Fatal Accident Investigation Report.

Paul's Hair and Beauty World, Oldham Street, Manchester. July 13, 2013

GREATER MANCHESTER FIRE AND RESCUE SERVICE

Contents

NB: All photographs within this report are taken from the Oldham Street incident and whilst individuals shown in the photographs did attend the incident they are used for illustration purposes only and are not necessarily related to a specific time stamp.

Remembered

This report aims to provide a summary of the fire at Paul's Hair and Beauty World, Oldham Street, Manchester, which broke out on Saturday, July 13, 2013, and tragically claimed the life of Firefighter Stephen Hunt.

Stephen was a proud and valued part of Greater Manchester Fire and Rescue Service (GMFRS). He was a professional Firefighter and hero who was a much loved member of Blue Watch at Philips Park Community Fire Station. He made the ultimate sacrifice in service and his loss was felt widely throughout the organisation, as well as the fire and rescue service community across the world.

GMFRS remains utterly devastated by Stephen's death but at the heart of every investigation into this complex incident is a family which has lost a son, brother, dad, uncle and friend.
We cannot bring Stephen back or turn back time to change the sequence of events that led to his death, as much as we would give everything that we have to do so.
We can however be open and transparent about what happened, what didn't happen that should have and what now needs to change to ensure anything similar never happens again.

Executive Summary

Greater Manchester Fire and Rescue Service has supported, co-operated and worked openly with Greater Manchester Police, the Health and Safety Executive and HM Coroner in the years that have passed since Stephen's death to support a range of investigations including the Inquest in May 2016. The ultimate aim of this work has been to help establish what happened. This has been about finding the truth for Stephen's family, for his legacy and ensuring that we understand, so far as possible, exactly what happened that day. That learning will be used to ensure that everything possible is done to prevent anything like this from happening again.

The following provides a summary of the key issues identified from the investigation, based on all the information available to the investigation team, including details from Stephen's breathing apparatus (BA) partner about what he remembers from inside the fire.

- The lack of an assurance process by the command team to ensure that functional roles and control measures were maintained or removed with justification.
- The control measure to supervise the duration of BA wears that existed during the day shift that was not carried forward into the night shift.
- The use of a 2nd Safety Officer as a control measure to ensure that BA wearers were monitored during the day was not carried forward into the night shift.
- Lack of identification and understanding by BA wearers, of the signs that would indicate physiological deterioration, both in self and others.
- The lack of action when concerns were raised relating to the safety of BA crews.
- The briefings of BA crews by two separate officers where specific words were used in one brief but not the other.
- The exchange of information between BA crews and entry control officers (ECO).
- The application of basic BA procedures to ensure safety at incidents.
- Individual officers not fulfilling the responsibilities of their functional roles.

- The actions of Sector Commanders and their communications with other sectors.

- The recording and communication of hazard and control measures to ensure critical actions and information was carried forward.

Part 1 of this report provides an introduction, putting context to the incident and outlines the sequence of events from the discovery of the fire up to and including actions taken following the BA emergency. Part 2 provides details of actions taken, by multiple agencies post incident. Part 3 of the report draws together conclusions made by the Accident Investigation Team and provides a response to the conclusions made by the Inquest jury. Finally, Part 4 details the lessons learnt by GMFRS and an update on actions taken to address them.

Introduction and Context

Part 1: Firefighting Operations

Section 1: Incident summary

1.1.1 By way of an overview, this section provides a summary of the incident background, type of premises, what was involved in fire, as well as a timeline which details fire appliance mobilisations, informative messages and key time stamps from the discovery of the fire to the action taken when the BA Emergency was declared.

1.1.2 At the time of the fire on the July 13, 2013 Paul's Hair and Beauty World premises were located within a multi occupied building on Oldham Street Manchester. The building, known as Plaintree House consists of four floors and a basement. Due to being built on sloping ground the front elevation has three storeys whilst the rear of the building is four. At the rear, ground floor level of the building is six steps above the ground level with the basement only partly below ground. Figure 1 below illustrates a side elevation of the building, showing this change in floor level.

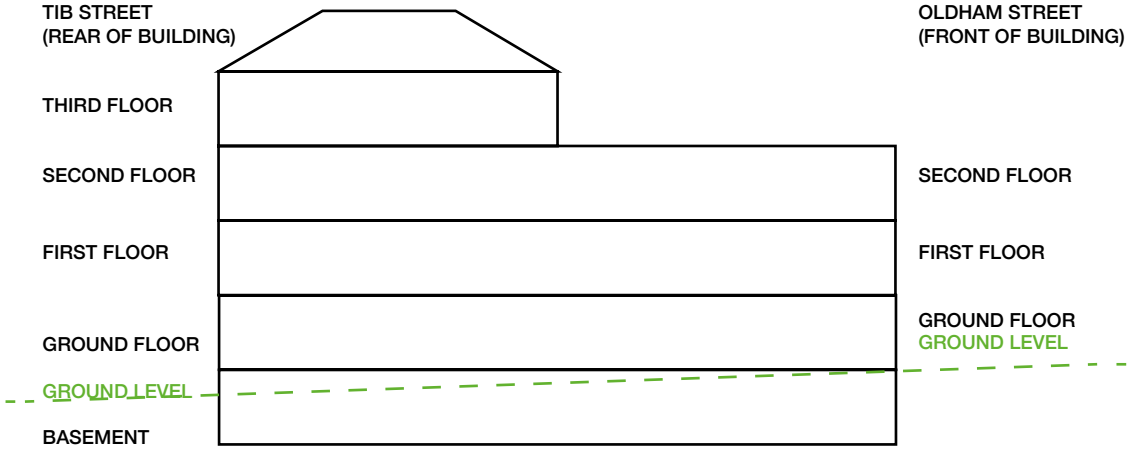
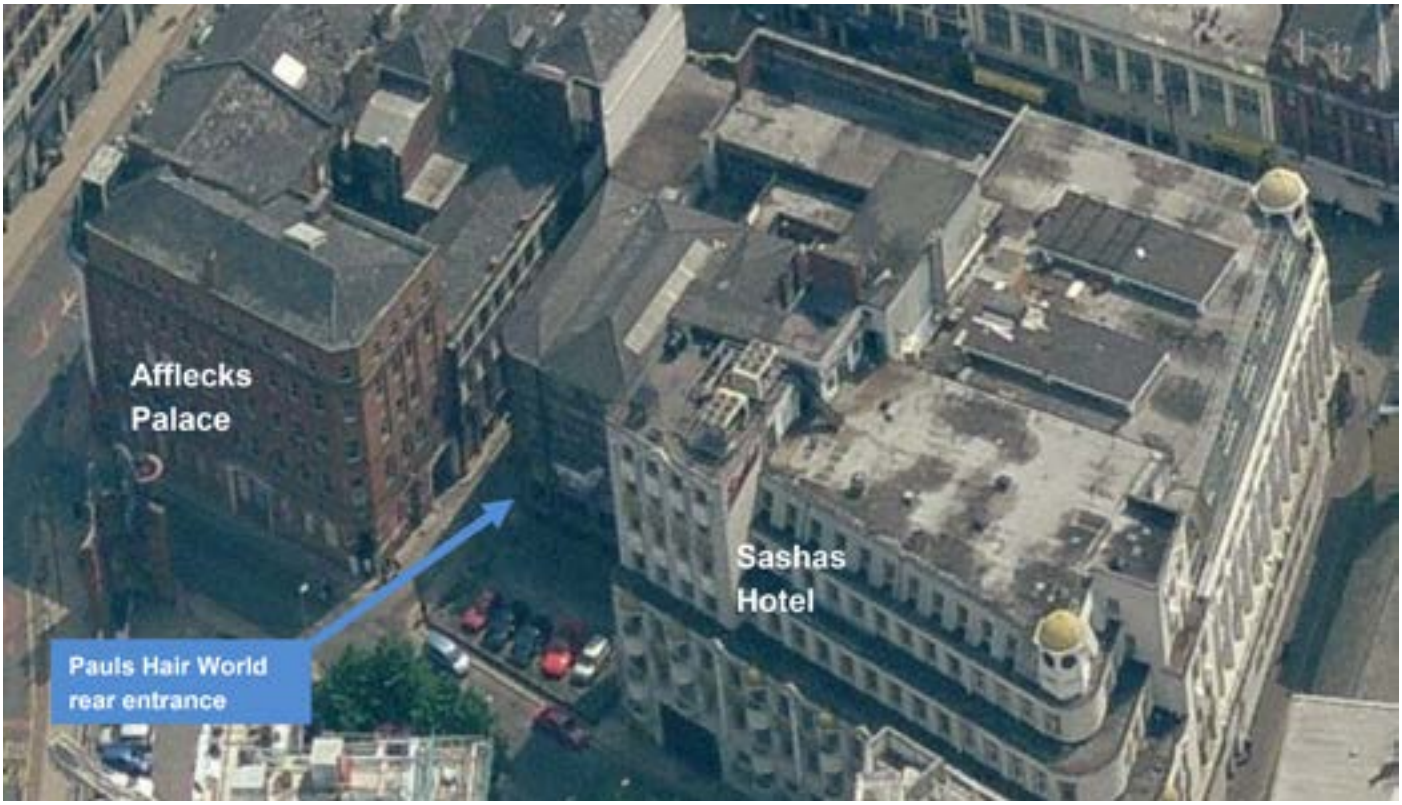


Figure 1: Side elevation of building

1.1.3 The building is of traditional brick and concrete construction and has adjoining buildings on either side. To the south-west side is Sachas Hotel and to the north-east side is The Manchester Coffee Company café. Afflecks Palace (Emporium) adjoins this café and is in close proximity to Plaintree House at the rear of the premises.



(Photograph 1)
Aerial view showing rear of Paul's Hair World

1.1.4 As stated, the building at the time of the incident was multi occupancy. Paul's Hair and Beauty World occupied the ground floor along with Blue Rinse Clothing. First and third floors were occupied by Ticket Line, with the second floor being occupied by various organisations, including a language college, Alcoholics Anonymous and an acting agency.

1.1.5 The ground floor had its main entrance via the shop front on Oldham Street. This door led to the shop floor which was laid out with counters, with storage and display of products, in a squared off 'U' configuration to three sides. To the left hand side of the shop floor there was also a long shelved aisle that shoppers could also access, where mainly shampoos and hair treatments were displayed.

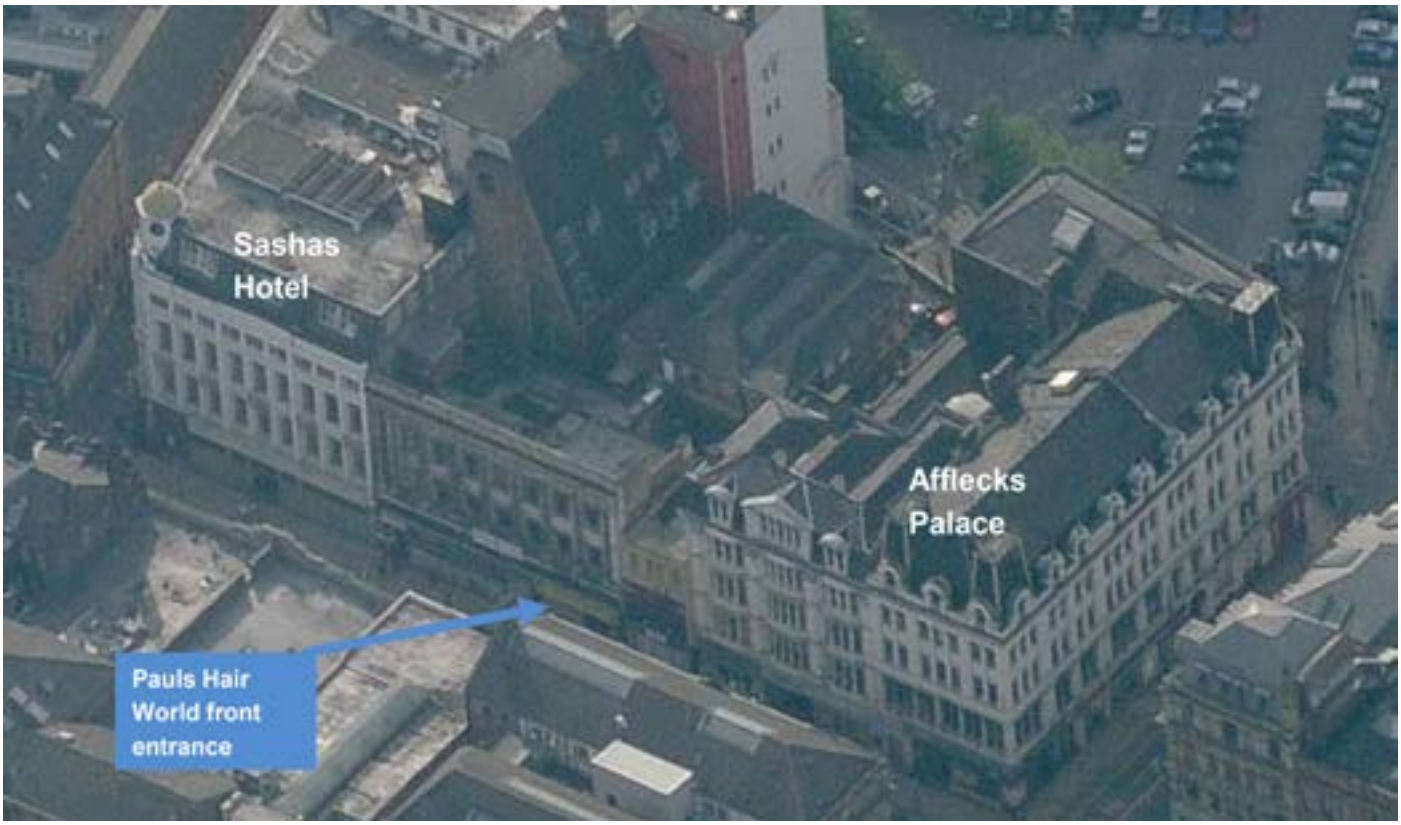
1.1.6 To the right hand side of the shop floor and behind the serving counter, at ground level, were offices and access, via two staircases, to a mezzanine level, with further office space, staff facilities and a separate store room.

1.1.7 To the rear of the ground floor was the stock room for Paul's Hair and Beauty World. This stock room was accessed by staff from the shop floor and consisted of wooden racking approximately 3 metres in height. This racking spanned the entire width of the shop, constructed in a library shelving configuration with narrow aisles separating them. There was a large amount of heavily compacted stock in this room, mainly consisting of natural and synthetic hair pieces.

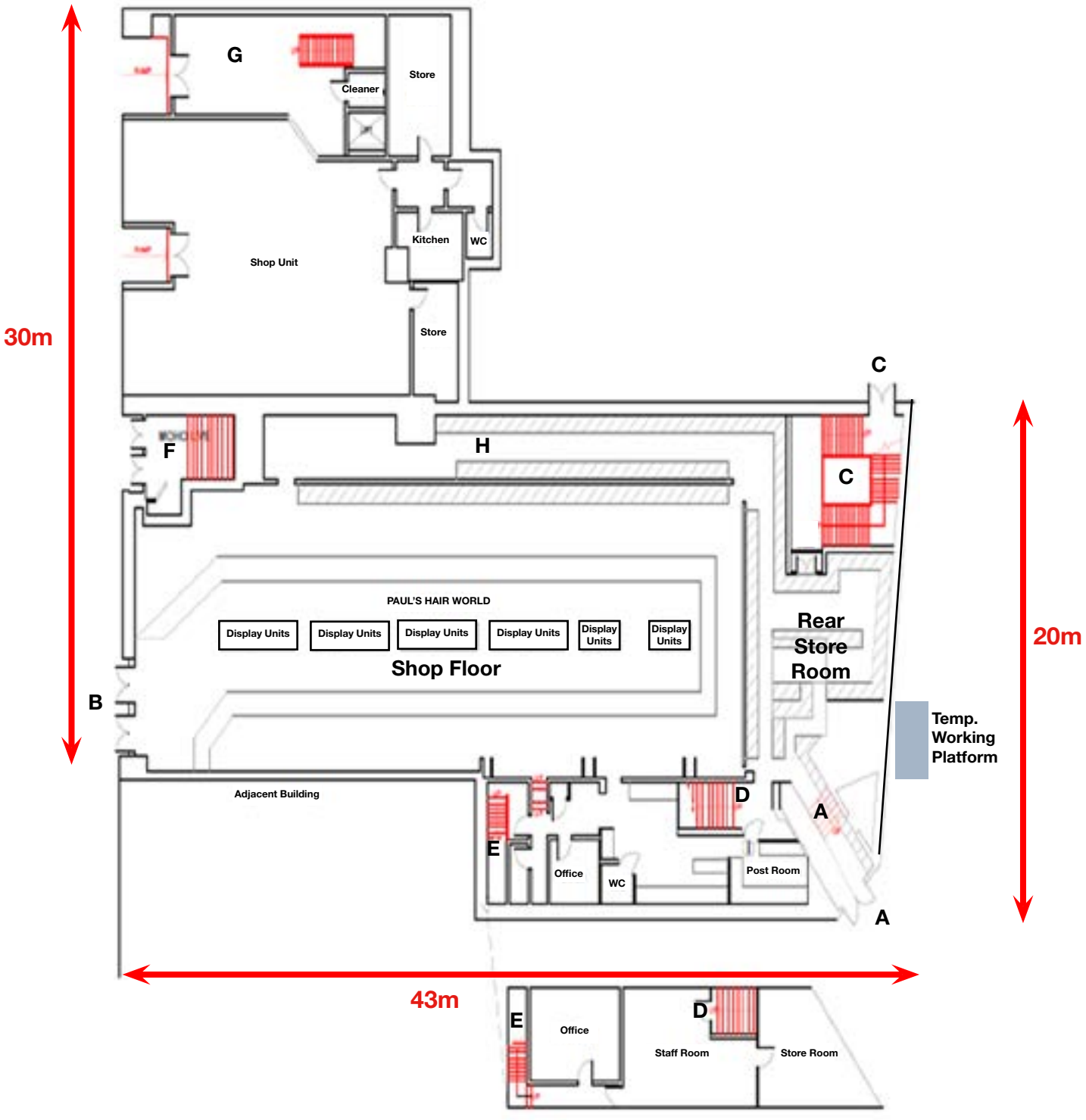
1.1.8 Accessed from this store room was the rear fire exit for the shop. From the store room, descending six steps led to a final exit which allowed egress from the rear of the building. The exit consisted of two fire doors, operated internally by push bar mechanisms. With both doors open and looking from outside the building, there was a metal cage construction behind the left hand door, used for cardboard storage. It was within the cardboard storage that the fire was first discovered on July 13, 2013.

1.1.9 Going through the right hand door, a couple of strides led to the bottom of the six steps which led back to the store room. From the exit and extending up the steps was further racking which was stocked primarily with synthetic hair pieces. It was this configuration and cardboard storage and stock loading immediately behind the rear fire exit that played a major contributory factor in the development of the fire. This exit was also the only escape route from the rear of the shop and was one of the main areas of operation throughout the incident.

The plan (Figure 2) overleaf shows the layout of Paul's Hair and Beauty World, locations of entrance / exit doors along with the location of staircases. (1.1.9 provides a key to the description and any significance of these locations)



(Photograph 2)
Aerial view showing front of Paul's Hair World



1st Floor Mezzanine

Figure 2

1.1.10 **Key to figure 2**

- Doorway A - located at the rear of the building on the north corner. It is where the first crews entered the building and was the entry point from Sector One.

- Doorway B - the main shop entrance to Pauls Hair & Beauty World from Oldham Street, Sector Three.

- Doorway C - located at the rear on the south-west corner of the building. Became the entry point to Sector Four and is where crews entered to rescue FF Hunt and his BA Partner.

- Staircase A is a short flight of six steps connecting the rear car park with the ground floor Pauls Hair & Beauty World on the north corner. This was used to access the ground floor from doorway 'A' in Sector One.

- Staircase C is a protected staircase at the rear which serves ground, first, second and third floors and discharges through doorway C into an alleyway adjacent to Sachas Hotel. At the time of the fire, access to Pauls Hair & Beauty World on the ground floor was blocked off with racking and storage covering the inside. Also, a roller-shutter door between the staircase and Pauls Hair & Beauty World was in the closed position.

- The basement nightclub stairs are within stairwell C, but are completely separated and do not communicate with the ground or upper floors.

- Staircase D leads from the ground floor to the mezzanine and was ascended by FF Hunt.

- Staircase E also leads from the ground floor, but at the opposite end of the mezzanine.

- Staircase F is in between Pauls Hair & Beauty World and Blue Rinse clothing and only serves the basement nightclub.

- Staircase G discharges onto Oldham Street at the front and serves the basement, first and second floors. It is a protected staircase (enclosed in fire-resisting construction).

- Staircase H is located on the south-west wall and serves the first and third floors only. This staircase is not shown in detail on the attached plan as it does not return to ground level, although it may have done previously.

1.1.11 The following timeline is a summary of the sequence of events from the discovery of the fire by shop staff to actions taken during the BA Emergency.

1.1.12 Conditions on the day of the fire were clear and warm with a day time temperature recorded at 25.2 Celsius in Manchester City Centre.

1.1.13 NB: Text in italics throughout this document indicates actual radio messages, phone calls or direct quotations.

Highlights Assistance messages from the fire ground
Highlights Informative messages from the fire ground
Highlights key points in fire fighting operations

Time	***Descriptor***	**Duration hh:mm**
14:38	Two individuals seen on CCTV approaching rear exit doors of building	00:00
14:44	Fire is discovered by staff member	00:06
14:49	Time of initial call to Fire Control - 3 pumps were mobilised as per the pre-determined attendance (PDA) for a commercial property	00:11
14:50	G17P1 Appliance from Blackley mobilised	00:12
14:51	G13P1 Moss Side and G58P1 Salford mobilised	00:13
14:52	Further call to Control - Persons reported – nearest SM/GM mobilised as per PDA	00:14
14:53	Mobilised appliances informed - Persons reported	00:15
14:55	G58P1 Salford in attendance at incident – Day Shift Sector 1 Sector Commander in charge	00:17
14:56	G17P1 Blackley in attendance at incident – Initial Incident Commander in charge	00:18
14:58	The first BA team to the rear through doorway ‘A’	00:20
15:00	Two Firefighters entered the building at the front wearing BA and began to search for the missing manager	00:22
15:00	G13P1 Moss Side in attendance at incident – Day Shift Sector 3 Sector Commander in charge	00:22
15:02	*Assistance Message from Initial Incident Commander; Make pumps 4 for BA*	00:24
15:05	Group Manager arrived at the incident and carried out initial risk assessment.	00:27
15:07	*Group Manager now taken charge of the incident.*	00:29
15:08	Fourth pump to arrive was G13P2 Moss Side 2nd Appliance Officer in charge	00:30

Time	Descriptor	Duration hh:mm
15:14	*Assistance Message; From Incident Commander Make Pump x 6, Aerial Appliance x 1*	00:36
15:20	*From Incident Commander - fire involves ground floor of city centre shop unit, eight BA in use commencing firefighting operations; four hose-reels and safety jet laid, Sectors 1 and 3 now in operations, both sectors in offensive mode*	00:42
15:20	An aerial appliance (G16A1) arrives	00:42
15:23	*Assistance Message; Attendance of Enhanced Rescue Unit, Stihl saw required to gain access*	00:45
15:29	*From Incident Commander - make pumps 12 for BA*	00:51
15:34	*From Incident Commander - crews making good progress in Sector 1, platform carrying out observations of upper floors. Sachas Hotel now evacuated due to smoke*	00:56
15:37	*Message; Operational Support Unit (OSU) now contact point for incident*	00:59
15:38	Area Manager mobilised to take over the role of IC as per 12 pump PDA	01:00
15:40	Fire Control informed Assistant Chief Fire Officer (ACFO) of the fire, he decides to open the Operations room at FSHQ	01:02
15:46	12 Pumps, HP, ERU in attendance	01:08
15:50	*From Incident Commander - eight BA wearers conducting firefighting and search procedures, fire involves whole of ground floor of city centre shop unit, fire involves large amount of stock, enhanced response unit gaining access through roller shutter in Sector 3, external electrical supply affected, request electricity northwest to attend, one male aged 40 years suffering slight burns, being treated by the ambulance in attendance*	01:12
15:53	Additional Area Manager informed of informative message, in attendance Ops room	01:15
16:00	*Ops Room established by Additional Area Manager at Fire Service HQ (FSHQ)*	01:22
16:08	*From Incident Commander - all BA crews withdrawn from Sectors 1 and 3 due to deteriorating conditions, offensive mode in operation*	01:30
16:11	*Area Manager now in attendance carrying out risk assessment*	01:33
16:28	*From Incident Commander - BA main control in operation; Sector 1 in offensive mode, three jets and six BA wearers. Sector 3 in offensive mode, four BA wearers. Electrical supply to main building now isolated*	01:50
16:30	ACFO in attendance at incident. He first met with Area Manager and Incident Commander. ACFO (who was not mobilised to the incident) then left to go to the Ops room at FSHQ	01:52

Time	Descriptor	Duration hh:mm
16:36	*From Incident Commander - fire involving ground floor of City Centre unit contained within Building Approx. 200M x 100M 4 floors of concrete and brick construction, fire contained to ground floor area*	01:58
16:51	Message; from Environment Agency representative at the scene, all water runoff from this incident would only enter the foul sewer system due to the area it is in, no water runoff will enter any rivers. Environment Agency have asked Fire Control to inform United Utilities of this to make them aware.	02:13
17:02	*From Incident Commander - Sector 4 now being established in offensive mode*	02:24
17:24	*From Incident Commander - good firefighting progress being made in all three Sectors; 14 BA, safety jets in place and ventilation ports being opened in Sector 1*	02:46
17:53	*From Incident Commander - crews in Sector 1 facing difficult conditions in gaining entry due to heavy stock load involving hair care products; inform Environment Agency regarding water run-off, which is currently being contained by fire service personnel*	03:15
18:10	*From Incident Commander - Multi agency meeting held to discuss required support services*	03:32
18:17	Message; can control contact workshops and arrange for some diesel to be delivered asap as they have 3 pumps that are very low on fuel	03:39
18:33	*From Incident Commander - firefighting operations continuing in Sectors 1 and 3; BA wearers being constantly refreshed, in the region of 50 BA wears up to this point*	03:55
18:38	*From Incident Commander – 8 pump relief required for change of watch, Operational Support Unit and support pump crew, one GM and three SMs also required at change of watch. Rendezvous point is Oldham Street. All appliances to proceed down Oldham Street off Great Ancoats Street.*	04:00
18:44	BA team 4 FF A and B enter doorway ‘A’	04:06
18:50	BA team 4 FF A and B withdraw and talk to Day Shift Sector 1 Sector Commander, 2nd Safety Officer Sector 1, and 1st Operational Assurance Officer.	04:12
18:55	BA team 4 FF A and B re-enter doorway ‘A’, from 19:02 to being relieved at 19:10 they can be seen on CCTV working just inside the doorway	04:17
18:58	Tactical ventilation in Sector 3 smashing of windows of PHW	04:20
19:07	*From Incident Commander - firefighting crews having difficulty in gaining access to seat of fire due to heavy stock load of haircare products, natural ventilation taking place, 12 BA wearers, four jets and safety jets in use*	04:29
19:10	BA team 3 FF A and B enter Sector 1 Entry Point, from entering and up to 19:23 they are seen operating just inside doorway ‘A’	04:32
19:14	*From Incident Commander - Make Aerial Appliances two, rendezvous point Tib Street*	04:36

