IC is kept fully aware of events falling under his responsibility.
- 21:42 Large steam emissions from lounge and kitchen windows, no fire is visible.**
- 21:42
Estimated Time CM Clarke descends the stairs to the Bridgehead to locate a doctor for Ff Bannon.
- 21:42 The Bridgehead Commander (GM Deacon) phones AM Crennell and informs him that two firefighters have been recovered unconscious and not breathing. AM Crennell tells him that he is not on duty and that he will get Fire Control to ring him direct. This mobile telephone call lasted 2 minutes 17 seconds.
- Comment: The Bridgehead Commander (GM Deacon) stated that he thought that AM Crennell was the IC due to an earlier missed call during the incident.
- 21:43 Large smoke emissions from lounge and kitchen windows, no fire is visible.**
- 21:43
Estimated Time CM Wood proceeds to the ninth floor corridor and assists CM James and the doctor with resuscitation of Ff Bannon in the ninth floor corridor.
- 21:44 Steam emitting from lounge and kitchen windows, no fire is visible.**
- 21:44
Estimated Time Red Team 11 (A/CM Timms and Ff Hickman) return to BAECO 2 (Ff Ingoldsby) and shut down their sets.
- 21:44
Estimated Time Red Team 12 (Ffs Hicks and Sawdon) re-enter flat and commence fire fighting, they note the fire is still burning in kitchen and lounge.

- 21:44:37 Fire Control contact Command 1 and request the status of the BA emergency that Fire Control were informed of at 21:12. Command 1 confirms that two firefighters are missing in Flat 72. Fire Control ask if anyone has gone in to look for them and are told “yes”.
- 21:45 Steam emissions from lounge and kitchen windows.**
- 21:46 Steam emissions from lounge and kitchen windows.**
- 21:46 Bridgehead update to Command 1, “Re the BA emergency, two firefighters missing in Flat 72”.
- 21:46:56 Message from Command 1 to Fire Control, “Update on BA emergency - two firefighters missing in Flat 72”.
- 21:47 Steam emissions from lower part of lounge and kitchen windows.**
- 21:47:40 Fire Control telephone GM Deacon and explain that AM Crennell has asked them to ring him urgently. GM Deacon says he is the Bridgehead Sector Commander and wanted to get a secure message out. GM Deacon continues “Red Team 2, BA emergency have been removed from Flat 72 unconscious and not breathing”.
- Comment 1: Fire Control would have expected a message of this nature to originate from the IC and not a Sector Commander, yet they did not question the origin of this message. Fire Control ask if an ambulance is there. GM Deacon confirms that an ambulance is present and then says that he has the names of the two firefighters and that it is very delicate. Ff Burford (Control) says that she isn’t going to put this in the log because of its sensitivity. GM Deacon continues “Ff Bannon, 54 St Marys and Ff Shears”. Fire Control acknowledge and ask if either of the firefighters are breathing, the response is “no”.
- Comment 2: This omission created problems later when despite the names of the two firefighters (that were subsequently pronounced deceased) being passed to Control, GM Trevethick had to once again identify Ffs Bannon and Shears. Please refer to Finding 6.7 and Recommendation 6.7.1.
- 21:47 Urgent message from Bridgehead Command Support to Command 1, requesting six BA in fresh sets to Bridgehead.
- 21:47 SM Spencer-Peet (Bridgehead Command Support) requests more non BA wearers to assist with the removal of two casualties.
- 21:48 Steam emissions from lower part of lounge and kitchen windows.**

- 21:48 SM Spencer-Peet (Bridgehead Command Support) reports that a casualty with a resuscitation team is being removed by stretcher.
- 21:49 **Steam emissions from lower part of lounge and kitchen windows.**
- 21:50 **Steam emissions from lower part of lounge and kitchen windows.**
- 21:50:16 GM Deacon (Bridgehead Commander) informs Command 1 that two Ffs from Red Team 2, BA emergency, have been removed from Flat 72, unconscious and not breathing.
- Comment: This message was sent eight minutes after the mobile telephone conversation between the Bridgehead Commander (GM Deacon) and AM Crennell (timed at 21:42).
- 21:51 **Steam emissions from lower part of lounge and kitchen windows.**
- 21:52 **Steam emissions from lower part of lounge and kitchen windows.**
- 21:53 **Steam emissions from lower part of lounge and kitchen windows.**
- 21:53
Estimated Time Ff Shears is carried by stretcher to the fifth floor lift lobby by firefighters and paramedics. Resuscitation is taking place both here and in the lift whilst travelling down to the ground floor.
- 21:54 **Pulses of steam coming out of the flat suggesting that damping down operations are in progress.**
- 21:55 **Pulses of steam coming out of the flat suggesting that damping down operations are in progress.**
- 21:55 Ff Shears carried on stretcher, exits lift into ground floor lobby with two paramedics and five firefighters attending. They continue to give resuscitation. He is carried through the front door to an ambulance.
- 21:56 **Fire is again visible in the lounge. Black smoke is issuing.**
- 21:57 **Black smoke issuing together with some steam emissions.**
- 21:57 Command 1 start to pass information to Fire Control regarding two firefighters being transported to Southampton General Hospital with burns. This was Red Team 1 (Ffs Holland and Ryan).

Comment: During the incident both members of Red Team 1 sustained burns to their hands from the ambient temperature in Flat 72. They were both wearing HFRS issue gloves. Please refer to Finding 1.2 and Recommendations 1.2.1 and 1.2.2. Please also refer to Finding 1.4 and Recommendations 1.4.1 and 1.4.2.

21:58

Steam emissions from lower part of lounge windows.

21:58:23

Command 1 inform Fire Control that one firefighter is being extricated with possible cardiac arrest, a firefighter from St Marys (subsequently confirmed as Ff Shears). They then ask for a Welfare Officer to be despatched to Southampton General Hospital.

21:59

Smoke and steam emissions affected by spray from ALP.

22:00

Smoke and steam emissions affected by spray from ALP.

22:00

Estimated Time

A firefighter, in his statement, said that after leaving the BA servicing point he borrowed a mobile telephone from a colleague and rang his partner to tell her that Ff Bannon was missing. (The firefighter and his partner knew Ff Bannon socially).

Comment: Uncontrolled messages of this nature from the fire ground run the risk of the family of the missing firefighter hearing the news from an unofficial source. Please refer to Finding 3.4 and Recommendation 3.4.2.

22:00:45

Message from Command 1 to Fire Control, "Two firefighters conveyed to Southampton General Hospital with burns. (These are subsequently confirmed as Red Team 1 (Ffs Holland and Ryan)). One HFRS firefighter being extricated with possible cardiac arrest (subsequently confirmed as Ff Shears). Welfare Officer required. No further information at this moment."

Comment: The casualties removed to hospital were Ffs Holland and Ryan of Red Team 1 who had sustained burns to their hands

22:00

Command 1 ask for confirmation of who the Sector Commanders are.

22:03:10

Fire Control telephones and instructs GM Tasker to act as the Welfare Officer at the hospital.

Comment: The accurate location of officers is important to Fire Control in mobilising the nearest resources to incidents. Please refer to Finding 6.5 and Recommendations 6.5.1 and 6.5.2.

- 22:03:27 Assistance message from Command 1 “make pumps 18”.
- Comment 1: This message did not originate from the IC. HFRS radio procedures dictate that all messages from the fireground originate from the IC via the designated Contact Point. Please refer to Finding 3.8 and Recommendations 3.8.1 and 3.8.2.
- Comment 2: Officers and appliances mobilised to the incident were not informed of the situation at the incident. Please refer to Finding 6.4 and Recommendation 6.4.1.
- 22:04
Estimated Time CM James briefs GM Deacon on the situation on the ninth floor and then, accompanied by WM Woods, walks downstairs from the Bridgehead to the ground floor and exits the building.
- 22:10 SM Spencer-Peet states that he noted the time as the doctor confirmed that Ff Bannon was deceased.
- 22:10 An assistance message is sent from Command 1 “make pumps 20”²⁸.
- 22:12 Recorded radio messages show that personnel on the Bridgehead were still not sure what floor they were situated on.
- Comment: There was continued confusion throughout much of the first two hours of the incident as to where the Fire Floor and the Bridgehead Floor were situated. Various terms were used including ‘Casualty Floor’. Please refer to Finding 3.9 and Recommendations 3.9.1 and 3.9.2.
- 22:12
Estimated Time SM Spencer-Peet requests non BA wearers not connected to St Marys Fire Station, to report to the ninth floor to carry Ff Bannon down to the ground floor.
- 22:19
Estimated Time The IC (DCO Curry) is informed by SM Spencer-Peet that immediate medical care and resuscitation was carried out by paramedics and the doctor. The first casualty (Ff Shears) was removed from the scene at approximately 21:55. The second casualty (Ff Bannon) was declared deceased by the doctor at 22:10.
- 22:30 **Fire appears to be out, with just steam emissions from lounge and kitchen windows.**
- 22:59 Ff Bannon is carried from the building on a stretcher and passed into the care of the South Central Ambulance Service.

HFRS AIT timeline ceases at 22:59 as Ff Bannon (the second casualty) is passed into the care of the South Central Ambulance Service.

²⁸This request was to provide resources in order that the St Marys appliances could be released and return to home station.

Appendix B

Hampshire Fire and Rescue Service Accident Investigation Team Terms of Reference

Introduction

- 1 On 6 April 2010 at 20:10 hours, Hampshire Fire and Rescue Service (HFRS) attended a fire at Shirley Towers, Church Street, Southampton. During the course of fire fighting actions, two HFRS firefighters (James Shears and Alan Bannon) sustained fatal injuries.
- 2 In accordance with the Health and Safety at Work Act 1974 and the Management of Health and Safety at Work Regulations 1999 - Regulation 5 - 36(b), HFRS will complete an investigation regarding this incident.

