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Manchester Arena Inquiry
Volume 2: Emergency Response

Volume 2-II

Report of the Public Inquiry into the
Attack on Manchester Arena
on 22nd May 2017

Chairman: The Hon Sir John Saunders

November 2022

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The twenty-two who died

Alison Howe

Angelika Klis Marcin Klis

Chloe Rutherford Liam Curry

Courtney Boyle

Eilidh MacLeod

Elaine McIver

Georgina Bethany Callander

Jane Tweddle

John Atkinson

Kelly Brewster

Lisa Lees

Martyn Hakan Hett

Megan Joanne Hurley

Michelle Kiss

Nell Jones

Olivia Paige Campbell-Hardy

Philip Tron

Saffie-Rose Roussos

Sorrell Leczkowski

Wendy Fawell

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Part 17

The explosion

THE CONTENT OF PART 17 IS PARTICULARLY DISTRESSING.
IT CONTAINS DETAIL IN RELATION TO THE EFFECT OF AN EXPLOSION
AND THE IMPACT ON THOSE WHO SURVIVED

Introduction

- 17.1 The Improvised Explosive Device detonated by SA had a devastating effect. In Volume 3, I will describe its construction in greater detail. At this stage, it is sufficient to record that it comprised a high explosive element, triacetone triperoxide,¹ which was surrounded by a large number of small metal items. Those metal items comprised 29.26kg of metal nuts and 1.47kg of screws or cross dowels. It is estimated that there were approximately 3,000 such items in total.²
- 17.2 Those numbers give some idea of the terrible intent of SA and HA. They planned to cause as much harm to as many people as they could. In this Part, I deal with the effects of the explosion and the experience of some of the members of the public who were in the City Room and survived the Attack. This cannot be a complete summary of all of the effects of the Attack on each person who was in the City Room. It would be impossible to cover that in my Report. Rather, this Part sets out the accounts I heard from some of those most seriously affected by the events that night.
- 17.3 In Part 18, I will consider what happened to each of those who died following the detonation of the bomb. I will also consider whether any of those who were killed could have survived the Attack had the emergency response been different.

¹ [44/49/23-50/8](#)

² [44/110/11-111/8](#)

Effect of an explosion

- 17.4 I was assisted in understanding the effects of an explosion by a Blast Wave Panel of Experts, led by Professor Anthony Bull from the Centre for Blast Injury Studies.
- 17.5 When an explosion occurs, it causes a blast wave. A blast wave has two component parts. The first is the shock wave. This is a high-pressure wave of energy, which transmits through material. Behind the shock wave is the blast wind. This follows the shock wave and carries material with it. The material moved by the blast wind comprises 'primary fragments', which come from the device itself, and 'secondary fragments', which come from the environment.³
- 17.6 Blast injuries fall into five main categories.⁴
- 17.7 Primary blast injuries result from the contact of the shock wave with the body. The shock wave transmits through the structures of the body. Where there are spaces between those structures, it causes a tearing or separation. This is particularly significant where the two structures are of different densities, such as in a lung. The shock wave is capable of causing very serious injury.⁵
- 17.8 Secondary blast injuries are caused by objects moved by the blast wind. When they make contact with the body, they can disrupt the anatomy. Being struck by a fragment from a blast has been likened to being shot with a bullet. However, the fragment typically causes more devastation as the energy around the object does not travel in a straight line, rather it is tumbling. This means a small wound from a secondary blast injury can cause devastating internal injuries.⁶
- 17.9 Tertiary blast injuries are the damage caused when the body is thrown against an object or a large object strikes against the body. This commonly occurs when a person is pushed to the floor or against a wall by the force of the blast wind, causing crush injuries. The energy involved is often far higher than in a road traffic collision. This can result in very severe injury.⁷
- 17.10 Quaternary blast injuries are those not due to primary, secondary or tertiary blast injuries. Any part of the body can be affected. Often they are burn or inhalation injuries.⁸
- 17.11 Quinary blast injuries are caused by contaminants in the explosion, such as biological or radiological contaminants.⁹

³ [150/10/3-18/23](#)

⁴ [150/21/18-20, INQ025364/9](#)

⁵ [150/21/15-24/8](#)

⁶ [150/25/15-27/11](#)

⁷ [150/29/11-30/18](#)

⁸ [150/31/1-5](#)

⁹ [150/31/6-15](#)

17.12 The first four types of blast injury were caused to those present in the City Room by SA's detonation. Figure 41 provides a pictorial representation of the way in which blast injuries occur.

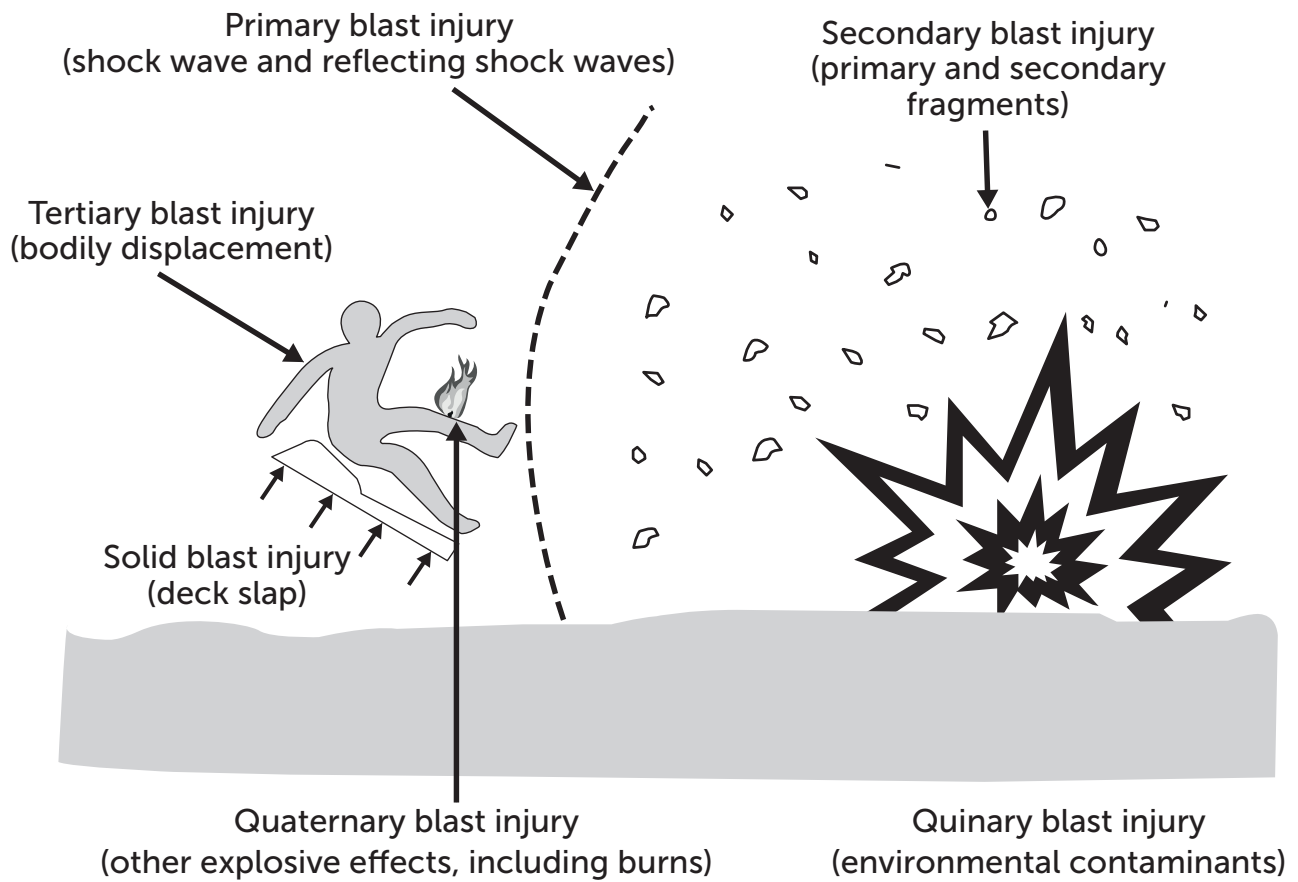


Figure 41: Types of blast injury¹⁰

¹⁰ INQ025364/9

THE CONTENT OF THIS SECTION IS PARTICULARLY DISTRESSING.
IT CONTAINS DETAIL IN RELATION TO THE EFFECT OF AN EXPLOSION
AND THE IMPACT ON THOSE WHO SURVIVED