Time	Descriptor	Duration hh:mm
19:14	G18P2 in attendance with a crew of 4 including FF Hunt and his BA Partner	04:36
19:18	*From Incident Commander – All BA withdrawn from inside the building due to worsening conditions. Fire has broken through to the first floor. Aerial appliance and jets being directed through the first floor windows.*	04:40
19:28	2 jets continue to be trained through the ground and 1st floors in Sector 3	04:50
19:30	Hydraulic Platform Vehicle cage goes up and starts to train monitor through 1st floor window Sector 3	04:52
19:35	From entering Sector 1 Entry Point (EP), viewed from CCTV, a FF from BA team 3 step out to have discussion with 2nd Safety Officer Sector 1, he remains under air and re-enters building one minute after	04:55
19:41	FF Hunt and his BA Partner dismount and leave appliance G18P2	05:03
19:43	Handover of Sector Commander Sector 3 (Day Shift Sector 3 Sector Commander to Night Shift Sector 3 Sector Commander)	05:05
19:45	FF Hunt and his BA Partner arrived in Sector 1 and attend the entry control point (ECP)	05:07
19:52	BA team 3 FF A and B exit doorway 'A'	05:14
19:57	Incident Commander briefing his relief Night Shift Incident Commander in Sector 3. Operations Commander is also present for part of this discussion.	05:18
19:59	FF Hunt and his BA Partner (under air) at doorway 'A' with 2nd Safety Officer Sector 1, waiting four minutes for water and testing the branch before entering	05:19
20:00	G19P2 pump exchanged with a relief pump G33P2 in Sector 1	05:55
20:02	ECO from day shift hands over to ECO from night shift in Sector 1	05:24
20:04	FF Hunt and his BA Partner enter building in Sector 1	05:26
20:06	Incident Commander, Night Shift Incident Commander and Operations Commander walk around the incident ground as part of the command team handover.	05:28
20:06	2nd Safety Officer Sector 1 leaves doorway 'A' and his role as 2nd Safety Officer in Sector One. He can be seen on CCTV pointing to doorway 'A', briefing Night Shift Sector 1 Sector Commander. This discussion lasts for a total of 5 minutes and are joined by members of the Command Team part way through (see 20:09)	05:28
20:07	FF Hunt's BA Partner's BA set lost telemetry with the ECB and this was not re-established	05:29

Time	Descriptor	Duration hh:mm
20:09	Incident Commander, Night Shift Incident Commander, Operations Commander, 2nd Safety Officer Sector 1, and Night Shift Sector 1 Sector Commander all in discussion pointing at doorway 'A'	05:31
20:11	Night Shift Sector 1 Safety Officer arrives in Sector One wearing Sector Command tabard and enters into discussion with Night Shift Sector 1 Sector Commander and 2nd Safety Officer Sector 1	05:33
20:15	BA Team 6 FF A and B prepare to go under air. Second Hydraulic Platform Vehicle enters Sector 1 cordon at the rear of the building	05:37
20:17	*Message; From Incident Commander – relief crews being co-ordinated across all Sectors; officers in process of conducting hand over; firefighting operations in Sector 1 now offensive, six BA wearers, three jets committed.*	05:39
20:17	The HPV monitor directed a jet into the ground floor in Sector 3	05:39
20:18	BA Team 6 FF A and B head to temporary platform in Sector 1 direct a jet in to the stock room from outside	05:40
20:24	A ground monitor jet is directed into the ground floor in Sector 3	05:46
20:24	FF Hunt's BA Partner's BA set tally was taken out of the board and reinserted a second later, as BA Team 5 FF A and B prepare to enter the building to relieve FF Hunt and his BA Partner	05:46
20:25	BA Team 7 FF A and B are briefed by Night Shift Sector 4 Commander - preparing for deployment in Sector 4 to adjust a ground monitor	05:47
20:26	BA Team 5 FF A and B entered the building via doorway 'A' to relieve FF Hunt and his BA Partner	05:48
20:29	BA Team 7 FF A and B entered Sector 4 via doorway 'C'	05:50
20:29	At approx. this time BA Team 5 FF A and B meet FF Hunt and his BA Partner inside the building for a handover	05:51
20:30	FF Hunt's Low Pressure Warning Whistle operated	05:52
20:32	BA Team 5 FF A and B emerge from doorway 'A' after self-withdrawing due to the conditions inside and due to having no TIC or radio	05:54
20:32	Time of Whistle for FF Hunt and his BA Partner (manual calculation)	05:54
20:34	BA Team 7 FF A locates FF Hunt's BA Partner and raises alarm	05:56
20:34	Night Shift Entry Control Officer Sector 1 presses the evacuation signal on his Entry Control Board	05:56
20:35	FF Hunt's BA Partner brought out of Sec 4 EP	05:57
20:35	Message; From Night Shift Incident Commander – BA emergency	05:57
20:36	FF Hunt's ADSU activates	05:58
20:41	FF Hunt brought out of Sec 4 EP	06:03

Time	Descriptor	Duration hh:mm
20:44	Crews withdrawn and a roll call is carried out	06:06
20:54	*From Night Shift Incident Commander currently carrying out full roll call of all FS personnel on incident ground following BA emergency*	06:16
20:56	From Night Shift Incident Commander - full roll call taken - all personnel accounted for	06:18
21:02	NWAS transferred FF Hunt to hospital	06:24
21:04	*From Night Shift Incident Commander - firefighting operation recommenced, no BA committed*	06:26
21:21	NWAS transferred FF Hunt's BA Partner to hospital	06:43

Section 2: Discovery of the fire

1.2.1 At 14:44 the fire was discovered by one of the shop staff, behind the rear fire exit door. Other shop staff were alerted to the fire and on investigating, found that the cardboard store behind the rear fire door was already well alight.
Shop staff made their way out of the premises via the front entrance, with the exception of the shop owner who attempted to fight the fire.

1.2.2 Along with the owner of Paul's Hair World (PHW), individuals from Afflecks Palace and other local businesses, continued to fight the fire, using a large number of extinguishers, buckets and hose reel, for several minutes prior to the arrival of GMFRS.

1.2.3 With this first aid firefighting taking place a repeat call to Fire Control stated that there were still people inside the building. This led to Fire Control changing the designation to persons reported and informing all proceeding appliances.

1.2.4 With the fire being discovered by shop staff at 14:44, a five minute delay to the initial call meant the first appliance arrived at 14:55. This 11 minute period gave the fire time to develop significantly, mainly due to high levels of stock and availability of flammable fuel sources.

Section 3: From first arrival at 14:55 to 19:00

1.3.1 The first fire appliance to arrive at the incident was from Salford station with a Watch Manager in charge. Taking account of the information supplied by the initial call to Fire Control, this appliance arrived at the rear of the premises, where the fire had started.

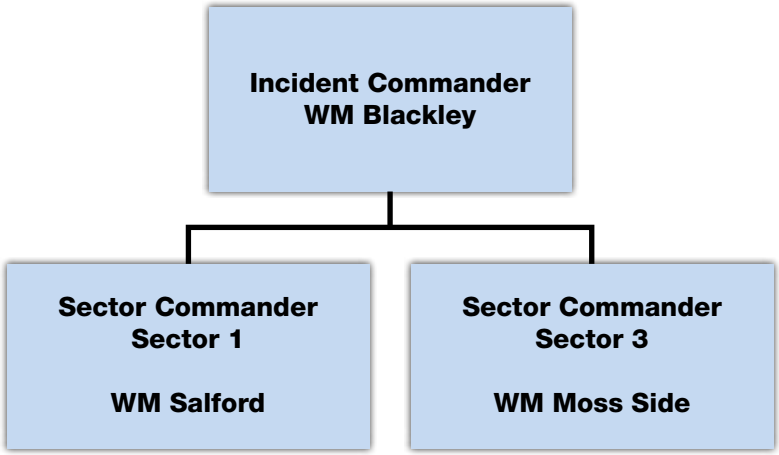
1.3.2 The second and third appliances to arrive were from Blackley and Moss Side stations. Due to the direction they approached the incident they parked up at the front of the shop on Oldham Street. The fire was well developed at this point with smoke issuing from the front of the shop.

1.3.3 Shortly after their arrival and following a dynamic risk assessment (DRA) the Watch Manager at the rear of the premises committed a breathing apparatus (BA) team in through doorway 'A'. They were briefed to make the initial attack on the fire from just inside the doorway and to gather information as to the extent of the fire and conditions inside.

1.3.4 At the front of the shop the Watch Manager who was in charge of Blackley's appliance, committed a BA team in through the front of the shop as crews had been informed by Fire Control that the shop manager was missing. The Watch Manager from Salford and the Watch Manager from Blackley were initially unaware of each other's attendance. When the Watch Manager arrived on the appliance from Moss Side station and he completed a 360 degree tour of the incident, it became evident that three appliances were now at the scene.

1.3.5 All three appliances had a Watch Manager (WM) in charge. Collectively, the three WM's determined who would become Incident Commander (IC) and sectorising the fire, who would become the Sector Commanders. This allocation of roles led to the formation of the command structure in figure 3.

(Photograph 3)
Firefighters entering doorway 'A'



(Figure 3)

Command Structure at 3 Pumps

1.3.6 The incident was split into two sectors. Sector One was designated at the rear, due to that being the location of the fire, and the front on Oldham Street as Sector Three.

1.3.7 At 15.00 hours, the Initial Incident Commander received information from two Greater Manchester Police (GMP) Officers that the missing person, the manager of the shop, was now out of the building. Due to the deteriorating conditions, he decided to withdraw the BA team from Sector Three although one thing that could not be determined at this point was whether all customers had exited the building. Due to this the incident remained as persons reported.

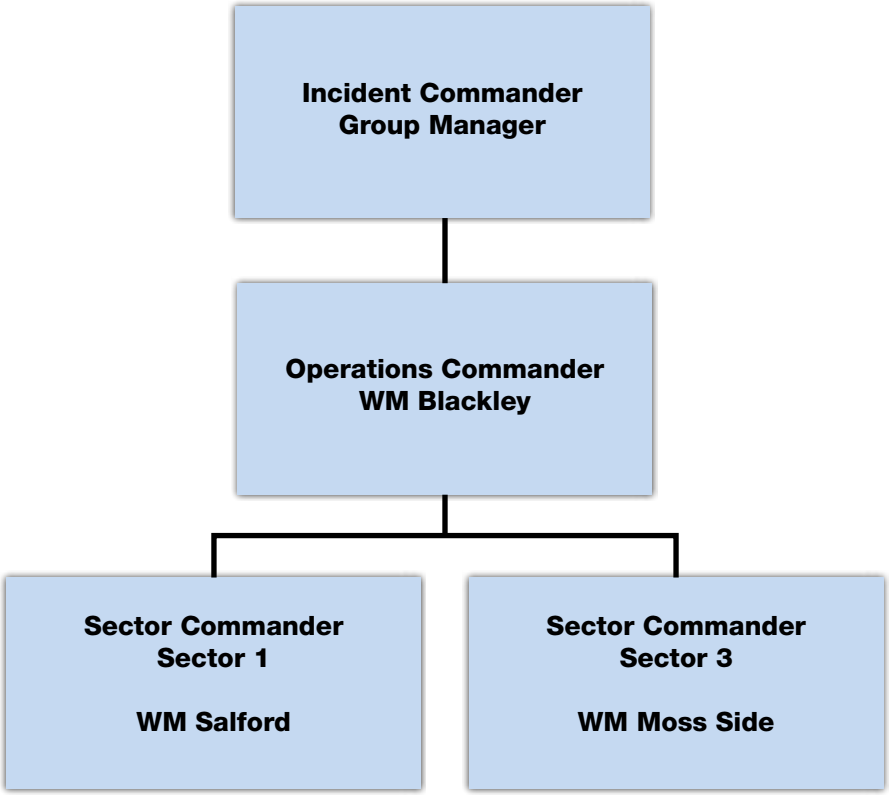
1.3.8 At 15:02 the Initial Incident Commander determined that there were not enough resources available to carry out the tactical plan, and sent a make pumps four message.

1.3.9 At 15:05, the Group Manager, who was mobilised at the time the incident became persons reported, arrived at the scene and commenced his initial assessment of the incident and review of the tactical plan.

1.3.10 On arrival, as part of his initial assessment, the Group Manager received a briefing from the Initial Incident Commander. He recalls being told that PHW manager had completed a staff roll call and confirmed that the shop staff were all out of the premises. However, the manager could not confirm whether all the shoppers were out. This information remained at the forefront of the decision making throughout the early stages of the incident; the Group Manager later stated that if anyone was in the building they would be in great difficulties due to the worsening conditions.

1.3.11 During this briefing the Group Manager observed thick black acrid smoke issuing from the front of the building. With the knowledge that the fire had started at the rear of the premises, he concluded that the fire involved most of the shop area.

1.3.12 Once the Group Manager had completed his assessment and obtained the brief from the Initial Incident Commander he made the decision almost immediately to take over command of the incident due to the location within the City Centre and visual indications of the fire. He confirmed the incident command structure and appointed the Initial Incident Commander (WM) as Operations Commander (OC). The incident command structure now looked as follows;

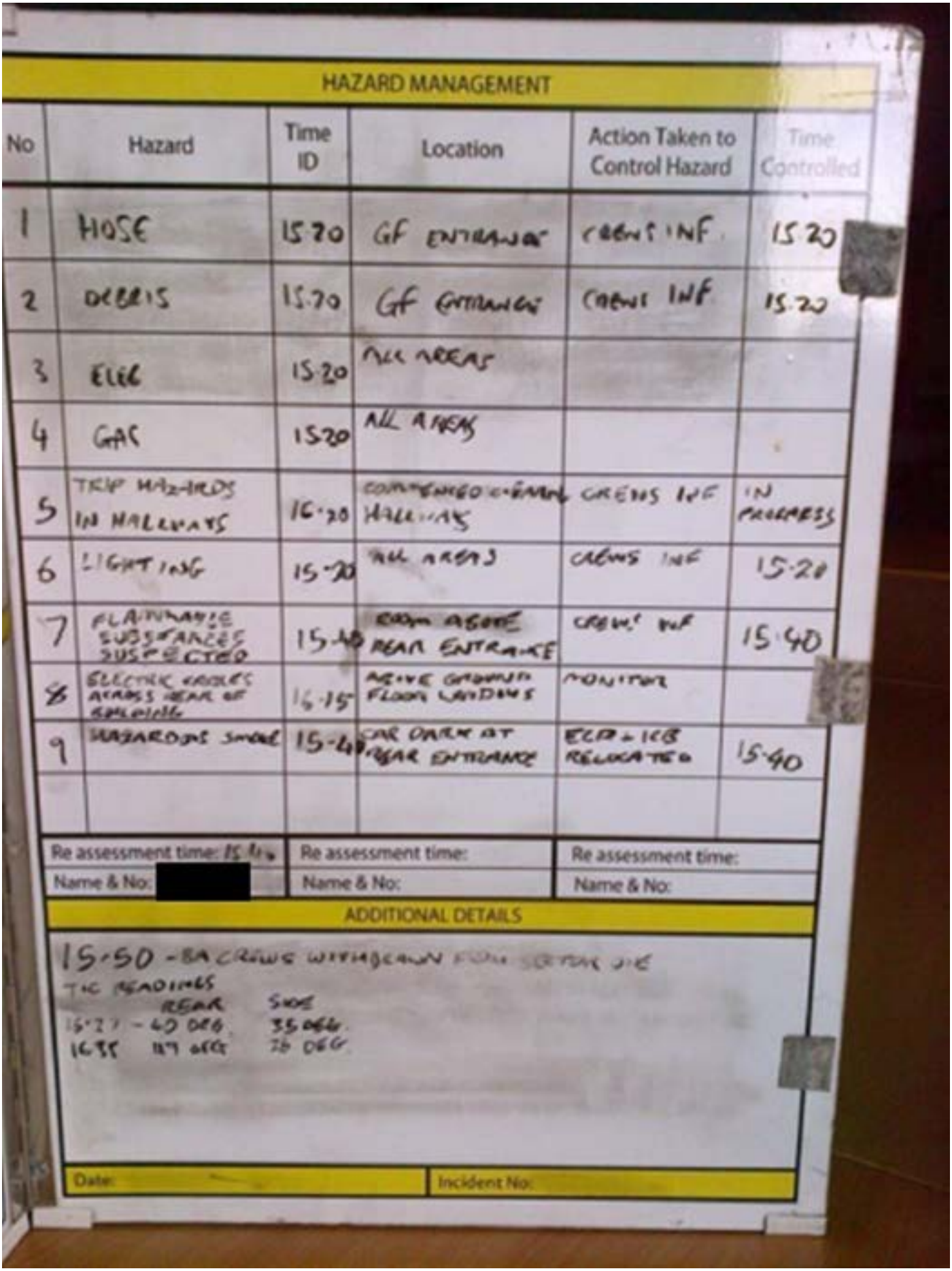


(Figure 4)
Command Structure at 3 Pumps

1.3.13 Now the Incident Commander, the Group Manager communicated with the Operations Commander (WM), the Sector One Sector Commander, and the Sector Three Sector Commander and confirmed his tactical plan was to locate and extinguish the fire in Sector One and search and locate any missing persons in Sector Three.

1.3.14 At this stage the Incident Commander was aware of rapid fire growth due to the amount of smoke exiting the front of the building. Despite being informed the fire was at the rear, from his observation, he reasoned that the whole shop was involved and that the rapid fire growth was due to the products being sold by the business.

1.3.15 Whilst gathering hazard information, crews were informed that acetone and peroxides may be involved in the fire. This specific information from shop staff was not recorded and it never appeared on the analytical risk assessments (ARA). The information was recorded in less detail on the Sector One Incident Command Board (ICB) and the ARA as ‘flammable substances suspected’ ‘room above rear entrance’. Evidence from shop staff, confirmed that both acetone and peroxide (in an aqueous solution) were stored and sold in the shop. During the Inquest shop staff explained that a small amount of peroxide was stored at the front of the shop and acetone in a small store room on the mezzanine floor.



HAZARD MANAGEMENT

No	Hazard	Time ID	Location	Action Taken to Control Hazard	Time Controlled
1	HOSE	15.20	GF ENTRANCE	CREWS INF.	15.20
2	DEBRIS	15.20	GF ENTRANCE	CREWS INF	15.20
3	ELEC	15.20	ALL AREAS		
4	GAS	1520	ALL AREAS		
5	TRIP HAZARDS IN HALLWAYS	16.20	COMMENCED GENERAL HALLWAYS	CREWS INF	IN PROGRESS
6	LIGHTING	15.20	ALL AREAS	CREWS INF	15.20
7	FLAMMABLE SUBSTANCES SUSPECTED	15.40	FROM ABOVE REAR ENTRANCE	CREWS INF	15.40
8	ELECTRIC CABLES ACROSS REAR OF BUILDING	16.15	ABOVE GROUND FLOOR LANDINGS	MONITOR	
9	HAZARDOUS SMOKE	15.40	CAR PARK AT REAR ENTRANCE	ECP & ICB RELOCATED	15.40

Re assessment time: 15.40	Re assessment time:	Re assessment time:
Name & No: [redacted]	Name & No:	Name & No:

ADDITIONAL DETAILS

15.50 - BA CREWS WITHDRAWN FROM SECTOR ONE

TIC READINGS

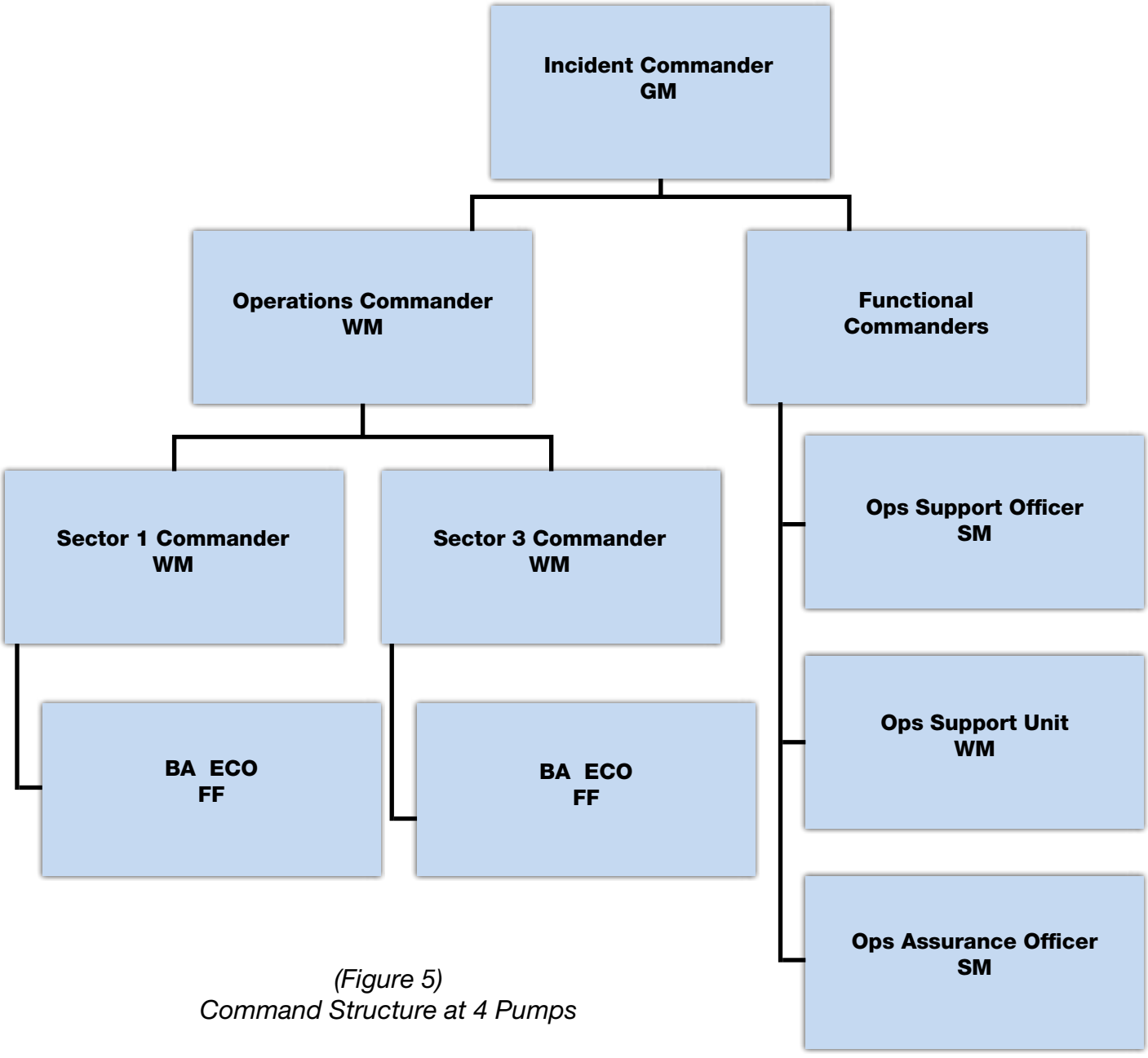
	REAR	SIDE
15.27	40 DEG	35 DEG
1635	119 DEG	28 DEG

Date: Incident No:

(Photograph 4)

Sector One Incident Command Board

1.3.16 At 15:08 the fourth appliance, Moss Side's second appliance, arrived with a Crew Manager in charge. Like the third appliance it arrived at the front of the building and initially committed their BA team, BA Team 1 FF 'A' and 'B', in Sector Three. After a brief search of the café next door they were redeployed to Sector One to assist with firefighting efforts there.



(Figure 5)
Command Structure at 4 Pumps

1.3.17 At 14:58 in Sector One the first BA team to enter the building was from Salford, BA Team 2 FF 'A' and 'B'. They ascended staircase 'A' with a 19mm hose reel jet and attempted to make progress further. At this early stage, approx. 14 minutes after the fire had started, they were struggling to advance and extinguish the fire due to stock loading and fallen stock. BA Team 2 remained in the area at the top of staircase 'A' and fought the fire from there. This information was relayed to the Day Shift Sector One Sector Commander to inform his tactical decision making. At 15:26 a larger 45mm jet was charged at doorway 'A' to replace the hose reel jet

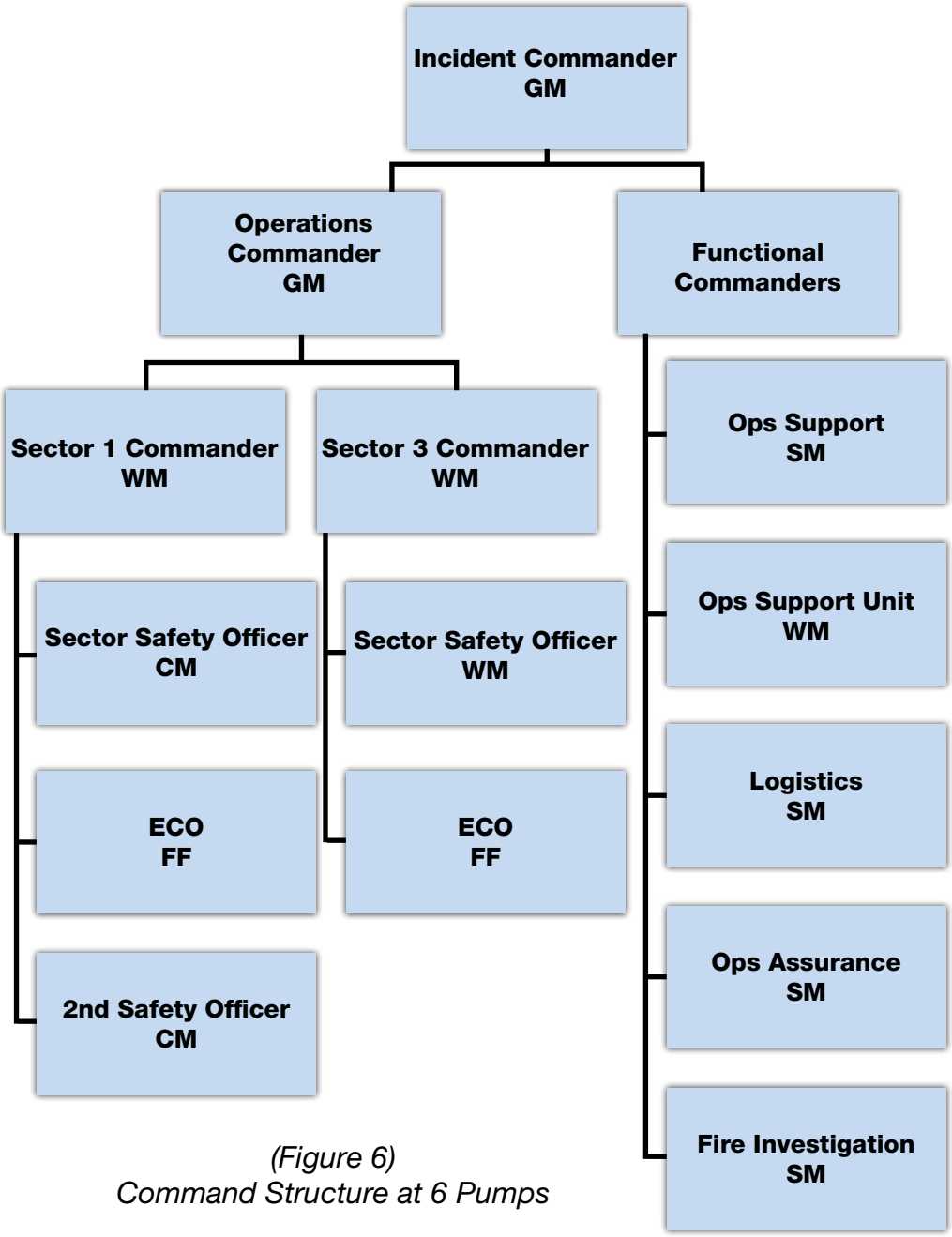
1.3.18 **Comment;** The Fire Service technical advisor to the Coroner for this incident, observed 'this is relatively unusual, the majority of fires attended by the Fire Service in occupied buildings are extinguished using a hose reel jet'.