Investigation

- 3 Hampshire Constabulary are charged with determining the circumstances around the deaths at work in order to inform the Coroner's inquest. Additionally, the investigation will determine if a 'criminal offence' has been committed.
- 4 The Hampshire Constabulary investigation (Operation Carrageen) is being supported by West Midlands Fire Service (technical advice) and London Fire Brigade (cause, origin and development of the fire) and is being monitored by the Health and Safety Executive.
- 5 London Fire Brigade, on behalf of Hampshire Constabulary, will undertake the fire investigation:

Senior Officer: Deputy Assistant Commissioner Steve Turek

Lead Officer: Station Manager Rick Hunt

West Midlands Fire Service will act as technical advisers to Hampshire Constabulary:

Lead Officer: Assistant Chief Officer John Brown

- 6 The Health and Safety Executive (HSE) is responsible for enforcing work related health and safety legislation under the Health and Safety at Work Act 1974.
- 7 Joint agency terms of reference, produced by Hampshire Constabulary, have been agreed between Hampshire Constabulary, HFRS, London Fire Brigade, West Midlands Fire Service and the HSE (Version 8 - 9 April 2010).
- 8 HFRS has a duty to provide Hampshire Constabulary with information as requested in order to assist them with their investigation. To facilitate this, the Service Accident Investigation Principal Lead, ACO Bob Ratcliffe, will meet on a regular basis with the Hampshire Constabulary Senior Investigating Officer (SIO), Superintendent Jason Hogg.

- 9 The HFRS Accident Investigation Team consists of:

Name and Title	Investigation Role	Service Payroll No
Bob Ratcliffe Assistant Chief Officer	Principal Lead for the Investigation Team	1800276
Mick Johns Group Manager	Incident Command Fire fighting Operations	3905645
Chris Stephens Group Manager	Training Fire fighting Operations	3123573
Phil Webb Performance Review Manager	Liaison - Insurance and Legal Report Draft	3005395
Elizabeth Manser Investigation Process	Administrative Support	3147322

- 10 Phase 1 of the HFRS Accident Investigation is to gather, record, copy and log information relevant to the incident.
- 11 Phase 2 will run concurrently with Phase 1 and will construct a comprehensive record of what happened at the incident and how it happened. This approach will be in line with HSG 65 and HSG 245 guidance.
- 12 Phase 3 will be to establish why the events occurred and associated risk control measures. This process will be informed by Phases 1 and 2.
- 13 Phase 4 will be the production of an investigation report incorporating an action plan and recommendations for its implementation.
- 14 ACO Bob Ratcliffe will manage strategic issues, liaison with other agencies, ie, Hampshire Constabulary, Chief Fire and Rescue Advisers Unit (CFRAU), HSE, Fire Brigades Union (FBU), regarding the investigation.
- 15 The representative bodies have been invited to work in partnership with the HFRS Accident Investigation Team in line with HSE recommended good practice for safety representative involvement in investigations into workplace accidents. The representative bodies may be asked to undertake specific tasks to support the investigation.
- 16 Hampshire Constabulary will conduct interviews with witnesses including fire and rescue service personnel. HFRS will not interview any witnesses without first gaining approval from the SIO. HFRS and Hampshire Constabulary will conduct interviews in accordance with the agreed HFRS/Hampshire Constabulary Memorandum of Understanding (MoU - 21.04.2010)
- 17 Using a Sequence Time Event Plotting (STEP) process developed from various intelligence sources, the team will ensure that only those interviews that are deemed essential will be carried out to minimise further distress.

Sharing of Information

- 18 HFRS will provide all necessary information as requested by Hampshire Constabulary and the HSE.
- 19 A MoU will be developed with the FBU regarding the sharing and disclosure of information during the investigation.
- 20 If, during the course of the investigation, the team identify a significant safety issue in any of the following areas, this will be brought to the attention of relevant parties (as agreed within Hampshire Constabulary/HSE and Hampshire Constabulary/HFRS MoUs):
 - Community safety
 - Firefighter safety
 - National safety implications

The intention being to use CFRAU as the conduit for fire-related information to the sector as a whole or to other government departments.

Reference Documents

- Health and Safety at Work Act 1974
- Health and Safety Guidance - HSG65
- Management of Health and Safety at Work Regulations 1999
- HSE – Guidance Workbook Investigating accidents and incidents - HSG 245

Appendix C

Operation Carrageen Investigation Strategy Agency Terms of Reference

Operation Carrageen - The Investigation Into The Deaths of Firefighter James Shears and Firefighter Alan Bannon - 6 April 2010

Memorandum of Understanding Between Hampshire Constabulary, London Fire Brigade, West Midlands Fire Service and the Health and Safety Executive

Introduction

This memorandum of understanding (MoU), agreed between Hampshire Constabulary, London Fire Brigade (LFB), West Midlands Fire Service (WMFS) and the Health and Safety Executive (HSE), sets out the principles for liaison between the agencies. The aim is to ensure effective investigation processes are in place to support the Investigation Strategy and Terms of Reference agreed by Assistant Chief Constable Dann at 18:30, 9 April 2010 (version 8) or any subsequent versions of that document.

Specific Points of Contacts (SPoC) will be established within each agency and will be required to attend meetings and reviews, and act as conduits into their respective organisations as required.

Basic Principles of Co-operation

- 1 In principle, all evidence and information can be disclosed to all other partner agencies involved in the Police investigation (WMFS, LFB, HSE). The timing of any disclosure of information to outside agencies is subject to the authority of the Senior Investigating Officer (SIO), Detective Superintendent Hogg. His decision will be based upon consideration of the benefits of the disclosure against the needs of the investigation.
- 2 Confidentiality - no information will be released without the approval of the SIO to anyone outside of this agreement. In particular no disclosure will be made to Hampshire Fire and Rescue Service or the Fire Brigades Union and Fire Officers Association without the authority of the SIO to ensure that the investigation is independent.
- 3 Freedom of Information requests received by any agency should be referred to Hampshire Constabulary for consideration and discussion with the receiving agency prior to any reply being provided.
- 4 Safety considerations are of paramount importance and it is fully accepted that the investigation may uncover information that may assist in informing the Fire Service safety procedures. Where the investigation identifies a potential risk to Fire Service personnel, the public or serious procedural failures that may expose others to harm advice will be sought from WMFS, LFB and HSE regarding the need for early disclosure against the needs of the investigation, and the most appropriate channels to communicate this information.

- 5 In the event of any uncertainty or conflict by any agency regarding whether to pursue a course of action which could have an adverse impact upon the investigation, the SIO will be consulted and appropriate discussion between agencies will take place to decide a way forward.

The Sharing and Handling of Evidence/Information

The expertise of all parties is essential in the gathering and analysis of information and material to further the investigation

All documentation obtained during the investigation by the LFB and WMFS will be handed to the Hampshire Constabulary investigation team and will be placed on the Police major incident recording system – HOLMES. Any documentation obtained separately by the HSE for the purpose of their investigation will be shared with Hampshire Constabulary.

This will include all reports and working notes, photographs and imagery. If original documents cannot be handed over for genuine operational reasons good quality copies may be supplied.

All exhibits and documentation secured by any agency will be in accordance with Police procedures and the rules of evidence. A relevant training input will be provided by Hampshire Constabulary to those agencies who require it.

All exhibits and documentation will be handled and retained in accordance with the Police disclosure requirements as detailed within the Criminal Procedures and Investigations Act 1996. Relevant awareness training will be provided by Hampshire Constabulary to those agencies who require it.

All exhibits seized will be recorded and retained by a Hampshire Constabulary Exhibits Officer to ensure continuity and integrity. Those exhibits which need to be retained as evidence or for further testing by appropriate experts will be at the direction of the SIO.

Destructive Testing of Evidence

The investigation team has a statutory duty to present to a Coroner's Court or Criminal Court the 'best evidence' available. On occasions this may be considered to be the physical evidence in the state in which it was recovered. However, in order to establish the cause of the deaths, the team may need to undertake further tests to develop further evidence that will modify the condition or possibly destroy some part of the item.

The SIO will seek to obtain agreement with relevant agencies involved in the investigation regarding the nature, timing and oversight of the testing prior to its commencement.

London Fire Brigade Tasking

LFB are tasked to conduct an independent investigation into the cause, origin and development of the fire at Flat 72, Shirley Towers. In so doing they will keep accurate records detailing the methodology and conduct of that investigation. An overall strategy for the LFB investigation will be shared with the Hampshire Constabulary SIO and agreed prior to commencement.

Regular updates will be provided to the SIO on the progress of the LFB investigation and any significant findings shared immediately so they can be considered in the context of the investigation as a whole.

Forensic submissions in relation to the LFB investigation will be agreed by the Hampshire Constabulary SIO prior to submission to a laboratory or expert. LFB will produce a written report for presentation at court.

West Midlands Fire Service Tasking

WMFS will be tasked directly by the Hampshire Constabulary investigation team with 'Actions' regarding the identification and furtherance of lines of enquiry deemed relevant to the investigation. The West Midlands Fire Service Team are a fully integrated part of the Hampshire Constabulary investigation team and working directly to the SIO.

WMFS will keep accurate records detailing the activity undertaken and the results of their 'Actions' in accordance with the principles of the Major Incident Room Standardised Administrative Procedures (MIRSAP). Relevant training in MIRSAP will be provided by Hampshire Constabulary.

WMFS will provide reports at appropriate times in consultation with the SIO.

HSE

The Health and Safety Executive will work and co-operate with Hampshire Constabulary and other agencies that are signatories to this MoU, in accordance with the principles set out in the Work-related Deaths Protocol and the Terms of Reference for this investigation. HSE will provide proportionate and necessary resources and clear points of contact, in order to fulfil its role to work alongside the Police with their overall investigation aims and in particular to ensure that a proper investigation of any possible breaches of health and safety legislation is carried out. HSE will assist the SIO with advice, guidance and expertise, where it is able, and will ensure that any new lines of enquiry, evidence or exhibits which come into its knowledge or possession are passed to the SIO or a member of his team for consideration as soon as practicable. HSE wishes to play its full part in the joint investigation both in terms of pursuing particular lines of enquiry, as agreed with the SIO, and having clear and unfettered access to all evidence, exhibits and opinions held by partner agencies, in order to fulfil its own statutory responsibilities.

In the event of Hampshire Constabulary reaching a point in the investigation where they decide that their continued investigation is limited purely to satisfying the requirements of the Coroner, HSE will meet and agree with the SIO how best to continue with any continuing investigation under health and safety legislation, in accordance with the principles of the Work-related Deaths Protocol.

Witness Identification and Interviews

The details of any witnesses relevant to the investigation identified by any agency will be passed to the Hampshire Constabulary investigation team.

The interviewing of any witnesses will be in accordance with the witness interview strategy compiled by the Hampshire Constabulary Interview Manager and agreed by all agencies.

Media

All media releases will be in accordance with the Media Strategy compiled by the HFRS media officer and agreed by all agencies.