Those who survived

Introduction

- 17.13** In 2019, Greater Manchester Police (GMP) estimated that there were 940 victims of the Attack who survived. Of those 940 victims, 337 people were in the City Room at the time of the explosion and a further 92 people were in the immediate vicinity. Of the victims, 237 people were physically injured. A total of 111 people required hospitalisation. A total of 91 people were categorised as being seriously or very seriously injured.¹¹
- 17.14** This section of the Report will describe the experience of some of those who were present in the City Room in the aftermath of the explosion and their recollection of the moment the bomb detonated. It will set out their views of the emergency response that followed, where it was effective and where it failed.
- 17.15** These accounts, which are harrowing, show the courage of the human spirit in adversity. For most, if not all, the Attack is something they will never forget. The physical and mental scars will always be there. The testimony each person gave to the Inquiry was moving and powerful. It forms an important part of the record of the events that night. I am very grateful to all those who provided evidence to the Inquiry and for the courage they showed in doing so.
- 17.16** In this section, I summarise and quote from the evidence given, largely without comment. This is to convey the experiences of each witness, through their words and their perspective. This section does not seek to review the experience of every person who was a victim of the Attack. Nor is it a record of the most seriously injured people. It provides the accounts of some of the members of the public in the City Room, many of whom were severely injured. Part 16 in Volume 2-I contained evidence from others in the City Room, viewed from the perspective of their contribution to the emergency response. Some of those I mentioned in Part 16 in Volume 2-I were also casualties themselves.
- 17.17** At the end of this section, I consider the experience of those who were present in the City Room and survived the explosion but whose loved ones died in the Attack.
- 17.18** Where appropriate, I have included references to occasions on which a survivor saw SA prior to the explosion.

¹¹ [138/58/4-59/15](#)

Before the Attack

- 17.19 Many people described their excitement, and that of their children, at the thought of attending the Ariana Grande concert. For a large number, this was their first ever concert. For many, the ticket was a Christmas or birthday present, often purchased with a second ticket so that a friend could also attend.
- 17.20 In the moments immediately prior to the explosion, the atmosphere in the City Room was described as joyful. Josephine Howarth described a “family atmosphere”, with “lots of parents and grandparents around waiting to pick up children”. She said: “Everybody seemed to be enjoying themselves.”¹²
- 17.21 Sarah Gullick described the atmosphere in the City Room as “good natured”. She recalled: “You could hear the music playing and people were coming out of the arena excited with happy faces.”¹³
- 17.22 Janet Capper remembered standing in the City Room, looking back to the main doors to the Arena. She could still hear the music playing. The staff had opened the doors as there were people leaving. She said: “I vividly recall seeing how happy all the children looked as they were leaving.”¹⁴ David Robson recalled spotting his daughter and her friend. He started waving at them. He stated: “I looked at them and they had spotted us and they were running towards us, excitedly.”¹⁵
- 17.23 What happened next is in stark contrast to those positive emotions. Witnesses heard a loud bang and saw a bright orange flash. Some were knocked to the ground. It was, many said, like nothing they had ever experienced before. Witnesses went on to describe a scene of chaos and devastation in the City Room in the immediate aftermath of the explosion.

After the Attack

Amelia Tomlinson and Lucy Jarvis

- 17.24 Amelia Tomlinson, known as Millie, went to watch the concert with her friend Lucy Jarvis.¹⁶ They left just as the encore ended.¹⁷ They walked across the City Room arm in arm.¹⁸ Millie Tomlinson felt a rush of warm air. She said it was like when you jump in a pool and feel water in your ears.¹⁹ Lucy Jarvis did not hear the explosion but recalled it being “really hot”.²⁰

¹² [89/64/7-11](#)

¹³ [INQ006992/4](#)

¹⁴ [87/31/24-32/4](#)

¹⁵ [85/19/2-5](#)

¹⁶ [86/3/5-10](#)

¹⁷ [86/6/12-15](#)

¹⁸ [86/7/18-23](#)

¹⁹ [86/7/1-9](#)

²⁰ [86/54/19-24](#)

- 17.25** Millie Tomlinson and Lucy Jarvis were separated by the force of the blast.²¹ They were able to get up and run back into the Arena bowl.²² Lucy Jarvis fell over. She could not walk due to an ankle injury.²³ She was losing a lot of blood.²⁴ Millie Tomlinson tied her jacket around Lucy's leg to try to stop the bleeding.²⁵ Lucy Jarvis described having holes in her jeans from the shrapnel and an injury to her arm.²⁶
- 17.26** Millie Tomlinson and Lucy Jarvis were helped out of the Arena bowl by SMG and Showsec staff.²⁷ Lucy Jarvis was evacuated first,²⁸ and recalled that she was taken to the Arena concourse, where two SMG staff cared for her and bandages were applied. After about 30 minutes, she was put on a stretcher.²⁹ The two SMG staff stayed with her, even though firearms officers told them to leave.³⁰ Lucy Jarvis was evacuated over the raised walkway and down in the lift.³¹
- 17.27** A Showsec first aider stayed with Millie Tomlinson while she waited for her family and then drove Millie Tomlinson and her family to Manchester Royal Infirmary.³² She had injuries to her hand and foot.³³
- 17.28** Lucy was assessed in the Casualty Clearing Station. Initially, she was triaged as 'orange' and wondered what that meant.³⁴ She had to wait on the station concourse floor for two hours. During that time she vomited. Her status became 'red' and she was taken to an ambulance immediately.³⁵ Lucy described her experience of waiting as "*quite stressful*" and "*scary*".³⁶ People all around her were injured, but she did her best to remain calm.³⁷ Lucy Jarvis gave evidence to the Inquiry and set out the extent of her injuries.³⁸ She underwent a 14-hour operation and was in hospital for eight weeks.³⁹

²¹ [86/7/17-20](#)

²² [86/8/19-9/7](#)

²³ [86/9/24-10/1](#), [86/55/25-56/2](#)

²⁴ [86/10/23-11/2](#)

²⁵ [86/11/23-12/2](#)

²⁶ [86/61/2-5](#)

²⁷ [86/59/11-62/10](#)

²⁸ [86/12/13-14/2](#)

²⁹ [86/61/22-24](#)

³⁰ [86/63/7-17](#)

³¹ [86/64/5-9](#)

³² [86/13/7-17/13](#)

³³ [86/13/15-22](#)

³⁴ [86/64/21-65/2](#)

³⁵ [86/65/3-11](#)

³⁶ [86/66/2-7](#)

³⁷ [86/64/17-67/10](#)

³⁸ [86/67/11-68/9](#)

³⁹ [86/70/6-14](#)

Andrea Bradbury

- 17.29** Andrea Bradbury is a retired counter-terrorism police officer. She served for 30 years in the police and retired two months before the Attack.⁴⁰ She drove her 15-year-old daughter with her friend, and her friend's mother, Barbara Whittaker, to the concert.⁴¹ Andrea Bradbury described her daughter, like so many of those who went, as an Ariana Grande *"addict"*, who loved watching her on television and wearing cat ears.⁴² Andrea Bradbury texted her daughter throughout the concert. She said she had *"an absolute ball"*.⁴³
- 17.30** At 21:52, Andrea Bradbury and Barbara Whittaker can be seen on CCTV on the raised walkway, walking towards the City Room.⁴⁴ They had arranged to meet their daughters on the McDonald's staircase after the concert.⁴⁵ At the time of the explosion, they were near to the merchandise stall, facing the doors to the Arena.⁴⁶ There was a massive blast from behind them. Andrea Bradbury described a *"big white flash"* and said it felt like her legs had been hit by a garden strimmer.⁴⁷
- 17.31** Andrea Bradbury said, as a former counter-terrorism police officer, it was immediately obvious to her that it was a bomb explosion.⁴⁸ She did not think at any point that a firearm was involved, nor that it was an active shooter incident.⁴⁹ She was concerned about a secondary device and said to Barbara Whittaker that they needed to leave to get to a place of safety.⁵⁰ They were confident they had not seen the children come into the City Room before the explosion and crawled to the Arena bowl to find them.⁵¹ In the period of time she was in the City Room, Andrea Bradbury did not see any members of the emergency services.⁵²
- 17.32** It was loud inside the Arena, with tannoy messages and alarms.⁵³ They were able to speak to their children on the phone.⁵⁴ The children had left the Arena via Hunts Bank.⁵⁵ Andrea Bradbury said she went back through the City Room. She was only there a very short time. She saw three police officers run in but no wider emergency response at that stage.⁵⁶ Andrea Bradbury said she telephoned

⁴⁰ [89/86/24-87/12](#), [89/90/13-92/17](#)