1.3.19 The Incident Commander completed a 360° tour of the incident ground. Due to the size of the building, the possibility of fire spread and the amount of BA wearers that would be needed, he determined that further assistance would be required. He also assessed the possibility of vertical spread and the need for an aerial appliance.

1.3.20 **Comment;** A 360° tour of an incident ground is carried out by officers to enable them to gather information that may help determine whether or not to take over command. It also helps in the development of their tactical plan. At this incident the Incident Commander decided to take over command of the incident following a brief handover from the Initial Incident Commander and prior to completing a 360°. This was due to the City Centre location of the fire and the visual indicators that were present on arrival.

1.3.21 At 15:14 an assistance message was sent, *'make pumps six for BA; aerial appliances one; rendezvous point, Oldham Street, junction of Dale Street Manchester'.*

1.3.22 This further assistance message also triggered the mobilisation of further functional officers to support the command structure.



(Figure 6)
Command Structure at 6 Pumps

1.3.23 Having now completed his dynamic risk assessment (DRA), the Incident Commander determined, that in order to achieve his tactical plan, firefighters would be required to work within the risk area. Therefore he declared that the incident was in 'offensive mode' at 15:20.

1.3.24 At 15:17 and 15:28 respectively, in Sectors One and Three, the DRAs were translated into ARA's and recorded on the ICBs. This process recorded the hazards identified in each Sector and the control measures put into place to appropriately deal with the hazards (Photograph 1). At around the time that the ICBs were established, Safety Officers were also appointed in Sectors One and Three for scene safety and building stability.

1.3.25 Two Station Managers (SM) attended the incident as Operational Assurance Officers (OA). Their role was to ensure safe systems of work were employed during the incident. One element of this was to ensure that the ICB's were being updated with the risks and control measures and that, when practicable, this information was transferred to a more permanent hazard risk inventory. This is recorded on an OPS25 form and then collated by the command unit operators.

1.3.26 At approx.15:20 the aerial appliance that had been requested earlier, arrived, and was deployed in Sector Three to monitor vertical fire spread.

1.3.27 Less than 30 minutes into firefighting operations, the Incident Commander stated that he became convinced there would no longer be any saveable life, if anyone had been trapped in the building. This assessment came following an observation of the volume and type of smoke issuing from the front of the building. It was this assessment that determined the amount of risk he was prepared to take with future firefighting operations. This effectively translated into BA only being used in Sector Three for gas cooling, limited penetration in Sector One to the top of the steps, and later in the incident a ground monitor being utilised in Sector Four.

(Photograph 5)
Firefighter on staircase 'A' inside doorway 'A'

1.3.28 There was no requirement within GMFRS procedures in 2013 to record decisions during an incident other than the messages that were being sent to Fire Control, for example informing them of the tactical mode. Declaring that a sector, or whole incident is in 'offensive' mode is an indication that Firefighters are working within a risk area i.e. they are at risk of harm from the incident. It does not specifically indicate that BA teams are being committed into the building.

1.3.29 Smoke was now entering open windows of the adjacent hotel, and the Incident Commander made a request for the Police to coordinate the evacuation of the hotel.

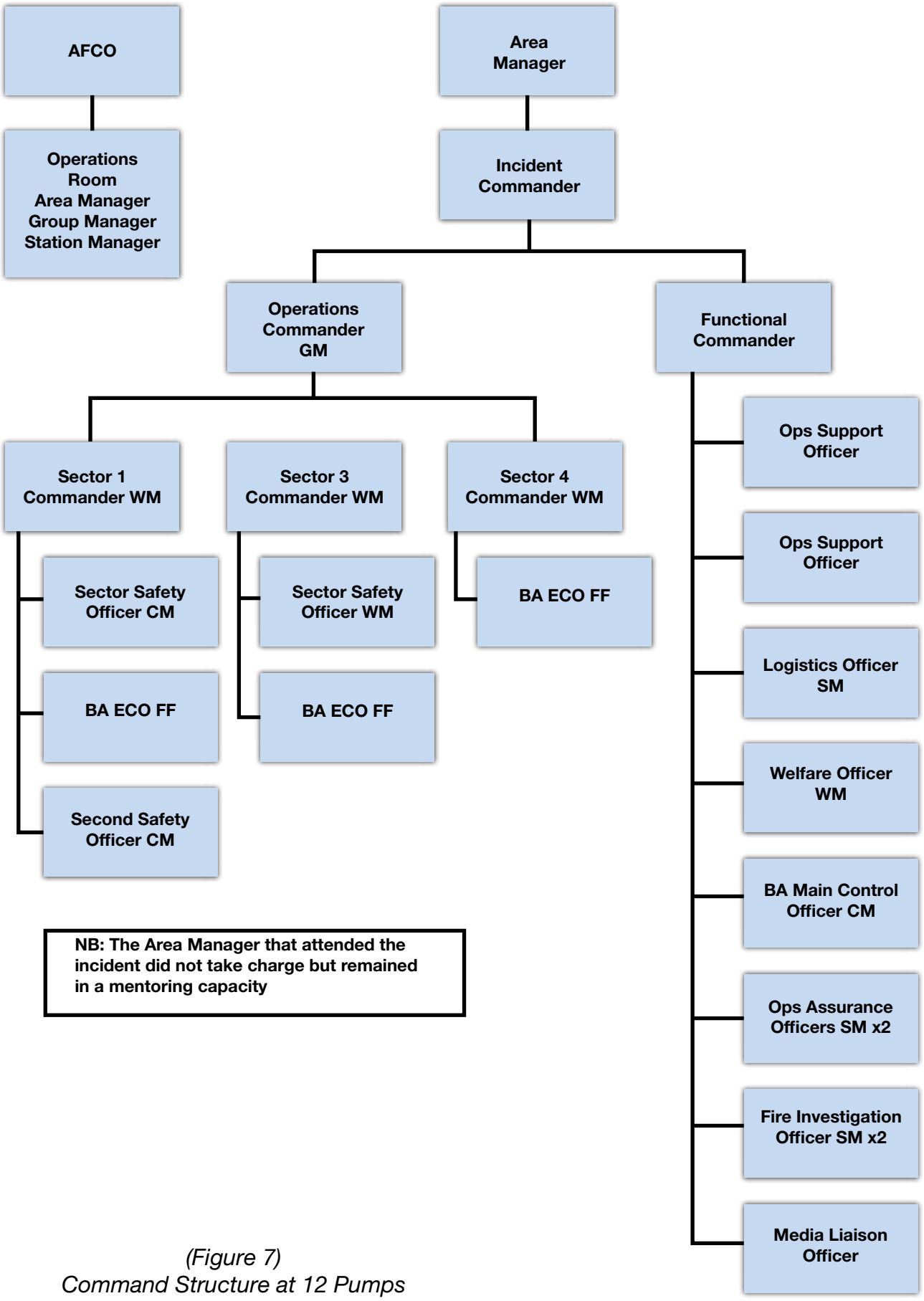
1.3.30 After his arrival at 15:19 on Broughton's appliance, the Crew Manager's (CM) first task was to cordon off the area around the rear of the building. Once this was completed the Sector One Sector Commander wanted the CM to act as a 2nd Safety Officer. He was asked by the Sector One Sector Commander to assist the Initial Entry Control Officer in Sector One in monitoring BA wearers that entered through doorway 'A'. The CM became a '2nd Safety Officer' in Sector One monitoring the BA teams that were entering through doorway 'A'. He remained in place in Sector One, throughout the day shift.

1.3.31 **Comment:** Appointing a 2nd Safety officer to monitor BA is not a standard or a routine appointment in GMFRS procedures. Although a number of the supervising officers at the incident acknowledge that they knew of this control measure being in place there is no evidence that it was formally recorded during the incident.

1.3.32 Following an update in Sector One from the Sector Commander that crews were having difficulty getting water on to the fire due to the stock loading and the configuration of the stock room, the Incident Commander determined that the rotation of BA wearers and further resources would be required to implement the tactical plan.

1.3.33 At *15:29*, the Incident Commander sent a further assistance message; *'make pumps 12 for BA'.*

1.3.34 In line with GMFRS protocol, the addition of six further appliances demanded the mobilisation of further officers to support the command structure. The following diagram (Figure 5) illustrates the command structure following the arrival of these additional officers;



(Figure 7)
Command Structure at 12 Pumps

1.3.35 The make pumps 12 message triggered the mobilisation of an Area Manager (AM) to assume the role of Incident Commander. Mobilising an AM reflects the size or complexity of an incident and this level of officer is one level below the most senior tier on duty in GMFRS.

1.3.36 On the arrival of the Area Manager, he was briefed by the Incident Commander about his tactics. The Area Manager confirms that he was happy with the tactics, however before making the decision to take charge of the incident he was asked by the Incident Commander to leave him in charge of the incident for his own personal development. The Area Manager agreed not to take charge but remained at the incident, in a mentoring role. For the next five hours, apart from the short period when the Assistant Chief Fire Officer (ACFO) visited the incident, the Area Manager was the most senior officer present.

1.3.37 **Comment;** the Incident Command Manual states that the role of Incident Commander (IC) need not invariably be fulfilled by the most senior officer present, but the senior officer present does have a moral and organisational responsibility within the command structure that cannot be divested. This arrangement allows an officer more senior to the IC to adopt a mentoring or monitoring role.

1.3.38 At approximately 15:40, the ACFO was informed by Fire Control of the incident. He decided to open the Operations Room at Fire Service Headquarters. Although in no way part of the command structure for the incident, an additional Area Manager, an additional Group Manager and a Control Officer (Station Manager) provided remote support for the incident from the Operations Room.

1.3.39 Shortly before 16:08 the Incident Commander was informed by the Sector Commander in Sector One that he had decided to withdraw crews from the building due to deteriorating conditions. At 16:08 this led to an informative message; *'all BA crews withdrawn from Sectors One and Three due to deteriorating conditions, offensive mode in operation'*. Although withdrawn from the building, crews remained in the risk area applying water from the outside of the building. This was the first of a number of withdrawals from the building as conditions continually changed.

1.3.40 At 16:28, as a further control measure, the Incident Commander implemented BA main control. This is a standard system to coordinate BA resources. A pool of BA wearers is centrally coordinated as opposed to being locally managed by each of the Sector Commanders. Under the guidance of the Operational Support Officer, the Incident Commander appointed a Crew Manager as the BA Main Control Officer. The Operational Support Officer instructed the Crew Manager BA Main Control and the Welfare Officer, who was a Watch Manager to work alongside each other in the logistical management of the BA deployment and welfare. In practice, the Crew Manager BA Main Control updated the BA Main Control Board, whilst the Watch Manager (Welfare Officer) assisted him by organising the BA pool and addressing crew welfare.

1.3.41 **Comment;** GMFRS procedures in 2013 required a minimum rank of WM to supervise BA Main Control. The Welfare Officer (WM) offered to support the Main Control Officer (CM) as he had previous experience of main control procedures.

1.3.42 At 16:30 the ACFO attended the incident. He had not been mobilised as part of the command function and did not enter the inner cordon or the sectors on the incident ground. He first met with the Area Manager and the Incident Commander and then followed the Incident Commander to the command unit and had the current tactical plan explained to him. He states that he was informed by the Incident Commander that because of difficult access he intended to fight the fire from outside the building using aerial appliances and covering jets and also with Firefighters stood in the doorway in Sector Three. The Incident Commander states that this was the tactic at the time the ACFO visited the incident and not the overall tactic of the day as crews were committed into the building before and after this time. The ACFO then left the incident to go to the Operations Room at FSHQ.

1.3.43 At around this time the Operations Commander, now a Group Manager, had noted a steel door on Short Street that looked like it led into the building and considered it as a possible point of access. He liaised with the Incident Commander and was given permission to investigate further, and if viable to open up this area as Sector Two. The Operations Commander asked the 2nd Operational Assurance Officer to look into this possibility. Once entry was gained via the steel door it was recognised that, due to the restricted access and the amount of further work necessary, entry to the building would not be feasible from this point. The 2nd Operational Assurance Officer and the 1st Operational Assurance Officer agreed this from an operational assurance perspective. The 2nd Operational Assurance Officer relayed this information to the Operations Commander and Sector Two was not established as a working sector.

1.3.44 At 16:50 an assessment of staircase ‘C’ was completed to determine whether it was another viable option to attack the fire. This assessment identified a further access point to the stock room was possible by cutting a hole through a roller shutter covering a set of doors.

1.3.45 Following this, the Incident Commander set up Sector Four. The tactic in this sector was to establish a ground monitor through the roller shutter doorway negating the necessity to commit firefighters into the building. This remained the tactic in Sector Four throughout the course of the incident, up to and including the relief period.

1.3.46 Shortly before 17:30 an opening was created at the rear of the building in between doorway ‘A’ and staircase ‘C’. An external hoarding was removed and the block work from a former window was breached. This meant that a further jet could be played into the stock area. In order to aid this water application, and due to the elevated aspect of the opening, a temporary working platform from the Enhanced Rescue Unit (ERU) was erected and placed under the opening. BA wearers committed through Sector One Entry Control Point (ECP) worked off this platform throughout the course of the incident.

1.3.47 At approximately 17:45 BA Team 1 FF ‘A’ and ‘B’ were committed in Sector Three to the first and second floors, they were briefed to open the windows in order to ventilate the upper floors. After entering the first floor the BA team discovered that the fire had spread vertically via a utilities service riser. When they exited the building this information was passed on to the Sector Three Sector Commander.

1.3.48 At 17:53 the Incident Commander sent a further informative message indicating that crews in Sector One were facing difficulty gaining any further penetration toward the fire due to conditions and heavy stock loading.

1.3.49 The tactical plan in this sector remained the same, with crews briefed to limit penetration to the top of staircase ‘A’, fighting the fire from there. Although the location of the BA crews was recorded on the Sector One Entry Control Board as ‘first floor stairwell’, it was in fact the ground floor of the shop.

1.3.50 Due to the conditions of the day (day time temperature high of 25.2 Celsius in Manchester City Centre) and the working conditions, crews were limited in Sector One to 20 minute BA wears. This control measure, introduced by the Sector One Sector Commander, was never recorded anywhere. By 18:33 over 50 BA wears had taken place. The 2nd Safety Officer in Sector One stated that while this control measure was implemented it was flexible dependant on conditions at the time, as sometimes the 20 minutes was extended. As an example, CCTV footage shows BA Team 3 FF ‘A’ and ‘B’ (the last day shift team to enter through doorway ‘A’) remained under air for a total of 42 minutes although they were just inside the doorway, at the bottom of the steps for approximately 25 of these minutes.

(Photograph 6)
Firefighters directing jet from working platform

1.3.51 From first arrival at the incident Salford's appliance supplied water in Sector One through doorway 'A'. At approximately 18:37 this appliance was running low on fuel and had to be changed over with the appliance from Gorton station. This change resulted in a break in water application through doorway 'A' and the working platform for around six minutes.

1.3.52 The Incident Commander felt the smoke indicated that water had been hitting the fire and that the break whilst changing the appliance was detrimental to any progress made. The Sector One Sector Commander also thought the fire had developed again due to the break in water application whilst changing the pumps.

1.3.53 The Incident Commander was aware that crews, in an attempt to improve prevailing conditions were removing the front windows of the shop front in Sector Three allowing natural horizontal ventilation. Seen on CCTV, this took place at 18:58, by smashing windows of the shop front.

1.3.54 Prior to this ventilation taking place at the front, the BA team that was committed in Sector One were withdrawn to allow an assessment to be made of the effect ventilation would have on conditions. BA Team 4 FF 'A' and 'B' first entered through doorway 'A' at 18:44 and on the instructions of the 2nd Safety Officer Sector One withdrew at 18:50. Whilst staying under air they exited the building and had a 5 minute brief, present at this brief were the Sector One Sector Commander, the 2nd Safety Officer, and the 1st Operational Assurance Officer.

1.3.55 At 18:55 they re-entered into doorway 'A'. BA Team 4 FF 'A' and 'B' could periodically be seen working just inside the doorway, at the bottom of the stairs up until 19:10, when they were relieved. It would appear that they were instructed to just work inside the doorway whilst the effects of the tactical ventilation were observed. BA Team 4 FF 'A' observed that, whilst the smoke conditions had improved, there had been a significant increase in temperature. This rise in temperature is not unexpected following horizontal ventilation, after the windows at the front of the building being breached.

Section 4: Handover period

1.4.1 In Sector Three at around 19:00 the Sector Three Sector Commander instructed BA Team 1 FF 'A' and 'B' to go back to the first floor above the shop and close the windows. They were also instructed to assess the fire spread that they had observed earlier in the utilities riser. This time they reported that the fire had spread further and had now breached the concrete floor around the area of staircase 'H'.

1.4.2 With the fire still not under control the Incident Commander recognised the possibility of fire spreading to the adjacent hotel remained. This was a large City Centre, 223 bedroom hotel. To prevent this happening at 19:14 he sent a message requesting the attendance of a further aerial appliance. The plan was for this appliance to work at the rear of the building in Sector Four and protect the hotel.

1.4.3 With the BA crews again withdrawn due to the worsening conditions and the fire spreading, to protect the hotel, the Operations Commander decided to deploy the aerial appliance monitor through the first floor windows in Sector Three. This information was recorded by way of the following informative message at 19:18; *'All BA withdrawn from inside the building due to worsening conditions. Fire has broken through to the first floor. Aerial appliance and jets being directed through the first floor windows'.*

(Photograph 7)
Aerial appliance delivering water into first floor

1.4.4 At the time the message was sent (19:18) the only BA crew operating within the building were BA Team 3 FF ‘A’ and ‘B’. They had first entered at doorway ‘A’ at 19:10, however it would appear that the tactic that had been employed with the previous BA team, BA Team 4 FF ‘A’ and ‘B’, of working at the bottom of the stairs, just inside doorway ‘A’, was carried on. BA Team 3 FF ‘A’ and ‘B’ were not actually withdrawn as the informative message at 19:18 stated. They can be seen on CCTV working just inside the doorway from entering at 19:10, up to 19:23.

1.4.5 From 19:23 to 19:35 the view of BA Team 3 FF ‘A’ and ‘B’ is obscured by the smoke conditions, however at 19:35 the 2nd Safety Officer Sector One walked to the doorway and a member of the BA team stepped out of the doorway for a brief discussion, indicating that they had remained at the bottom of the stairs for 25 minutes.

1.4.6 The Incident Commander assessed that most of the fuel available to the fire in terms of stock loading would have been depleted due to the period of time the fire had been burning. Therefore the necessity to commit as many BA crews going into the evening shift would be significantly reduced. For this reason the relief requirement would see the attending pumping appliances reduced from 12 down to 8. The Technical Adviser appointed by the Coroner for this incident, stated that this decision had merit. At the time of the incident, leading into the night shift, GMFRS had 55 pumping appliances available. As stated earlier, there was no requirement in 2013 to record decisions therefore this decision and rationale were not recorded at the time.

1.4.7 At 18:38 the following message was sent; *‘8 pump reliefs required for change of watch, OSU crew and support pump crew, 1 x GM, 3 x SM also required at change of watch, RVP is Oldham Street, all appliances to proceed down Oldham Street off Great Ancoats Street’.*

1.4.8 A relief plan was discussed between the Operational Support Officer and the Logistics Officer. This plan was devised following a brief from the Incident Commander which laid out his resource requirements going forward into the evening shift.

1.4.9 The Operational Support Officer states that he communicated the plan via the fireground radio to all sector commanders and recalls receiving acknowledgement back. He informed them to only relieve one appliance at a time and that Sector Three would be completed first. He also recalls informing them that only he or the Logistics Officer could authorise movements.

1.4.10 Although the Operational Support Officer and the Logistics Officer had discussed their relief plan in detail it was never recorded. The Operational Support Officer stated the plan was to swap appliances over on a like for like basis, identifying three appliances for Sector Three, three appliances for Sectors One and Four, leaving appliances spare for contingencies. It was decided that Sector Three, the Oldham Street side, would be changed over first, with the Operational Support Officer coordinating the handover followed by Sectors One and Four on the Tib Street side with the Logistics Officer coordinating movements there.

1.4.11 **Comment;** The Technical Advisor to the Coroner stated that there appeared to be a lot of change, both of officers and appliances, happening at the same time. He stated *'This change of officers and appliance based crews and the subsequent break in continuity had the potential to increase risk'.*

1.4.12 The plan to change over in Sector Three first did happen with a handover brief between the Day Shift Sector Three Sector Commander and the Night Shift Sector Three Sector Commander taking place sometime later (approximately 19:43). With the Sector Three handover of reliefs coordinated successfully the Operational Support Officer later assisted the Logistics Officer with the coordination of reliefs in Sectors One and Four.

1.4.13 Leading up to the arrival of relief appliances, there was a strain on the resources in the BA pool. The Welfare Officer directed BA wearers, upon arriving, to supplement the resources in the pool; this action was not communicated to either the Operational Support Officer or the Logistics Officer. This decision led to individual officers and appliance crews being split up and sent to different sectors for different roles. The Welfare Officer states that the Logistics Officer had made him aware that there was a relief plan but not that it was intended to replace the appliances and their crews together. He also states that he took this proactive approach as the Logistics Officer was absent for a period and the Welfare Officer felt that there was no obvious coordination of the relief plan.

1.4.14 Following a period of water being applied to the first floor by the aerial appliance in Sector Three, water being continually applied from the temporary working platform in Sector One, the ground monitor in Sector Four and horizontal ventilation from the front of the shop, a reassessment was carried out to consider how these tactical changes had affected the conditions. This assessment took place in Sector One shortly after 19:30 and involved the Operations Commander, the Incident Commander, the Day Shift Sector One Sector Commander and the 2nd Safety Officer, who was monitoring the BA crews.

1.4.15 Following this assessment they concluded that conditions had improved and that BA teams could be re-committed into doorway ‘A’ with the brief, again, ‘to fight the fire from the top of the stairs’. This effectively meant that firefighting operations at doorway ‘A’, between 18:55 to 19:35 had been carried out at the bottom of the stairs; would again be extended to working at the top of the stairs.

1.4.16 Although the decision and rationale to withdraw BA crews was recorded as an informative message, this particular decision to recommit BA wearers back in to the building was not. The next time reference was made to BA wearers being committed was at 20:17, approx. 45 minutes later.

1.4.17 As BA Team 3 FF ‘A’ and ‘B’ were still under air at doorway ‘A’ they were re-entered, going to the top of the stairs, only withdrawing and closing their sets down at 19:52. This meant that they had been under air for a total of 42 minutes albeit working at the bottom of the stairs for the majority of the wear. Following the assessment and decision to re-establish them to the top of the stairs, they only remained there for approximately 16 minutes. The 2nd Safety Officer stated that the 20 minutes maximum wear time was being used flexibly.

1.4.18 During this relief period the appliances had started to arrive and be directed into position by the Logistic Officer in line with the relief plan. At around 19:47 the ground monitor in Sector Four was turned off for approximately eight minutes. This was the time it took for the change over from the day shift to the night shift appliance.

1.4.19 After the withdrawal of BA Team 3 FF ‘A’ and ‘B’ at 19:52 in Sector One, no water was delivered via doorway ‘A’ for approximately 12 minutes, again, this was due to the day and night shift appliance change over.

1.4.20 The appliance supplying the water to the jet on the working platform in Sector One which was delivering water in to the stock area, between doorway ‘A’ and Sector Four was refuelled in situ, allowing continuous operation throughout the changeover period.

Section 5: FF Hunt's arrival and deployment

1.5.1 On the evening of the incident Firefighter Hunt was part of the crew on Philips Park's second appliance. He was one of a team of two BA wearers with his BA Partner, arriving at the incident at 19:14.

1.5.2 At 19:40 the Watch Manager Welfare Officer, who was working alongside the Crew Manager BA Main Control, approached the appliance and instructed FF Hunt and his BA Partner to report to the BA pool. The Welfare Officer confirms that it is likely that he instructed them to go to the BA pool; however he also states that he did not inform relief crews of the current situation. FF Hunt's BA Partner recalls initially being informed that they would be required in Sector Four to reposition a ground monitor, although it is not clear who by.

1.5.3 FF Hunt and his BA Partner were in the BA pool for a matter of minutes when the Crew Manager BA Main Control instructed them to report to Sector One Entry Control Point (ECP) at approximately 19:45.

1.5.4 In Sector One, BA Team 3 FF 'A' and 'B' exited the building at 19:52, removed the hose-line they had been using and reported to the ECP. BA Team 3 FF 'A' can remember speaking with FF Hunt and his BA Partner; however he did not have any discussion about BA operations in the sector or conditions inside. BA Team 3 FF 'A' stated that he did not have a debrief with the Entry Control Officer Sector One. He did however state, that he was under the impression that there would not be any further teams deployed in through doorway 'A', as BA Team 3 FF 'B' had removed the hose from the building.

1.5.5 **Comment;** Technical Bulletin 1/97 was the national guidance for BA procedures in 2013. It states that one of the duties of a BA wearer is; *'on collection of their tally, ensure that any information of use to teams entering the risk area or the Officer-in-Charge (OIC) is made known to the Entry Control Officer (ECO)'*. The same guidance also places a duty on the ECO to ensure that crews are fully de-briefed. This did not happen on this occasion.

1.5.6 Just before 20:00, the appliance that had been supplying water to the 45mm hoseline at doorway 'A', Gorton's appliance (day shift) was replaced by Oldham's second appliance (night shift). This change over happened after BA Team 3 FF 'A' and 'B' had exited the building and contributed to the 12 minute gap in the application of water at doorway 'A'.