Signatories

Detective Superintendent Jason Hogg
Hampshire Constabulary

Borough Commander Peter Mansi
London Fire Brigade

Assistant Chief Officer John Brown
West Midlands Fire Service

Steve Hull Principle Health and Safety Inspector
Health and Safety Executive

Dated

Appendix D

Memorandum of Understanding Between Hampshire Constabulary Investigation Team and the Hampshire Fire and Rescue Service Accident Investigation Team

Introduction

This memorandum of understanding (MoU), agreed between the Hampshire Constabulary investigation team appointed to investigate the circumstances of the fire at Flat 72 Shirley Towers, and the investigation team appointed by HFRS to carry out an internal investigation into the incident, sets out the principles for liaison between the agencies.

The aim is to ensure that effective investigation and data sharing processes are in place in order to facilitate an independent and transparent investigation by Hampshire Constabulary. Although Hampshire Constabulary has primacy for the investigation into the deaths of the two firefighters it is accepted that Hampshire Constabulary will have to communicate with personnel from HFRS on a regular basis to request information and provide updates where appropriate.

This MoU has been developed from the Investigation Strategy and Terms of Reference agreed by Assistant Chief Constable Dann at 18:30, 9 April 2010 (version 8)

The Senior Investigating Officer for the Hampshire Constabulary investigation is Detective Superintendent Hogg. The HFRS Accident Investigation Principal Lead is Assistant Chief Officer Bob Ratcliffe.

Requests for Information by Hampshire Constabulary

HFRS have a duty to provide Hampshire Constabulary with information as requested in order to assist with the Police investigation. Hampshire Constabulary may request information from HFRS either verbally or in writing.

DC Leonard of the Arson Task Force will be based at HFRS HQ to facilitate the flow of information between Hampshire Constabulary and HFRS and will act as the principal contact for requests for material made by Hampshire Constabulary.

If HFRS are not prepared to supply any information, document or exhibit requested by Hampshire Constabulary, reasons for this refusal should be given in writing.

Communication

The SIO will formally meet with the HFRS Accident Investigation Principal Lead on a periodic basis to provide an update on the Police investigation. The format for these meetings will be as follows;

- General Update on Police Investigation
- Update on planned Police activity and timescales
- Significant safety issues identified
- Local and national lessons learnt (subject to disclosure criteria test)
- Requests by Hampshire Constabulary for further information disclosure by HFRS
- Request by HFRS for disclosure of material by the Hampshire Constabulary investigation team

It is accepted that it may be necessary for members of the HFRS investigation team to communicate with members of the Hampshire Constabulary investigation team on a regular basis (particularly at the start of the investigation when information is being requested and secured). Although this is accepted, protecting the independence of the investigation is paramount and it is essential that there should be a sterile corridor between the two investigation teams.

All communication between Hampshire Constabulary and the HFRS investigation team will be recorded and retained in line with the disclosure provisions of the CPIA 1996.

Any difficulties in communication between the two teams will be dealt with by the SIO and the service accident investigation principal lead.

Members of the HFRS investigation team should not attempt to communicate or request information from fire service personnel from WMFS or LFB who are working as part of the Police investigation. All communication and requests for information by HFRS should be to the SIO or other Police personnel who are part of the team. This is to protect the integrity and independence of the investigation.

Destructive Testing of Exhibits/Equipment

The Hampshire Constabulary investigation team has a statutory duty to present to a Coroner's Court or Criminal Court the 'best evidence' available. On occasions this may be considered to be the physical evidence in the state in which it was recovered. However, in order to establish the cause of the deaths the team may need to undertake further tests to develop further evidence that will modify the condition or possibly destroy some part of the item.

If the SIO plans any forensic testing which is likely to modify/destroy the condition of any exhibit, HFRS will be given prior notification of this testing in order that they can consider sending a representative to oversee the testing. The results of such tests will not necessarily be disclosed to HFRS immediately after the test is complete to protect the integrity of the ongoing investigation.

In relation to planned forensic testing or testing of equipment which is likely to be non-destructive, HFRS will be invited to make representations as to the type of testing carried out. The SIO will give consideration to any representations made but will have the final decision with regard to any forensic submissions or testing of equipment.

Interviews of HFRS Personnel

A detailed interview strategy is currently being prepared by the Hampshire Constabulary investigation team in liaison with HFRS and other representative bodies. In carrying out interviews with HFRS personnel, the general principles will be adopted. They are as follows;

- Hampshire Constabulary has primacy for the interview of all witnesses. HFRS will not carry out interviews or take witness statements from any member of HFRS without the prior agreement of the SIO.
- Once all relevant information/evidence has been obtained from a witness, at an appropriate time, the SIO will give consideration to disclose the content of the interview to HFRS. If, having been provided with details of the witness account, HFRS wish to carry out additional interviews with the witness a formal request must be made to the investigation team for the Police to consider.
- A list of all persons who the Police wish to interview/take statements from will be forwarded to the HFRS accident investigation team and the FBU in advance. HFRS (with assistance from the FBU) will arrange interviews at suitable times, facilitate the change of duty rotas etc. in order that these interviews can be carried out at the earliest opportunity.
- All members of HFRS who are asked to provide a witness account can be accompanied by a friend, representative and/or a legal advisor. Witnesses will be asked not to select persons who attended the incident at Shirley Towers on 6 April 2010 as supporters to prevent any subsequent allegations of collusion. HFRS will not insist on the attendance of a senior member of staff when firefighters are interviewed (as per normal protocol). If a witness requests that they are accompanied during a witness interview by a senior member of HFRS, HFRS will supply a senior officer who is not part of the investigation team and had no involvement in the incident under investigation. Any senior member of HFRS who attends an interview at the request of a witness will be instructed not to discuss the content of the witness testimony with the HFRS team or any other member of HFRS.
- The Police will request that “significant interviews” (interviews with key members of staff who had an important role in the incident) are conducted at dedicated Police witness suites and that the accounts given are visually recorded. The Police will facilitate any requests from a witness that the interview takes place at a different location eg, fire service building. A witness interview will not be visually recorded if the witness objects to this.

- Details of interviews with individual witnesses (summary of interview, statement and transcript) will not be disclosed to HFRS immediately after the interview of a witness. The SIO will determine an appropriate time when such disclosures will be made on the basis of the status and developments of the on-going investigation.
- The same process will be followed if the Police wish to interview a witness under caution. In such circumstances, the member of staff will be offered legal advice as per normal Police provisions.

The Sharing of Information

It will be the decision of the SIO when to release information and material to the HFRS investigation team. Any decision to disclose information will consider the balance in supporting the HFRS investigation with protecting the integrity of the ongoing Police investigation. The principle that Hampshire Constabulary have primacy for the investigation will be at the forefront of every decision to disclose information. No information will be disclosed which may damage the ongoing Police investigation.

The SIO will consider all written requests for disclosure from the HFRS investigation team. Following such requests a written record will be made of any information disclosed and any decision not to disclose the information.

Where appropriate, the SIO will seek advice from the force legal advisor and the CPS regarding whether to release the information to the HFRS investigation team.

Safety considerations are of paramount importance and it is fully accepted that the investigation may uncover information that may assist in informing the Fire Service safety procedures. Where the investigation identifies a potential risk to Fire Service personnel, the public or serious procedural failures that may expose others to harm, advice will be sought from WMFS, HSE and Chief Fire & Rescue Advisors Unit (CFRAU) regarding the most appropriate channels to communicate this information to provide advice and guidance to fire and rescue services and other statutory bodies.

In deciding whether to disclose information regarding safety matters that arise during the investigation, the following distinction will be made between:

- (i) Safety Critical Information - Immediate release will be required
- (ii) Safety Relevant Information - Safety information where there is not an immediate risk to fire service personnel or the public. When such issues are identified a disclosure test will be applied to balance the benefits and requirements of disclosure with the likely impact on the ongoing investigation.

Signatories

Detective Superintendent Jason Hogg - Hampshire Constabulary

Assistant Chief Officer Bob Ratcliffe - Hampshire Fire and Rescue Service

Dated

Appendix E

Memorandum of Understanding between Hampshire Fire and Rescue Service Accident Investigation Team and the Fire Brigades Union (Southern Region) Accident Investigation Team

Introduction

On 6 April 2010 at 20:10 hours, Hampshire Fire and Rescue Service (HFRS) attended a fire at Shirley Towers (Flat 72), Church Street, Southampton. During the course of fire fighting actions, two HFRS firefighters (James Shears and Alan Bannon) sustained fatal injuries.

This memorandum of understanding (MoU) between HFRS and the Fire Brigades Union (FBU) - Southern Region Accident Investigation Team, outlines the key principles for a partnership approach to investigate the Shirley Towers Incident in line with Health and Safety Executive (HSE) recommended good practice.

Each investigation team will produce a report on completion of their investigations, the common aim being to ensure lessons are learnt and longer term objectives are introduced.

Each accident investigation team has terms of reference/aims for their teams:

HFRS Accident Investigation Team - Version 1 - 27 April 2010
 FBU Accident Investigation Team - Aims/Objectives - April 2010

Principles

- 1 HFRS and the FBU will provide all necessary information as requested by Hampshire Constabulary and the HSE.
- 2 HFRS and the FBU will ensure openness and transparency during the investigations and will secure and provide records and equipment relevant to the investigation at the earliest opportunity and under the instruction of Hampshire Constabulary.
- 3 In order to minimise possible additional stress for staff, and for the duration of the Hampshire Constabulary investigation, HFRS and the FBU will work in partnership with Hampshire Constabulary to co-ordinate and facilitate any necessary interviews. On completion of the Hampshire Constabulary investigation, possible subsequent interviews for the purposes of their own investigations will be co-ordinated between HFRS and the FBU.
- 4 Information gained from any interviews will be shared between the investigation teams. This may, in part, be subject to discussion and agreement with Hampshire Constabulary.
- 5 All requests for information from either team will be submitted in writing and recorded. Any information disclosed will be recorded.

- 6 HFRS and the FBU will jointly discuss any internal/external media releases relating to the investigation prior to publication.
- 7 Joint investigation progress meetings will be conducted between the investigation teams and facilitated at Fire and Rescue Service Headquarters, Eastleigh. Minutes will be produced from these meetings.
- 8 All information gathered as part of the investigation process will be treated as confidential and will only be released to organisations with whom HFRS and/or the FBU have a Memorandum of Understanding.