⁴¹ [89/107/18-22](#)

⁴² [89/106/18-107/2](#)

⁴³ [89/112/19-25](#)

⁴⁴ [89/113/10-17](#)

⁴⁵ [89/115/10-19](#)

⁴⁶ [89/123/21-124/12](#)

⁴⁷ [89/124/9-23](#)

⁴⁸ [89/126/4-13](#)

⁴⁹ [89/127/1-21](#)

⁵⁰ [89/128/3-22](#)

⁵¹ [89/128/19-130/24](#)

⁵² [89/130/19-24](#)

⁵³ [89/133/4-7](#)

⁵⁴ [89/133/4-16](#)

⁵⁵ [89/133/17-19](#)

⁵⁶ [89/135/7-136/10](#)

the on-call counter-terrorism officer in Lancashire to provide an account from the scene. She did this three times. She felt it was important for senior officers to know what had happened and that there had been a single explosion.⁵⁷

17.33 Later that evening, once reunited with her daughter, Andrea Bradbury went to GMP Headquarters (GMP HQ). She went there to tell them what had happened.⁵⁸ She spoke to an officer at the security gatehouse and then a police officer who said she was “Gold”.⁵⁹ Assistant Chief Constable Deborah Ford, who was duty Strategic/Gold Commander for GMP on the night, said that this was not her.⁶⁰ Andrea Bradbury made concerted efforts, despite her own injuries, to give the police information about the Attack.

17.34 Andrea Bradbury required medical treatment and arrived at hospital at 00:48 on 23rd May 2017.⁶¹ She has suffered permanent nerve damage to her legs.⁶²

Darah Burke

17.35 Dr Darah Burke is a general practitioner.⁶³ He went to the concert with his wife, Ann, and their 10-year-old daughter.⁶⁴ They left the concert as Ariana Grande was singing the last song of her encore.⁶⁵ They made their way towards the railway station.⁶⁶

17.36 Dr Burke described a sudden, very loud bang as the family made its way through the City Room. He was thrown forwards slightly.⁶⁷ His daughter was on the floor, screaming.⁶⁸ They were about halfway to the doorway leading out to the raised walkway.⁶⁹

17.37 His daughter could not stand up. Dr Burke and his wife carried her out to the raised walkway.⁷⁰ Dr Burke and his wife were bleeding from their legs.⁷¹ Dr Burke had shrapnel injuries to his right leg and left buttock. His wife had shrapnel injuries to her thigh and heel.⁷² His daughter’s right arm and leg were bleeding heavily, as was the right side of her head.⁷³ Dr Burke took off his shirt and tied a tourniquet around his daughter’s arm and a coat around her leg.⁷⁴

⁵⁷ [89/138/6-139/15](#)

⁵⁸ [89/142/19-143/5](#)

⁵⁹ [89/144/9-23](#)

⁶⁰ [105/86/17-90/19](#)

⁶¹ [89/146/17-23](#)

⁶² [89/147/12-17](#)

⁶³ [85/49/17-21](#)

⁶⁴ [85/50/3-11](#), [85/52/13-14](#)

⁶⁵ [85/52/9-15](#)

⁶⁶ [85/53/2-11](#)

⁶⁷ [85/55/13-16](#)

⁶⁸ [85/56/1](#)

⁶⁹ [85/56/8-17](#)

⁷⁰ [85/57/16-58/6](#)

⁷¹ [85/58/9-10](#)

⁷² [85/60/16-21](#), [85/64/19-25](#)

⁷³ [85/58/11-59/3](#)

⁷⁴ [85/58/21-24](#)

- 17.38** Dr Burke assessed that his daughter was not in immediate danger and went back into the City Room.⁷⁵ Due to his own injuries, he was not able to provide assistance, but described how he saw *"shadows and people were starting to stand and ... provide assistance"*.⁷⁶ Dr Burke returned to the raised walkway where he ensured that an injured person was not in *"immediate danger"*.⁷⁷ He described how emergency responders arrived. He stated that as he and his family were *"relatively stable, not in immediate danger"*, he directed emergency responders onto the City Room.⁷⁸ He recalled police firearms officers pointing their guns at him and his family.⁷⁹
- 17.39** He and his family were on the raised walkway for an hour.⁸⁰ At some point, they were given a trauma pack with bandages. They were small. There were no major trauma dressings.⁸¹ A doctor in plain clothes re-dressed his daughter's wounds.⁸² A police officer told them they needed to leave the area. The officer carried his daughter off the raised walkway in his arms.⁸³ No one triaged them when they were on the walkway or in the station.⁸⁴
- 17.40** His daughter was carried to an area outside Chetham's School of Music. After about 15 or 20 minutes, they were triaged as a family as P3 casualties.⁸⁵ 'P3' refers to priority three casualties and means casualties whose treatment may be safely delayed for beyond four hours.⁸⁶ Dr Burke could not remember anyone giving his daughter a full medical examination.⁸⁷
- 17.41** The family waited at Chetham's School of Music until about 02:00 on 23rd May 2017. By then, his daughter's situation had deteriorated. She was cold, shivering and light-headed. A decision was made to take her to hospital by ambulance.⁸⁸ She was reassessed as a P2 casualty.⁸⁹ 'P2' refers to priority two casualties and means casualties who require surgical or other interventions within 2–4 hours.

⁷⁵ [85/59/13-23](#)

⁷⁶ [85/60/6-15](#)

⁷⁷ [85/61/9-20](#)

⁷⁸ [85/62/13-63/4](#)

⁷⁹ [85/64/4-6](#)

⁸⁰ [85/65/14-15](#)

⁸¹ [85/65/15-20](#)

⁸² [85/65/4-23](#)

⁸³ [85/67/2-68/1](#)

⁸⁴ [85/67/10-17](#), [85/69/10-15](#)

⁸⁵ [85/70/3-16](#)

⁸⁶ [INQ022339/5-7](#)

⁸⁷ [85/70/17-22](#)

⁸⁸ [85/75/10-77/15](#)

⁸⁹ [85/78/9-13](#)

- 17.42 Ann Burke accompanied her daughter in the ambulance.⁹⁰ Dr Burke went to a different hospital on a bus transporting casualties to hospital. Apart from Dr Burke, there were no medical practitioners on the bus.⁹¹ He arrived at hospital at about 03:00.⁹² His daughter arrived at hospital by ambulance at about 02:15.⁹³
- 17.43 Dr Burke stated that the response from bystanders and first responders was “*rapid, highly professional*”.⁹⁴ He stated that there were, however, very few stretchers available and that the dressings in packs were inadequate.⁹⁵ He stated that they were reassessed frequently, it was slightly chaotic and they were asked the same questions. He stated that new dressings were removed unnecessarily⁹⁶ and not everyone seemed to be aware of the triage system.⁹⁷

Janet Senior and Josephine Howarth

- 17.44 Janet Senior drove her sister, Josephine Howarth, and her two young nieces to the concert.⁹⁸ The girls were really excited.⁹⁹ Janet Senior and her sister arranged to meet the girls in the City Room after the concert.¹⁰⁰
- 17.45 Janet Senior and Josephine Howarth returned to the City Room shortly before 22:00.¹⁰¹ They initially sat on the JD Williams staircase and then moved to sit at the top of the McDonald’s staircase. They can be seen on CCTV appearing from those steps and making their way across the City Room at 22:30.¹⁰²
- 17.46 Janet Senior recalled a petrol-like smell and then the explosion happened.¹⁰³ She described it as a “*crack bang*” with a flash and that there was pink-coloured smoke.¹⁰⁴ Janet Senior felt a horrendous impact on her chest and neck. In common with others, she said it was similar to being underwater. She said: “*Everything seemed to move in slow motion for a few minutes.*”¹⁰⁵ Shrapnel was “*buzzing around*”.¹⁰⁶

⁹⁰ [INQ022339/5-7](#)

⁹¹ [85/78/20-23](#)

⁹² [85/79/21-80/2](#)

⁹³ [85/80/11-14](#)

⁹⁴ [85/81/1-6](#)

⁹⁵ [85/81/14-82/5](#)

⁹⁶ [85/82/12-83/6](#)

⁹⁷ [85/82/14-83/23](#)

⁹⁸ [89/2/1-11](#)

⁹⁹ [89/6/12-19](#)

¹⁰⁰ [89/8/25-9/16](#)

¹⁰¹ [89/14/5-9](#)

¹⁰² [89/14/12-16/24](#), [89/19/23-20/12](#)

¹⁰³ [89/20/12-21/4](#)