1.5.7 Shortly before 19:59 FF Hunt and his BA Partner were briefed by the Day Shift Entry Control Officer Sector One. In his GMP statement he instructed them *"to go in through the double doors (doorway 'A') up a short set of stairs to a mezzanine and squirt water from there, don't move, nothing more than that".* The Entry Control Board in Sector One recorded the BA crews as being in the 'first floor stairwell'. He did not inform them of any limit, in terms of time as he was unaware of this control measure. The Day Shift Entry Control Officer Sector One had taken over the role of ECO from the Initial Entry Control Officer in Sector One, after the 20 minute control measure had been introduced.

1.5.8 **Comment;** Technical Bulletin 1/97 states that it is the ECO's duty to; *'acting on the guidance of the OIC (in this case Sector Commander) if necessary, restrict the length of exposure in difficult or strenuous conditions. The BA wearer and team leader must be advised to withdraw from the risk area at a predetermined pressure gauge reading. The ECO should calculate the time of exit and make a note in the remarks column accordingly'.*

1.5.9 This 20 minute limit, when applied, was never translated into cylinder pressure by the ECO and was never recorded on the BA board. It appears this 'time limit' control measure was administered by the 2nd Safety Officer externally, as BA wearers can only acknowledge limiting a BA wear by cylinder pressures through their contents gauges and not the time that has elapsed when in a risk environment.

1.5.10 At 19:59 FF Hunt and his BA Partner started their BA sets and began to carry out their pre-entry tests. At this time FF Hunt's cylinder pressure was 291 bar and his BA Partner's was 288 bar. FF Hunt had a handheld radio, allowing him to carry out a radio test with the Day Shift Entry Control Officer Sector One. FF Hunt's BA Partner had a thermal image camera (TIC), which had been indicated for use by the 2nd Safety Officer.

1.5.11 **Comment;** Technical Bulletin 1/97 states that it is the ECO duty *'where practicable, to ensure BA wearers are appropriately pre-briefed prior to entry to the risk area'.*

1.5.12 FF Hunt's BA Partner recalls their brief as *"make entrance through the entrance that was indicated to us in Sector One (doorway A) which was the only entrance there and find a set of steps on our left hand side leading to a mezzanine level. From there our role would be to search out hot spots using the TIC, which I was given and to search out any seats of fire and deal with those as safely as we could do."* He recalls asking the ECO to repeat the brief because he wanted to be clear on the *"gravity"* of the fire. They were the only team being committed into the building that the Day Shift Entry Control Officer briefed that day. During the Inquest the ECO recalls the brief he gave FF Hunt and his BA Partner to be *"go to the top of the short set of stairs to the first floor mezzanine, get to the top of the stairs, sit there and squirt water".* He stated that this information was passed on to him by the 2nd Safety Officer, not by the Initial Entry Control Officer Sector One. He also recalled not being made aware, during his handover from the Initial Entry Control Officer, about any specific control measures.

1.5.13 However, the Initial Entry Control Officer in Sector One recalls briefing him about the 20 minutes limit, the role of the 2nd Safety Officer, crews positioned at the top of the stairs and that crews had been withdrawn on a number of occasions throughout the day.

1.5.14 Following the brief from the Day Shift Entry Control Officer Sector One FF Hunt and his BA Partner were then briefed by the 2nd Safety Officer. He had been operating in that sector, as a 2nd Safety Officer at or around doorway 'A' for most of the day. The 2nd Safety Officer was aware that they were from the night crew and wanted to provide more detail, this brief lasted 1 minute 30 seconds at the ECB. He recalls telling them to *"go to the top of the stairs (staircase 'A') turn left, then look right and fight the fire from there, to use the TIC and if it gets too hot pull yourselves out"*. The 2nd Safety Officer then led them toward doorway 'A' in Sector One.

1.5.15 When FF Hunt and his BA Partner arrived at the doorway they had to wait for the hose to charge and deliver the appropriate pressure and flow. At around 20:03 FF Hunt checked the branch a number of times with the 2nd Safety Officer, and communicated with the Pump Operator to increase the water pressure at the branch until he was satisfied with its operation. There was no other BA team operating in the building at this time as the previous team (BA Team 3 FF 'A' and 'B') had exited the building at 19:52.

1.5.16 At 20:04 FF Hunt led his BA Partner through doorway 'A' and into the building, with FF Hunt's BA Partner pulling the 45mm hose line in with them.

1.5.17 FF Hunt ascended the 6 steps of staircase 'A' first and once at the top verbally communicated to his BA Partner to follow. FF Hunt's BA Partner recalled that, after reaching the top of the steps, FF Hunt communicated to him that he had reached the mezzanine level. They were now stood at the point as described by the Day Shift Entry Control Officer (first floor mezzanine) and the point described by the 2nd Safety Officer (top of the stairs). However, with the building being on sloping ground, this was in fact the ground floor level of the shop if entered from the front via Sector Three.

1.5.18 FF Hunt's BA Partner stated that at the top of the stairs there was a lot of debris and visibility was zero for 95% of the time. He also recalls that their role wasn't to search the building. He understood their brief was to get to a point and using the TIC to find hotspots and fight the fire from that point.

1.5.19 After both of them were at the top of the stairs FF Hunt's BA Partner recalls FF Hunt asking him what reading he was getting with the TIC. He recalls that he was reading nothing above 50°C and that both FF Hunt and he agreed that it felt much hotter. He did however go on to explain that the reading from the TIC was not an ambient temperature but was the reading from the surface the TIC was pointed at.

1.5.20 From the top of staircase ‘A’, they progressed into the building, with FF Hunt leading. FF Hunt’s BA Partner recalls separating on a couple of occasions while he returned to the top of the stairs in order to pull in more hose. Whilst they continued to make progress FF Hunt was operating the branch in short pulses in to the atmosphere in order to ‘gas cool’, a technique used to reduce atmospheric temperature inside a compartment.

1.5.21 FF Hunt found a door on their right, later identified as the door into the post room. FF Hunt decided that they would check behind the door and *‘sweep’* the room with the TIC. Due to their relative positions, at this point they briefly swapped roles, with FF Hunt handing the branch to his BA Partner. His partner entered the room and scanned it with the TIC. Finding no obvious signs of fire in the room they both retreated out with FF Hunt closing the door behind them.

1.5.22 FF Hunt’s BA Partner recalls that it was about this time that he started to feel the effects of the heat. It was here that they checked their BA gauges and he can recall that his cylinder content was 210 bars and FF Hunt’s was 190 bars. Telemetry data downloaded from both BA sets indicates that, at these cylinder readings they would have been in the building for approximately 8 minutes.

1.5.23 After exiting the post room and continuing to make progress the team came upon another set of stairs. These stairs were later identified as the stairs leading to a mezzanine level and staircase ‘D’ on the plan. When FF Hunt had ascended the stairs his BA Partner indicated that he was too warm and that it was time to get out.

1.5.24 FF Hunt descended staircase ‘D’, confirming that he too was also hot and decided that they would make their way out. By grabbing his shoulders FF Hunt directed his BA Partner in the direction he believed the entrance / exit to be.

1.5.25 FF Hunt’s BA Partner recalls that he was having difficulty recognising this as the way they had entered as there seemed to be obstacles in the way. In an attempt to retrace their steps and to get away from the heat he got on to his hands and knees. He tried to follow the 45mm hose as he knew this would lead to the exit, however, to his confusion, the hose seemed to disappear under some debris.

1.5.26 At this point he recalls feeling increasingly concerned about their exit strategy. He attempted to feel for the steps that would lead to the exit but was unable to find them. He shouted back to FF Hunt that this way was blocked and could not be the way out. FF Hunt instructed him to come back to his location and they could reassess their position.

1.5.27 FF Hunt’s BA Partner returned and FF Hunt gave him the branch before leading off in another direction in order to find the exit. Again they found that this way was also blocked and their concern grew. With both exit attempts being unsuccessful FF Hunt decided to radio for another team to come in and lead them out.

1.5.28 FF Hunt tried to transmit a message over the radio but with no response from anyone. FF Hunt’s BA Partner recalls him attempting to send this message 5 or 6 times but was unable to hear exactly what FF Hunt was saying and was not able to see whether or not the talk button was active or transmitting.

1.5.29 **Comment;** The Health and Safety Laboratory (HSL) carried out testing of both the fireground radio (attached to FF Hunt's BA set) and the radio utilised by the Entry Control Officer (ECO). During all functional tests both radios performed within design and operational parameters, indicating that there were no technical issues with the equipment.

1.5.30 FF Hunt's BA Partner recalls that at this point in time he carried out the last gauge check that he could remember. His cylinder content was 190 but was unable to recall FF Hunt's reading. Telemetry shows that at this reading FF Hunt and his BA Partner had been in the building for approximately 12 – 14 minutes and the time was between 20:16 and 20:18.

1.5.31 At this point FF Hunt's BA Partner suggested that they try again to retrace the hose-line. FF Hunt, holding the branch, followed his BA Partner, who was on his hands and knees again. Tracing the hose back no more than five metres it disappeared again under something. FF Hunt's BA Partner stated that the fact they could not retrace the hose or move what was on it led to confusion.

1.5.32 FF Hunt and his BA Partner became separated for a while at this point, however his partner recalls that he was shouting FF Hunt's name and he was responding. When they came back together his recollection of events from that point in time becomes very uncertain and he cannot recall the events when the next BA team (BA Team 5 FF 'A' and 'B') were sent in to relieve them.

1.5.33 **Comment;** It is widely recognised the effect of heat may be underestimated and the BA wearer will either not notice, or not acknowledge their decreasing manipulative and cognitive ability. Anxiety and mental confusion will increase as will the time taken to make decisions. (GMFRS Physiology guidance)

1.5.34 BA Team 5 FF 'A' and 'B' were the BA team deployed in Sector One to relieve FF Hunt and his BA Partner from their position inside the building. Both BA Team 5 FF 'A' and 'B' recall that their brief was to follow the hose in to the building and relieve the team at the end of the branch. They were told the team they were relieving would be at the top of the stairs after bearing left.

1.5.35 At 20:26 BA Team 5 FF 'A' and 'B' entered the building via doorway 'A' and followed the hose-line and quickly located and ascended staircase 'A'. At the top they went left and came across a drop in the floor level. Both team members can recall that fallen stock and debris covered the floor. BA Team 5 FF 'B' could then see the flashing lights of FF Hunt's and his BA Partner's BA sets in front of him. He made his way to them and recalls that they were facing towards him. He believes he was no further than 10 metres inside the building at this point and that they had taken no more than two minutes, from entering the building, to locating them.

1.5.36 BA Team 5 FF 'B' reached the team and the lead BA wearer presented him with the branch in his chest and said, *"Here's the branch we are getting out of here."* He asked if they were OK, the firefighter said, *"Yes, we just need to get out of here."* BA Team 5 FF 'B' turned and informed BA Team 5 FF 'A' that they had located the BA team who were now making their way out.

1.5.37 BA Team 5 FF ‘A’ and ‘B’ recall that to allow FF Hunt and his BA Partner access to the exit route they had to squeeze past them both. It is unknown whether it was FF Hunt or his BA Partner but BA Team 5 FF ‘A’ recalls that as the two firefighters passed him, one of them fell. He helped him to his feet and asked if he was OK, recalling the firefighter reply to be *“come on, let’s get out”*.

1.5.38 BA Team 5 FF ‘A’ and ‘B’ assumed that FF Hunt and his BA Partner were now on their way to the exit at doorway ‘A’, which they describe as being 10 metres away. It is evident that they headed deeper into the stockroom area in the direction of staircase ‘C’.

1.5.39 FF Hunt’s BA Partner recalls that at some point they started to separate as they searched for exits from the building. He further recalls it was hard to keep in contact as they were falling over debris on the floor. He was unsure which direction FF Hunt was going in so they communicated by shouting each other’s name. However, he believed that at this stage he was lost. He was unsure where both the exit and FF Hunt were.

1.5.40 Whilst FF Hunt’s BA Partner states that his recollection is hazy as to events he can recall himself and FF Hunt coming together again and recognising that they were in a tricky situation. As they continued to search for the exit they again became separated.

1.5.41 He recalls at some point crawling on his hands and knees and putting his gloved left hand down onto something hot. Feeling pain and causing burns to his hand his reaction was to take off his glove and scream out in pain.

1.5.42 At this point he recognised that he was in a *“very bad situation”*. His reaction was to activate his automatic distress signal unit (ADSU) manually, however he was unsuccessful. He recalls trying to remove the tally key in order to activate the unit instead of depressing the manual activation button at the front of the unit. When the team were committed the ECO had removed the tally key and inserted it into the BA board, thus arming the unit. Whilst attempting to activate his ADSU FF Hunt’s BA Partner continued to shout for help.

1.5.43 BA Team 6 FF ‘A’ and ‘B’ had been working on the temporary platform in Sector One from 20:20 directing a jet through the window in to the stock room area. Throughout the day teams had been working at the top of the steps in doorway ‘A’ to the left of the opening and a ground monitor was operating from staircase ‘C’ to the right. The teams on the temporary platform had been fighting the fire in the centre rear section of the stock area.

1.5.44 Both Firefighters recall hearing voices inside the building on two occasions. On the first occasion BA Team 6 FF ‘A’ heard a voice, which they believed to be two BA teams coming across each other and BA Team 6 FF ‘A’ and ‘B’ didn’t believe the voices were in distress.

1.5.45 BA Team 6 FF ‘B’ turned off the jet as he did not want to wet the BA team inside. He used the TIC but could not locate the BA team. He then turned the jet back on and after approximately three to four minutes they both heard the second shout of, *“hello, hello”* which was quite loud. He turned off the jet and again checked for BA wearers inside with the TIC. He shouted, *“Is anybody there?”* Again, he recalls hearing voices to his right hand side in the direction of Sector Four, but did not see anybody. He then turned the jet back on and continued to apply water into the compartment.

1.5.46 At 20:29 BA Team 7 FF ‘A’ and ‘B’ entered through doorway ‘C’ in Sector Four. It is unknown the exact location of FF Hunt or his BA Partner at this time but telemetry analysis indicates that at 20:29 FF Hunt had 87 bars remaining in his cylinder and his BA Partner had 146 bars remaining.

1.5.47 BA Team 7 FF ‘A’ and ‘B’ were tasked to ascend staircase ‘C’ to a half landing and reposition the ground monitor that was delivering water through a hole that had been cut in the roller shutter door. On reaching the monitor BA Team 7 FF ‘A’ decided to turn the monitor off momentarily to make it easier to manoeuvre. He recalls that when the monitor was switched off there was a quick increase of thick black smoke from the roller shutter.

1.5.48 After turning off the ground monitor BA Team 7 FF ‘A’ crawled through the roller shutter in order to reposition it. On entering the compartment he thought he could hear a BA team mumbling. He was not expecting a BA team in this area of the building so he checked with BA Team 7 FF ‘B’ to see if he was aware. Neither crew member recalls being informed that a BA team was working within this area of the building. BA Team 7 FF ‘A’ shouted, *“is there a BA crew in here?”* After approximately ten seconds without response, he shouted the question again. Shortly after he heard shouts of help and what he thought was a scream.

1.5.49 At the same time in Sector One BA Team 5 FF ‘A’ and ‘B’ recall that visibility was zero and that conditions didn’t reflect their brief, in that they could not locate any flames and so did not use any water. Neither member had radio or a TIC so they decided to withdraw to retrieve a TIC in order to improve their vision.

1.5.50 As they made their way out of the building, BA Team 5 FF ‘A’ and ‘B’ believe they heard two shouts for help in the distance. They were unsure where this had come from but thought it may have been from outside because they appeared to be faint. BA Team 5 FF ‘B’ also thought he could also hear a faint low-pressure warning whistle (LPWW). It is likely that this was in fact FF Hunt’s LPWW as according to telemetry download that had activated at 20:30.

1.5.51 At 20:32 BA Team 5 FF ‘A’ and ‘B’ exited the building, having been inside for a total of 6 minutes and reported their concerns to the Night Shift Sector One Sector Commander and the Pump Operator that was supplying water to the jet in Sector One.

1.5.52 After hearing the shout for help and a scream in Sector Four BA Team 7 FF 'A' was handed the TIC by BA Team 7 FF 'B' to enable him to look for the source of the shout. He saw the outline of a firefighter to the right hand side of the doorway. He crawled further into the building and to the right, negotiating obstacles on the way. Fire debris and fallen stock covered the floor in this area.

1.5.53 FF Hunt's BA Partner recalls somebody shouting but doesn't recall what the person said. He made his way towards the voice thinking it was FF Hunt. He recalls being exhausted and extremely low on energy.

1.5.54 BA Team 7 FF 'A' reached out with his right hand and felt the top of FF Hunt's BA Partner's cylinder, sensing there was still movement he grabbed hold of his wrist and reassured him saying, *"I've got you"*.

1.5.55 BA Team 7 FF 'A' worked hard to pull FF Hunt's BA Partner past him and recalls he appeared to be scrambling to assist with his own rescue but was barely capable of moving. By this time BA Team 7 FF 'B' had made his way into the stock area to assist. He recalls FF Hunt's BA Partner appeared to be in and out of consciousness. In an attempt to raise the alarm BA Team 7 FF 'A' sent a radio message to the ECO in Sector Four.

1.5.56 The Night Shift Sector Four Sector Commander and the Night Shift Entry Control Officer Sector Four were monitoring the BA deployment. They received a radio communication from a BA wearer who they believed to be BA Team 7 FF 'A', which caused them significant concern.

1.5.57 At this time the Operational Support Officer had also made his way into Sector Four. He recognised their concerns and investigated the situation by going to the entry point and entering staircase 'C'. On entering he heard a low pressure warning whistle (LPWW) so advanced to the roller shutter door on the half landing. He witnessed that a rescue was underway and gave the order to initiate a BA emergency over the fire ground radio.

1.5.58 At 20:34 as the Operational Support Officer declared a BA emergency, the Night Shift Entry Control Officer pressed the evacuation button in Sector Four and the Night Shift Entry Control Officer Sector One pressed of the evacuation button on the ECB in Sector One.

1.5.59 As the rescue was being carried out FF Hunt's BA Partner recalls obstructions making egress difficult before being pushed through the exit by BA Team 7 FF 'B'. He was handed over to the Operational Support Officer, who continued the rescue. At the same time BA Team 7 FF 'A' recalls hearing a low-pressure warning whistle operating, whilst BA Team 7 FF 'B' believed he heard an ADSU alarm operating. According to telemetry analysis FF Hunt's ADSU operated at 20:36.

1.5.60 In the few moments leading up to the Operational Support Officer locally declaring BA emergency there are several reports from individuals who recall hearing a shout for '*help*', either over the radio or in person. Just prior to being found by BA Team 7 FF 'A' in Sector Four, FF Hunt's BA Partner recalls that he shouted for help. BA Team 7 FF 'A' affirms this as he stated that he heard a shout of help just prior to locating FF Hunt's BA Partner and the rescue commencing. Both BA Team 5 FF 'A' and 'B', in their GMP statements recall hearing a shout for help as they exited the building at 20:32. Neither of these Firefighters had a radio so could not have heard this shout via this method. It is highly likely that they too were hearing FF Hunt's BA Partner's shout for help.

1.5.61 In Sector Three, the Night Shift Entry Control Officer Sector Three, also recalls hearing a shout for help over the radio on channel 3, followed by BA Team 7 FF A's name. He also states, that soon after this, the BA emergency was called over the radio (by the Operational Support Officer at 20:34). BA Team 7 FF 'A', shortly after finding FF Hunt's BA Partner, recalls sending a message over the radio on channel 3 to the ECO in Sector Four. He states that he said something along the lines of '*BA emergency*' or '*we need more firefighters in Sector Four*'. Although these two recollections are very different, the Night Shift Entry Control Officer Sector Four confirms that BA Team 7 FF 'A' did raise the alarm over the radio but was initially unable to make out the muffled message. He tried to contact BA Team 7 FF 'A' back and recalls that he thought BA Team 7 FF 'A' said 'it's flaming in here'. The Night Shift Entry Control Officer Sector Four also confirms that just as he heard this message the Operational Support Officer declared the BA emergency.

1.5.62 Very soon after these shouts are heard, whether over the radio or in person, the BA emergency was declared and the rescue was under way. Whilst FF Hunt's BA Partner recalls seeing FF Hunt attempting to send a message over the radio, in his own words, periods of his account are confused and hazy.

It is therefore unlikely that his recollection of FF Hunt using the radio is connected to the period just prior to him being found by BA Team 7 FF 'A'.

1.5.63 The BA emergency message was relayed from the command unit to Fire Control at 20:35.

Section 6: BA Emergency

1.6.1 After being alerted about the BA emergency BA Team 5 FF ‘A’ and ‘B’, who had two minutes earlier exited from Sector One via doorway ‘A’, made their way to Sector Four. Due to the call for more BA wearers in Sector Four BA Team 6 FF ‘A’ and ‘B’ were directed off the working platform in Sector One and made their way toward Sector Four, pulling the 45mm hose with them.

1.6.2 With the BA emergency message having been declared over the fireground radio, Firefighters from around the incident were also making their way to Sector Four. The North West Ambulance Service Hazardous Area Response Team (HART), who were stood by at the incident, were alerted to the BA emergency and were directed to make their way to Tib Street.

1.6.3 After raising the alarm the Operational Support Officer re-entered staircase ‘C’ and made his way to the roller shutter door where the ground monitor was situated. On arriving at the roller shutter he was passed FF Hunt’s BA Partner by BA Team 7 FF ‘A’ and ‘B’. He then carried FF Hunt’s BA Partner down staircase ‘C’, where he handed him over to BA Team 5 FF ‘A’ and ‘B’.

1.6.4 At 20:35 BA Team 5 FF ‘A’ and ‘B’, carried FF Hunt’s BA Partner from the building and passed him to crews in Sector Four where he received first aid treatment from HART and the Firefighters outside.

1.6.5 BA Team 7 FF ‘A’, who had found FF Hunt’s BA Partner and began the rescue, was fully aware that there was likely to be another BA wearer with him. Although fatigued, he was not prepared to exit the area until he had located this Firefighter. He remembers hearing an ADSU sounding and the low-pressure warning whistle, that he had heard earlier, appeared to have stopped. Analysis shows that FF Hunt’s ADSU activated at 20:36 and at the same time his cylinder contents were reduced to zero.

1.6.6 BA Team 7 FF ‘A’ reached out into the same area where he had located FF Hunt’s BA Partner. He soon located FF Hunt’s BA straps and realising he had found the second BA wearer. He called out several times, “*Come on, I’ve got you*”, but there was no response from FF Hunt.

1.6.7 BA Team 7 FF ‘B’ made his way through the roller-shutter doorway back into the stock area and also recalls hearing an ADSU sounding. He located BA Team 7 FF ‘A’ and FF Hunt in a similar position to where the first rescue took place. Grabbing his BA set strap he tried to pull FF Hunt towards him. There were obstructions at the doorway that impeded the rescue.

1.6.8 BA Team 5 FF ‘A’ and ‘B’ had already returned into staircase ‘C’ and entered the stock area to assist with the rescue; they were then followed by BA Team 6 FF ‘A’ and ‘B’. There was then a period of confusion within the building, as other BA wearers who had come to assist with the rescue were shouting at those inside to evacuate. The ECO’s in both Sector One and Four had pressed the evacuation button on the BA board resulting in evacuation alarms operating on all BA set ADSU’s. However, the firefighters actively engaged in the rescue of FF Hunt ignored the alarms sounding on their BA sets and refused to leave, continuing their efforts.

1.6.9 BA Team 5 FF ‘A’ and ‘B’ assisted in pulling FF Hunt free from the obstructions that were hindering the rescue efforts. BA Team 6 FF ‘A’ and ‘B’ then lifted FF Hunt over the roller-shutter door and out of the stock area.

1.6.10 At 20:41 the Operational Support Officer and the Night Shift Sector One Safety Officer carried FF Hunt out of the building. North West Ambulance Service paramedics and Firefighters trained as trauma technicians provided immediate life support and first aid medical treatment to FF Hunt.

1.6.11 At 21:02 North West Ambulance Service transferred FF Hunt to the Manchester Royal Infirmary and FF Hunt’s BA Partner was transferred at 21:21.

Section 7: Key events concurrent with the deployment of FF Hunt and his BA Partner

1.7.1 From arriving at the Entry Control Board (ECB) at 19:45, and in the 42 minutes from FF Hunt and his BA Partner receiving their brief at 19:59 to FF Hunt being carried out of the building at 20:41, other actions and events were taking place around the incident ground. This section outlines these events and is concurrent with this time frame.

1.7.2 Prior to FF Hunt and his BA Partner entering the building at 20:04 CCTV evidence shows that the Day Shift Sector One Safety Officer (SO), left the sector at 19:51 and did not return. The role of the SO is to look after general scene safety. The 2nd Safety Officer in Sector One did remain in the sector however; he was not the designated Sector Safety Officer for Sector One. There is no evidence that the Day Shift Sector One Safety Officer met with or handed over any information to the on-coming officer that would later fulfil the role of SO. This meant that there was at least a 20 minute period when no designated Safety Officer was present in the sector. The Logistics Officer, assisted by the Operational Support Officer was coordinating the plan to have a structure in place that replicated the day shift in Sector One. The SO role was not replaced straight away and the 2nd Safety Officer role was not replaced at all.

1.7.3 Whilst the Day Shift Sector One Sector Commander states that he wanted the 2nd Safety Officer Sector One to perform a specific task and the 2nd Safety Officer understood that he had been asked to look after BA crews coming in and out of doorway 'A', the 2nd Safety Officer was not formally appointed as a Safety Officer, identifiable by wearing a Safety Officers tabard.

1.7.4 **Comment;** National Incident Command guidance states that; *"the command team comprises officers holding a variety of roles and it is essential for each to be easily identified"* Due to the 2nd Safety Officer Sector One fulfilling a specific task, not wearing a Safety Officer tabard, and not being recorded as a control measure on the ICB or the command unit meant that he was not formally recognised as part of the incident command structure.

1.7.5 With regard to the command team handover, the team walked around the incident ground as a group with both day and night shift officers together. The specifics of each functional role were not decided until after the walk-round was complete. The handover involved a walk through each sector, where observations of the operational tactics and discussions took place.

1.7.6 The day shift command team included the Incident Commander, the Operations Commander, the Logistics Officer and the Operational Support Officer. The Area Manager was also present. The night shift officers included the Night Shift Incident Commander, and two night shift Station Managers who were yet to be allocated their roles.

1.7.7 The Incident Commander and the Night Shift Incident Commander began their handover brief, they can be seen arriving in Sector Three at 19:57, Sector Four at 20:04 and finally arriving in Sector One at 20:06. They observed the operations taking place and spoke to the Sector Commanders as they went. They also discussed the incident command boards that had been set up to record the hazards and control measures, the Night Shift Incident Commander can be observed taking notes throughout.

1.7.8 Following the Sector Commander handover for Sector One between the Day Shift Sector One Sector Commander and the Night Shift Sector One Sector Commander, which had commenced at 19:44, the Night Shift Sector One Sector Commander, could be seen in the Sector Commander's tabard from 19:48. However after speaking to the Day Shift Sector One Safety Officer and the Operational Support Officer he left the sector at 19:52 returning 5 minutes later at 19:57 with the tabard removed. The Night Shift Sector One Sector Commander states that he felt that he had not been officially designated the role, so removed the tabard.