Signatories

HFRS AIT Lead Officer

FBU AIT Lead Officer

Dated:

Appendix F

Hampshire Fire and Rescue Service Casualties Sustained at the Shirley Towers Incident

Role, Name and Service Number	Station/Appliance	Location where Injury Sustained	Injuries and Treatment
Ff James David Shears (No 1498)	St Marys (54) Water Tender Ladder	In the doorway to Bedroom 1 (right hand)	Fatally injured.
Ff Alan Iain Bannon (No 1352)	St Marys (54) Water Tender Ladder	In the doorway to Bedroom 2 (left hand).	Fatally injured.
Ff Keith Andrew Holland (No 1354)	Redbridge (53) Water Tender Ladder	Stairway from lounge to eleventh floor escape door.	Burns to both hands. Immersed in cold water before treatment at hospital.
Ff Liam Michael Maurice Ryan (No 1510)	Redbridge (53) Water Tender Ladder	Stairway from lounge to eleventh floor escape door.	Burns to fingers on both hands. Immersed in cold water before treatment at hospital.

Appendix G

Cause of Death

Ff James David Shears 1498



Post mortem results identified exposure to excessive heat as the cause of death.

Ff Alan Iain Bannon 1352



Post mortem results identified exposure to excessive heat as the cause of death.

Appendix H

Verbatim Extract from the London Fire Brigade Report into the Cause, Origin and Development of the Fire (Page 42, Paragraph 14, Conclusions)

- 14.1 The initial witness testimony by the residents Mr Karl Hoffman and Mrs Kirsty Hoffman has not been disproved by scene excavation, reconstruction, sample analysis, witness testimony or by CCTV evidence viewed. Therefore their account of how the fire started is wholly believable.
- 14.2 The development of the fire appears to have had a number of phases with the initial ignition developing rapidly across the window in curtain material. The second stage of the fire was still flaming but did not produce a rapid growth within the lounge and appears to have been contained in the sofa below the window due to lack of ventilation. After the opening of the front door and entry of the firefighters into the premises no immediate rapid development took place. There appears to be a correlation between the opening of windows at the bedroom level, and the rapid development within the lounge. This resulted in the lounge window failing within a number of minutes.
- 14.3 Red Team 2 firefighters Bannon and Shears were tasked with the hose management and protection of the escape route of Red 1 firefighters Ryan and Holland. Red 2 firefighters Bannon and Shears had ascended to the upper level with no extinguishing media due to short hose lengths. This was prior to the rapid development and sudden rise in temperature within the lounge which they had passed through. Attempts were made to exit via the same entrance route but due to the rapid increase in temperature both crews were unable to exit.
- 14.4 Due to the dropping of cables contained in plastic trunking both teams became entrapped in cables but Red 1 firefighter Ryan and Holland were able to escape via the escape door onto the eleventh floor communal hallway unaware of the location of Red 2 firefighter Bannon and Shears. Red 2 firefighters Bannon and Shears became entrapped in wiring at the top of the upper stairs and succumbed to the prevailing conditions, later being rescued one from each bedroom.
- 14.5 The use of pulse spray/gas cooling techniques by crews failed to extinguish the fire but appeared to control the fire until its decay phase when rescue took place some 50 minutes after the rapid development within the lounge at 20:38 hours.
- 14.6 This report concludes that after extensive enquiries by Hampshire Constabulary, including scene examination, reconstruction, analysis of samples and CCTV recordings the most probable cause of this fatal fire was the accidental ignition of curtain material located on top of an energised up lighter light fitting within the lounge of number 72 Shirley Towers. The rapid development of the fire was due to the change in ventilation conditions within number 72 Shirley Towers after the opening of windows within the bedrooms. The lack of sufficient extinguishing media being applied due to pulse spray techniques allowed the fire to develop and hampered rescue attempts.

Date completed: 24 May 2011

Author: Richard Hunt

Appendix I**Breathing Apparatus Team Membership**

Team Number	Team Members	Station	Set Start-up
1	Ff Holland Ff Ryan	Redbridge (53)	20:28
2	Ff Bannon Ff Shears	St Marys (54)	20:30
3	Ff Bates Ff Hitchcoe	St Marys (54)	20:37
4	Ff Hicks Ff Sawdon	St Marys (54)	20:42
5	Ff Lyons Ff Railton	Hightown (56)	20:59
6	Ff Tan Ff Richards	Eastleigh (32)	21:07
7	CM Young Ff Beckett	Hightown (56)	21:12
8	Ff Matthews Ff Benfield	Hightown (56)	21:13
9	Ff Hair Ff Keyworth	Totton (46) St Marys (54)	21:26
10	T/CM Martin Ff Bray	Romsey (33) Totton (46)	21:28
11	A/CM Timms Ff Hickman	St Marys (54)	21:22
12	Ff Hicks Ff Sawdon	St Marys (54)	21:35 (Approx)

Appendix J**Personnel and Appliance Attendance List (First 20 Appliances)**

Order Att	Time Mobile	Time Arrival	Appliance Call Sign	Appliance Crew - Role/Name	Rider Position
1	20:11:51	No Record	53WL Redbridge	WM Reddish Ff Elst Ff Ryan Ff Holland Ff Bryant	OiC Driver BA BA BAECO
2	20:12:23	20:17:16	54WL St Marys	CM Clarke Ff Williams Ff Bannon Ff Shears Ff Hicks	OiC Driver BA BA BAECO
3	20:12:57	20:18:03	54EU St Marys	Ff Cherry Ff Perraton	OiC Driver
4	20:13:16	20:18:35	46WT Totton	T/WM Godwin CM Launchbury CM Remsbery Ff Bennett Ff Hair Ff Bray	OiC Driver BA BA BAECO No 6
5	20:10:53	20:22:06	54WT St Marys	CM Wood Ff Sawdon Ff Hitchcoe Ff Bates	OiC Driver BA BA
6	20:18:17	20:22:12	53AL Redbridge	T/CM Miller Ff Mahoney	OiC Driver
7	20:16:39	20:22:50	54ST St Marys	A/CM Timms Ff Keyworth Ff Hickman Ff Sowdon Ff O'Shea	OiC Driver BA BA BAECO
8	20:21:33	20:26:46	56WL Hightown	CM Young Ff Beckett Ff Lyons Ff O'Rourke Ff Railton	OiC Driver BA BA BAECO
9	20:36:42	20:45:06	COM2	Unit (2)	

10	20:46:22	20:47:33	33WT Romsey	T/CM Martin Ff Cookson Ff Turnbull Ff Nicholson Ff Harvey	OiC Driver BA BA BAECO
11	20:42:30	20:51:17	32WL Eastleigh	WM Young Ff Billows Ff Tan Ff Richards Ff Peters	OiC Driver BA BA BAECO
12	20:42:37	20:52:43	56WT Hightown	CM James Ff Benfield Ff Cole Ff Matthews	OiC Driver BA BA
13	20:24:22	21:02:20	16MR Havant	Ff Saunders Ff Simmons Ff Wearn	OiC Driver No 3
14	20:44:34	21:03:02	32ST Eastleigh	CM Mockett Ff Tredre Ff Botto Ff Treweek	OiC Driver BA BA
15	20:43:06	21:03:08	32WT Eastleigh	WM Ratcliffe Ff Roe Ff Sutherland Ff Logan	OiC Driver BA BA
16	21:06:07	21:09:11	38WT Botley	WM Woods CM Unsworth CM Head Ff Phipps-Bilton Ff Simpson Ff Dawkins	OiC Driver BA BA BAECO No 6
17	21:01:13	21:09:38	33WL Romsey	CM Tongs Ff Macdonald Ff Thompson Ff Grinstead Ff Peel Ff Carruthers	OiC Driver BA BA BAECO No 6
18	20:44:52	21:11:32	49WT Beaulieu	WM Knight Ff Sheppard Ff Fitch Ff Shelley	OiC Driver BA BA

19	21:07:36	No Record	55WT Hamble	WM Williams CM Stockwell Ff Weston Ff Toone Ff Broomfield	OiC Driver BA BA BAECO
20	21:08:33	21:20:41	48WL Lyndhurst	WM Clements Ff Baynton Ff Malcom Ff Perry Ff Diaper	OiC Driver BA BA BAECO

Officers Attending Incident

Order Att	Time Mobile	Time Arrival	Officers Call Sign	Officers Rank/Names
1	20:14:21	20:28:18	GO50	GM Pinchin (IC)
2	20:16:26	20:33:27	SO17	SM Evans
3	20:22:06	20:36:10	SO64	SM Spencer-Peet (Search Sector Cdr)
4	20:21:16	20:39:27	GO15	GM Deacon (Fire Sector Cdr)
5	20:26:18	20:46:04	GO48	GM Oxlade (CSO)
6	20:48:26	21:20:06	AO38	AM Kettle (Ops Cdr)
7	20:38:23	21:27:12	GO68	GM Trevethick (Welfare)
8	-	21:21	BO13	DCO Curry (IC) (approximate time)
-	20:46:21	-	GO22	GM Gates (Logistics Sector)
-	22:03:02	-	GO66	GM Tasker (Welfare)
-	21:25:10	-	SO62	SM Smith

Note: There are no Fire Control record of GMs Gates and Tasker or SM Smith booking in attendance at the incident .