¹⁰⁴ [89/22/1-9](#)

¹⁰⁵ [89/22/1-16](#)

¹⁰⁶ [89/25/12-16](#)

- 17.47 Josephine Howarth described seeing the merchandise stall turn “to shreds”. She knew instantly it was a bomb. She described rolling, orange flames. The explosion was “very bright, very loud”, and debris struck her.¹⁰⁷ Her leg was badly injured, and there was blood gushing from it.¹⁰⁸
- 17.48 Janet Senior had the presence of mind to telephone 999. She told the operator that there had been an explosion, people had died and they needed help.¹⁰⁹ The connection was lost. Janet Senior later found a voicemail from the emergency services asking for her to call back. The voicemail was timed at 22:44.¹¹⁰ At about this time, Janet Senior’s nieces also left voicemails saying they were OK.
- 17.49 Janet Senior and Josephine Howarth were both seriously injured.¹¹¹ Josephine Howarth told her sister to use her handbag strap as a tourniquet.¹¹² They both had knowledge of first aid. Janet Senior had done a course as part of her role as a horse-riding coach. They had both been taught about tourniquets and how to use them to stem severe bleeding.¹¹³
- 17.50 The CCTV confirms that they were both evacuated from the City Room at 23:14.¹¹⁴ Janet Senior arrived in the Casualty Clearing Station at 23:18.¹¹⁵ She was placed in an ambulance at 00:42 and arrived at hospital an hour later at 01:40.¹¹⁶ Josephine Howarth left the Casualty Clearing Station at 01:34. She was placed in an ambulance at 01:41 and arrived at hospital at 02:08.¹¹⁷
- 17.51 Janet Senior said that when she was in the City Room, she was praying for more people to come: “time was clocking on”, people were dying and the room was getting quieter.¹¹⁸ She vividly recalled seeing a dog and hearing it panting. It was at that point she realised that a bomb had exploded and thought she and her sister were not going to make it home.¹¹⁹ She said that help was very slow in coming. People were “dotted about”, but she did not think anyone was actually doing a lot.¹²⁰ Her experience of the Casualty Clearing Station was that it was “organised chaos”.¹²¹ She felt that no one regularly checked on her, even though

¹⁰⁷ [89/67/20-68/17](#)

¹⁰⁸ [89/68/18-24](#), [89/70/16-71/11](#)

¹⁰⁹ [89/26/2-18](#)

¹¹⁰ [89/26/19-27/22](#)

¹¹¹ [89/24/1-9](#), [89/70/16-71/11](#)

¹¹² [89/29/13-30/8](#), [89/69/24-70/4](#)

¹¹³ [89/30/25-32/3](#), [89/71/16-72/4](#)

¹¹⁴ [89/24/10-20](#)

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¹¹⁶ [89/44/23-45/8](#)

¹¹⁷ [89/74/5-14](#)

¹¹⁸ [89/33/3-9](#)

¹¹⁹ [89/32/17-34/19](#)

¹²⁰ [89/38/7-18](#)

¹²¹ [89/41/1-8](#)

she was a P2 casualty.¹²² No one gave her pain relief.¹²³ When the ambulance drove her to hospital, it had to turn around because of road blocks.¹²⁴ The satnav did not work.¹²⁵

- 17.52 Josephine Howarth said she slipped in and out of consciousness and only had short clips of memory.¹²⁶ She did recall seeing three people giving first aid in the City Room and thinking, “[O]h my God, there’s only three for all these people, where are the paramedics?”¹²⁷ She also recalls being very cold, lying on a marble floor without any blankets.¹²⁸

Martin Hibbert

- 17.53 Martin Hibbert went to the concert with his daughter, Eve. It was, he said, “daddy and daughter time”: a happy occasion.¹²⁹ The sun was shining. It was a beautiful day.¹³⁰ Martin Hibbert said that the concert was amazing. They were in a VIP box.¹³¹

- 17.54 On CCTV, they can be seen walking into the City Room, from the Arena bowl, at 22:30.¹³² They were between five and six metres from SA.¹³³ Martin Hibbert said that he heard an “almighty bang”. There was a high-pitched, piercing sound.¹³⁴ Then it felt like a ten-tonne truck had hit him.¹³⁵ He immediately felt he could not breathe and noticed he was losing a lot of blood.¹³⁶

- 17.55 At that point, he saw how seriously injured Eve was. It was “like she had been shot through the head”. She was bleeding and gasping for breath.¹³⁷ He had shielded Eve from much of the blast, but one bolt got through. Eve suffered a very significant brain injury.¹³⁸

¹²² [89/40/20-44/12](#)

¹²³ [89/44/16-22](#)

¹²⁴ [89/46/14-47/4](#)

¹²⁵ [89/47/5-20](#)

¹²⁶ [89/73/7-13](#)

¹²⁷ [89/73/7-74/4](#)

¹²⁸ [89/78/15-79/16](#)

¹²⁹ [138/4/3-5](#)

¹³⁰ [138/3/12-4/6](#)

¹³¹ [138/5/10-17](#)

¹³² [138/6/8-14](#)

¹³³ [138/6/19-7/5](#)

¹³⁴ [138/7/11-23](#)

¹³⁵ [138/7/18-19](#)

¹³⁶ [138/7/18-8/5](#)

¹³⁷ [138/8/6-13](#)

¹³⁸ [138/9/17-10/3](#)

- 17.56** Martin Hibbert said he thought he was watching Eve die. He was not in pain. He did not panic. He had a job to do: make sure Eve survived.¹³⁹ He could feel his body shutting down, but fought to stay awake to ensure that Eve got out.¹⁴⁰ He kept asking: *"Where is everybody? Where are the paramedics?"* He got fed up of being told that they were on the way.¹⁴¹ He said it seemed like forever.¹⁴²
- 17.57** He saw Eve covered up twice with T-shirts and posters. People thought she had died.¹⁴³ Martin Hibbert said he could see she was gasping for breath. Her lips were quivering.¹⁴⁴ People thought her injury was non-survivable. They were going to cover her up and leave her. It was a *"big frustration"*, as he felt that if he had lost consciousness, Eve would have died.¹⁴⁵ He thought that unqualified people were being left to make a life or death choice.¹⁴⁶
- 17.58** Martin Hibbert was taken out of the City Room at 23:21. Eve was taken out at 23:25.¹⁴⁷ They were both taken to the Casualty Clearing Station. Eve left by ambulance at 00:18.¹⁴⁸ He found it *"baffling"* that she was not put straight into an ambulance. In those circumstances, he thought it was a miracle that she was still alive. He said he had *"just no words for it"*.¹⁴⁹
- 17.59** Martin Hibbert left for hospital at 00:24, 1 hour and 53 minutes after the detonation.¹⁵⁰ When he was placed in an ambulance, he was going to be taken to Wythenshawe Hospital. This was a 25- to 30-minute journey. The paramedic, however, went to Salford Royal Hospital, 10 minutes' away. Martin Hibbert said that decision was *"life saving"*.¹⁵¹ A different paramedic might have made a different decision. That was another frustration for him.¹⁵²
- 17.60** Martin Hibbert noted that the equipment that was available, such as plasters, scissors and bandages, was inadequate and that the responders didn't have *"the right equipment"*.¹⁵³ He has reflected on whether Eve's treatment would have been different with more strategic planning and marshalling of vehicles; whether it might have shortened the period to get to hospital.¹⁵⁴

¹³⁹ [138/8/6-19](#)

¹⁴⁰ [138/10/4-18](#)

¹⁴¹ [138/10/18-22](#)

¹⁴² [138/14/9-17](#)

¹⁴³ [138/11/8-12/19](#)

¹⁴⁴ [138/12/20-13/1](#)

¹⁴⁵ [138/13/2-12](#)

¹⁴⁶ [138/24/4-25/7](#)

¹⁴⁷ [138/15/11-16/1](#)

¹⁴⁸ [138/17/5-7](#)

¹⁴⁹ [138/16/8-17/1](#)

¹⁵⁰ [138/23/19-23](#)

¹⁵¹ [138/17/12-18/20](#)

¹⁵² [138/18/2-5](#)

¹⁵³ [138/25/20-26/7](#)

¹⁵⁴ [138/27/21-28/6](#)

17.61 Martin Hibbert described the life-changing impact of his injuries. He suffered 22 shrapnel wounds, one to the centre of the back which severed his spinal cord. He has been left paralysed from the waist down.¹⁵⁵ Sometimes, he said, the post-traumatic stress disorder is a greater battle than the spinal injury.¹⁵⁶ He tries to motivate and inspire people. He does everything he had done before and more and is thankful to be alive.¹⁵⁷ Eve was in hospital for ten months. Initially, her family were told that Eve would probably remain in a vegetative state, but she can now eat, talk and walk unassisted. Martin Hibbert said she would “*inspire the world*”.¹⁵⁸