1.7.9 At 20:01 after some confusion as to which on-coming officers would be fulfilling which roles, the Logistics Officer designated the Night Shift Sector One Sector Commander to become Sector Commander resulting in him putting the Sector Commander tabard back on again at 20:03. At the same time the Logistics Officer instructed the Night Shift Entry Control Officer Sector One to relieve the Day Shift Entry Control Officer (ECO). Having handed over, the Day Shift Sector One Sector Commander removed his tabard at 19:50 but remained in and around the sector ensuring equipment was back on his appliance up to 20:05.

1.7.10 Shortly before FF Hunt and his BA Partner entered the building the appliance delivering water to the hose at doorway 'A' was changed over as part of the relief plan. At this point there were no personnel committed through doorway 'A', the previous team having exited at 19:52. This led to FF Hunt having to wait at the entry point for a few minutes until he was satisfied with the pressure of the jet prior to entering the building. In total, FF Hunt and his BA Partner entered after a 12 minute break in water being applied in this part of the building.

1.7.11 At 20:04 the handover was completed between the Day Shift and the Night Shift Entry Control Officers in Sector One. FF Hunt and his BA Partner were first briefed by the Day Shift Entry Control Officer Sector One and then by the 2nd Safety Officer before they were led to doorway 'A'. However, it was the Night Shift Entry Control Officer in Sector One who was the ECO for the remainder of their deployment.

1.7.12 At 20:06, two minutes after FF Hunt and his BA Partner entered the building, the 2nd Safety Officer left doorway 'A'. He had previously (19:49) briefed a Crew Manager as to his role during the incident. However, as this briefing was taking place the Crew Manager was directed to carrying out the Sector Commander role in Sector Four by the Operational Support Officer (the OSO). The OSO stated to the 2nd Safety Officer and the Crew Manager that this role of Safety Officer could be carried out by a Firefighter, as the Crew Manager would be better utilised as a Sector Commander in Sector Four. Subsequently, the 2nd Safety Officer role was never replaced. The Operational Support Officer states that he did get on the radio to the command unit and ask for a Safety Officer in Sector One. He recalls that this was to fill the gap left by the Day Shift Sector One Safety Officer and not specifically to replace the 2nd Safety Officer for Sector One.

1.7.13 *FF Hunt and his BA Partner have been in the building for two minutes.*

1.7.14 This 2nd Safety Officer role was originally put in place as a control measure by the Day Shift Sector One Sector Commander who stated that it formed part of his handover to the Night Shift Sector Commander. Control measures such as this and any time limits for BA wears should be recorded on the ICB, although in this case the board was not looked at during the handover.

1.7.15 After walking away from doorway 'A' the 2nd Safety Officer for Sector One is seen on CCTV pointing at doorway 'A' and briefing the Night Shift Sector One Sector Commander. During this discussion they are joined by the Incident Commander, the Night Shift Incident Commander and the Operations Commander, who were touring the incident ground as part of the Command Team handover. The 2nd Safety Officer can finally been seen in discussion with the Night Shift Sector One Safety Officer before he left the incident. The Night Shift Sector One Sector Commander states that he was unaware of the role that the 2nd Safety Officer had been fulfilling but does recall being told about limiting wears to 20 minutes. The Night Shift Sector One Safety Officer who arrived at 20:11, only remembers being sent to fulfil the sector Safety Officer role, not the specific 2nd Safety Officer role in Sector One.

1.7.16 In Sector one at approximately 20:06 the Night Shift Incident Commander was close to doorway 'A' with the Day Shift Incident Commander and the Operations Commander. He recalls being told by the Day Shift Incident Commander that there was a BA team working just inside doorway 'A', he states, they were at the top of 4 or 5 steps, with a jet and TIC. He stated that he understood that, due to their position, this was just a 'comfort wear'. This is a phrase used when no arduous work is being carried out and BA is worn for respiratory protection. This phrase is not recounted by any BA wearer or other officers who attended the incident and it is evident that arduous work was being carried out in Sector One.

1.7.17 At 20:07, after being in the building for approximately three minutes, the telemetry signal to the BA Board from FF Hunt's BA Partner's BA set was lost. This was indicated on the BA board by a green flashing light that would have continued to flash until he came out of the building and the BA set was logged off the board. The telemetry data shows that telemetry on this set was never re-established. The Night Shift Entry Control Officer (ECO) Sector One stated during the Inquest that he did not know that telemetry had been lost and does not recall seeing the green flashing warning light. Therefore he never reacted to the warning light nor did he pass this information on to the Night Shift Sector One Sector Commander.

1.7.18 At 20:11 the Pump Operator for Oldham's appliance approached the Night Shift ECO Sector One and asked if he had had any verbal communication with the team inside. At this time point the Night Shift Entry ECO confirmed that he had not spoken to the team despite trying to contact them via the radio on channel 3. The ECO states that whilst he had not spoken with the team over the radio, he believed them to be just at the top of the stairs. The Pump Operator was not overly concerned at this point as his pump gauges showed that they were still delivering water inside via the hoseline.

1.7.19 The ECO acknowledges that he never had any radio communications with FF Hunt, despite trying to contact the team on a number of occasions. Other than the Pump Operator, who had asked the question, he did not inform anyone of this lack in communication.

1.7.20 **Comment;** Technical Bulletin 1/97 states that it is the duty of the ECO to *"notify the OIC of any prolonged breakdown in radio communications with BA teams"*

1.7.21 *FF Hunt and his BA Partner have been in the building for 5 minutes.*

1.7.22 Also at 20:11 the Night Shift Sector One Safety Officer, arrived in Sector One. At this point he arrives with a Sector Commander tabard which he was handed by the Command Unit team. However, following a brief discussion with the Night Shift Sector One Sector Commander, who was also wearing a Sector Command tabard, he took his tabard off and left the sector.

1.7.23 The Night Shift Sector One Safety Officer (SO) does not recall wearing the SC tabard and can only ever remember being allocated the role of Safety Officer. The Day Shift Sector One Safety Officer initially took the SO tabard off at 18:48 and following a brief discussion with the Day Shift Sector One Sector Commander put the tabard back on. Then at 19:29 the Day Shift Sector One Safety Officer left Sector One and returned at 19:35, without the tabard, which he had returned to the Command Unit. Finally he left the sector at 19:51, 20 minutes earlier than the Night Shift Sector One Safety Officer's arrival, resulting in no handover of duties. The Day Shift Sector One Safety Officer is seen speaking with the Operational Support Officer and the Night Shift Sector One Sector Commander prior to leaving the sector. He states that he had informed the Day Shift Sector One Sector Commander he was leaving the sector and was under the impression that a Firefighter would fulfil the role of Safety Officer. When the Night Shift Sector One Safety Officer arrived he carried out the role of Safety Officer based on his own experience of this role and GMFRS Safety Officer Procedures.

1.7.24 The Night Shift Sector One Safety Officer recalled that, at one point, there were no emergency BA crews stood by the entry control board (ECB) in Sector One as required by GMFRS BA procedures and national guidance. BA Team 6 FF 'A' and 'B' had been standing by in Sector One from 19:49, before FF Hunt and his BA Partner entered the building at 20:04 however they were now being prepped for deployment onto the temporary platform in Sector One.

1.7.25 The Night Shift Sector One Safety Officer states that the ECO assured him that the BA crew in the building (FF Hunt and his BA Partner) were only at the top of the steps in doorway 'A' and were not in a risky position. The Sector One Safety Officer, aware that an emergency crew should be in place, went to find his own crew members for this role, BA Team 5 FF 'A' and 'B'. They were subsequently used by the ECO Sector One as a relief team for FF Hunt and his BA Partner. To ensure crew rotation, the ECO's deployment of BA Team 5 FF 'A' and 'B' as a relief team is justifiable, however, he did not replace the BA Team prior to their deployment. This resulted in Sector One having no emergency team after their deployment and while FF Hunt and his BA Partner were still inside the building. CCTV footage shows at least one BA team stood by the Sector One entry control board from approx.16:00 until the deployment of this team at 20:26.

1.7.26 Throughout this period the command team handover continued. The Area Manager arrived in Sector One with a Station Manager at 20:11. The Day Shift Incident Commander had a brief discussion with them before he left Sector One and headed to the Command Unit. He was followed to the command unit by the Operational Support Officer at 20:13. The Night Shift Incident Commander, the Day Shift Operations Commander and the Area Manager at 20:14.The Station Manager, who later became the Operations Commander, headed to the unit at 20:15.

1.7.27 With all officers now back at the command unit the handover continued and concluded moments before the BA emergency was called. All the roles had been handed over to the on-coming officers, with the exception of the Operational Support Officer (OSO). The OSO went back to Sector One at 20:32, shortly before the BA emergency occurred, to deliver equipment from the command unit.

1.7.28 At 20:13 and 20:14 the Night Shift Sector One Sector Commander had a brief discussion with the Night Shift Entry Control Officer Sector One in Sector One. Following this discussion, the ECO prepared BA Team 6 FF 'A' and 'B' to relieve the BA team on the working platform in Sector One. Both of the teams working in Sector One, the team entering via doorway 'A' and the team on the temporary platform were committed via the Sector One ECB.

1.7.29 Prior to these discussions with the ECO, the Sector One Sector Commander had a brief conversation with the Pump Operator who had already asked the ECO if communication with the BA team had been made.

1.7.30 *FF Hunt and his BA Partner have been in the building for 10 minutes.*

1.7.31 20:17 Informative message from the IC – *relief crews being co-ordinated across all sectors; officers in process of conducting hand over; firefighting operations in Sector One now offensive, six BA wearers, three jets committed*.

1.7.32 In Sector Three (at the front of the building on Oldham Street), shortly before 20:17, the Night Shift Sector Three Sector Commander that the aerial appliance, which was training its monitor through the first floor windows, was not having much effect. He stated that he could see visible flames in the smoke at ground floor level and could hear explosions. To address this he decided to move the aerial monitor from directing water into the first floor to directing water into the ground floor. Prior to this action there was no communication with any of the Command Team or any other area of the fire ground.

(Photograph 8)
Aerial appliance delivering water into ground floor

1.7.33 The Sector Commander, during the investigation, stated that had he been made aware that BA crews had been committed into the doorway of the building he would not have carried this action out. Shortly after the aerial monitor was moved into the ground floor he tried to contact the command unit to inform them of what he could see and hear in the ground floor. This message was picked up by the Operational Support Officer, who walked to the sector from the command unit, to investigate.

1.7.34 The Operational Support Officer arrived in the sector at approximately 20:21 and spoke with the Sector Commander; walking around Sector Three they observed firefighting operations and were in discussion until the Operational Support Officer left the sector at 20:30. The Operational Support Officer told him that explosions were suspected to be pressurised hairspray canisters and signs of flames had periodically been seen throughout the day and that the tactic used was to gas cool with no Firefighters committed in to the building in Sector Three.

(Photograph 9)
Aerial monitor and a jet into the ground floor

1.7.35 **<u>Comment;</u>** The Technical Advisor to the Coroner stated 'the change of tactics at the front had made no apparent significant difference to the conditions at the rear (43 meter building). The Coroner emphasised that, ideally Sector Commanders should communicate with one another about their activities in case they may affect the firefighting operations in another sector.

1.7.36 At the same time the monitor was moved, 20:17, BA Team 5 FF 'A' and 'B' arrived at the Sector One ECB. The telemetry signal from FF Hunt's BA Partner's BA set had now been lost for 10 minutes and the ECO had had no communication with the crew.

1.7.37 *<u>FF Hunt and his BA Partner have been in the building for 13 minutes.</u>*

1.7.38 One minute later at 20:18 BA Team 6 FF 'A' and 'B', who had been stood by the ECB, made their way to the temporary working platform. The working platform was in the open air and the teams on it had continued to deliver water into the stock area continuously throughout the handover period.

1.7.39 At 20:22 the Night Shift Sector One Safety Officer arrived back in Sector One. He recalls leaving the sector in order to address safety issues, update the safety cordons and obtain safety equipment, etc. BA Team 5 FF 'A' and 'B' were then prepped for deployment to relieve FF Hunt and his BA Partner via doorway 'A'.

1.7.40 Following analysis of BA telemetry data, at exactly 20:24:43 FF Hunt's BA Partner's BA tally was taken out of the board and reinserted at 20:24:44, 1 second later. The ECO does not remember carrying this action out. It is clear from the analysis however, that this action had no effect in re-establishing telemetry.

1.7.41 **Comment;** Under BA Technical Bulletin 1/97, the ECO must inform the IC of any prolonged breakdown in radio communications with BA teams. The procedures to be followed in the event of a loss of contact or breakdown in telemetry communications should take into account the existence of other means of communication with BA teams, i.e., by radio, line communications or even by direct speech

1.7.42 **Comment;** GMFRS Guidance document BA003 States: If telemetry is lost with individuals during operations, this is not considered a risk critical event. The ECO should monitor the situation as it is extremely likely connection will be regained quickly. However, if any of the following are experienced, the ECO and Incident Commander should consider reverting to manual procedures, or committing emergency teams:

- Loss of telemetry with a team is prolonged.
- Telemetry is lost with a number of teams or individuals.
- Telemetry and other forms of contact are lost (such as personal radios).

1.7.43 *FF Hunt and his BA Partner have been in the building for 20 minutes.*

1.7.44 At 20:26 BA Team 5 FF 'A' and 'B' enter doorway 'A', briefed to relieve FF Hunt and his BA Partner. This left the sector with no emergency team. BA procedures specify that this is something that should have been addressed by the ECO prior to committing BA Team 5 FF 'A' and 'B'. Other than the Night Shift ECO and the Night Shift Sector One Sector Commander, no other command team officers were present in Sector One at this time.

1.7.45 **Comment;** Under BA Technical Bulletin 1/97 (CNP 10) emergency teams must be established and stood by at the entry control points at all incidents where Stage II entry control procedures are in operation. The Entry Control Officer (ECO) is responsible for informing the Officer-in-Charge (OIC) of the need for an emergency team, (unless the BA Main Control or the Main Control Officer has assumed this function). Note; Stage I and Stage II BA procedures are progressive systems for managing BA resources. This incident had progressed past Stage II of BA procedures and was being coordinated through Main Control. In Sector Four the Night Shift Sector Four Sector Commander states that he did make a request to BA Main Control for an emergency team in his Sector, however no team was supplied.

1.7.46 At 20:27, after recognising that FF Hunt had stopped delivering water, the Pump Operator again approached the ECO to raise concerns about the lack of communication. The ECO had just committed BA Team 5 FF 'A' and 'B' to relieve FF Hunt and his BA Partner and informed the Pump Operator that they were probably not delivering water due to them changing over. No further action was taken at this point as the ECO believed the team to be relieved were just at the top of the stairs. He had committed the relief team specifically due to FF Hunt and his BA Partner coming close to their time of whistle, which had been manually calculated earlier as 20:32, by the Day Shift ECO.

1.7.47 Comment; The time of whistle is a calculation which denotes the time when the low cylinder pressure warning whistle operates. This is when the cylinder pressure has fallen to a point where only the Safety Margin remains.

1.7.48 *FF Hunt and his BA Partner have been in the building for 23 minutes.*

1.7.49 At 20:30 in Sector Three, a hand held jet that was directing water into the ground floor was replaced by a ground monitor.

1.7.50 At 20:33 the Night Shift Sector One Safety Officer is seen arriving back again in Sector One, this time with the Safety Officer (SO) tabard on.

1.7.51 At approximately the same time the command team handover concluded. The Operations Commander states that the handover discussions were around general tactics and operations rather than specifics such as the control measures employed in each sector; these were not discussed in great detail. The command team had assembled by the command unit at approximately 20:15 where the functional roles were allocated following a group briefing. This was when the last of the night shift officers arrived at the incident.

1.7.52 On completion of the handover the Night Shift Incident Commander stepped into the command unit to ask them to send the message that he was now in charge. This message was never sent as on his arrival on the command unit the BA emergency had been called on the fire ground. This meant that the Night Shift Incident Commander's first message to Control was 'BA Emergency' at 20:35.

Part 2: Post Incident

Section 1: Immediate Actions

2.1.1 Following the events that unfolded on the night of July 13, Greater Manchester Police (GMP) and The Health and Safety Executive (HSE) conducted investigations to establish the facts surrounding the incident. GMFRS brought together a dedicated team to support GMP and the HSE in expediting their investigations.

2.1.2 It was determined that this team would remain in place until the completion of the coronial process (concluded May, 2016), the findings of which have been summarised within this report.

2.1.3 GMFRS contacted the Health and Safety Executive on the night of the incident to inform them of the events that had taken place and the Chief Fire Officer (CFO) informed the Fire Brigades Union (FBU).

2.1.4 Following the events at the incident, all crews and officers at the scene were relieved at the earliest opportunity, in recognition of their welfare needs. They were brought to the GMFRS Training and Development Centre to allow for some immediate defusing activity. The crews were then asked to take some time and provide their initial accounts, whilst their memories were fresh to help with any subsequent investigations.

2.1.5 An Area Manager was appointed as a GMFRS Family Support Officer and maintained relations with the family and GMP's Family Liaison Officers through to the Coroners hearing in May 2016 and beyond.

2.1.6 GMP appointed a Major Investigation Team to work with investigators from the HSE and they were further supported by:

- Merseyside Fire and Rescue Service providing an investigation into the origin, cause, and the subsequent development of the fire.
- West Yorkshire Fire and Rescue Service who provided technical guidance of Fire and Rescue Service practice and procedure to GMP and the HSE.
- A former Deputy Chief Fire Officer was appointed by the Coroner to provide independent expert advice to the Inquest.

2.1.7 GMP conducted witness interviews with 136 GMFRS employees involved in the incident and produced 57 witness statements.

Section 2: HSL Investigations

2.2.1 The Health and Safety Laboratory (HSL) summarised their report into five distinct areas of testing; Breathing Apparatus (BA) and Personal Protective Equipment (PPE), BA Alarm Systems, Scott Eagle Attack Thermal Imaging Camera, Entel Fireground Radio and Thermal Environmental Effects on Firefighters.

2.2.2 *BA and PPE:* All BA and PPE examined were designed for structural firefighting and during testing there was no indication of significant failure or malfunction occurring during the incident. There was evidence of several shortcomings in maintenance procedures associated with the use of BA, however HSL are of the opinion that these shortcomings had no bearing or impact on the events at the incident. Specific to BA, HSL made eight recommendations, all of which were centred on review of maintenance procedure. The current maintenance procedures within GMFRS are suitable and sufficient to address the recommendations.

2.2.3 *BA Alarm Systems:* Following testing of both the pneumatic and electronic low pressure alarms HSL concluded that, as these alarms activate simultaneously, there is no question that audibility of these alarms would have been an issue during the incident. As a result, no recommendations were levied within this section of the HSL report. They did note however that when tested in isolation the pneumatic whistle on FF Hunt's BA Partner's BA set and the electronic low pressure alarm on FF Hunt's BA set were borderline pass and marginal fail respectively.

2.2.4 *Thermal Imaging Camera:* Following testing of all Scott Eagle Attack thermal imaging cameras used by GMFRS, HSL concluded that all cameras worked as intended. They went on to point out that these cameras are intended to be used to highlight areas of high temperature but are not designed to read the environmental surroundings (ambient temperature). Again there were no recommendations from this section of the HSL report.

2.2.5 *Entel Fireground Radio:* This part of the HSL report detailed the testing of both the fireground radio (attached to BA set) and the radio utilised by the Entry Control Officer (ECO). During all functional tests both radios performed within design and operational parameters. HSL did however identify potential issues with battery life and charging procedures leading to two recommendations. These two recommendations were around reviewing procedures associated with battery charging and discharge cycles. As GMFRS no longer use Entel fireground radios, these recommendations are no longer applicable. However the manufacturer has been made aware of these findings.

2.2.6 *Thermal Environmental Effects on Firefighters:* For this part of the HSL report the Executive were asked by West Yorkshire Fire and Rescue Service (WYFRS) to complete a literature review into the subject of firefighter physiology within compartment fires. HSL suggest that current knowledge into this field indicates that human tolerance time when working in full PPE and working in routine firefighting environments would not exceed 20 minutes. They did however go on to state that as variables combining to produce a physiological effect cannot be determined specific to the Oldham Street incident, it is impossible to conclude, in terms of a specific time, when the onset of detrimental physiological effects occurred. Although they did go on to hypothesise that it would be reasonable to assume that both firefighters would have been severely affected by conditions, possibly to the extent that their physical and mental capacity to escape was compromised. It is clear from the HSL report that there are many contributory factors which affect a firefighter's physiological response within a compartment fire situation. It is these factors and variables that, through the commissioning of research, GMFRS wish to develop dynamic and more pragmatic control measures to help determine more accurately, deployment time scales against firefighters physiological tolerances. (see Section 4 for more details)

Section 3: Fire Investigation

2.3.1 To demonstrate impartiality Merseyside Fire and Rescue Service (MFRS) Incident Investigation Team (IIT) was requested by GMFRS to independently carry out the investigation in to the origin, cause and development of the Paul's Hair & Beauty World Fire.

2.3.2 A multi-agency investigation team spent a number of weeks excavating and examining the scene. At the conclusion of the investigation the IIT were satisfied that the fire had originated in the cardboard recycling area adjacent to the rear exit doors facing Tib Street (doorway 'A').

2.3.3 The team considered both accidental and deliberate as possible causes of the fire and concluded, after considering all the physical evidence, the timeline and the information ascertained from witnesses, CCTV and other persons at the scene that most likely cause was the application of a naked flame.

2.3.4 This evidence was collated by GMP and passed to the Crown Prosecution Service (CPS) for consideration; however in April 2015 it was decided by the CPS that no further action would be taken against any individual(s).

2.3.5 Following the conclusion of the Inquest in 2016, evidence that was presented in Court was passed on to the CPS in order to again establish whether there would be any further legal action taken against the individual(s) accused of starting the fire.
After an examination of this evidence the CPS concluded;

- There was no new and compelling evidence arising from the Inquest which was not available to the Prosecution when earlier decisions were taken in this case;
- There is no viable legal mechanism for the further prosecution;
- There is no reason, emerging from the evidence at the Inquest, to revisit the decisions taken by the Prosecution as to charge and/or disposal of the criminal investigation.

Section 4: Coronial Inquest

2.4.1 A Coroner was appointed to oversee the Inquest into the death of FF Hunt which commenced on April 4, 2016 and concluded on May 18, 2016. The evidence was presented and witnesses were called under three main areas:

- Start of the fire / fire investigation
- Fire risk management
- Firefighting operations

The start of the fire has been discussed in Section 2.3 and below is a summary of the jury responses to the fire risk management and firefighting operations related questions posed by the Coroner at the end of the process.

2.4.2 Questions relating to fire risk management, the jury found that;

- The presence of the cardboard storage area and the racking up the stairs contributed to the fire developing.

2.4.3 Questions relating to firefighting operations, the jury found that;

- In relation to the control measures that were in place during the afternoon
  - » BA crews were limited during the day shift and that time was a maximum 20 minutes.
  - » Most BA crews were probably told to remain at the top of the stairs and fight the fire from there only.
  - » Other control measures included a second Safety Officer to keep an eye on the BA crews.
  - » The safety control measures identified above were not communicated to the Entry Control Officer who sent Stephen and his partner into the building nor were they communicated to the Entry Control Officer at the change of shift.
  - » The above control measures were however communicated to the new Sector Commander for Sector One at the changeover of shifts.

- The jury found that safety measures were in place when Stephen and his colleague entered the building, but not implemented. These measures should have been carried through over handovers.
- The jury also found that the new Sector Commander misinterpreted the brief and the new Entry Control Officer was not fully informed, and therefore could not implement safety measures.
- At the time Stephen and his colleague entered the building a number of officers at the incident were aware that the previous BA teams had been limited to a 20 minute wear.
- Various officers also knew that teams were being directed to go to the top of the stairs and fight the fire at that point but go no further and that a safety officer had been dedicated to watch over them and keep in communication.
- The jury concluded that Stephen and his colleague were given two briefs, initially from the Entry Control Officer “to go to the top of the stairs, take over, sit there and squirt water - top of the mezzanine, you know what the crack is”.

- The 2nd Safety Officer gave “go to the top of the stairs, turn left, look right, and use the thermal imaging camera and spray water from there”. This second brief removed the word ‘mezzanine’ and contained no direct instructions.

- The jury also concluded that Stephen and his colleague had followed their brief as they understood it. They stated that confusion, due to the use of the term ‘mezzanine’ and ‘seek out hotspots’ may have led to misunderstanding of the brief.
- Finally, the jury were asked what factors probably contributed significantly to

    - Lack of communications and information at handovers
    - Lack of communications and information at briefings and debriefings
    - Misinterpretation of instructions
    - Incorrect decision-making
    - Competency within the roles given
    - Paul’s Hair World storeroom layout, internal conditions, stock debris and smoke detection
    - Breakdown of telemetry and radio communications
    - Inadequate fire risk assessment
    - Inadequate fire safety measures in Paul’s Hair World e.g. fire drills

Part 3: Conclusions

3.1.1 As a result of the GMP and Coronial investigations a number of conclusions were reached by the jury. Part 4: Recommendations, details the lessons learnt by GMFRS and the recommendations of the Coroner, the following section is a response to the narrative conclusions of the Jury and also includes the findings of the GMFRS internal investigation.

3.1.2 **Jury Point 1;** The control measures from the afternoon, 20 minutes of wearing BA, being told to remain at the top of the stairs and to fight the fire from there only and the use of a 2nd Safety Officer were communicated to the Night Shift Sector One Sector Commander at the changeover of shift. However they were not communicated to the Day Shift Entry Control Officer Sector One or the Night Shift Entry Control Officer Sector One as ECO's. The jury stated that the Sector Commander misinterpreted the brief.

3.1.3 **Established facts;**

- The Day Shift Sector One Sector Commander wanted the 2nd Safety Officer Sector One to act as a 2nd Safety Officer with the specific task of closely monitoring BA crews in Sector One and maintaining communication. The 2nd Safety Officer Sector One had been in place for the duration of the day shift. This role was not replaced at the change of shift.
- The Night Shift Sector Four Sector Commander was briefed by the 2nd Safety Officer Sector One on the role of 2nd Safety Officer, however the Night Shift Sector Four Sector Commander was directed to another role (Sector Four Commander) by the Operational Support Officer (OSO) and a replacement was not established.
- The control measure employed during the day relating to the limited duration of BA wears at doorway 'A', although used flexibly by the 2nd Safety Officer Sector One (depending on conditions) was not recorded contributing to a lack of continuity into the night shift.
- The limit on the time the BA wearers were committed was also not translated into cylinder contents as per Technical Bulletin 1/97.
- Handover procedures varied from sector to sector. Sector Three replaced all staff directly, like for like. The Day Shift Sector One Safety Officer, left before his replacement, the Night Shift Sector One Safety Officer arrived. The 2nd Safety Officer Sector One's role was not recorded. The Night Shift Sector One Commander removed his tabard for a period of time leaving the sector unsupervised for approx. 9 minutes.