Appendix K

Glossary of Terms

ADSU	Automatic Distress Signal Unit
AIT	Accident Investigation Team
ALP	Aerial Ladder Platform
AM	Area Manager
BA	Breathing Apparatus
BAECO	Breathing Apparatus Entry Control Officer
Bridgehead	Forward operating base, usually sited two floors below fire floor
CFRAU	Chief Fire and Rescue Adviser's Unit
CM	Crew Manager
CSO	Command Support Officer
DCO	Deputy Chief Officer
DCLG	Department for Communities and Local Government
DRA	Dynamic Risk Assessment
ECP	Entry Control Point
Fire Appliance	Fire Engine
FBU	Fire Brigades Union
FDS	Flexible Duty System
Ff	Firefighter
FRV	First Response Vehicle
GM	Group Manager
HC	Hampshire Constabulary
HFRS	Hampshire Fire and Rescue Service
HSE	Health and Safety Executive
IC	Incident Commander
ICS	Incident Command System
ICT	Incident Command Team
IPDS	Integrated Personal Development System
LFB	London Fire Brigade
LPI	Local Performance Indicator
MDT	Mobile Data Terminal
MoU	Memoranda of Understanding
OISG	Organisational Improvement Steering Group
PDA	Pre-Determined Attendance
PIC	Premise Inspection Card
PPE	Personal Protective Equipment
PPV	Positive Pressure Ventilation
SCC	Southampton City Council
SEU	Special Equipment Unit
SM	Station Manager
SSRI	Site Specific Risk Information
ST	Second Water Tender (St Marys)
TIC	Thermal Imaging Camera
WL	Water Tender Ladder
WM	Watch Manager
WMFS	West Midlands Fire Service
WPA	Work Place Assessment
WT	Water Tender
16	Havant Fire Station
32	Eastleigh Fire Station
33	Romsey Fire Station
38	Botley Fire Station
46	Totton Fire Station
48	Lyndhurst Fire Station
53	Redbridge Fire Station
54	St Marys Fire Station
55	Hamble Fire Station
56	Hightown Fire Station

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Appendix M

Letter from Health and Safety Executive to Hampshire Fire and Rescue Service

Mr John Bonney (CFO)
Hampshire Fire and Rescue Service HQ
Leigh Road
Eastleigh
Hants
SO50 9SJ

Date 10.2.12

Reference 4203694

Field Operations Directorate

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cc Bob Ratcliffe (ACFO), Dave Dymond
(Regional FBU rep)

Operations Manager
Mike Wilcock

Dear Mr Bonney

SHIRLEY TOWERS INVESTIGATION - HSE INVESTIGATION DECISION

I am now writing to formally confirm the outcome of the HSE investigation regarding the tragic fire at Shirley Towers, Southampton on 6 April 2010. As you know, before Christmas, I orally informed ACFO Bob Ratcliffe that HSE was not 'minded to' institute criminal proceedings against any party involved with the incident. I am now able to confirm that this decision has been formalised.

As you are aware, my investigation team and I have worked in close partnership with our colleagues in Hampshire Constabulary throughout the investigation. In broad terms, the Police concentrated on actions taken by individuals on the night of the incident, whereas HSE also focussed on the adequacy of background policies and procedures. There was continuous liaison and overlap between the two investigation teams to ensure that continuity of direction and decision-making was maintained. You will also be aware that assistance to the overall investigation was provided by personnel from the West Midlands Fire Service, the London Fire Brigade and the Health and Safety Laboratory. Attention has been paid to the evidence and opinions of these various parties in reaching conclusions in the HSE investigation.

The Police announced in the autumn of last year that they had reached the conclusion that no criminal proceedings, under legislation that they enforce, were warranted in relation to the incident. However, HSE remained tasked with considering compliance with health and safety legislation of relevant parties. My investigation team have now completed our investigation that included consideration of HFRS and national guidance, policies and procedures and considered how they were implemented and adhered to, or diverged from, on the night of the fire. We have also considered evidence relating to custom and practice obtained from HFRS personnel not involved in the incident. In reaching our conclusion we are obliged to consider the Code for Crown Prosecutors and the HSE's own Enforcement Policy Statement, together with the document "Striking the balance between operational and health and safety duties in the Fire and Rescue Service", published by HSE shortly before the Shirley Towers incident. The Code in particular requires that we consider not only the evidence available to us, but also whether or not prosecution would be in the public interest.

On the basis of the evidence alone we 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. We also recognised that many of the decisions taken by individuals on the night were taken on the spur of the moment in stressful and sometimes frenetic situations, amidst an unfolding dangerous situation where HFRS personnel were attempting to protect the lives and property of many members of the public. Overall, we reached the decision that it would not be in the public interest to commence prosecution of any party involved in the incident.

Following the conclusion of my team's investigation we submitted our report for a comprehensive review by a senior HSE manager, not previously involved in the investigation, who took on the role of 'independent oversight'. His review confirmed my team's recommendation not to prosecute.

From the start of the investigation there has been a desire and a willingness by all parties involved to work together to ensure a full and thorough examination of the circumstances, with a view to uncovering and learning from this tragic event. I would like to take this opportunity to thank the many staff of HFRS, as well as representatives of the Fire Brigades Union, for the assistance and cooperation they have afforded my investigation team over many months. I recognise that there have been times when an inability to reveal detail for legal reasons may have appeared frustrating or bureaucratic, but hope that on the whole your staff have understood the process HSE was required to follow when investigating a fatal accident. Can I also ask you to pass on my particular thanks to GM Dave Turner and his team for organising and facilitating the recent HSE observation and inspection of Compartment Fire and Tactical Ventilation training procedures and Incident Command assessment at your Eastleigh HQ. This provided an excellent insight into how the Service is tackling these important issues and the challenges they present.

From time to time throughout the investigation, HSE has drawn to the attention of HFRS, copied to FBU, 'emerging issues' which we have felt may require attention, in order to reduce the risk of harm to firefighters in the future. This process remains ongoing. To date enforcement notices have not been considered necessary to secure compliance and I hope that HFRS will continue to work constructively with HSE so that this remains the case. Attached to this letter is a complete list of the HSE Recommendations (including those where HFRS have already taken some action - noted in italics) which we have formulated, based on the evidence we have reviewed. I would request that you please consider this list and provide an appropriate response to me in due course.

At the same time as sending this letter to you I am providing a copy of the Factual section of the HSE investigation report, together with the list of the Recommendations to HM Coroner. It is HSE's policy that I am not permitted to disclose the Analysis or Legal Conclusions sections of our report.

I have seen your note entitled, "Update on Shirley Towers Investigation", released to other Chief Officers in December and believe it to be an accurate and fair summary of the situation. I note that you have correctly identified that both the Police and HSE do, notwithstanding everything set out in this letter, have the right to reconsider our decisions following the Inquest, should anything unexpected and at odds with evidence so far collected, come to light. If there is anything about which you would like clarification please let me know and I would be happy to discuss or meet with you or Bob Ratcliffe.

Under the Health and Safety at Work etc Act 1974 I am required to provide relevant health and safety information to employees. For this reason, I am sending a copy of this letter to Dave Dymond (Regional FBU rep) as the relevant local FBU representative.

Yours sincerely

Steve Hull
HM Principal Inspector Health and Safety
Hants and Isle of Wight Team

Hampshire Fire and Rescue Service
Report of the Investigation into the Deaths of Firefighters Alan Bannon and James
Shears - Shirley Towers, Southampton
6 April 2010

RECOMMENDATIONS

Command, Control and Communications

HFRS

- 1 Review the assessment of command competence in the role of Sector Commander.
- 2 Base requirements for reassessment on calendar years rather than *training cycle intervals*. *A position statement produced by the HFRS Leadership and Command school after the incident recognised that they should move to a two year validity period for IC assessment.*
- 3 Clearly identify who is responsible for managing the training records system and who is responsible for ensuring staff receive required training during the set timescales.
- 4 Implement a clear system for recording central and station based training, which easily highlights if training has not been undertaken *within the set period*. *The current system is to be replaced by an integrated IT system designed for Fire Services, known as Fire watch. This will link central and workplace based records, and be used for competence based mobilisation. The project is due to be completed in April 2012.*
- 5 Provide further guidance on the situations or locations at operational incidents where MDTs are not directly available and hardcopies of SSRIs, including building plans, may need to be used. For example, how such information from MDT5 will be made available at the bridgehead in high rise incidents.
- 6 Re-emphasise monitoring of handovers of incident command, including briefing of and by Sector Commanders, to ensure adequate exchange of safety critical information. *The audit form used by Audit Officers already includes the headings 'How well were the hazards and control measures communicated' and 'How effective was the communication system'*
- 7 Provide further guidance and training on the required or expected content of the briefing given by IC/SOs to initial BA teams and ECOs, including the use of TICs. *HFRS have agreed to produce guidance on what constitutes a good briefing for a BA team, to allow audit and feedback during training and following operational incidents.*
- 8 Implement a system for monitoring and assessment of the briefing given by IC/SCs to initial BA teams. *Since the incident at Shirley Towers, HFRS have initiated a system for mobilising a Tactical Advisor to all critical incidents. Part of the role of this officer is to audit key aspects of operational activity including briefing to teams*

- 9 Clarify the role and provide additional guidance on the responsibilities of Incident and Sector Commanders and Entry Control Officers in relation to debriefing of BA teams.
- 10 Review the FDA for Command Support to ensure attendance of trained personnel at a sufficiently early stage of an incident to provide effective support for Incident/Sector Commanders and *reduce their spans of control. Following feedback from this and other incidents, HFRS changed the PDA to ensure earlier attendance of trained command support personnel. HSE were informed that from 1 November 2010, in addition to a Command Support Officer and Command vehicle, a Command Support Pump and crew would attend Level 2 incidents (4-6 appliances).*
- 11 Clarify the role of the SEU crew in relation to command support and consider whether additional training should be provided to these crews.
- 12 Training should be provided on the detail to record on the new analytical risk assessment forms.
- 13 Undertake sample monitoring of the use of mobile phones at incidents and ensure their use has not become systemic or culturally acceptable.
- 14 Ensure the use of effective call handling prompts for Control Room Operators, as recommended in GRA 3.2, to provide guidance on questions to ask and information to be logged.
- 15 Ensure there is a system for sample monitoring of the quality of information collected and passed on by Control Room Operators.
- 16 The number of radios provided on appliances should be reviewed to ensure an adequate supply in the early stages of the incident. *Since the incident, HFRS have increased the provision of radios to four hand held radios per appliance.*

Training and Assessment

HFRS

- 17 Implement an effective system for monitoring the quality as well as quantity of station based training and ensuring consistency. *HFRS plan to implement a QA system over a two year period from April 2012.*
- 18 Monitor information recorded on the WA activity sheets and ensure it is sufficient to identify the detail of the training delivered as described in Guidance Note *GN191511*.
- 19 Implement a system to assess and maintain the competence of all BA Instructors. Ensure the system is in place by April 2012. *All BAIs are scheduled to attend standardisation workshops by the end of March 2012. HFRS plan to commence quality assurance observations of the BAI network to a planned sampling strategy on 1/4/2012.*

Breathing Apparatus and Fire Fighting Procedures Recommendations

HFRS

- 20 Provide refresher training covering the impact of hard physical work, arduous conditions, travel distances, etc. on consumption rate and physiology. In particular, firefighters should be reminded of the need to adjust times of whistle in these circumstances, to reinforce the procedures described in section 1.4.5 of PD 17/7.
- 21 Re-emphasise the importance of the role of BA Team Leader. Ensure that training for this role is consistent with all relevant procedures described in PD 17/7 and monitor practice.
- 22 Monitor whether Incident and Sector Commanders are moving from Stage I to Stage II BA entry control procedures appropriately and consistently. If failures to do so are found, ensure that appropriate action is taken to ensure competence and compliance with HFRS procedures.
- 23 Clarify operational guidance on what constitutes a "prolonged breakdown in radio communications" for the purpose of initiating BA emergency procedures.
- 24 Remind firefighters of the circumstances when TICs can be usefully employed.
- 25 Clarify the procedures to be followed by firefighters finding stairs when searching for a fire and/or casualties. *This has already been addressed by Training Bulletin 07/11.*
- 26 Clarify the definitions and roles of covering jets and safety jets, and ensure that firefighters are provided with appropriate training.
- 27 Clarify, in the current high-rise procedure, whether or not a jet provided to protect a BA team needs to be as long as, or longer than, an attack jet - with reference to relevant national guidance in GRA 3.2 (2008).
- 28 Ensure that all training content emphasises that opening windows in a compartment fire must only be done as part of a ventilation strategy under the control of the Incident Commander.
- 29 Ensure all FDS Officers have received appropriate training on tactical ventilation.
- 30 Re-emphasise that when firefighters apply water in a compartment, in a circumstance where steam generation is a risk, they must inform the ECO and others in the vicinity prior to doing so.
- 31 Re-emphasise to ECOs the usefulness of drawing boards when debriefing BA crews.