Sarah Nellist

17.62 Sarah Nellist was in the City Room to collect her daughter and niece. She arrived at about 21:50 and waited by the box office, near to the exit doors from the Arena. This is where she was at the time of the explosion.¹⁵⁹ She described seeing SA a couple of minutes before the explosion. She thought he looked “*a bit odd*”.¹⁶⁰

17.63 She saw the bomb detonate. It was, she said, like “*black powder paint*”.¹⁶¹ There was a high-pitched noise. The heat was “*unbelievable*”.¹⁶² The force of the blast knocked her over.¹⁶³ Sarah Nellist was able to get up.¹⁶⁴ She ran onto the Arena concourse and was then directed outside. She was able to find her daughter and niece, and they went to their car.¹⁶⁵ They did not see any paramedics but were assisted by members of the public.¹⁶⁶

Suzanne Atkins

17.64 Suzanne Atkins took her daughter and her daughter’s friend to the concert.¹⁶⁷ She described how the children were happy and excited as they went into the Arena.¹⁶⁸ They arranged to meet at the doors to the City Room after the concert.¹⁶⁹ Suzanne Atkins went back to the City Room with her mother at about 22:20 to collect the children.¹⁷⁰ At the time of the explosion, she was standing against railings by the merchandise stall.¹⁷¹

¹⁵⁵ [138/8/20-9/16](#)

¹⁵⁶ [138/20/1-17](#)

¹⁵⁷ [138/19/21-21/21](#)

¹⁵⁸ [138/21/22-23/10](#)

¹⁵⁹ [85/34/4-36/25](#)

¹⁶⁰ [85/38/15-39/17](#)

¹⁶¹ [85/39/18-22](#)

¹⁶² [85/39/23-40/1](#)

¹⁶³ [85/40/8-10](#)

¹⁶⁴ [85/40/20-25](#)

¹⁶⁵ [85/41/2-42/9](#)

¹⁶⁶ [85/42/20-25](#)

¹⁶⁷ [86/22/13-21](#)

¹⁶⁸ [86/26/14-17](#)

¹⁶⁹ [86/26/14-27/1](#)

¹⁷⁰ [86/29/15-22](#)

¹⁷¹ [86/37/15-21](#)

- 17.65 She described seeing SA walk across the City Room. He was about a metre in front of her. She said he was *“stooped and had a bit of a swagger about him”*.¹⁷² He looked out of place in a crowd of young girls and families.¹⁷³ She said that SA looked like he was going somewhere, but from the direction he was going, he could not have been going anywhere.¹⁷⁴
- 17.66 Suzanne Atkins described seeing an orange flash from the explosion. It felt like something had rolled into her that was burning her legs. The impact sent her backwards.¹⁷⁵ She found her mother on the floor and quickly took her out to the raised walkway.¹⁷⁶ Suzanne Atkins said she went onto autopilot. She went to find her daughter.¹⁷⁷ She recalled someone saying there had been another explosion.¹⁷⁸ She thought she had lost her daughter and needed to get into the Arena to find her.¹⁷⁹ She scoured the City Room.¹⁸⁰
- 17.67 After some time, she was able to contact her daughter by mobile phone, but it kept cutting out.¹⁸¹ She was trying to escort her mother away from the City Room and speak to her daughter.¹⁸² It was a frightening situation. Suzanne Atkins explained: *“It felt like no one was coming ... and we had to deal with it ourselves.”*¹⁸³ Suzanne Atkins saw a police officer, who told her to drive her mother to hospital. The police officer said people had been shot. Suzanne Atkins said to the officer that it was an explosion.¹⁸⁴
- 17.68 Eventually, Suzanne Atkins was reunited with her daughter outside the station.¹⁸⁵

Family of those who died

- 17.69 I heard oral evidence from a number of those bereaved by this atrocity who were at or near the City Room at 22:31. I am extremely grateful to them for the courage and dignity that they displayed when recounting their terrible experience of the Attack and its aftermath. What follows is a summary of that evidence.

¹⁷² [86/34/10-25](#)

¹⁷³ [86/35/7-25](#)

¹⁷⁴ [86/36/1-11](#)

¹⁷⁵ [86/37/14-38/2](#)

¹⁷⁶ [86/38/13-39/2](#)

¹⁷⁷ [86/38/24-39/15](#)

¹⁷⁸ [86/39/20-40/4](#)

¹⁷⁹ [86/41/5-17](#)

¹⁸⁰ [86/42/12-19](#)

¹⁸¹ [86/43/9-14](#)

¹⁸² [86/44/6-12](#)

¹⁸³ [86/43/22-44/5](#)

¹⁸⁴ [86/45/23-47/11](#)

¹⁸⁵ [86/47/15-48/2](#)

Paul Price, partner of Elaine Mclver

17.70 Paul Price and Elaine Mclver were in the City Room to collect his daughter and her friend. As the concert ended, he recalled that a wave of people came out of the exit doors into the City Room. He was seriously injured by the explosion. He saw Elaine Mclver lying about three or four metres away from him, but he could not reach her because of his own injuries. Paul Price was evacuated from the City Room at 23:18.¹⁸⁶

Claire Booth, sister of Kelly Brewster

17.71 Claire Booth went to the concert with her daughter, Hollie, and her sister, Kelly.¹⁸⁷ Claire Booth said the drive to Manchester was a lovely one. Kelly and Kelly's partner Ian had just had an offer accepted on a house. Kelly and Kelly's partner Ian talked about all the plans for the move, the layout for a future nursery and a holiday they were planning to Disneyland.¹⁸⁸

17.72 It was a good concert. They all enjoyed it. Claire Booth described "*loads of little girls just dancing*".¹⁸⁹ They left their seats as the last song ended, walking in a line. Claire Booth was at the front, Hollie in the middle and Kelly at the back.¹⁹⁰ They went into the City Room and started to walk towards the Trinity Way link tunnel.¹⁹¹

17.73 As they passed the box office windows, there was a huge yellow flash. Claire Booth described it as like a "*blowtorch*".¹⁹² It was really loud and the hottest heat she had ever felt. The force of the blast pushed her into the box office wall.¹⁹³ Claire Booth described the room then going momentarily silent. It took a moment to focus, but then she was able to see shrapnel on the floor. At that point, she knew it was a bomb and could see some of its components.¹⁹⁴ She was worried about a second explosion or someone shooting them.¹⁹⁵

17.74 Claire Booth described looking back to find Kelly and Hollie. Kelly was lying on her side. Hollie was leaning on her hands as if about to get up. Hollie called out.¹⁹⁶ Claire Booth explained how she picked Hollie up and started to run out of the City Room, towards the Fifty Pence staircase. She called for Kelly to follow them. Claire Booth only stopped when Hollie said she was bleeding. At that point, she realised that Kelly was not with them.¹⁹⁷

¹⁸⁶ [156/46/7](#), [156/53/19-57/24](#), [156/50/16-17](#)

¹⁸⁷ [138/63/13-17](#)

¹⁸⁸ [138/65/2-66/5](#)

¹⁸⁹ [138/70/6-12](#)

¹⁹⁰ [138/71/11-72/1](#)

¹⁹¹ [138/72/6-73/1](#)

¹⁹² [138/73/14-74/5](#)

¹⁹³ [138/73/19-74/8](#)

¹⁹⁴ [138/74/9-75/12](#)

¹⁹⁵ [138/75/18-76/1](#)

¹⁹⁶ [138/76/3-25](#)

¹⁹⁷ [138/76/3-77/16](#)