3.1.4 **GMFRS Conclusion;** There was no assurance process to ensure the above failures were avoided. The command team, led by the Incident Commander who, as stated earlier, was being mentored by the Area Manager, did not instigate a process that ensured that functional roles and the control measures that had been in place at sector level were maintained, carried forward or removed with justification.

3.1.5 When handing over the command of sectors the Incident Command Manual specifies that a clear and precise exchange of information must be undertaken. This also places a responsibility on the individuals carrying out those roles.

3.1.6 **Jury Point 2;** When FF Hunt and his BA Partner entered the building a number of officers were aware of the 20 minute limit, only fighting the fire from the top of the stairs and the dedicated 2nd Safety Officer.

3.1.7 **Established facts;**

- During the analytical risk assessment process various hazards and control measures were recorded, however the ones relating to these control measures were not logged.
- The Night Shift Sector One Sector Commander was aware of the 20 minute limit but did not inform the Night Shift Entry Control Officer Sector One. The Entry Control Officer had not been made aware of this, so used the existing time of whistle calculation, the Day Shift Entry Control Officer Sector One had established of 20:32, this equated to a 33 minute BA wear.
- The Pump Operator raised concerns; with both the Night Shift Entry Control Officer Sector One and the Night Shift Sector One Sector Commander about the lack of communications and that the team were not delivering water. Despite the Night Shift Sector One Sector Commander being aware of the 20 minute limit and the Night Shift Entry Control Officer Sector One being aware of the lack of communication, these concerns were not acted upon.

3.1.8 **GMFRS Conclusion;** There was no assurance process to ensure the above failures were avoided and that the control measure of 20 minutes was maintained.

3.1.9 There were individuals at sector command level, the Night Shift Sector One Sector Commander and the Night Shift Entry Control Officer Sector One, who did not maintain a safe system of work prior to, and whilst this situation was developing.

3.1.10 **Jury Point 3;** FF Hunt and his BA Partner were given two briefs, the Day Shift ECO told them to go to the top of the mezzanine, however the 2nd Safety Officer removed the word ‘mezzanine’, and mentioned seeking out hotspots. This confusion may have led to a misunderstanding of the brief.

3.1.11 **Established facts;**

- FF Hunt's BA Partner states that FF Hunt and he believed that they had reached the mezzanine when they had got to the top of staircase 'A'.
- FF Hunt's BA Partner understood they were to go to a point in the building and search for hotspots with the TIC. He went on to state that he understood from the brief that they were not to search the building.
- The previous BA team, BA Team 3 FF 'A' and 'B', should have briefed and been de-briefed by the ECO when they exited the building. The Day Shift Entry Control Officer Sector One should also have ensured that this de-brief was carried out, ensuring relevant information, location, conditions etc. could have been passed on to FF Hunt and his BA Partner (the next team to wear in doorway 'A')

3.1.12 **GMFRS Conclusion;** Although the briefs differed, the presence of the 2nd Safety Officer throughout the day helped to counter any potential misinterpretations that may have arisen. Therefore the previously discussed omissions that led to that role not being replaced, i.e. with no assurance process by the command team, this must be considered a contributory factor.

3.1.13 Failure to exchange critical information by the BA team and the ECO as per agreed procedures could also have contributed to the inconsistence in the briefs.

3.1.14 Although the jury identified that there were inconsistencies in the two briefs, particularly with the use of the word 'mezzanine', FF Hunt and his BA Partner believed they were on a mezzanine level when they had entered the building and ascended the first set of stairs. The inconsistencies also include the use of the phrase 'search out hotspots' which may have led to them to advance further into the building.

3.1.15 **Jury Point 4:** Other personnel factors that probably contributed to the death were;

- » Lack of communications and information at handovers
- » Lack of communications and information at briefings and debriefings
- » Misinterpretation of instructions
- » Incorrect decision-making
- » Competency within the roles given
- » Loss of communications
- » Handing over

3.1.16 **Established facts;**

- There was a relief plan to assist the handover however this wasn't adhered to in its entirety, leading to confusion as to who was doing what role at sector level in Sector One. The Welfare Officer had drawn BA wearers away from their appliances to supplement the BA pool as per Main Control procedures. Operationally, this was not compatible with the 'like for like' plan devised by the Operational Support Officer and the Logistics Officer, which would have kept all crews together.
- The Day Shift Sector One Safety Officer left his sector without handing over to the Night Shift Sector One Safety Officer who had been designated to fulfil the role for the night shift. The Night Shift Sector One Safety Officer was allocated this role when he reported to the Command Unit crew, however he cannot recall exactly by whom.
- The level of hazard and control measure recording (2nd Safety Officer, 20 minute duration etc.) was not consistent leading to gaps in continuity from the day shift to the night shift.
- There were indicators and concerns raised at the incident that were not acted upon e.g. the Pump Operator highlighting the lack of water being delivered, the lack of communication from the BA team and the loss of telemetry. There was no appropriate response from the functional officers, the Night Shift Entry Control Officer and the Night Shift Sector One Sector Commander, who were supervising the BA deployment in Sector One.
- FF Hunt's BA Partner's BA set lost telemetry early into his wear, at 20:07. A green flashing light would have indicated this loss on the BA board. The ECO states he was not aware that telemetry had been lost, however at 20:24 FF Hunt's BA Partner's tally was removed from the board and re-inserted. This coincided with the ECO committing the next BA team through the same BA board. The ECO does not recall removing and re-inserting the tallies.
- The Night Shift Sector Three Sector Commander did not inform anyone within the command structure when he moved the aerial monitor from the first floor to the ground floor. However, the Technical Advisor to the Coroner stated during the Inquest that he *"would not expect a significant impact at the rear of the building"* with this action.
- The Night Shift Sector Three Sector Commander stated that if he had known firefighters were committed at the rear he would not have used the aerial appliance to deliver water. During the Inquest the Coroner concluded that different tasks carried out within the same building (e.g. application of water and BA wears) should be communicated.

- CCTV footage shows at least one BA team stood by the Sector One entry control board from approx.16:00 onwards. The Night Shift Entry Control Officer Sector One did not replace the emergency team after using them to relieve FF Hunt and his BA Partner at 20:26. There were no emergency teams in Sector One from this point onwards. When the BA emergency occurred at 20:34 there were 6 BA wearers already under air in close proximity to the Sector Four entry point, stairway 'C'. These were the same 6 BA wearers that carried out the rescue of FF Hunt and his BA Partner. Extra BA teams arrived in the sector after the BA emergency was declared at 20:34.
- CCTV footage shows that there was also no BA emergency team available in Sector Four following the change over to the night crew. This is confirmed by the Night Shift Sector Four Sector Commander, however, he stated that he had asked BA Main Control to send 4 BA to Sector Four, two BA to act as an emergency team; however, he only got two BA wearers, BA Team 7 FF 'A' and 'B'. As the task was only to enter and reposition the ground monitor, he determined that he would allow them to proceed in prior to receiving another team.
- An Area Manager (AM) was mobilised to assume the role of Incident Commander, he agreed not to take charge but remained at the incident, in a mentoring role, for the next five hours. The Area Manager was the most senior officer present.

3.1.17 **GMFRS Conclusion;** The decision of the Area Manager (AM) not to take charge but remain at the incident for the next five hours caused some ambiguity for the investigation when trying to absolutely determine the responsibility for critical operational decisions that needed to be identified. GMFRS policy at the time of the incident did allow senior officers the flexibility not to take charge of an incident, but to remain in a mentoring capacity. GMFRS has since revised its guidance, ensuring that the senior FRS officer present will be in command of the incident (further details in Part 4).

3.1.18 The relief plan across the incident wasn't recorded, managed adequately or adhered to. This led to periods where supervision was not sufficient, for example, no safety officer for a period of time in Sector One, the Night Shift Sector One Safety Officer was not briefed by the Day Shift Sector One Safety Officer, and the 2nd Safety Officer Sector One was not replaced.

3.1.19 The level of hazard and control measure recording was not consistent, leading to gaps in continuity from the day shift to the night shift. Since this incident GMFRS has introduced a more formal handover form that serves as both a prompt and a formal record. However this investigation has highlighted the need for GMFRS to introduce a more robust process at all levels from the sector officers to the overall incident commanders. (further details in Part 4).

3.1.20 There were indicators at the incident that should have raised concerns regarding the safety of FF Hunt and his BA Partner. The lack of communication, lack of water used by FF Hunt and his BA Partner and the loss of telemetry should have prompted an earlier response from the functional officers (the Night Shift Entry Control Officer and the Night Shift Sector One Sector Commander).

3.1.21 The Night Shift Entry Control Officer did not follow basic BA procedures by not replacing the emergency team as per BA procedures leaving a period of 8 minutes without this safety measure before the BA emergency began and extra BA teams began to arrive in the sector

3.1.22 CCTV footage shows that 6 BA wearers were already under air and in the risk area, which, once the alarm was raised, resulted in an immediate response to carrying out the rescue of FF Hunt and his BA Partner.

3.1.23 GMFRS acknowledges the acts of heroism performed by those personnel carrying out the rescue of FF Hunt and his BA Partner. GMFRS and other public bodies view the actions of individual firefighters as heroic when they have put themselves at risk to protect the public or colleagues.

Part 4: Lessons

Section 4.1: Learning the lessons

4.1.1 Much time and effort has been invested into understanding this incident and to identify any learning opportunities that can be achieved organisationally, by Greater Manchester Fire & Rescue Service (GMFRS). The findings will be shared across FRS's with the objective of minimising the chance of a similar tragedy occurring in the future. It is recognised that changes to policy and procedure must be communicated properly in order to entrench the learning until it becomes second nature.

4.1.2 GMFRS formed a dedicated team following this incident and they have carried out an ongoing analysis of events at Oldham St. Where development needs have been recognised, steps have been taken to work towards the resolution of the issues. Some of these proactive measures tie in with the Coroner's Regulation 28 recommendations. These recommendations refer to the situation at the time of 13th July 2013 and thus, some of the issues described in the letter have already been part resolved. All work appertaining to the outcome of the Oldham Street investigation that has already been initiated or completed is provided in a table format and can be found in Appendix 'C'.

4.1.3 The Fire Brigades Union (FBU) compiled a report for the Coroner, into the death of Stephen Hunt based on the analysis of recommendations from previous coroners inquests into Firefighter fatalities. This report was presented to the Coroner prior to his verdict. To ensure that lessons from previous Inquests have been learned by Fire and Rescue Authorities and Government, the FBU have made a series of recommendations within the report. GMFRS acknowledge the FBU recommendations and a response from them to the Coroner are provided at Appendix 'D'.

4.1.4 A report was sent from the Coroner to the Home Secretary and the Chief Fire and Rescue (CFRA) Advisor under Regulation 28 and 29 of the Coroners (Investigations) Regulations, 2013. This report formally identified 10 'Matters of Concern' raised as suggestions. GMFRS has established an internal 'Task and Finish' group to ensure that all of these concerns are addressed. Those actions are summarised in the table at Appendix 'E'.

Section 4.2: GMFRS Response

4.2.1 Based on the findings of the jury, the Coroner, assisted by GMFRS and the Fire Brigades Union (FBU), made the following recommendations to prevent future Firefighter deaths. Those recommendations plus the GMFRS response are as follows;

4.2.2

Physiology; It is recommended that all FRSs should consider the implementation of measures to reduce the risks associated with the physiological effects of working in a hot environment. In particular consideration should be given to:

- *Duration of wears under breathing apparatus;*
- *Having regard to all relevant factors including, for example the weather, previous exertions of BA teams and individual circumstances.*
- *Training and guidance for all operational personnel to recognize the effects of heat, both on themselves and on their colleagues, and the appropriate steps to take upon such recognition, including withdrawal and self-withdrawal.*
- *Training and guidance for all operational personnel to have the ability and confidence to ensure the withdrawal of others who may be adversely affected by heat whether by calling a BA emergency or otherwise appropriately.*
- *Training and guidance for all operational personnel to have the ability and confidence to withdraw themselves by whatever means appropriate including activating the ADSU.*

4.2.3 GMFRS response: At the time of this incident in July 2013, Home Office Technical Bulletin 1/97 set out the breathing apparatus (BA) procedures to be adopted by all Fire and Rescue Services (FRS)'s at operational incidents. Within this document there is very little reference to physiology and the effects of heat on firefighters. GMFRS had addressed this issue to some extent through internal practical training themes and guidance, but perhaps did not have an emphasis on this aspect of physiology whilst wearing BA at operational incidents. The importance of recognition of the effects of heat on the individual (whether on the BA wearer or a colleague) cannot be undervalued and must underpin all BA training moving forward.

4.2.4 The Technical Bulletin 1/97 has now been superseded by Department for Communities and Local Government (DCLG) Guidance Document: Operational Guidance Breathing Apparatus (OGBA), published in 2014. OGBA, Section B-8 'Welfare of BA Wearers', references physiology considerations and, since its introduction, all GMFRS training materials have been updated to reflect this content. The review and introduction of the new breathing apparatus procedures in line with the national guidance was approved at the GMFRS Joint Health and Safety Committee in February 2015. In addition all GMFRS training and guidance notes applicable to Breathing Apparatus are currently being ordered into an overarching Breathing Apparatus policy and procedure document for publication in December 2016.

4.2.5 Work is programmed going forward to review training content, frequency and delivery in the area of physiology and BA. This will evaluate if GMFRS are giving the appropriate balance and emphasis to this area of development, and to address any shortcomings. Regular assessable 'practical' training will be carried out from a new bespoke training site in Bury from April 2017 to ensure understanding of this subject. The emergency actions to be taken where difficulties are encountered by the individual or colleagues whilst wearing BA, including withdrawal, activation of ADSU and calling of 'BA Emergency' will be incorporated in the training content. Assessable 'theoretical' training to include key questions ensuring understanding of the effects of heat on the individual as well as other risk critical information is due to be introduced through a new online training tool by the end of 2016.

4.2.6 Following this incident it was recognised that there was insufficient operational guidance available, and the 'Welfare of Personnel at Incidents' service order was produced. Guidance around the duration of wears in relation to variable factors such as ambient temperature and condition of the wearer is found in this document. It provides information on the availability of refreshments and rest facilities as well as advising on core temperature, recovery and re- deployment. It details advisory rest and rehydration actions for BA wearers and other considerations appropriate to physiology and welfare of the individual.

4.2.7 In 2014, in conjunction with Salford University and Draegar, GMFRS initiated a research and development project into technology that can be utilised in the operational arena to monitor, in real time, a Firefighters physiology. This control measure will ultimately assist safety by giving an indication of the condition of the Firefighter when considering allocation of tasks and duration of wears. Trials will begin in late 2016 at Salford University to test this monitoring equipment. This will validate the protocols that will be used in this project.

4.2.8 *Communications; It is recommended that all FRSs should consider the implementation of measures to reduce the risks associated with the loss of communications at operational incidents. For example, to include safety control measures to ensure BA teams can be withdrawn from the risk area if needed.*

4.2.9 GMFRS response: Following the incident, questions were raised around both telemetry and radio communication between the BA wearers and the Entry Control Officer (ECO). There were also questions raised around the availability and location of emergency teams. This has led GMFRS to review its emergency procedures. At the time of the incident, GMFRS operated in line with Technical Bulletin 1/97 at Section CMP6C.

4.2.10 Since then GMFRS has adopted DCLG Guidance Document: Operational Guidance Breathing Apparatus (OGBA), 2014. Communication is one of the key principles in this document, Section 5.9 states:
"Good communications between the entry control point and BA teams, other entry control points and, where established, with Command Support are also essential to the effectiveness and safety of BA teams. Accordingly, suitable, sufficient and resilient means of communications should be established at all times."

4.2.11 The introduction of OGBA has greatly improved the level of BA supervision to that of Technical Bulletin 1/97. At Stage II BA there is now the requirement for an Entry Control Point Supervisor, to oversee and support the Entry Control Operator (ECO). Consideration is also given to the appointment of a Communications Officer at Stage II, their function will be to send and receive messages between BA teams and the BA entry control point.

4.2.12 OGBA Section B-9 'Emergency Arrangements' considers emergency actions comprehensively, examining in detail the provision, equipping and deployment of teams. Subsequently GMFRS has updated all its training materials to reflect this content. As previously mentioned at 4.2.2, All GMFRS training and guidance notes applicable to Breathing Apparatus are currently being ordered into an overarching Breathing Apparatus policy and procedure document for publication in December 2016.

4.2.13 Assessable 'practical' training to ensure competency across the operational workforce is also being revised for implementation in the training year commencing April 2017. Assessable 'theoretical' training will be commencing earlier through a new IT based learning software system to ensure that the knowledge of the operational workforce relating to BA emergency procedures and communications is attaining the expected levels.

4.2.14 GMFRS has also introduced an enhanced safety capability through the use of specialist teams sent to all incidents where 6 appliances and above attend. This 'Enhanced Safety Team', carry specialist equipment such as line communications, battery powered cutting and spreading tools, casualty rescue slings and confined space equipment. In the event of a BA Emergency they will report to the relevant Entry Control Point (ECP) with the appropriate equipment ready for deployment by the Entry Control Point Supervisor in order to assist with the withdrawal of BA crews.

4.2.15 This team will also carry out proactive tasks to improve health and safety on the incident ground. Work is currently being undertaken to review training content, frequency and delivery in the area of BA emergency procedures. The GMFRS Operational Support Team is also exploring alternatives to the existing Emergency Air Supply Equipment (EASE) used by BA emergency teams at operational incidents.

4.2.16 *Handing over; It is recommended that all FRSs should undertake a review to ensure the adequacy of standard operating procedures, guidance and training of the handing over and taking over of roles at incidents to ensure all the key areas of information, including safety control measures, are captured and shared.*

4.2.17 GMFRS response: GMFRS acknowledge that following this incident, analysis showed that, the way in which the handover of crucial information and safe systems of work particularly during a period of reliefs, could be improved. In March 2015, GMFRS produced a 'Service Order' (internal guidance) 'Reliefs at Operational Incidents' that highlights considerations for the IC. This includes managing a phased relief plan to avoid the loss of operational momentum and tactical objectives, such as the interruption of water supplies.

4.2.18 Guidance was issued in November 2014 entitled 'Handing Over and Taking Over at Incidents'. In order to ensure consistent and accurate handovers, particularly during the relief stage of the incident, the existing Incident Commander now completes a detailed handover form (OPS 50). This is used during the briefing process with the oncoming commander. This form must be signed by both commanders, retained by command support and the confirmation of this handover is included in the informative message notifying the change of command.

4.2.19 Since its introduction, the OPS 50 form has become a more familiar and increasingly well utilised part of the handover process. Continued training and operational use will further establish this process as a customary practice. Further inter-departmental work is also underway looking to improve how GMFRS capture role specific handover information outside of the Incident Commander role, e.g. Sector Commander, as well as improving how staged relief handovers are managed.

4.2.20 This 'Handing Over and Taking Over at Incidents' guidance document also establishes policy around the taking over of incidents. Now, whenever a more senior officer is mobilised to an incident as the oncoming Incident Commander (IC) they will take command of the incident following a full incident assessment. The only two exceptions to this approach are firstly, when the oncoming IC recognises that the incident will quickly be scaled down, thereby allowing the current IC to continue as IC. In this situation following a full incident assessment the senior officer must leave the incident. The second exception is when the incident scale has been further increased and another more senior officer has already been mobilised to the incident to take command. Again, in this situation a full incident assessment must still be carried out by the most senior officer.

4.4.21 *Risk information; It is recommended that all FRSs should ensure that significant hazards and any safety control measures are:*

- *The responsibility of the Incident Commander and should be recorded within each sector, to ensure visibility to all on the fire ground, and*
- *Passed/copied for use by the Incident Commander/command team to assist on the analytical risk assessment.*

4.2.22 GMFRS response: GMFRS acknowledge that at this incident risk critical information relating to safe systems of work and control measures were not communicated to the appropriate personnel, or captured on the analytical risk assessments (ARA's). The Risk Assessment/ Hazard Inventory process has been in place in GMFRS since February 2006. Its main purpose is to ensure that all hazards are recorded, made known and acted upon by crews through recording on an OPs 25 form. This form also makes provision for the recording of regular reassessments, any control measures in place and the time at which the hazard becomes controlled. It does not however, constitute a full analytical risk assessment as defined by national guidance.

4.2.23 An internal review of current procedures is underway by the GMFRS Operational Support Team and the Operational Assurance Team, with consideration being given to how the existing procedures can be more closely aligned to the national analytical assessment process. GMFRS is currently reviewing its training and development through its Incident Command Academy to include assessment in the recording of risk critical information on ARA's during corporate Incident Command training and through promotional processes for all operational staff.

4.2.24 *Thermal imaging; It is recommended that all FRSs should undertake a review to ensure the adequacy of standard operating procedures, guidance and training in the appropriate use of thermal imaging cameras to include the limited extent to which they can be relied upon to measure ambient temperature.*

4.2.25 GMFRS response: Following this incident there was concern as to the levels of understanding held by the operational workforce relating to the technical capabilities of the thermal image cameras in use in GMFRS at the time.

4.2.26 GMFRS carried out a training needs analysis in the form of a workforce survey to establish this knowledge and understanding. The survey was conducted by Training and Development Centre staff and completed by 11% of the workforce during a 7 week period in March and April 2014. The results, coupled with initial accounts from the Oldham St incident, provided clear evidence that a large percentage of operational personnel surveyed did not understand the information provided by a thermal imaging camera within a fire compartment. The results showed that many personnel misinterpreted the temperature readings. This prompted a comprehensive review, upgrade and re-issue of all thermal image camera literature and training packages, with an emphasis on their use in relation to compartment fires.

4.2.27 In 2014, new thermal imaging cameras were introduced, intended for use by Incident Commanders to complement those in use by BA wearers. These cameras provide a full thermo-graphic picture of any property involved in fire, and assist the Incident Commander in formulating a tactical plan.

4.2.28 GMFRS recently introduced a new IT based training system which involves user completion of an assessable test of knowledge. Risk critical questions around the use and capabilities of GMFRS' thermal imaging cameras will feature in these tests to ensure that the appropriate level of understanding is achieved and maintained by the operational crews. At present, operational personnel in GMFRS carry out training on the thermal imaging cameras at least once every 6 months to maintain competencies in line with Firefighter National Occupational Standards (NOS).

4.2.29 *Aerial monitors; It is recommended that all FRSs should undertake a review to ensure the adequacy of standard operating procedures, guidance and training in the deployment of aerial monitors to ensure the safety of any personnel within the risk area is not compromised.*

4.2.30 GMFRS response: GMFRS accept that there is a lack of guidance in the operational arena as to the use of aerial monitors at incidents where breathing apparatus crews are committed to the risk area. This highlights a previously unidentified gap in procedural guidance.

4.2.31 There is limited written guidance in the National Operational Guidance on this subject knowledge was formerly passed on through peer networks and commonly referred to as 'practical firemanship'. Now that this omission has been highlighted, work is currently underway to create an aide memoire specific to this field (for issue late 2016), which will act as an interim guide. The knowledge to inform this piece of work is being drawn from a variety of sources including other FRSs, appropriate GMFRS departments and operational staff from aerial appliance stations who have practical working experience of this equipment.

4.2.32 This subject matter will be covered in full in the 'Fires in Buildings' standard operational procedure (SOP) currently under development by the GMFRS Operational Information Team. The draft SOP will be taken to the internal Operational Information Governance Group for ratification prior to publication. This group contains members of the Health and Safety Committee, including the FBU's own Health and Safety representative. Following the publication of this SOP, an action card will be created that will replace the interim aide memoire.

4.2.33 *7(2)(d) criteria; It is recommended that all FRSs should undertake a review to consider the circumstances in which inspections should be carried out under section 7(2)(d) of the Fire and Rescue Services Act 2004.*

4.2.34 GMFRS response: the GMFRS operational risk gathering inspection strategy is based on a risk profiling scoring system. In practice this means that where a premises has a higher risk scoring it will be visited for the purpose of gathering risk information, whereas low risk scoring premises will not. The lowest score (less than 5) will generate a validation check by the GMFRS Contact Centre every 36 months whereas the very highest score (above 20) should generate a visit by an operational crew, and where resources permit, a Fire Safety Enforcement Officer every 12 months. For information, Paul's Hair World (PHW) is one of over 18,000 commercial businesses on record for the borough of Manchester and this borough is one of 10 boroughs covered by Greater Manchester Fire & Rescue Service. Under this inspection process, as a shop, PHW today scores 8 (low risk), resulting in a validation check by the Contact Centre every 24 months. PHW and its 'parent' building does not contain any 'active' fire safety measures that would raise the risk any higher than low.

4.2.35 As an example of this risk based approach, significant risks relating to residential high rise premises were highlighted in reports following the Shirley Towers and Harrow Court incidents. Since these reports GMFRS has concentrated on inspecting residential high rise properties and all those properties within the county now have

a specific risk record. The same exercise is now being undertaken to gather risk information on commercial high rise properties.

4.2.36 In 2014 all GMFRS operational crews began fire safety training to complement the ongoing 72(d) risk assessment and site specific risk information capturing process. The training themes are:

- General principles of fire protection
- The emergency response and fire safety interface
- The built environment

The initial sessions were delivered by GMFRS uniformed Fire Safety Enforcement Officers however this has now evolved into online 'webinar' sessions due to continue into 2017.

4.2.37 Following the fire at PHW a 12 month project was established to inspect all the properties in the surrounding area of Manchester. The intended outcome was to reduce the number of fires in non-domestic premises, improve community engagement within the residential sector and to enhance safety measures within the building stock through regulatory compliance and design innovation.

4.2.38 The Coroner also recommended that all the above mentioned steps be undertaken jointly by Fire and Rescue Services and the FBU or other Health and Safety Representatives on the Health and Safety Committees.

4.2.39 GMFRS response: In GMFRS, a task and finish group is working to make improvements in relation to all the above recommendations. Members of this group include a representative of the FBU and also representatives from the GMFRS Health and Safety team. The FBU Health and Safety Representative also attends the GMFRS Health and Safety Committee. An example of joint working between GMFRS and Representative Bodies is provided at 4.3.6 below.

Section 4.3: Other related GMFRS improvements post July 2013

4.3.1 As well as the looking to tackle the areas of concern highlighted by the Coroner, GMFRS have been proactive in developing other advances to improve firefighter safety throughout the organisation since July 2013.

4.3.2 GMFRS updated its 'Incident Command Policy and Procedure' document in November 2014 to apply the principles and guidance contained within the current Incident Command National Operational Guidance (NOG). All GMFRS training and guidance notes applicable to Incident Command are currently being reviewed and ordered into an overarching 'Incident Command Policy and Procedure' document by the Operational Information Team, scheduled for publication in February 2017.

4.3.3 Incident command; Training and assessments have improved through the development of the XVR software system to ensure all our officers have command competence. XVR is interactive software capable of simulating a wide range of scenarios. It provides high quality training and will develop skills of personnel in a command role such as conducting dynamic risk assessments and risk critical decision making. These skills ensure that Incident Commanders maintain a high level of competency which will help them make better decisions at incidents, where lives and property are at risk. Incorporating 'joint working' and 'joint understanding' with other emergency services within these simulations has also been instrumental in assisting the understanding of the need for a multi-agency approach. Since July 2013, GMFRS has been externally recognised by the British Quality Foundation for its innovation around the use and development of this XVR system.