Risk Assessment, Premises Information, Pre-planning and Familiarisation - Recommendations

HFRS

- 32 Produce an improved description of how operational risks are assessed, particularly for fighting fires. This should include;
 - How the Risk Assessment Record fits in with the production of Service Orders
 - How further measures (e.g. new technology, systems developed by other FRS, measures identified as needed due to other incidents) are identified and assessed
 - How operational risk assessments adequately cover all the topics that the GRAs do when a Service Order is not produced
 - Clarify the links between SSRI records, generic pre-planning, and familiarisation visits
- 33 Carry out an assessment of the risk from fallen cables within a building, to include consideration of what equipment and procedures needs to *be provided*. *Since the accident, HFRS have provided a modification to BA sets to reduce the risk of cables falling between the cylinder and the harness, and have provided tools for cutting cables, for use where fallen cables may be present.*
- 34 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.
- 35 Clarify roles and responsibilities for drawing up and signing off SOs.
- 36 Consider more of a team approach to producing SSRI for high risk premises, to ensure peer review.
- 37 Ensure firefighters who collect premises information have received appropriate guidance and training.
- 38 Clarify what the contents should be for an 'operational tactical plan' for high rise buildings, as referenced in the HFRS Service Order for Site Specific Risk Information.
- 39 Include a completion and/or review date to SSRI records to aid the monitoring and reviewing of SSRIs and identification of most recent versions at stations, and put a system in place that ensures that SSRI records are completed to schedule, and that information on SSRI records is adequate.

- 40 Produce a policy on familiarisation which should include a clear definition of familiarisation and how it fits in with other visits (e.g. home fire safety visits) which are carried out by firefighters. The policy should include a clear line on identifying premises for familiarisation, the frequency for carrying out familiarisation and the content of familiarisation. The policy should enable stations to have a clear view of what is expected of them, while leaving sufficient flexibility for local needs and ensuring competence.
- 41 Record the names of personnel who have carried out familiarisation to particular premises.
- 42 Consider what degree of familiarisation can be provided to firefighters based at outlying stations who may be required to attend a fire at identified high risk premises.
- 43 Familiarisation visits should include checking site specific arrangements, such as checking that keys open dry risers cupboards.
- 44 Consider some form of knowledge check following familiarisation visits.
- 45 Raise relevant recommendations with South East Regional Group.

Matter for National Consideration

- 46 Consider the need for national guidance on the content and frequency of familiarisation. *CLG will be publishing guidance on premises risk information covering these matters in February 2012.*

Personal Protective Equipment - Recommendations

HFRS

- 47 Ensure pre-use check and maintenance procedures are effective in picking up relevant defects, that the checking frequency is appropriate, and that the checking regime is properly supervised.
- 48 Review whether a means of monitoring BA using telemetry (e.g. via electronic BA boards or Command vehicle) would provide operational and *safety advantages. Since the accident, HFRS have undertaken trials/evaluation of electronic BA control boards (BA telemetry) and have identified that this equipment would be favoured for use within HFRS in the future.*

Radio Equipment - Recommendations

HFRS

- 49 HFRS should consider provision of 'hands-free' radios, due to the common need to carry out other operations with the hands at the same time. *At the time of writing this report, HFRS are in process of providing 'hands free' BA Communications to two BA sets on each appliance.*

Appendix N

Letter from Hampshire Fire and Rescue Service to Health and Safety Executive

Mr Steve Hull
 HM Principal Inspector Health & Safety
 Field Operations Directorate
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 Leigh Road
 Eastleigh
 Hampshire
 SO50 9SJ
 Tel: 023 8064 4000
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Date: 26 April 2012

Enquiries To: Andy Bowers
 Extension: 3224

My Reference: AB/em
 Your Reference:

Dear Steve

Thank you for your letter dated 10 February 2012 and the recommendations included therein. It has been passed to me as the chair of the Operational Improvement Steering Group (OISG) as the most appropriate respondent on behalf of Hampshire Fire and Rescue Service (HFRS).

On behalf of the Chief Officer and the Service, I would like to thank you for your continued open communication and positive dialogue with us and would like to reaffirm our absolute commitment to addressing all of the issues arising from this tragic incident.

As you will be aware HFRS have established OISG to monitor, manage and disseminate the lessons learned and the action points arising from the Shirley Towers incident. OISG was originally chaired by ACFO Kevin Butcher. Since his retirement this role has fallen to me. To date this group has received 84 emerging issues and is on track to have addressed all of them by the commencement of the inquest in June.

It is my intention as the chair of the group to deal with the 84 as the first tranche of work, to deal with the 49 recommendations you have raised, (which are not already being addressed in the first tranche) as the second tranche, and then to address any further issues highlighted by the inquest as the third tranche of that work.

We will then seek to ensure that we embed continuing operational development and improvement into the Service, and maintain the improvement momentum.

I thank you for the opportunity to discuss our plans when we met with you on Wednesday 25th.

In response to your recommendations I offer the following comments:

General.

Several of these issues have been previously raised either by the HSE or the HFRS Accident Investigation Team (AIT), and have been allocated to OISG to action. Many others however are new issues and, as described above, will now be allocated to OISG as the next phase of their work.

In many cases there is both a process or policy element requiring immediate action as well as a longer term education issue to ensure that personnel take the appropriate actions at incidents. Whilst the policy or process improvements can be implemented readily it is clear that education and embedding change will be a longer and ongoing remedy.

It is our intention therefore to ensure that we embed the process of operational improvement and development into the 'business as usual' processes of Service Delivery Response in order to maintain continuous and sustained improvement and not just take actions that only have a short term impact.

Where an issue reference is quoted this refers to the OISG code allocated to the 84 recommendations already actioned or being processed.

I have, for ease of reference, included your recommendation (in bold) and the current status of our actions directly beneath. I have not included documentation to evidence what we have done but will supply copies if you wish.

Where I indicate that our actions are complete, I mean this from our perspective. Any further guidance that you may offer will of course be gratefully received.

RECOMMENDATIONS

Command, Control and Communications

HFRS

1. Review the assessment of command competence in the role of Sector Commander.

Our strategy to date has been to test at Incident Command level, and transfer this to Sector Command. This because there is no significant difference between the ICS skills required at the different levels.

2. Base requirements for reassessment on calendar years rather than training cycle intervals. *A position statement produced by the HFRS Leadership and Command school after the incident recognised that they should move to a two year validity period for IC assessment*

This action has now been completed, OISG items T3/HSE and T3A/HSE refer and provide evidence.

3. Clearly identify who is responsible for managing the training records system and who is responsible for ensuring staff receive required training during the set timescales.

This recommendation has been raised before in T1/AIT, T3/HSE, T3A/HSE and T4/HSE.

This has been partially completed but cannot be signed off until the Fire Watch system is implemented. (Fire watch was due to be launched by April 2012. However there have been some technical difficulties and it is now expected to go live for all station-based staff by the end of August 2012, and for all FDS Officers by the end of December 2012.)

4. Implement a clear system for recording central and station based training, which easily highlights if training has not been undertaken within the set period. *The current system is to be replaced by an integrated IT system designed for Fire Services, known as Firewatch. This will link central and workplace based records, and be used for competence based mobilisation. The project is due to be completed in April 2012.*

As in 3 above this issue has previously been raised, T1/AIT, T3/HSE, T3A/HSE and T4/HSE refer. Again this has been partially completed but cannot be signed off until the Fire Watch system is implemented, as referred to in my answer above.

5. Provide further guidance on the situations or locations at operational incidents where MDTs are not directly available and hard copies of SSRIs, including building plans, may need to be used. For example, how such information from MDTs will be made available at the bridgehead in high rise incidents.

This is a new issue. We will look into how we can achieve this objective. However, every appliance is equipped with a printer attached to the MDT and therefore printed copies of plans are already an option.

6. Re-emphasise monitoring of handovers of incident command, including briefing of and by Sector Commanders, to ensure adequate exchange of safety critical information. *The audit form used by Audit Officers already includes the headings 'How well were the hazards and control measures communicated' and 'How effective was the communication system'*

This issue has been addressed by changes to the logging system and the creation of a formal handover process on the Incident Command Unit. All FDS officers, Command Support Officers, and students on CMMI courses will receive direct input over the next 6 months.

7. Provide further guidance and training on the required or expected content of the briefing given by IC/SCs to initial BA teams and ECOs, including the use of TICs. *HFRS have agreed to produce guidance on what constitutes a good briefing for a BA team, to allow audit and feedback during training and following operational incidents.*

We have now issued guidance on briefing and debriefing BA crews and what should be recorded on a BA board. We consider this to be ongoing and is chiefly about education of personnel.

8. Implement a system for monitoring and assessment of the briefing given by IC/SCs to initial BA teams. *Since the incident at Shirley Towers, HFRS have initiated a system for mobilising a Tactical Adviser to all critical incidents. Part of the role of this officer is to audit key aspects of operational activity including briefing to teams*

The role of the Tactical Adviser will look at all aspects of operational effectiveness and will include briefing and debriefing of teams. We consider this to be ongoing and is chiefly about education of personnel.