- 17.75** Claire Booth described the scene as one of chaos and panic. People were screaming. Some were running and others were still on the floor. Hollie was very upset. Claire Booth was torn: she wanted to care for her daughter but also find her sister. She begged people to look after Hollie. People kept running past. No one helped. Claire Booth realised she was on her own. She ran back into the City Room and found Kelly was still lying on the floor where they had left her, as if she were asleep. She did not look injured. Claire Booth described kicking at her legs, shouting at her to get up. Kelly did not respond at all.¹⁹⁸
- 17.76** Claire Booth went back to Hollie. She used her daughter's mobile phone and called Hollie's father, Dale, to tell him what had happened. He told her to go back and check on Kelly. Claire Booth went back and stood over her, screaming her name over and over. Dale said to check Kelly's pulse. It was only at this point, as she leaned over Kelly, that Claire Booth realised she was also injured. Hollie was screaming for her. Claire Booth described her sense of hopelessness. She said "sorry" to Kelly over and over and walked away.¹⁹⁹
- 17.77** Some help started to arrive. Someone told her to elevate Hollie's legs. Claire Booth was by this time concerned about her own injuries. She did not know if she was dying. She asked a police officer if her throat had been cut. She was told that she had a facial injury. This made her calmer. She was then able to focus on getting help for her sister and Hollie. Claire Booth spoke to her own mother when her mother rang Hollie's mobile phone. Claire Booth told her mother that Kelly had died.²⁰⁰
- 17.78** Showsec staff tried to help. One person gave her a T-shirt to hold against Hollie's leg. When she pressed it down, another part of Hollie's jeans started to go a deeper red with more blood. She was given another T-shirt but noticed another hole. Hollie's legs were covered in holes. Claire Booth begged the Showsec staff not to let Hollie die.²⁰¹
- 17.79** When asked about the emergency response, Claire Booth said: "*Every minute in the foyer felt like an hour.*"²⁰² She told anyone who approached her to offer their help, to go to Kelly. She could see no one was staying to give first aid, and she could not understand why. Nobody came back to tell her anything. Eventually, an off-duty police officer did stay with Kelly. He moved her and checked her pulse.²⁰³
- 17.80** Hollie needed urgent attention. She had started to go quiet and close her eyes. She spoke very slowly and said she wanted to sleep. Claire Booth described calling out to Emergency Training UK staff.²⁰⁴

¹⁹⁸ [138/77/17-79/14](#)

¹⁹⁹ [138/79/20-83/11](#)

²⁰⁰ [138/83/15-86/10](#)

²⁰¹ [138/86/13-87/16](#)

²⁰² [138/87/17-21](#)

²⁰³ [138/87/23-89/19](#)

²⁰⁴ [138/91/13-93/10](#)

- 17.81** The room suddenly seemed full of police officers, all in different uniforms. At one point, she was told that Kelly had a faint pulse but did not hear anything further after this. Someone helped to cut Hollie's jeans, and it was clear her legs were very badly injured. Claire Booth said it felt like hours had gone by. She repeatedly asked where the ambulances were. She could hear sirens. She was told they were coming but then they would never arrive. At one point, firearms officers asked her to leave. She was asked to carry Hollie, which was impossible.²⁰⁵
- 17.82** Claire Booth described how it did not make any sense that ambulances were not arriving. Claire Booth said she was desperate. Police officers were helping to apply pressure to Hollie's legs. They found even more injuries at the top of her legs. She did not think Hollie was going to get out of the City Room alive. Dale telephoned and said he and Ian had arrived from Sheffield but could not get through the police cordon. He said he could see ambulances. Claire Booth said that she felt relieved because she hoped that Ian could stay with Kelly, so that Kelly would not be alone. Claire Booth said, at around this time, the atmosphere in the room started to change: things were happening. A paramedic saw them. It was very quick. Hollie was given a card with a number two on it. Claire Booth was given a number three.²⁰⁶
- 17.83** It became their turn to be taken out of the City Room to the Casualty Clearing Station. On the CCTV, this can be seen at 23:29. Hollie was put on a metal crowd barrier and Claire Booth in a wheelchair.²⁰⁷ Hollie described the experience as "*very scary, incredibly painful*".²⁰⁸ She was not fastened to the barrier. She had to grip on. It felt like she would slide off. Claire Booth said it was a "*horrific way*" for anybody with injuries to be moved.²⁰⁹
- 17.84** Claire Booth and Hollie arrived in the Casualty Clearing Station at 23:31.²¹⁰ Claire Booth described how lost she felt there. It was cold and bright. They had no blankets, but someone gave them a curtain to wrap up in and keep warm.²¹¹ There were lots of injured people. She described how it felt. It was chaotic. There was no plan. It seemed that no one knew who would be treated next. It felt like a long time before anyone checked Hollie. Hollie was reassessed as a priority, P1 patient, but it still took a long time for her to be taken to hospital.²¹² They were taken to hospital at 01:59 on 23rd May 2017, 3 hours and 28 minutes after the explosion.²¹³ Both Claire Booth and Hollie received treatment for their

²⁰⁵ [138/93/16-101/5](#)

²⁰⁶ [138/101/22-106/22](#)

²⁰⁷ [138/107/14-109/20](#)

²⁰⁸ [138/111/11-23](#)

²⁰⁹ [138/111/23-112/7](#)

²¹⁰ [138/112/14-21](#)

²¹¹ [138/113/24-114/3](#), [138/123/18-124/8](#)

²¹² [138/113/1-122/5](#)

²¹³ [138/121/20-122/5](#)

injuries and were in-patients for weeks after the Attack. They underwent a number of operations. Hollie had lost so much blood that she needed a blood transfusion at hospital.²¹⁴

- 17.85** Reflecting on what happened, Claire Booth said: *"I remember feeling like we had been abandoned ... I could hear the sirens so close by but help never came."*²¹⁵ She stressed the need to educate the public that in a situation such as this, medical help might not always come immediately. Claire Booth said if she had known that, she would not have sat and waited for help to arrive.²¹⁶

Bradley Hurley, brother of Megan Hurley

- 17.86** Bradley Hurley attended the concert with his 15-year-old sister, Megan Hurley. His sister was a big Ariana Grande fan, and they were both excited to see the show.²¹⁷ Bradley Hurley described it as a *"really fun night"*.²¹⁸ They left as soon as the concert finished, and as they approached the doors to the City Room Megan Hurley said: *"What an experience that was."*²¹⁹
- 17.87** Bradley Hurley said they were in the City Room for about five seconds before his vision went completely white. There was a high-pitched, piercing sound. It was like a mosquito. His whole body felt extremely hot. He thought he might have collapsed or had a heart attack.²²⁰
- 17.88** After the immediate shock, Bradley Hurley realised he was on the floor. He tried to get up but knew straightaway that his legs were broken. He lay on his back, propped up on his elbows. His legs were bent and his skin was burning all over. His vision was blurred and his hearing distorted, like being underwater.²²¹
- 17.89** Bradley Hurley described looking at his sister. He knew straight away that she had died. She was not breathing. He tried, but couldn't find a pulse. Bradley Hurley said at that moment he felt strangely calm: he felt an acceptance about what had happened and that there was nothing he could do to change it.²²²
- 17.90** He knew it had been a terrorist attack: a bomb with shrapnel.²²³ They were a few metres away from the seat of the explosion.²²⁴
- 17.91** Bradley Hurley found it difficult to put things in a precise order, but he described how the City Room quickly descended into chaos. There were screams of pain from every direction. The room was dimly lit and smoky, and he had never felt

²¹⁴ [138/126/13-129/11](#)

²¹⁵ [138/129/15-22](#)

²¹⁶ [138/136/23-138/10](#)

²¹⁷ [138/146/22-147/1](#), [138/149/22-150/4](#)

²¹⁸ [138/155/7-13](#)

²¹⁹ [138/156/3-6](#)

²²⁰ [138/157/1-20](#)

²²¹ [138/157/21-159/4](#)

²²² [138/161/1-162/16](#)

²²³ [138/162/17-24](#)

²²⁴ [138/162/25-163/5](#)

so alone or helpless. He could not move and was bleeding heavily. There were other people in a similar situation lying around, but he did not have the words to speak to them. He recalled it being *"the worst imaginable situation"*.²²⁵

- 17.92** Bradley Hurley remembered people coming over to him. One person wrapped their belt around his leg as a makeshift tourniquet. To him, it seemed like the right thing to do. Someone else later joined him and told him to take off the tourniquet. They said he could lose his leg. Bradley Hurley said he was *"conflicted"*, but the tourniquet was taken off.²²⁶
- 17.93** Someone was handing out Ariana Grande merchandise to cover those who had died. Someone covered his sister.²²⁷
- 17.94** More police arrived, and Bradley Hurley described trying to get their attention. He did not feel like anyone checked him properly. No one cut off his jeans to see how bad his injuries were.²²⁸ He felt helpless, lying in pain on the floor, unable to move. The feeling of large police boots walking around close to his face was *"uncomfortable"* and *"scary"*.²²⁹ From the CCTV, he later knew that North West Ambulance Service Advanced Paramedic Patrick Ennis assessed him at 23:06. This lasted ten seconds, but he had no memory of it.²³⁰
- 17.95** The police reassured him that the paramedics were on the way, but they also seemed to be frustrated and confused that the ambulance personnel were not in the room.²³¹ At some point, he was given a wristband with a number two on it.²³²
- 17.96** Bradley Hurley said that at some stage he was able to speak to his parents on Megan Hurley's mobile phone. He told his father that there had been a bomb and where he was in the City Room. He said that his sister was with him. Bradley Hurley's father told him that he was going to come to the Arena and to stay there. Bradley Hurley also described speaking to his mother. He told her that Megan Hurley had died. It was the worst thing he had ever had to do.²³³
- 17.97** Bradley Hurley's father can be seen on the CCTV in the City Room with Bradley Hurley and Megan Hurley at 22:56.²³⁴ At that point, some men began to assess Megan Hurley. One of them thought she had a pulse. Bradley Hurley recalled that he suggested they get a defibrillator. He thought it was *"mad"* that he was the first person to suggest it.²³⁵ The people using the defibrillator seemed to be in a state of shock and panic. His father was constantly asking for medical help.