4.3.4 Functional role guidance: The guidance in use in July 2013, 'Functional Officers Roles and Responsibilities', does not allocate a specific role the responsibility for the organisation of reliefs at a protracted incident. This has since been addressed in an updated set of 13 'functional role' service orders, which have been issued to clearly set out the roles and responsibilities of functional officers. In this document, one of the designated tasks of the Command Support Officer is to 'manage the Command Support Team's coordination of reliefs'.

4.3.5 Lessons learnt tracking system; GMFRS introduced the Review of Significant Events Register (RoSE) in 2014. This allows the recording of events whether they occur internally or externally to GMFRS and allows issues to be tracked from their identification to resolution. Previous Firefighter fatalities incidents have always been priority for the organisation, both to learn from and to avoid similar events.

4.3.6 As an example GMFRS worked very closely with the Fire Brigades Union (FBU) to address the areas highlighted by the FBU reports into the fires at Atherstone-on-Stour in 2007 and Marlie Farm in 2006, which tragically claimed the lives of serving firefighters. The outcome of these reviews was reported through to the Joint Health and Safety Committee (JHSC) with full support given to the outcomes by the representative bodies (Fire Officers' Association, FBU etc.). It is the duty of the JHSC to scan the wider environment to identify potential risks to staff and to work collectively to ensure that those risks never materialise. The FBU Brigade Secretary publically supported this joint work through to its conclusion in 2015 ensuring that everything possible was done to learn and provide maximum protection for firefighters.

4.3.7 Incident ground radio communications; All appliances have been fitted with new Motorola digital radios and chargers. The project to replace previous radios began in 2012 with rollout in February 2014. Incident Command vehicles and Command Support vehicles were also supplied with new radio repeaters to increase the ability to deliver more robust communications at incidents.

4.3.8 Command appliances; a new command appliance has been purchased to provide enhanced support at operational incidents. This Command Unit (CU) based at Rochdale is mobilised to incidents of 6 pumps and above, and uses new technology to assist in incident command. The two Command Support Units (mobilised to 4-5 pump incidents) based at Hyde and Atherton have been upgraded with similar technology to carry out the same function as the CU. Incident information and command decisions are now recorded on the 'Vector' system, a new technology on these appliances that effectively allows all incident records to be held on a remote server.

4.3.9 Electronic decision logging system; GMFRS implemented an electronic decision logging system in April 2014. This is available when the Command Support Room is open or if a command vehicle is in attendance. A new decision logging policy and revised contemporaneous note pads were introduced in 2014. GMFRS officers record key operational decisions and the rationale for those decisions using a variety of ways, appropriate to the level of incident or event being dealt with. This may be through radio messages, written records in contemporaneous notebooks and decision log books, or through the command support function. Where decisions are recorded, so will the rationale for the decision. It is recognised that records will be made where operational discretion or professional judgement is used. The review of the Analytical Risk Assessment (ARA) process will support this decision logging process.

4.3.10 Firefighting equipment; GMFRS acknowledges that improvements in equipment will always be required to ensure the safety of Firefighters and prevent similar fatalities in the future. In 2015 GMFRS introduced the ultra-high pressure cutting lance (UHPL), which has the ability to pierce surfaces to introduce fine water mist into a compartment fire. This limits water damage, improves internal conditions and more importantly in relation to this investigation, reduces the need for Firefighters to enter the building.

4.3.11 In December 2014 the existing black 19mm diameter hosereel tubing on all frontline appliances was replaced by new yellow 22mm diameter high pressure tubing. The purpose for this change was to improve fire fighter safety by increasing the flow of water available at the branch to assist gas cooling during compartment firefighting and reduce the physical effort required when moving either 45mm or 70mm hoselines from one area to another.

4.3.12 PPE; new layered firefighting kit was also introduced in 2014 which was very different to the previous kit. It now comprised of trousers, a mid-layer jacket and a breathable outer jacket that is more ergonomically fitted.

4.3.13 Additional; an Air Unit (commonly referred to as a drone) was introduced in 2015. This can gather imaging data and relay this down to the incident ground to improve situational awareness and inform decision making by the Incident Commander. A new Command Support Room and Business Continuity Management Room has been established at GMFRS Head Quarters. A new inner cordon gateway control incident system was introduced in July 2015. The purpose of this system is to enhance personal safety by ensuring operational personnel and other individuals are appropriately managed when entering the inner cordon during operational incidents.

4.3.14 The full Coroner's Regulation 28 letter can be seen at Appendix B.

Appendices

Appendix A: Glossary of terms
Appendix B: Regulation 28 Letter
Appendix C: Positive Action Pre-Coroner's Inquest
Appendix D: FBU recommendations and response
Appendix E: GMFRS Actions Post-Coroner's Inquest

Appendix A: Glossary of terms

Aerial appliance
A vehicle with the capability of delivering firefighting media from height which is also referred to as a Hydraulic Platform Vehicle (HPV) by GMFRS.

Analytical risk assessment (ARA)
Having completed the DRA and established a tactical mode, the IC will have formulated a tactical plan and will be managing the activities for that incident. The initial risk assessment forms the basis of a more detailed assessment, called the analytical risk assessment.

Automatic Distress Signal Unit (ADSU)
A device that emits at least an audible signal for summoning aid in the event the user becomes incapacitated or needs assistance, or for signalling evacuation, for use by Fire and Rescue Service personnel when wearing BA. It must be capable of being activated both automatically on immobility of the wearer of the distress signal unit and manually operated separately by the wearer.

BA Emergency
A message sent to Fire Control to initiate mobilisation of further support in the event of an emergency on the fireground relating to breathing apparatus

BA Pool
A designated area of the fireground where firefighters wearing breathing apparatus are gathered prior to allocation of tasks

Breathing apparatus (BA)
Self-contained respiratory protective equipment

Command unit (CU)
The CU is a dedicated vehicle with high tech communications and information systems. It allows an IC to manage an incident from a controlled environment with access to a host of information that will assist to develop the tactical plan.

Control measure
This is action taken to reduce the likelihood of a hazard. Severity of the risk cannot be reduced so the control measure must focus on making sure it is less likely to happen.

Defensive mode
Defensive mode can be applied to a sector or to the entire incident. This mode of operations will be used when the IC feels that the identified risks outweigh the potential benefits. Despite the available control measures, the remaining risks are still too great. Once a defensive mode is announced, all personnel must be made aware and the IC must ensure that everyone remains in the designated safe areas.

Dynamic risk assessment (DRA)
The term DRA is used to describe the continuing assessment of risk that is carried out in a rapidly changing environment.

Emergency Air Supply Equipment (EASE)
In the event of a BA wearer encountering difficulties with their BA set, GMFRS provide an EASE pack to allow emergency teams to assist their escape.

Emergency team
A number of BA wearers designated to standby at the entry control point(s) for emergency purposes.

Enhanced Rescue Unit
An appliance equipped with additional rescue equipment to that carried on the firefighting appliances. At this incident its enhanced cutting equipment was used to assist in making entry into the building through roller shutters and blocked up windows.

Entry control board (ECB)
A board used to monitor the safety of BA wearers and their cylinder contents.

Entry Control Officer (ECO)
An individual under the command and direction of either the Incident Commander or Sector Commander, nominated to monitor the wearing of BA through an entry control point, complete BA entry control point records, follow and implement appropriate procedures as directed, and notify the officer responsible for the entry control point of any relevant information, issues or significant events.

Entry control point (ECP)
The point used for monitoring and controlling BA use, and entry to and exit from the risk area where BA is used.

Fireground
A term used to describe the area within which fire service resources are operating.

Ground Monitor
A firefighting jet designed so it can be left unattended whilst in operation.

Hazard
The potential of a substance, activity or process to cause harm or damage

Hazard area
An area of operations where hazards are present and crews will be at risk, unless suitable measures are in place to eliminate or control the risks.

Hosereel
A small diameter hose tubing wound on a drum on both sides of the pumping appliance and capable of supplying a small jet (a hosereel jet).

Hydraulic Platform Vehicle (HPV)
See aerial appliance

Incident Command Board (ICB)
A board used to capture and record key information relevant to the incident such as hazards, risks, control measures and tactics.

Incident Commander (IC)/ Officer in charge (OIC)
The IC is the most senior officer in charge of an incident. In older documents, (such as TB 1/97) the IC is referred to as the Officer in Charge (OIC). The IC is responsible for the overall management of the incident and will focus on:

- Health and Safety.
- Command and Control.
- Deployment of Resources.
- Tactical Planning.

Jet
A firefighting jet supplied either by 45mm or 70mm hose-lines.

Logistics Officer (LO)
In GMFRS, the logistics officer assists the IC in the management of all fireground activities.

Low pressure warning whistle (LPWW)
A pneumatic whistle that is designed to operate when the remaining cylinder contents fall below a designated cylinder pressure and provide only the safety margin of compressed air.

Main control
An additional level of control required to oversee the requirements of Stage II procedures demanded by the circumstances of a large protracted BA incident.

Main Control Officer (MCO)
The officer charged with overseeing the BA main control.

Offensive mode
Offensive mode can be applied to a sector or to the entire incident. Offensive mode is adopted when the incident is being dealt with from inside the perceived hazard area.

Operational Assurance Officer (OAO)
In GMFRS, the OAO supports the IC to discharge corporate responsibilities and ensure the highest standards of public service are maintained in terms of operational response.

Operations Commander (OC)
An officer tasked with co-ordinating and directing the operational sectors of an incident. The operations commander is responsible directly to the IC. When an operations commander is assigned, the operational sector commanders will report directly to the operations commander rather than the IC.

Operational Support Officer (OSO)
In GMFRS, the role of the OSO is to provide support to the IC as required. This support function is provided using the Operational support unit (OSU) vehicle.

Operational support unit (OSU)
A dedicated vehicle with high tech communications and information systems allowing an Incident Commander to manage an incident from a controlled environment with access to a host of information that will assist to develop the tactical plan.

Ops 25
An operational incident form used to record hazards and control measures on the fireground.

Ops 50
An operational incident handover form introduced by GMFRS which is to be used during the briefing process.

Personal protective equipment (PPE)
Equipment that will protect the user against health or safety risks at work.

Risk
The likelihood of a substance, activity or process to cause harm.

Safety cordon
Safety cordons are used as an effective method of controlling and limiting access to and egress from an emergency scene and maintaining safety on the incident ground. The objective of a safety cordon is to facilitate the work of the emergency services and other responding agencies in the saving of life, the protection of the public and property, and the care of survivors.

Safety Officer (SO)
Certain hazards identified on the incident ground may necessitate the IC or SC to allocate a safety officer as the control measure. It will be the responsibility of the safety officer to monitor the hazard and reduce risk to personnel on the incident ground. Generally, safety officers are appointed for specific hazards that can be controlled by one person. The safety officer will report directly to the SC.

Sector
A sector is an agreed area of responsibility that is delegated to a sector commander (SC). Identifying sectors, and appointing SC's, allows the IC to manage to whole incident effectively. Sectors should be created to manage spans of control and ensure that all areas of operations receive the appropriate supervision and control. Operational sectors are those that are directly involved in dealing with the incident, where support sectors are often providing support in the form of a functional area such as water, decontamination, marshalling or foam.

Sector Commander (SC)
A SC will be appointed for every sector on the incident ground and will report to the IC. The SC has responsibility for the health and safety, and command and control, within their sector. The SC is responsible directly to the IC or the operations commander. The SC is responsible for implementing the tasks that will ensure that the IC's objectives are achieved.

Standard operating procedure (SOP)
Established procedure to be followed in carrying out a given operation or in a given situation

Tactical mode
The tactical mode is the term used to describe the outcome of a decision taken by the IC, which in turn provides the operating framework and tactical approach to the incident. In GMFRS, there are two tactical modes: defensive and offensive. The ICS Manual has three modes: defensive, offensive and transitional. Transitional mode is when both offensive and defensive modes are in use at the same time.

Tactical plan
Tactical planning is about determining the best solution for dealing with an incident. A good tactical plan will allow the IC to develop a clear understanding about what needs to be done to end the incident and restore normality. This is achieved by setting and completing strategic and tactical objectives.

Ultra high pressure lance (UHPL)
An appliance mounted high pressure hose reel water jet system.

Welfare Officer (WO)
An individual nominated to assist the incident commander with the welfare of incident ground personnel.

Appendix B: Regulation 28 Letter

	REGULATION 28 REPORT TO PREVENT FUTURE DEATHS **THIS REPORT IS BEING SENT TO:** • The Rt Hon. Theresa May MP, the Home Secretary • Mr. Peter Holland CBE, Chief Fire and Rescue Adviser Copied for interest to: • The Chief Fire Officer of Greater Manchester Fire and Rescue Service • The Chief Fire Officer of Merseyside Fire and Rescue Service • The Chief Fire Officer of West Yorkshire Fire and Rescue Service • The family of the Deceased • The President of the IFE • The other Interested Persons in the Inquest
1	**CORONER** I am Nigel Meadows, H.M. Senior Coroner for the area of Manchester City.
2	**CORONER'S LEGAL POWERS** I make this report under paragraph 7, Schedule 5, of the Coroners and Justice Act 2009 and regulations 28 and 29 of the Coroners (Investigations) Regulations 2013.
3	**INQUEST** In summary terms the jury found that the deceased had been unlawfully killed (by unlawful act manslaughter by arson) by a joint enterprise involving two juveniles and answered a number of other specific factual issues. Narrative conclusion comprising the answers to the following questions: Question 1: Are you satisfied so that you are sure that the deceased was unlawfully killed by the acts of a single person? Answer: No Question 2: Are you satisfied so that you are sure that the deceased was unlawfully killed by the acts of a joint enterprise? Answer: Yes Question 3: Do you find that the fire was probably deliberately started by the acts of one person? Answer: No Question 4: Do you find that the fire was probably deliberately started by the acts of a joint enterprise? Answer: Yes

Question 5: Was the caged cardboard storage area and the racking up the stairs from the emergency exit doors probably installed in or about the summer of 2009?

Answer: Yes

Question 6: Was the caged cardboard storage area and the racking up the stairs from the emergency exit doors probably installed and in place on 2 August 2012 when a fire risk assessment was carried out and was it in place on 13 July 2013?

Answer: Yes

Question 7: Did the presence of the caged cardboard storage area and the racking up the stairs from the emergency exit doors contribute to the fire developing?

Answer: Yes

Question 8: This question asks you about the probable control measures that were in place during the afternoon shift on 13 July 2013:-

(a): Was the period of wear for BA crews entering through the doorway in sector 1 probably limited to a period of time during the day shift?

Answer: Yes

(b) If the answer to the previous question is "yes", what was the time limit?

Answer: Maximum 20 minutes

(c) Were most BA crews entering through the doorway in sector 1 probably told to remain at the top of the stairs just inside the doorway and fight the fire from there only?

Answer: Yes

(d) Were there any other probable safety control measures instigated in sector 1 doorway for BA crews entering the building during the afternoon of 13 July 2013?"

Answer: Yes, there was a second safety officer to keep an eye on BA crews entering the doorway and to keep visual and/or verbal contact to check that they are okay.

Question 9: Were the safety control measures that you have identified in response to question 8 probably communicated to:-

(a) The entry control officer who sent the deceased and [redacted] into the building?

Answer: No

(b) The new sector commander for sector 1 at the changeover of shifts at about 2000 hours on 13 July 2013?

Answer: Yes

(c) The new entry control officer for sector 1 at the changeover of shifts at about 2000 hours on 13 July 2013?"

Answer: No

Question 10: Were the same safety measures that you have identified in response to question 8 probably in place when the Deceased and his colleague entered the building and if not should they have been?

Answer: Measures were in place although not implemented. These measures should have been carried through over handovers.

Question 11: Did the new sector commander and/or entry control officer for sector 1 probably fail to understand or comprehend and then implement the safety measures they were advised about?

Answer: The new sector commander misinterpreted the brief and the entry control officer was not fully informed and, therefore, couldn't implement the safety measures.

Question 12: On or about the time the deceased and his colleague entered the building was either of the new Entry Control Officer, the Sector Commander, the Sector Safety Officer, probably aware of the following:-

(a) that the previous BA teams had been limited to a 20 minute wear? If so, please specify who (by reference to their role and not their name - for example, Sector Commander; Entry Control Officer; Sector Safety Officer Etc.) knew what?

Answer: Ops commander, Sector 1 commander, Second safety officer, Ops support, Ops assurance and Sector safety officer

(b) that they had been directed to go to the top of the stairs and fight the fire at that point but go no further? If so, please specify who (by reference to their role and not their name -for example, Sector Commander; Entry Control Officer; Sector Safety Officer; etc) knew what?

Answer: Sector 1 commander, BA entry control officer, second safety officer, incident commander, operations commander, operational support, operations assurance, sector safety officer, logistics officer, and sector 4 commander.

(c) that a safety officer had been dedicated to watch over them and keep in communication? If so, please specify who (by reference to their role and not their name -for example, Sector Commander; Entry Control Officer; Sector Safety Officer; etc) knew what?

Answer: Second safety officer, sector 1 commander, operations commander, operational support, sector safety officer, and sector 4 commander.

Question 13 (a) What brief was probably given to the deceased and his colleague before entering the building at 20:04 hours; and (b) had this brief changed from earlier briefs and, if so, in what respect/s?

Answer: The deceased and his colleague were two briefs. The entry control officer gave:" Go to the top of the stairs, take over, sit there and squirt water, top of the mezzanine, you know what the crack is". The second safety officer gave this quote "Go to the top of the stairs, turn left, turn right, use the thermal imaging camera, and spray water from there." The brief changed from earlier briefs due to the wording-- sorry, the brief changed from earlier briefs due to the wording with the inclusion of the word "mezzanine" and no direct instructions.

Question 14: Did the deceased and his colleague probably follow their brief?

Answer: Yes, they followed their brief as they understood it. The confusion was due to the use of the term "mezzanine" and "seek out hot spots" may have led them to misunderstanding the brief.

Question 15: What factors probably contributed significantly to the death? They need not be the sole or even the principal cause of death, but they must be more than merely

	minimal. Answer: 1. Lack of communication / information at handover 2. Lack of communication, information at briefing and debriefing 3. Misinterpretation of instructions 4. Incorrect decision making 5. Competency within roles given 6. Paul's Hair World storeroom layout, internal conditions (stock, debris, smoke detectors) 7. Breakdown of telemetry radio communications 8. Inadequate fire risk assessments 9. Inadequate fire safety measures within Paul's Hair World (Fire drills) 10. Act of vandalism / criminal damage.
4	**CIRCUMSTANCES OF THE DEATH** The events concern a business known as Paul's Hair and Beauty World ("PHW") operating from the ground floor of 21 to 33 Oldham Street in the city centre of Manchester. The business is run by [redacted] and he took up occupation of this premises in approximately 2003 as a sub-tenant. He then became the main tenant in 2006. Over the years his business has been quite successful and he has other outlets. The nature of the business is the sale in particular of human and synthetic hair extensions as well as associated hair and beauty products. He also had an on-line business. Prior to PHW's occupation, the premises was used as a nightclub requiring a public entertainment license. It has a main front entrance as well as a rear emergency exit comprising of two doors which open outwards, but also another emergency exit which led onto a protected staircase also towards the rear of the premises. It seems that the protected staircase emergency exit was not used and indeed was padlocked when PHW took over the premises. The evidence indicated that it had never been used. The business kept a substantial amount of stock usually in large boxes. The front of the premises was designed as a shop in which customers could simply walk through aisles of products and it also had display cabinets. There was a main counter system. The rear of the premises which used for storage and office space and this was at a premium. It seems that over the years in order to boost the level of stock that could be kept a system of wooden racking from floor to near ceiling had been fitted out. It seems that by 13 July 2013 the disused emergency exit doors had been covered with racking for some years. In or about 2004 [redacted], who had previously been a Greater Manchester Fire and Rescue Service ("GMFRS") firefighter for 23 years, started an unincorporated business known as Firefighter UK. Originally, he simply serviced fire extinguishers at PHW but, as his business developed, he subsequently held himself out as being a competent fire risk assessor. In 2009, he completed a formal fire risk assessment document for PHW. He returned in 2010 and 2011 to service the business's fire extinguishers. However, in July 2012 PHW had a health and safety assessment carried out by [redacted] of a business known as Spectra Business Solutions and it was noted that the businesses fire risk assessment was out of date [redacted] was contacted and arranged to attend again, and conducted what he told the court was a fresh or initial fire risk assessment. In about the summer of 2009, a [redacted] of [redacted] Joinery was asked by PHW to construct a mezzanine floor level within the storage area at the rear of the demised premises and in addition to create some additional racking to store products which run up from the emergency exit doors at the rear of the premises on the right-hand side as you look at them from the outside. He also created a caged cardboard storage area which was situated behind the left hand door as you look at them from the outside.

Consequently, when [redacted] carried out his first fire risk assessment in 2009, the evidence suggested that the mezzanine together with the additional racking by the emergency exit doors and the cardboard storage area had been created and was in existence and in use. That would be the same position in 2010 and 2011 and indeed again in 2012.

The emergency services were called at 14:59 hours and initially three fire appliances (or pumps) attended with other supporting colleagues travelling by other vehicles. However, very quickly it became clear that additional resources would be required to fight the fire and eventually some twelve pumps attended, in addition to initially one and then a second aerial platform. The fire was deep-seated and extremely difficult to tackle.

On 13 July 2013 [redacted] and [redacted] had travelled by train into Manchester from Bolton in order to visit the city centre. [redacted] had her 15th birthday only a few days before and she had been given some money by her father. The weather on that day was particularly warm with temperatures reaching 27°C. Both girls were intending to visit a business known as Affleck's Palace which is adjacent to PHW's premises.

One entrance into Affleck's Palace is situated near to the rear of PHW's premises on what is known as Tib Street. Significant parts but not all of the events of relevance that happened thereafter were captured on CCTV cameras. The evidence indicates that [redacted] and [redacted] went to sit outside the rear emergency exit doors of PHW at about 14:38:32 hours. Both girls wanted to smoke and it seems that they sat down and lit and smoked a cigarette each. [redacted] had a hand bag which contained both the cigarettes and lighters which were in their possession. There was a significant dispute as to fact between [redacted] and [redacted] about what transpired. It was contended by [redacted] that for some time she had difficulty in practical terms in actually using a lighter and she got her friends to do so and in particular [redacted]

[redacted] told the court that she was still unable to light a cigarette using a lighter on 13 July 2013. She said that [redacted] lit her cigarette for her on this occasion and passed her the lit cigarette. However, [redacted] maintained that whilst [redacted] had been unable to light her own cigarettes using a lighter for some time, she was able to do so by 13 July 2013 and did in fact light her own cigarette on this occasion. It would be fair to say that there were inconsistencies and contradictions in both their accounts but this was a matter of fact for the jury to determine.

The girls sat down and smoked the cigarettes slowly and chatted for a few minutes. The CCTV shows their leaving the vicinity of the rear emergency exit doors 14:45:36 hours. However, it is suggested that on close observation of the CCTV images the first signs of smoke from the fire are seen at about 14:46:33 hours. This was before the girls leave the doorway. At about 14:47:06 smoke was clearly visible. In other words about one and a half minutes after the girls moved away from the doors, [redacted] the shop manager, ran around the back and is seen on camera at 14:47:11 hours and she thought that it had taken about 2 minutes being alerted to the fire to arriving at the back doors. The fire itself was discovered by an employee of the business known as [redacted] Allowing a margin of error for back calculation it was estimated that he had actually discovered the fire at about 14:45:35 hours. This means that the fire was first noticed when [redacted] and [redacted] would still have been at the doors. When it was first discovered the fire was described as being in the cage cardboard storage area with flames about 4 or 5 feet high. As a matter of common sense it would have taken some time to get to that stage after ignition, albeit quite rapidly as the expert evidence indicated.

The court heard from a total of four expert witnesses in relation to the cause of the fire. Merseyside Fire and Rescue Service have been appointed to investigate the fire and the fire investigator involved was [redacted] He was an extremely experienced fire officer with over 10 years' experience as a fire investigator and had investigated in excess of 1000 fires. He visited the scene of the fire following the fatality and took a number of photographs. Subsequently a number of tests were conducted in a simulation of the location. In his opinion, the fire had been caused by naked flame passed

underneath the left-hand door as you look at them from the outside coming into contact with cardboard in the store.

In simple terms on the accounts given by both juveniles, neither of them could have been responsible for starting the fire. There was no evidence of any other third party involved. Even if there had been a discarded cigarette involved originating from either them they both told the court that they smoke their cigarettes virtually down to the filter and had stubbed their cigarettes out very shortly before leaving. Irrespective of the consideration of there being insufficient fuel in the sense of tobacco to burn in the cigarette, the experiment that [redacted] conducted would suggest that even in unique circumstances it would have taken another three and a half minutes for the fire to have started and it was quite clear that the fire had started when the girls were at the back door.

[redacted] opinions were supported by [redacted] who is a forensic scientist and has been investigating fires since about 2002. He had been involved in advising the police and the CPS in connection with the original prosecution of [redacted] He agreed that the seat of the fire was the caged cardboard store. He too had attended the scene of the fire and assisted in the initial excavation. In his opinion the most likely explanation was fire started as a result of a naked flame rather than a smouldering cause, such as a lit cigarette. He agreed with [redacted] that a lit leaflet could ignite cardboard within seconds or almost instantly. Whilst he acknowledged that in very particular circumstances it may be possible to start a fire using a lit cigarette, having read the transcripts of the evidence given by both juveniles it was apparent that neither of them was saying that any cigarette butt that they had been smoking had rolled under the left-hand door or could have rolled under the left-hand door.

In any event both girls were saying that their cigarettes were completely extinguished and had been smoked virtually down to the filter, [redacted] opinion that the cause of the fire was due to a naked flame was supported because of the timing of the events and that the girls were at the doors when the first signs of smoke can be seen. All of this points towards a naked flame ignition rather than a smouldering source.

[redacted], another forensic scientist who had been investigating fires longer than [redacted], was essentially of the same view, particularly with regard to the timings of the development of the fire. He had been instructed by the solicitors then acting from [redacted] respect of the criminal charges but had not been provided with copies of the girls' police interview records to understand precisely what they were alleging had happened. He had been asked to consider whether or not the fire could have been potentially caused by a discarded lit cigarette igniting combustible materials. He was advised tha[redacted] cigarette was dropped on the floor and it either was rolled or was kicked under the rear door. However, he agreed when giving evidence that if the explanation about a lit cigarette rolling under the door is ruled out than that would leave only one other potential source of ignition. Namely, the use of a naked flame in the form of a lit leaflet pushed under the door.