9. Clarify the role and provide additional guidance on the responsibilities of Incident and Sector Commanders and Entry Control Officers in relation to debriefing of BA teams.

The Guidance issued, together with existing BA policy, cover this issue. As above however, we consider this to be ongoing and is chiefly about education of personnel.

10. Review the PDA for Command Support to ensure attendance of trained personnel at a sufficiently early stage of an incident to provide effective support for Incident/Sector Commanders and reduce their spans of control. *Following feedback from this and other incidents, HFRS changed the PDA to ensure earlier attendance of trained command support personnel. HSE were informed that from 1 November 2010, in addition to a Command Support Officer and Command vehicle, a Command Support Pump and crew would attend Level 2 incidents (4-6 appliances)*

As already recognised we have amended our pre-determined attendance to provide for adequate command support early in an incident. We consider this to be completed with ICS5/HSE providing evidence.

11. Clarify the role of the SEU crew in relation to command support and consider whether additional training should be provided to these crews.

It is our intention to remove the SEU from the initial command support role and enhance the equipment and training provided for command support stations. We will be making these changes during the financial year 2012/13 and they will be in place by April 2013 at the latest.

12. Training should be provided on the detail to record on the new analytical risk assessment forms.

Agreed. We will provide familiarisation on the new ARA form, although it should be simple and intuitive in use to be most effective.

13. Undertake sample monitoring of the use of mobile telephones at incidents and ensure their use has not become systemic or culturally acceptable.

We have issued clear and strong guidance about the use of mobile telephones at incidents and this is being followed. There is no evidence that the inappropriate use of phones is widespread or systemic, however we will continue to monitor.

14. Ensure the use of effective call handling prompts for Control Room Operators, as recommended in GRA 3.2, to provide guidance on questions to ask and information to be logged.

This has been reviewed and revised. Call handling prompts have been produced and are in use in Fire Control. We consider this to be complete and COM4/AIT refers.

15. Ensure there is a system for sample monitoring of the quality of information collected and passed on by Control Room Operators

Revised call handling prompts and the implementation of Fire Control Tactical Advisers to audit Control Room activities have addressed this issue. COM 4/AIT refers.

16. The number of radios provided on appliances should be reviewed to ensure an adequate supply in the early stages of the incident. *Since the incident, HFRS have increased the provision of radios to four hand held radios per appliance.*

We have increased the number of hand held radios to 4 per appliance plus two hands free radios built into BA sets. We consider this issue to have been satisfactorily addressed.

Training and Assessment

HFRS

17. Implement an effective system for monitoring the quality as well as quantity of station based training and ensuring consistency. *HFRS plan to implement a QA system over a two year period from April 2012.*

The Training team have implemented a Quality Assurance process from April 2012, and this will be further monitored by Tactical Advisers at incidents This will continue to develop and we will continue to monitor its effectiveness.

18. Monitor information recorded on the WA activity sheets and ensure it is sufficient to identify the detail of the training delivered as described in Guidance Note GN/9/5/1.

The Training team have now introduced a Quality Assurance process in HFRS and this will be both quantitative and qualitative. The OISG (or it's successor) will continue to ensure this is bringing improvements.

19. Implement a system to assess and maintain the competence of all BA Instructors. Ensure the system is in place by April 2012. All BAIs are scheduled to attend standardisation workshops by the end of March 2012. HFRS plan to commence quality assurance observations of the BAI network to a planned sampling strategy on /4/2012.

We have commenced a standardisation process through the BAI network, and all BAIs had attended standardisation workshops by March 2012. We will now be quality assuring the BAI network using a planned sampling strategy over a two year period commencing April 2012.

Breathing Apparatus and Fire Fighting Procedures - Recommendations

HFRS

20. Provide refresher training covering the impact of hard physical work, arduous conditions, travel distances, etc. on consumption rate and physiology. In particular, firefighters should be reminded of the need to adjust times of whistle in these circumstances, to re-enforce the procedures described in section 1.4.5 of PD/7/7.

Agreed. We will include this issue within BA refresher training and will re-emphasise the issues which will have an impact on air consumption rates and BA set working duration.

21. Re-emphasise the importance of the role of BA Team Leader. Ensure that training for this role is consistent with all relevant procedures described in PD/7/7 and monitor practice.

We do not currently train specifically for a BA team leader role as all competent BA wearers must be capable of leading a BA team. We will re-emphasise the importance of the role and the need to clarify who is the team leader in any BA team that is deployed.

22. Monitor whether Incident and Sector Commanders are moving from Stage I to Stage II BA entry control procedures appropriately and consistently. If failures to do so are found, ensure that appropriate action is taken to ensure competence and compliance with HFRS procedures

We have now issued prompt cards for BA Entry Control and will also include this issue in the Tactical Advisers thematic review programme. We consider this to be ongoing and is chiefly about education of personnel.

23. Clarify operational guidance on what constitutes a "prolonged breakdown in radio communications" for the purpose of initiating BA emergency procedures.

New Service Order on BA has been issued and addresses this recommendation. We consider this issue to have been satisfactorily addressed.

24. Remind firefighters of the circumstances when TICs can be usefully employed

We have taken measures to do this and to embed the use of Thermal Imaging Cameras in training. We consider this issue to have been satisfactorily addressed.

25. Clarify the procedures to be followed by firefighters finding stairs when searching for a fire and/or casualties. *This has already been addressed by Training Bulletin 07/11.*

Training bulletin 07/11 deals with this issue and this is being reinforced in training events. We consider this issue to have been satisfactorily addressed locally, however we have brought this to the attention of CFRAU in the current review of Technical Bulletin 1/97.

26. Clarify the definitions and roles of covering jets and safety jets, and ensure that firefighters are provided with appropriate training

Service Delivery have issued a bulletin clarifying these terms and this is now being embedded in training. BA6/HSE refers. We consider this issue to have been satisfactorily addressed.

27. Clarify, in the current high-rise procedure, whether or not a jet provided to protect a BA team needs to be as long as, or longer than, an attack jet -with reference to relevant national guidance in GRA 3.2 (2008).

We have issued guidance that hose lines in these circumstances need to be at least as long as the original hose line, and reinforced training in this area. OP8/AIT refers. We consider this issue to have been satisfactorily addressed.

28. Ensure that all training content emphasises that opening windows in a compartment fire must only be done as part of a ventilation strategy under the control of the Incident Commander.

Agreed We are currently ensuring that all documents and all training reinforce this principle.

29. Ensure all FDS Officers have received appropriate training on tactical ventilation.

All FDS officers have now had ventilation training and we consider this issue closed. T5/HSE refers.

30. Re-emphasise that when firefighters apply water in a compartment, in a circumstance where steam generation is a risk, they must inform the ECO and others in the vicinity prior to doing so.

Agreed. We will re-emphasise this.

31. Re-emphasise to ECOs the usefulness of drawing boards when debriefing BA crews.

Agreed. We will re-emphasise this

Risk Assessments, Premises Information, Pre-planning and Familiarisation Recommendations.

HFRS

32 Produce an improved description of how operational risks are assessed, particularly for fighting fires. This should include;

- **How the Risk Assessment Record fits in with the production of Service Orders**
- **How further measures (e.g. new technology, systems developed by other FRS, measures identified as needed due to other incidents) are identified and assessed**
- **How operational risk assessments adequately cover all the topics that the GRAs do when a Service Order is not produced**
- **Clarify the links between SSRI records, generic pre-planning, and familiarisation visits**

Agreed we will produce an overarching statement or diagram that clarifies the relationship between the various documents and processes

33 Carry out an assessment of the risk from fallen cables within a building, to include consideration of what equipment and procedures needs to be provided. *Since the accident, HFRS have provided a modification to BA sets to reduce the risk of cables falling between the cylinder and the harness, and have provided tools for cutting cables, for use where fallen cables may be present.*

HFRS have issued modified cylinder covers to prevent this happening and have also issued cable cutters to crews. We will re-emphasise correct search procedures and use of Thermal Imaging Cameras in these circumstances.

34. 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.

Agreed. We will develop appropriate contingency plans for reasonably foreseeable events.

35. Clarify roles and responsibilities for drawing up and signing off SOs.

This is part of the Policy Review project and is ongoing. We have provided a Project Officer resource to achieve this and a Project Initiation Document has been provided.

36. Consider more of a team approach to producing SSRI for high risk premises, to ensure peer review.

There will be occasions when a single firefighter will be responsible for production of draft SSRI's, however these will always be reviewed by at least one other member of the station as well as the Response team at SHQ. Usually however a crew of at least two will be responsible for the visit and drawing up the SSRI and we are content that this process is suitable.

37. Ensure firefighters who collect premises information have received appropriate guidance and training.

Agreed. We will provide further input to those tasked with SSRI production.

38. Clarify what the contents should be for an 'operational tactical plan' for high rise buildings, as referenced in the HFRS Service Order for Site Specific Risk Information.

When this document was produced it was envisaged that High Rise premises would be medium risk and would not therefore require an operational tactical plan. The types of premises that it is believed would be high or very high were industrial premises including COMAH sites, all of which have a dedicated response plan, often for both an on site response and an off site incident. The Service Order will be amended to reflect this change in category of risk.

39. Include a completion and/or review date to SSRI records to aid the monitoring and reviewing of SSRIs and identification of most recent versions at stations, and put a system in place that ensures that SSRI

Although there is a comprehensive system held centrally at SHQ to ensure that SSRI's are reviewed at appropriate times there is no date included on the SSRI itself. This is agreed, we will add the date upon which the SSRI was completed

40. Produce a policy on familiarisation which should include a clear definition of familiarisation and how it fits in with other visits (e.g. home fire safety visits) which are carried out by firefighters. The policy should include a clear line on identifying premises for familiarisation, the frequency for carrying out familiarisation and the content of familiarisation. The policy should enable stations to have a clear view of what is expected of them, while leaving sufficient flexibility for local needs and ensuring competence.

This policy has now been produced and implemented. We will continue to monitor its effectiveness and will evaluate as appropriate.

41. Record the names of personnel who have carried out familiarisation to particular premises.

This policy has now been produced and implemented. We will continue to monitor its effectiveness and will evaluate as appropriate.

42. Consider what degree of familiarisation can be provided to firefighters based at outlying stations who may be required to attend a fire at identified high risk premises.