²²⁵ [138/163/6-166/5](#)

²²⁶ [138/166/6-168/21](#)

²²⁷ [138/168/22-169/14](#)

²²⁸ [138/169/15-170/9](#)

²²⁹ [138/171/12-23](#)

²³⁰ [138/170/20-25](#)

²³¹ [138/172/10-25](#)

²³² [138/173/1-7](#)

²³³ [138/174/21-177/15](#)

²³⁴ [138/178/2-9](#)

²³⁵ [138/178/20-179/9](#)

Bradley Hurley said that the help they expected never came.²³⁶ The defibrillator did not help Megan Hurley.²³⁷ They were in a major city, and he could not fathom how few resources there seemed to be.²³⁸

- 17.98** Bradley Hurley's father left the City Room for a short time, but returned at 23:20 with his wife. Bradley Hurley described how hard it was seeing his parents confronted with what they saw. They were in shock. It was something he will never forget.²³⁹ By this time, Bradley Hurley said, although his skin was still burning, he was getting very cold. His teeth were chattering. He was covered with a green plastic sheet. His parents were continually asking where the paramedics were.²⁴⁰ There were police all around him. He was continually knocked, which was very painful. His mum asked for him to be given oxygen and pain relief.²⁴¹
- 17.99** Bradley Hurley praised an officer, Police Constable (PC) Lauren Moore, who stayed with him. She reassured him and asked him about normal life. It meant a lot.²⁴²
- 17.100** Bradley Hurley's parents became frustrated with the speed of the evacuation. His father found a fence panel, but passed it on to another casualty who needed it. Bradley Hurley recalled the pain and discomfort of that person as they were put onto the makeshift stretcher. It made him scared.²⁴³ His father found another barrier, and it was finally his turn to be moved. The pain from being moved onto the barrier was excruciating. He screamed and swore. The barrier was uncomfortable and unsteady. Every step would send a jolt of pain. He thought he would slide off.²⁴⁴
- 17.101** CCTV showed Bradley Hurley being taken out of the City Room at 23:39. He said he felt sick at leaving Megan.²⁴⁵ Bradley Hurley explained how he struggles to understand why he was the last survivor taken out of the City Room, despite being assessed as a P2 patient.²⁴⁶ He was on the floor of the City Room for one hour and eight minutes.²⁴⁷
- 17.102** Bradley Hurley arrived at the Casualty Clearing Station at 23:42.²⁴⁸ He was placed on the floor. It was freezing cold. At some point, he was covered with a foil blanket. It felt like he was back to square one, waiting for treatment again.²⁴⁹

²³⁶ [138/180/11-181/2](#)

²³⁷ [138/179/19-180/1](#)

²³⁸ [138/187/12-188/5](#)

²³⁹ [138/181/13-182/11](#)

²⁴⁰ [138/183/11-184/10](#)

²⁴¹ [138/184/18-25](#), [138/188/6-22](#)

²⁴² [138/185/5-186/17](#)

²⁴³ [138/189/18-190/16](#)

²⁴⁴ [138/191/2-192/169](#)

²⁴⁵ [138/192/20-193/7](#)

²⁴⁶ [138/173/7-174/20](#)

²⁴⁷ [138/174/11-17](#)

²⁴⁸ [138/193/25-194/3](#)

²⁴⁹ [138/194/4-195/20](#)

An off-duty nurse, Bethany Crook, cut off his jeans up to his thighs and took off his shoes. It was the first time it felt that someone was taking charge. She assessed him properly.²⁵⁰ He had 11 large holes in his leg and a large hole in his foot.²⁵¹ He was given pain relief and the anticoagulant tranexamic acid (TXA). He recalled that it did not seem to “*touch the sides*” and just made him sick.²⁵²

17.103 At 02:44 on 23rd May 2017, Bradley Hurley was taken from the Casualty Clearing Station to an ambulance. He arrived at hospital at 02:51, more than four hours after the detonation.²⁵³ He was taken straight to theatre for an operation. His injuries were extensive, with shrapnel injuries to his legs, feet and jaw. His legs had external braces for six months. The impact on him, physically and mentally, has been significant. The loss of his sister affects his family every day.²⁵⁴

17.104 As someone who experienced it, Bradley Hurley did not believe that the emergency response to the Attack worked well. If his parents had not been there, he fears that his extraction would have taken even longer.²⁵⁵

Lisa Roussos, mother of Saffie-Rose Roussos

17.105 Lisa Roussos described how Saffie-Rose was a big fan of Ariana Grande and was so happy to be going to the concert.²⁵⁶ Lisa Roussos accompanied her daughters, Saffie-Rose and Ashlee, to the concert and remembers how Saffie-Rose danced all night.²⁵⁷

17.106 As the concert came to an end, Lisa Roussos said she decided to stay for the encore. She had considered leaving to miss the crowds, but did not want to do that to Saffie-Rose. After the final song of the encore, they made their way out of the Arena bowl. Ashlee was in front. Saffie-Rose was pulling her mother’s left hand, eager to see her father and brother. Lisa Roussos’s last memory of Saffie-Rose before the explosion was of being pulled along by her, their arms outstretched.²⁵⁸

17.107 There was a big thud, and Lisa Roussos recalled lying on the floor. There was a muffled sound of white noise. She knew something serious had happened and that it was probably a bomb.²⁵⁹ Lisa Roussos could remember trying to move her body, her arms and legs, but nothing would move. She forced herself to stay awake. She thought help would come soon, but it felt like hours before anyone

²⁵⁰ [138/197/16-198/15](#)

²⁵¹ [138/198/21-24](#), [138/173/21-24](#)

²⁵² [138/198/21-200/1](#)

²⁵³ [138/205/7-18](#)

²⁵⁴ [138/209/1-213/11](#)

²⁵⁵ [138/213/17-214/2](#)

²⁵⁶ [174/143/5-10](#), [174/145/17-146/6](#)

²⁵⁷ [174/146/7-10](#), [174/148/9-149/3](#)

²⁵⁸ [174/149/14-150/12](#)

²⁵⁹ [174/150/16-25](#)

approached her. When they did, she was really breathless and could only say "Saffie".²⁶⁰ Lisa Roussos said she wanted to keep her eyes open, to stay alive, so that she could make sure someone was taking care of Saffie-Rose.²⁶¹

- 17.108** The next thing Lisa Roussos remembers was the feeling of being moved: her body being thrown from side to side, possibly from being taken out of the City Room on a stretcher. She tried to give someone her age, but because she was so breathless she gave the wrong age. Her breathing was very shallow and she could only take short breaths. She just wanted to close her eyes and give up.²⁶²
- 17.109** She could then recall being at hospital, her jeans being cut off and someone removing her jewellery. That was her last memory.²⁶³ She was later told that while unconscious she had been assessed as having a very small chance of survival, and amputation had been discussed.²⁶⁴
- 17.110** Lisa Roussos was in a coma for about two-and-half weeks and underwent a number of operations as a result of the injuries she sustained.²⁶⁵ When she woke up from the coma, her husband Andrew was holding her hand. He asked how she was feeling. He did not mention Saffie-Rose. Lisa Roussos said her last thought before she went into the coma was about Saffie-Rose, and she "just knew" when she woke up that Saffie-Rose had died. She wanted to go and be with Saffie-Rose to look after her.²⁶⁶