He did not attend the scene and carried out a paper review but then also carried out his own experiments. He purchased a number of cigarettes including those which were apparently being smoked by the girls at the time. He lit seven whole cigarettes and placed them on top of cardboard but on no occasion did they ignite a fire. For the eighth cigarette he created what was described as a cardboard sandwich with some paper wedged between them. He then inserted a lit cigarette horizontally into the package and blew on it several times. After about three and a half minutes there was an ignition and a flaming fire started. Unfortunately he did not record how many times he blew on the cigarette or for what length of time nor with what strength. Having completed this experiment, he thought as he demonstrated it was possible in some circumstances for a fire to be started and therefore did not do any further experiments including control experiments or putting a lit cigarette in contact with cardboard and/or paper is a different angle. Nor did he use cigarettes that have been smoked virtually down to the filter as was described in this case. This is important because the experiment that he video

recorded when a fire was ignited indicated that at least half of the cigarette had to be burnt before a fire could start. A virtually completely smoked cigarette would have very little fuel in the sense of tobacco to burn and would self-extinguish within a much shorter space of time. Apparently, the CPS decided to discontinue the prosecution and offer no evidence based on the contents of his report.

The court instructed another independent expert called [redacted] He was a very senior ex-Assistant and Acting Chief Fire Officer. He started investigating fires in 1984 and became a specialist fire investigation officer in 1993. He was the lead instructor for fire investigation for Derbyshire Fire and Rescue Service, as well as teaching police officers and scenes of crime officers about the process of fire investigation. He passed a number of examinations relevant in the fire service and was a member of the Institute of Fire Engineers. He investigated a large number of both fatal and non-fatal fires. He felt that the only credible way that the fire started was by the application of naked flame. He too took into account the timing of the events and pointed out that even if a discarded lit cigarette from the girls had managed to find its way under the door it would have taken much longer for any fire to have started than the evidence clearly shows in this case.

The expert evidence clearly indicates that the only credible explanation for the start of the fire is the introduction of a naked flame under the door into the cardboard storage area.

The fire itself took hold quite rapidly despite attempts by the owner and indeed others to try and extinguish the initial flames in the cardboard storage area. They had spread to the ceiling and across to the racking on the other side and ignited materials there which in turn had spread. There was a significant amount of combustible material. The premises were evacuated of all persons and on arrival one pump went to the back of PHW and the other to the front. The rear emergency doors where the fire started was designated as sector 1 in fire service terminology and the front of the building as sector 2. Initially crews wearing breathing apparatus (BA) were sent in to sector 1 in order to try and fight the fire but also carry out a reconnaissance mission. They reported back that the conditions were very cramped and there was an enormous amount of smoke being generated by the fire.

The span of command at a fire like this has an overall incident commander. Depending upon the nature and size of the fire they may have an operations commander as well as a logistics commander. The various designated sectors will each have sector commanders. The incident commander will set the overall strategy for fighting the fire which is then actioned by the operations commander. The individual sector commanders have responsibility for fighting the fire in their area and for the health and safety of the firefighters involved as well as members of the public. Where BA crews are used there will also be what is known as an Entry Control Officer who also operates the Entry Control Board. This can be written on with a black chinagraph pencil but also has telemetry connections with the BA crews' equipment. In this case, considerable amounts of pressurised smoke poured out of the building from both the front and the rear. Jets of water were applied to the front of the premises from early on but there was no ingress into the building by BA wearers.

As the afternoon progressed the sector commander in sector 1 appointed an overall sector safety officer but also appointed a second safety officer with a particular role. He had formulated a plan that BA wearers could enter via the emergency exit doors in sector 1, go up a short flight of about six steps and fight the fire from the top of that area but go no further. They were to be within visible sight or to be contacted audibly at all times. They could then direct jets of water to particular hotspots. Crews were given radios and thermal imaging cameras to assist. In addition because of extremely hot conditions both outside but particularly inside he set a maximum wear of 20 minutes. Over the afternoon there were some 40 entrances and exits by BA crew teams. In addition there was a specific entry control officer who had the responsibility of operating what is known as the entry control board. This role was carried out in the afternoon by a firefighter. He kept an eye on the 20 minute time limit and notified the second safety

officer when crews needed to be withdrawn. Overall, during the afternoon crews had self withdrawn on several occasions due to the deteriorating conditions. In addition they had been withdrawn by the second safety officer who could observe the conditions himself but from the outside. The entry control board itself has what is known as telemetry with the BA wearers equipment. On occasions this can be lost or can be intermittent but this would not automatically trigger any emergency response.

Over several hours, the conditions periodically changed in that there would be periods when less smoke came out of the building but other periods when significant amounts of pressurised smoke emanated from the building. In sector 1 they had managed to take down boarding across a disused window at the back of the building and make an entry into that compartment so that firefighters could be positioned on a platform immediately outside the building spraying a jet of water inside. They also managed to gain access to a protected staircase on the other side of the building in what became sector 4 and cut a hole in roller shutter doors covering the other set of disused emergency exit doors that had apparently been covered up with racking in the PHW premises. From there they deployed a fixed ground monitor. This is a static jet of water that is not controlled by firefighters themselves.

It was recognised this was a fire that was going to burn for some considerable time. The day shift would change at about 19:00 hours and new crews would be attending in order to take over from their colleagues who had been fighting the fire all afternoon. At the front of the premises had been positioned what is known as an aerial platform. This is able to deliver significant quantities of water onto a fire usually from a height. Depending upon the availability of water this equipment can fire a jet which is many times more in the terms of quantity than an ordinary 45mm hose. The building itself had on one side a coffee shop and on the other a hotel. There was concern to stop the fire spreading. At one point it was noticed that fire had apparently spread to the first floor and at about 19:18 hours there was a direction that all BA crews be withdrawn from the premises whilst the aerial platform directed water into the first floor.

This appeared to be successful and at about 19:30 hours the incident commander and his other senior officers met and decided that BA crews could be redeployed into the premises in sector 1 because there was no noticeable effect at the rear from the deployment of the aerial platform at the front of the building. Consequently, at 19:35 hours to firefighters wearing BA equipment were deployed into the building and they left at 19:52 hours. The BA crew team leader did not recall being told about the 20 minute maximum wear but in any event heard a shout for them to leave and they did so and took with them their hose. Usually they would have a debrief with either the entry control officer or the sector commander but this did not take place. It would seem that sometime after about 19:30 hours the sector commander of sector 1 handed over to his replacement and maintained that he gave a thorough brief explaining in particular the role of the second safety officer outside the sector 1 entrance keeping an eye on the firefighters at the top of the stairs. The second safety officer himself told the court that he briefed three colleagues on his role because originally he thought one of them was going to take over his particular tasks. Likewise the entry control officer says that he handed over what he had been doing that afternoon.

The incoming sector commander, entry control officer and sector safety officer gave evidence and did not seem to have either heard or understood about the particular safety measures for BA crews entering via sector 1. It is a matter of fact for the jury to decide but on the evidence that they have heard they could come to the conclusion that whatever brief was given to the deceased and Firefighter [redacted] was not the same as the earlier briefs. There was no second safety officer appointed. The jury were played CCTV recordings of the exit of the firefighters at 19:52 hours and then the deceased and Firefighter [redacted] preparing to go in at 20:04 hours.

The sector 3 commander decided to redirect the aerial platform jet into the front ground floor main entrance of the premises but indicated that he would not have done so had he realised that there were BA crews entering via sector 1. It seems that he decided to do

this without any specific instruction from the operations commander who told the court that he gave no such authority or instruction. Both the operations commander and the incident commander told the court that in fact they would have had no concern about this because they knew something of the structure of the internal part of the premises in that there was a dividing wall between the front of the shop in the rear storage area. Ideally sector commanders should communicate with one another about their activities in case they may affect the firefighting operations in another sector.

The deceased and his colleague Firefighter [redacted] had arrived as a member of the new evening shift and formed the BA team. They were directed to go to sector 1 and went under air at 19:59 hours and then went into the building at 20:04 hours. If they had been subject to a 20 minute maximum wear then they should have been exiting the building at 20:19 hours. In the event relief crew was sent in at 20:26 hours and they believed that it took them a couple of minutes to find the deceased and Firefighter [redacted] They had gone to the top of the stairs, turned left and had been found in the area outside what was described as the post room and at the base of a flight of stairs up to a mezzanine level. Visibility inside was virtually zero. The relieving crew had followed in the hose. The deceased was the leader of the BA crew and apparently walked towards the leader of the relieving crew and thrust the hose in his chest and said words the effect that they were getting out of there.

It was thought that this was about 10 metres inside the building. It was only a few feet away from the top of the stairs and the exit. Firefighter [redacted] had no recollection of this at all and in particular seeing and being relieved by the new BA crew. However, he did remember the post room and the fact that the deceased had gone virtually to the top of the stairs leading to the mezzanine when Firefighter [redacted] explained that he was feeling extremely hot and he thought that they should leave the premises. His recollection was that the deceased came down the stairs and they tried to follow their hose out but could not do so. They were crawling on their hands and knees and he recognised that he was suffering the cognitive effects of extreme heat. At one point he recognised the need to press the emergency button on his ASDU equipment but simply could not manage to do so even though he knew fully how to operate it. It seems that he suffered a very painful burn to his left hand and removed his glove.

The BA crew which had gone in to relieve the deceased and Firefighter [redacted] very quickly came to the conclusion that the circumstances inside were not as described to them when they were briefed and they decided to withdraw from the building and were seen doing so at 20:32 hours. When they exited they were mistaken for been the deceased and Firefighter [redacted] On leaving the building they thought they heard cries for help.

The BA equipment also known as ASDU has a telemetry system to make contact with the entry control board. This will show the rate of consumption of their air. It also has a movement sensor system so that if the operator does not physically move for a period of 36 seconds it will set an alarm off. The equipment can also set off what is known as a low pressure alarm when only a limited amount of air is still in the BA cylinder. In this case, the deceased's low pressure alarm was sounded at 20:30 hours and then motion alarm itself 20:35 hours. This coincided with the time that the deceased actually ran out of air completely.

Firefighter [redacted] low pressure alarm sounded at 20:32 hours. A BA emergency was called at 20:34 hours. A BA crew that had been sent to reposition the ground monitor at sector 4 heard what they thought was the sound of colleagues within the compartment. By crawling on his hands and knees he came across Firefighter [redacted] began to rescue him with the assistance of his colleagues. This coincided with the initiation of the BA emergency and it is thought Firefighter [redacted] was rescued at 20:35 hours. Other colleagues came to assist but it was not until 20:41 hours that the deceased was found a short distance away and removed from the fire compartment outside. He was still wearing his facemask but not his helmet. He had also lost a glove and a boot. Attempts were made to resuscitate him at the scene but with no success. He was taken to the

Manchester Royal Infirmary where further efforts at resuscitation also proved unsuccessful and he was pronounced dead at 21:21 hours.

After his death was reported to me, I authorised a forensic post-mortem examination carried out by a very experienced forensic pathologist. I also authorised a second post-mortem examination carried out by another forensic pathologist. It was apparent the deceased had suffered no significant traumatic injuries and examination of his heart and other organs demonstrated no abnormality. The first Forensic Pathologist [redacted] gave evidence and in summary terms expressed the opinion that the cause of death should be described as 1(a) Heat exhaustion and hypoxia.

5 **CORONER'S CONCERNS**

During the course of the inquest the evidence revealed matters giving rise to concern. In my opinion there is a risk that future deaths will occur unless action is taken. In the circumstances it is my statutory duty to report to you.

The **MATIERS OF CONCERN** are as follows:

(1) It is suggested that all Fire and Rescue Services (FRS's) should consider the implementation of measures to reduce the risks associated with the physiological affects of working in a hot environment. In particular consideration should be given to:
Duration of wears under breathing apparatus;
Having regard to all relevant factors including, for example the weather, previous exertions of SA teams and individual circumstances;
Training and guidance for all operational personnel to recognize the effects of heat both on themselves and on their colleagues and the appropriate steps to take upon such recognition, including withdrawal and self withdrawal.
Training and guidance for all operational personnel to have the ability and confidence to ensure the withdrawal of others who may be adversely affected by heat whether by calling a SA emergency or otherwise appropriately.
Training and guidance for all operational personnel to have the ability and confidence to withdraw themselves by whatever means appropriate including activating the ADSU.

(2) It is suggested that all FRSs should consider the implementation of measures to reduce the risks associated with the loss of communications at operational incidents. For example, to include safety control measures to ensure SA teams can be withdrawn from the risk area if needed.

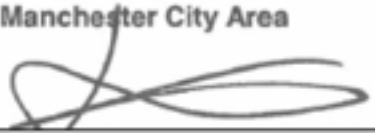
(3) It is suggested that all FRSs should undertake a review to ensure the adequacy of standard operating procedures, guidance and training of the handing over and taking over of roles at incidents to ensure all the key areas of information, including safety control measures, are captured and shared.

(4) It is suggested that all FRSs should ensure that significant hazards and any safety control measures are the responsibility of the incident commander and should be recorded within each sector, to ensure visibility to all on the fireground, and passed/copied for use by the incident commander/command team to assist on the analytical risk assessment.

(5) It is suggested that all FRSs should undertake a review to ensure the adequacy of standard operating procedures, guidance and training in the appropriate use of thermal imaging cameras to include the limited extent to which they can be relied upon to measure ambient temperature.

(6) It is suggested that all FRSs should undertake a review to ensure the adequacy of

	standard operating procedures, guidance and training in the deployment of aerial monitors to ensure the safety of any personnel within the risk area is not compromised. (7) It is suggested that all FRSs should undertake a review to consider the circumstances in which inspections should be carried out under section 7(2)(d) of the Fire and Rescue Services Act 2004. (8) It is suggested the above mentioned steps be undertaken jointly by Fire and Rescue Services and the FBU or other Health and Safety Representatives on the Health and Safety Committees. (9) It is suggested that the Secretary of State for the Home Department considers measures to ensure that: fire risk assessors are adequately trained and qualified so as to be competent in the role, and the responsible person has the means to verify the competence of any person holding themselves out to be a fire risk assessor. (10) It is understood that there are some 45 Fire and Rescue Services and the findings of the inquest need to be disseminated down to them all. The pressure is upon them to find their own solutions to problems against the backdrop of financial pressures. The Home Office now leads on fire issues and there has been ever increasing decentralisation. Whilst this is not without merit there appear to be difficulties in ensuring that services are meeting expectations and a means of disseminating national learning. It is suggested that consideration is given to being able to mobilise a national and consistent approach to sharing the learning and testing so that it can be shown to be received, understood, actioned and embedded.
6	**ACTION SHOULD BE TAKEN** In my opinion action should be taken to prevent future deaths and I believe you and your organisation have the power to take such action.
7	**YOUR RESPONSE** You are under a duty to respond to this report within 56 days of the date of this report, namely by Friday 12 August 2016. I, the coroner, may extend the period. Your response must contain details of action taken or proposed to be taken, setting out the timetable for action. Otherwise you must explain why no action is proposed.
8	**COPIES and PUBLICATION** I have sent a copy of my report to the Chief Coroner and to Interested Persons. I have also sent it to organisations who may find it useful or of interest. I am also under a duty to send the Chief Coroner a copy of your response. The Chief Coroner may publish either or both in a complete or redacted or summary form. He may send a copy of this report to any person who he believes may find it useful or of interest. You may make representations to me, the coroner, at the time of your response, about the release or the publication of your response by the Chief Coroner.

9	Nigel Meadows HM Senior Coroner Manchester City Area 

Appendix C: Positive Action Pre-coroners Inquest

Area of development identified	How this was addressed
Incident Command	• Introduction of a bespoke Command Support Room at Headquarters. • Introduction of a Business Continuity Management Room. • A new tally system to improve incident ground identification. • Updated Incident Command procedures and new guidance published. • Improvements made to assessment of all levels of incident commander. • A new command vehicle purchased to provide enhanced support at operational incidents.
Handovers and Briefings	• New guidance document published to improve this process. • New checklist style form introduced to ensure all risk critical information was handed over on the incident ground at relief stage from one OIC to another. • New functional role guidance documents issued clearly setting out the responsibilities of functional officers.
Breathing apparatus	• Revision of all BA procedures to comply with OGBA 2014. • Enhanced safety through the mobilisation of specialist rescue teams to all incidents of 6 pumps and above.
Incident ground radio communications	• All front line and reserve appliances fitted with new Motorola digital radios and charging units. • Radio repeaters replaced on command support vehicles.
Future fire-fighting	• New thermal image cameras introduced in 2014 that allowed incident commanders to thermal scan a building to inform tactical decision making. • New layered fire-fighting PPE introduced in 2014. • An Air unit (or drone) was introduced in 2015 to gather imaging data to enhance situational awareness at operational incidents. • Ultra high pressure cutting lance (UHPL) fitted on all first appliances to create a safer environment for fire fighters entering a building
Recording decisions	• Adoption of an electronic decision logging system fully implemented in April 2014. This is available through the Command Support Room, the Control Unit or the Command Support Vehicles.
Thermal imaging camera (TIC)	• A Comprehensive review was carried out on all TIC literature and training packages in September 2014 with an emphasis on their use in relation to compartment temperatures.
Firefighter physiology	• In conjunction with Salford University and Draegar, GMFRS has initiated research into a control measure that will assist in monitoring a fire-fighters physiology in the operational arena. • Welfare of Personnel at Operational Incidents Service Order April 2014

Appendix D; FBU Recommendations and Response: Summary

No.	FBU Recommendation	GMFRS Response
1	Carry out a comprehensive risk based inspection programme within Greater Manchester focusing on, but not exclusively to, the Northern Quarter.	A 12 month Safety Support Project was undertaken targeting premises in the Northern Quarter in August 2013. This project was completed in July 2014. Analysis of statistics suggests that this project brought down the occurrence of fires in the NQ with an estimated economic saving of 65% from the previous year.
2	Establish a formal structure that would allow operational crews to regularly liaise with GMFRS fire safety managers	Single Point of Contact (SPOC) Fire Safety Officers allocated to each station. These officers assist operational crews with 72d inspections, as well as providing information and undertaking training.
3	Identify gaps in FF knowledge and skills to include understanding of how fire safety measures may affect operational procedures	Operational Training & Development describes an annual programme of delivered training. Operational training requirements are identified each year through a Training Need Analysis (TNA). Maintenance of Skills (MOS) provides a consistent approach to locally delivered (on station) training. Tactical commanders will also have an annual MOS schedule as well as undertaking a simulated assessment every 24 months at the Incident Command Academy.
4	Review all radio communication equipment for reliability	The incident ground radio replacement project was set up in September 2012. All front line and reserve appliances were to be fitted with new digital radios and chargers. Radio repeaters on the command support vehicles were also to be replaced. This project was completed in February 2014 with the introduction of Motorola radios.
5	Review training in relation to BA, particularly with regard to Thermal Imaging Cameras (TIC's)	GMFRS carried out a survey of the workforce to establish the level of knowledge around TIC's. Following this a review and upgrade of all information and training in relation to TIC's was carried out with an emphasis on the relationship to compartment temperatures.
6	Bring all BA procedures in line with OGBA 2014	Compliance was achieved in 2015. GMFRS also introduced a further safety measure through the use of specialist rescue teams being sent to all incidents of 6 pumps and above.
7	Review IRMP to ensure that OGBA guidelines can be met, specifically in relation to emergency teams	The IRMP is developed with careful consideration to budget and is reviewed every 12 months. The FBU's responses through the consultation period will be considered prior to the publication of the 4 year plan.
8	Review of handover procedures with a view to introducing staggered handovers	New guidance released in 2014 'Taking Over and Handing Over at Operational Incidents'. A new system was introduced for recording key areas of information to be passed from one Incident Commander to another.
9	Ensure that procedure corresponds with Incident Command FS Manual volume 2 with regard to the completion of analytical risk assessments	GMFRS does comply. ARA's are recorded initially on incident command boards and then later by the Command Support team.

10	Ensure that dynamic risk assessment training is regularly delivered to all operational and supervisory personnel	See response to 3 and 9
11	Review mobilisation policy to consider appropriate units to support incident command at long, resource intensive incidents	GMFRS currently utilise 3 vehicles for incident command. The Command unit (CU) and the Command Support Units (CSU). All 3 have the similar technological capabilities and are all fully functional as command vehicles. The CSU is currently mobilised on 4 pump incidents and the CU on 6 pump incidents. Whenever a CSU or CU is mobilised, so is a flexi duty Command Support Officer (CSO). Use of either appliance is at the discretion of the Incident Commander following discussion with the CSO.
12	Review procedure for the use of aerial appliances with particular regard to aerial monitors	The relevant Standard Operating Procedures (SOP's) are currently being reviewed and re-written.

Appendix E; GMFRS Actions - Summary

Lesson 1: Consider the implementation of measures to reduce the risks associated with the physiological effects of working in a hot environment. In particular consideration should be given to:

- Duration of wears.
- Having regard to all relevant factors including, weather, previous exertions, individual circumstances etc.
- Training and guidance for all operational personnel to recognize the effects of heat and the appropriate steps to be taken, ensuring the withdrawal of others by calling a BA emergency and themselves by whatever means appropriate including activating the ADSU.

Recommendations; Task and Finish Group to;

Action 1: Review of BA training notes/policies for BA operational guidance, physiology and emergency procedures.

All BA guidance is being reviewed and brought together under an overarching Breathing Apparatus SOP incorporating OGBA, 2014.

Action 2: Incorporate physiology theme into corporate training.

From April 2017 the Corporate training strategy will incorporate the understanding of physiology into its programme. This will be assessable training to ensure competence of all personnel in the theoretical and practical areas of this subject. The corporate target is to assess every operational firefighter every 24 months and for local training and knowledge checks to be carried out at least bi-monthly.

Action 3: Incorporate into Learn-pro question bank for regular re-assessment.

An assessable question bank will contain questions directly related to the area of physiology to ensure regular learning by operational staff as part of the new Learning Content Management System (LCMS).

Action 4: Review frequencies and priorities for training and recording for physiology.

A review is currently ongoing across all subject areas to ensure that we have appropriate frequencies for risk critical areas of training including fire fighter physiology.

Action 5: Ensure that we have clear and unambiguous information relating to Fire fighting in compartment fires in the correct SOP or guidance.

An overarching Breathing Apparatus Guidance document is currently under development by the Operational Information Team. This will contain information in relation to this action.

Lesson 2; Implementation of measures to reduce the risks associated with the loss of communications at operational incidents.

Recommendations; Task and Finish Group to;

Action 1: Review of BA training notes/policies for reference to communications and emergency procedures.

All BA guidance is being reviewed and brought together under an overarching Breathing Apparatus Guidance document incorporating OGBA, 2014.

Action 2: Incorporate 'loss of communications' and emergency procedures themes into corporate training.

From April 2017, Corporate training will incorporate the understanding and demonstration of emergency procedures into its assessable programme at the new training site.

Action 3: Incorporate loss of communications and emergency procedures into Learn-pro question bank for regular re-assessment.

An assessable question bank will contain questions directly related to the area of communications and physiology to ensure regular knowledge refresh by operational staff as part of the new Learning Content Management System (LCMS).

Action 4: Review frequencies and priorities for training and recording for loss of communications.

A review is currently ongoing across all subject areas to ensure that we have appropriate frequencies for risk critical areas including communications and emergency procedures.

Action 5: Ensure that we have clear and unambiguous information relating to communications (loss of) in the correct SOP or guidance.

The new overarching Breathing Apparatus Guidance Document will contain this information upon release The current BA training notes are OGBA, 2014 compliant.

Lesson 3; The adequacy of standard operating procedures, guidance and training of the handing over and taking over of roles at incidents.

Recommendations; Task and Finish Group to;

Action 1: Review procedure for the handing over and taking over of roles at incidents.

Review to be carried out by the Operational support team in conjunction with the Operational Assurance Team.

Action 2: Incorporate 'handing/taking over' into Incident Command assessments.

Incident Command Academy to assess this procedure as part of promotion gateways and 'in-role' assessments.

Action 3: Review frequencies and priorities for training and recording of key information including safety control measures on the incident ground.

A review is currently ongoing across all subject areas to ensure that we have appropriate frequencies for risk critical areas including training and recording of key information at incidents.

Action 4: Incorporate handing/taking over into Learn-pro question bank for regular re-assessment.

An assessable question bank will contain questions directly related to this procedure to ensure regular knowledge refresh by operational staff as part of the new Learning Content Management System (LCMS).

Action 5: Ensure that we have clear and unambiguous information relating to communications (handing/taking over) in the correct SOP or guidance

The new overarching Incident Command policy document will contain updated information upon publication.

Lesson 4; Significant hazards and any safety control measures being the responsibility of the Incident Commander and should be recorded within each sector and passed/copied to assist on the analytical risk assessment.

Recommendations; Task and Finish Group to;

Action 1: Review the procedure in relation to hazards and safety control measures on the incident.

Review to be carried out by the Operational support team in conjunction with the Operational Assurance Team.

Action 2: Incorporate 'recording of risks' into incident command assessments.

Incident Command Academy to assess this procedure as part of promotion gateways and 'in-role' assessments.

Action 3: Review frequencies and priorities for training and recording of key information including safety control measures on the incident ground.

A review is currently ongoing across all subject areas to ensure that we have appropriate frequencies for risk critical areas including the recording of risks and hazards on the incident ground.

Action 4: Incorporate handing/taking over into Learn-pro question bank for regular re-assessment.

An assessable question bank will contain questions directly related to this procedure to ensure regular knowledge refresh by operational staff as part of the new Learning Content Management System (LCMS).

Action 5: Ensure that we have clear and unambiguous information relating to recording of hazards and safety control measures in the correct SOP or guidance

The new overarching Incident Command Guidance document will contain updated information upon publication.

Lesson 5; Review standard operating procedures, guidance and training in the use of thermal imaging cameras (TIC).

Recommendations; Task and Finish Group to;

Action 1: Review of BA training notes/policies for reference to TIC's.

All of the current training and guidance notes are to be refreshed and included in the overarching Breathing Apparatus Guidance Document

Action 2: Ensure that technical guidance relating to different TIC's in operation is clear

The technical guidance is to be reviewed and reissued by the Operational Support Team.

Action 3: Incorporate TIC's into Learn-pro question bank for regular re-assessment.

An assessable question bank will contain questions directly related to this procedure to ensure regular knowledge refresh by operational staff as part of the new Learning Content Management System (LCMS).

Action 4: Ensure that we have clear and unambiguous information relating to TIC's captured in the correct SOP or guidance

An overarching Breathing Apparatus Guidance document is currently under development by the Operational Information Team. This will contain information in relation to this action.

Lesson 6: Review standard operating procedures, guidance and training in the deployment of aerial monitors

Recommendations; Task and Finish Group to;

Action 1: Ensure that we have clear and unambiguous information relating to the use of aerial monitors captured in the correct SOP or guidance

An interim aide memoire is currently being produced to highlight considerations around the use of aerial monitors for fighting fires in buildings. This information will be included in the forthcoming SOP 'Fires in Buildings'

Action 2: Incorporate aerial monitors into Learn-pro question bank for regular re-assessment.

An assessable question bank will contain questions directly related to this procedure to ensure regular knowledge refresh by operational staff as part of the new Learning Content Management System (LCMS).

Lesson 7: Review to consider the circumstances in which inspections should be carried out under section 7(2)(d) of the Fire and Rescue Services Act 2004.

Recommendations; Fire Protection to;

Action 1: Review the guidance and policy in relation to how 7(2)(d) information is recorded and the frequency of inspection.

Review to be carried out around this issue relating to 7(2)(d) inspections by the Protection team.

BLANK

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