This policy has now been produced and implemented. We will continue to monitor its effectiveness and will evaluate as appropriate.

43. Familiarisation visits should include checking site specific arrangements, such as checking that keys open dry risers cupboards.

This policy has now been produced and implemented. We will continue to monitor its effectiveness and will evaluate as appropriate.

44. Consider some form of knowledge check following familiarisation visits.

This policy has now been produced and implemented. We will continue to monitor its effectiveness and will evaluate as appropriate.

45. Raise relevant recommendations with South East Regional Group.

Agreed. We will raise with appropriate regional groups

Matter for National Consideration

46. Consider the need for national guidance on the content and frequency of familiarisation. *CLG will be publishing guidance on premises risk information covering these matters in February 2012.*

CLG/CFRAU have recently issued this guidance and we are currently reviewing and assessing it in comparison with our own policy.

Personal Protective Equipment- Recommendations

HFRS

47. Ensure pre-use check and maintenance procedures are effective in picking up relevant defects, that the checking frequency is appropriate, and that the checking regime is properly supervised.

Guidance for firefighters and Operational Equipment Technicians about the content and rigour of set checks and maintenance procedures have been issued and are being monitored. We consider this to be ongoing and is chiefly about education of personnel.

48. Review whether a means of monitoring BA using telemetry (e.g. via electronic BA boards or Command vehicle) would provide operational and safety advantages. *Since the accident, HFRS have undertaken trials/evaluation of electronic BA control boards (BA telemetry) and have identified that this equipment would be favoured for use within HFRS in the future.*

HFRS have identified that a BA telemetry system would bring benefits and are intending to introduce this as part of a planned BA upgrade over the next two years. There are currently national issues with telemetry and the radio frequencies used which are causing difficulties for those services already using telemetry.

Radio Equipment - Recommendations

HFRS

49. HFRS should consider provision of 'hands-free' radios, due to the common need to carry out other operations with the hands at the same time. *At the time of writing this report, HFRS are in process of providing 'hands free' BA Communications to two BA sets on each appliance.*

HFRS have provided two hands free radio equipped BA sets per appliance as part of the planned BA upgrade.

Summary

I trust that you will be reassured by the work we have already commenced and, in some respects have completed. The work of both the AIT and OISG will undoubtedly continue significantly beyond the Inquest, and as previously stated it is our intention to continue to prioritise and emphasise continuous operational development and improvement across every element of our emergency response capability.

Once again I would like to thank you for your approach and your consideration and for meeting us on the 25 April which can only assist us to further and strengthen our drive for improvement.

Yours sincerely

Andy Bowers
Area Manager Response Delivery

Appendix O

Coroner's Rule 43 Letter



K. St. J. Wiseman
H.M. CORONER for the Southampton
City and New Forest District

Sir Ken Knight
Chief Fire and Rescue Advisers Unit
Department for Communities and Local Government
Eland House
Bressenden Place
LONDON
SW1E 5DU

Date: 04 February 2013

Dear Sirs

INQUEST INTO THE DEATHS OF ALAN BANNON AND JAMES SHEARS

I am writing to you concerning the Inquest into the tragic deaths of Firefighters Alan Bannon and James Shears.

Both men died on the 6 of April 2010 when fighting a fire in a high-rise block of flats in Southampton. The Jury brought a narrative verdict as follows:

Death by misadventure in each case in conjunction with the following narrative:

“Firefighters Alan Bannon and James Shears died from sudden exposure to initially intense heat from 20.38 to 20.41 and thereafter to excessive heat while dealing with a fire in a flat on the ninth floor of the high-rise tower block Shirley Towers. Obvious precautions to prevent the fire occurring were not taken in addition, operating conditions for all firefighters involved became extremely difficult and dangerous and this significantly contributed to the deaths of Firefighters Alan Bannon and James Shears. Numerous factors have been identified as being relevant in the chain of causation which could have affected the eventual outcome and which, where appropriate, will form the basis of recommendations to improve safety in the future.”

I am writing to you under the provisions of Rule 43 of the Coroner's Rules which reads “a Coroner who believes that actions should be taken to prevent the recurrence of fatalities similar to that in respect of which the Inquest is being held, may announce at the Inquest that he is reporting the matter in writing to the person or authority who may have power to take such action and he may report the matter accordingly”.

I received a number of very helpful reports that assisted me at the Inquest and at its conclusion I have agreed with all the advocates representing those entitled to be heard that I should make the following recommendations under Rule 43 to these primary recipients:

- a) Sir Ken Knight, Chief Fire and Rescue Advisers Unit (CFRAU) with responsibility for disseminating these recommendations to every Fire and Rescue Service (FRS) in the UK
- b) Eric Pickles MP, the Secretary of State for the Department for Communities and Local Government, with responsibility for considering any legislative changes required to implement any of these recommendations,
- c) Brandon Lewis MP, Parliamentary Under Secretary of State for the Fire & Rescue Service, with responsibility for disseminating these recommendations to every FRS
- d) Mark Prisk MP, the Minister of State for Housing (and Local Government), with responsibility for disseminating these recommendations to every social housing provider in the UK.

All these primary recipients listed above should disseminate these recommendations to every FRS and social housing provider in the UK so that they shall promptly consider these recommendations in relation to high-rise buildings within their locality, decide what to do about them and inform the primary recipient of such decisions.

Rule 43 Recommendations for Consideration in relation particularly to the risk of fire in High-Rise Buildings

- 1 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:
 - e) Thermal imaging cameras are used to search for fire in smoky conditions
 - f) Fire-fighters understand the importance of fully extinguishing fires before proceeding past or above the fire scene
 - g) Methodical search patterns are undertaken e.g. area by area, room by room or floor by floor.
 - h) Search patterns are standardised across every FRS in the UK so that there is common understanding and procedure when fire-fighters from different FRSs are engaged in joint working.
- 2 It is recommended that a review is undertaken to ensure that the teaching and training of those fire-fighting techniques used to contain and cool compartment fires, on the one hand, fully complement techniques designed to attack and extinguish fires, on the other. A review should be undertaken into the training provided in relation to the circumstances and manner in which each technique should be used. For example, a pulse spray technique should not be used in a fully ventilated compartment fire, the severity of which will not be controllable by pulse spraying and gas cooling approach.

- 3 It is recommended that a review is undertaken to ensure the adequacy of teaching and training of tactical ventilation procedures in compartment fires to highlight the effect ad-hoc ventilation can have on fire development and to confirm the associated dangers.
- 4 It is recommended that all FRSs should consider the implementation of measures to reduce the risks associated with fallen cables. In particular consideration should be given to:
 - a) Providing insulated wire cutters, or other means of severing cables, to all breathing apparatus teams;
 - b) Modifying breathing apparatus sets to reduce the risk of cables becoming caught between the wearer's back and the cylinder (as introduced by Hampshire Fire and Rescue Service – please contact HFRS for more details);
 - c) Training all breathing apparatus wearers in the risks presented by fallen cables and how to reduce those risks.
- 5 It is recommended that all FRSs and social housing providers consider the Rule 43 recommendations made by HM Coroner for Hertfordshire Mr Edward Thomas¹ following the inquest into fire-fighter fatalities at Harrow Court in particular Recommendation 8 made by the FBU which is here repeated for ease of reference:

“8. That SBC should remove all the surface mounted plastic trunking/conduit used to protect and support the Fire Alarm and Automatic Fire Detection System in the Common Areas of all their premises, and replace them with a method of cable support which as a minimum conforms to BS 5839- Part 1 : 2002; clause 26.2 (f);

Methods of cable support should be such that circuit integrity will not be reduced below that afforded by the cable used, and should withstand a similar temperature and duration to that of the cable, while maintaining adequate support.

Note 7. In effect, this recommendation precludes the use of plastic cable clips, cable ties or trunking, where these products are the sole means of cable support.”
- 6 It is recommended that Building Regulations are amended to ensure that all cables, not just fire alarm cables, are supported by fire-resistant cable supports. This could be achieved by an amendment to BS 7671 (2008) Institute of Electrical Engineers Wiring Regulations.
- 7 Social housing providers should be encouraged to consider the retro-fitting of sprinklers in all existing high rise buildings in excess of 30 metres in height, particularly those identified by Fire and Rescue Services as having complex designs that make fire-fighting more hazardous and/or difficult. It is noted that current legislation requires that all newly built high rise buildings in excess of 30 metres in height must be fitted with sprinkler systems.

- 8 It is recommended that a review of training given to control staff is undertaken by all FRSs in UK in light of the guidance given in recent GRAs including GRA 3.2 of September 2008.

All FRS should further consider the implementation of measures to ensure that control staff are properly supervised when taking calls and are trained to capture and relay relevant information likely to assist operational firefighters.

- 9 It is recommended that there should be an obligation to:
- d) provide signage to indicate floor levels both in stairwells and lift lobbies in high rise premises, to assist the emergency services;
 - e) ensure that signage indicating flat numbers and emergency exits in high rise premises are placed at a low level to increase visibility in smoke conditions.

This could potentially be achieved by amending Article 38 of the Regulatory Reform (Fire Safety) Order 2005, which relates to maintenance of measures provided for the protection of fire-fighters. Alternatively new legislation may be required.

I am sure that due consideration will be given to all these recommendations and policies formulated to ensure the safety of firefighters and the minimalisation of risks to the occupiers of high-rise flats.

Many thanks for your anticipated attention to this matter. Rule 43A requires that you give a written response within 56 days of the day the report is sent. If you are unable to respond within that time, you may apply to me for an extension. The response is to contain details of any action that has been taken or which it is proposed will be taken whether in response to this report or otherwise, or an explanation as to why no action is proposed.

Yours faithfully

K St J Wiseman
HM Coroner for Southampton &
New Forest

Appendix P

Acknowledgements

Appreciation is recorded for contributions and support during the Shirley Towers investigation and production of this report.

Hampshire Fire and Rescue Service - Accident Investigation Team
Hampshire Constabulary
Health and Safety Executive
London Fire Brigade
West Midlands Fire Service
Chief Fire and Rescue Advisers Unit
Southampton City Council
Fire Brigades Union - Accident Investigation Team
Deputy Chief Fire Officer Gary Walsh - East Sussex Fire and Rescue Service
Carole Hobbs - Hampshire Fire and Rescue Service
Andrew Relton - Berrymans Lace Mawer
Ian Garnett - Zurich Insurance