Andrew Roussos, father of Saffie-Rose Roussos

- 17.111** Andrew Roussos went with his son, Xander, to collect his wife, Lisa, daughter, Saffie-Rose, and step-daughter, Ashlee, from the concert. He spoke to Lisa at 22:29 to check where he should wait. As Ariana Grande was about to do an encore, he decided to find a parking space. Andrew Roussos was not present in the City Room at the time of the explosion but he was in the vicinity. His evidence relates to the adequacy of the emergency response and I have therefore included a summary of his evidence in this section.²⁶⁷
- 17.112** A few minutes later, after he parked in Cathedral Gardens, Andrew Roussos described hearing screams and seeing hysterical children running away. He tried to stop people to find out what had happened. Three women told him that either a bomb had exploded or a balloon had popped causing everyone to panic.²⁶⁸

²⁶⁰ [174/151/5-15](#)

²⁶¹ [174/151/22-25](#)

²⁶² [174/152/1-153/5](#)

²⁶³ [174/153/6-12](#)

²⁶⁴ [174/158/3-7](#)

²⁶⁵ [174/155/11-158/19](#)

²⁶⁶ [174/154/13-25](#)

²⁶⁷ [174/115/19-116/22](#)

²⁶⁸ [174/117/1-119/4](#)

- 17.113** Andrew Roussos decided he needed to find his family. Together with Xander and the family dog, they walked towards the Arena. As they turned onto Hunts Bank, the first person he saw was his step-daughter, Ashlee, on the floor near to Chetham's School of Music. She was stable, but injured and confused. He knew then that this was serious and feared that Lisa and Saffie-Rose would also be injured.²⁶⁹
- 17.114** There were two trainee doctors with Ashlee, who confirmed that a bomb had gone off. This was about 22:50. A police officer advised Andrew Roussos that everyone was out of the Arena and that he should go from person to person to see if he could find Saffie-Rose and his wife, Lisa. He could see hundreds of people now. Many were injured on the floor. The majority were children. He was frightened but trying to keep calm and not panic, for Xander's sake. It took about 30 or 40 minutes for Andrew Roussos to get to the bottom end of Hunts Bank.²⁷⁰
- 17.115** Andrew Roussos continued to search around the perimeter of the Victoria Exchange Complex for Saffie-Rose and Lisa. Unable to find them, at around 23:45 he went back to check on Ashlee. The trainee doctors agreed to stay with her, and he contacted her boyfriend who was also travelling to Manchester. They agreed to meet at Manchester Royal Infirmary to see how Ashlee's boyfriend could help with finding Lisa and Saffie-Rose before he continued on to be with Ashlee.²⁷¹
- 17.116** Andrew Roussos waited at the hospital for hours. He gave the staff the details for Saffie-Rose and Lisa and felt a growing sense of "*panic*".²⁷² Andrew Roussos said he called the helpline many times, but they were not able to give him any information. One hospital did not appear to know what was happening at another. They told him they would call back, but never did.²⁷³
- 17.117** At about 04:00, a friend found out that Lisa was at Salford Royal Hospital. Andrew Roussos arrived there after 04:30. He was taken into a private room and told of the extent of his wife's injuries. Lisa had been airlifted to Wythenshawe Hospital, which was better placed to treat her, but her chances of survival were small. Salford Royal Hospital had no news about Saffie-Rose. Andrew Roussos said that knowing that Ashlee was injured, then hearing of the serious injuries suffered by his wife, but still not knowing where Saffie-Rose was, was "*indescribable*".²⁷⁴
- 17.118** Andrew Roussos drove to Wythenshawe Hospital to see Lisa. It was about a 40-minute drive. Lisa was so badly injured that she was put into an induced coma. Andrew Roussos said he broke down when he saw her. At 08:00, he

²⁶⁹ [174/119/5-120/14](#)

²⁷⁰ [174/120/17-122/25](#)

²⁷¹ [174/123/1-127/22](#)

²⁷² [174/129/17-18](#)

²⁷³ [174/127/25-131/16](#), [174/137/11-14](#)

²⁷⁴ [174/130/12-16](#), [174/131/21-134/6](#)

spoke to a police officer at the hospital and asked for help to find Saffie-Rose. He gave the police officer a photo. At about 12:30 on 23rd May 2017, the officer returned and told him that Saffie-Rose had been killed in the explosion.²⁷⁵

17.119 As a father, he wished he could have protected Saffie-Rose more. Andrew Roussos described the emergency response to the Attack as “*shameful*” and “*inadequate*”.²⁷⁶

²⁷⁵ [174/138/1-140/24](#)

²⁷⁶ [174/113/23](#), [174/114/12-15](#)

Part 18

Fatal consequences of the explosion

THE CONTENT OF PART 18 IS PARTICULARLY DISTRESSING.
IT CONTAINS DETAIL ABOUT THE NATURE OF THE INJURIES
SUSTAINED BY THOSE WHO DIED AND THEIR CAUSE OF DEATH

Introduction

- 18.1** My investigation into the Attack began as twenty-two inquests. As I set out in my Preface to Volume 1, it became necessary to continue that investigation as a statutory public inquiry. This Part has been drafted with the duties of a Coroner in mind.
- 18.2** The purpose of this Part is to provide a summary of the evidence about what happened to each of those who died. For each individual, I heard detailed evidence about the circumstances of their death during a period of the Inquiry's oral evidence hearings concerned exclusively with each of those who died.
- 18.3** The summary of that evidence within this Part is intentionally short. Its focus is on the most relevant information about the circumstances in which they were killed. It is not necessary, and would be distressing, to repeat every aspect of the evidence heard. The transcripts of the evidence, which provide far greater detail, are available on the Inquiry's website.¹ I have noted in this Part where some of the evidence has not been published on the Inquiry's website due to its graphic and distressing nature. This includes post-mortem reports.
- 18.4** I have summarised the position in relation to each person who died separately. I made exceptions for this in the case of two couples. For each of those who died, I set out where that person was in the period immediately after detonation, what care they received, when they were confirmed as dead and their cause of death. I confirm in the case of every person who died that they were unlawfully killed.
- 18.5** This is the information that, as a Coroner, I would have included in the record of inquest for each person.
- 18.6** The evidence set out in this Part is distressing. It sets out the tragic circumstances in which each person died. It is important to remember, as the Inquiry heard during the commemorative pen portrait evidence, that

¹ [Transcripts by hearing date, Manchester Arena Inquiry website](#)

each of those who died is *"not a number, each of them is not just one of the 22 who died: each was an individual, each was unique, each loss of life is a separate tragedy"*.²

Investigation

- 18.7** All of those who died were the subject of a post-mortem examination. These examinations were carried out by a team of forensic pathologists, led by Dr Philip Lumb.³ The post-mortem examinations were assisted by a radiology team led by Colonel Dr Iain Gibb, who was supported by Lieutenant Colonel Dr Mark Ballard and Commander Dr David Gay.⁴
- 18.8** Extensive work was undertaken by Operation Manteline, the Greater Manchester Police (GMP) team who assisted my investigation. This included many hundreds of hours spent analysing the footage from 90 CCTV cameras, from 52 body-worn video cameras and from mobile phones. From that work, timelines were produced to show, as far as possible, what happened to each person who died and the individuals who interacted with them.
- 18.9** An important part of my investigation has been whether a different or better emergency response may have led to the survival of any of those who died. I have been assisted in this part of my investigation by experts. These experts and their qualifications are set out in Appendix 12. Such has been the complexity of some of the issues that have arisen that it has been necessary to call upon more than one expert in certain disciplines.
- 18.10** First, I instructed the Blast Wave Panel of Experts to consider the relevant evidence. The Panel are a multi-disciplinary team based at Imperial College London and the Defence Science and Technology Laboratory. The Panel have considerable expertise in blast injury. The Panel comprised Professor Anthony Bull, Colonel Professor Peter Mahoney, Colonel Professor Jonathan Clasper, Lieutenant Colonel Ballard and Alan Hepper. The purpose of their review was to consider whether any of those who died may have been able to survive their injuries with different or better care.
- 18.11** Second, in relation to two of those who died, the complexity of the evidence surrounding their deaths led me to instruct further experts. In the case of John Atkinson, I instructed cardiology expert Surgeon Commander Dr Paul Rees. In the case of Saffie-Rose Roussos, I instructed consultants in pre-hospital care and emergency medicine, Lieutenant Colonel Dr Claire Park, Dr Gareth Davies and Mr Aswinkumar Vasireddy, and consultant radiologist Dr Richard Wellings.

² [10/25/15-22](#)

³ [176/109/19-112/8](#)

⁴ [177/163/3-9](#)

18.12 Third, I instructed forensic pathologists Professor Jack Crane and Dr Lumb to review the post-mortem evidence in the light of all the medical and scientific evidence. That included a review of relevant video footage. In relation to John Atkinson's post-mortem, Dr Naomi Carter, who carried it out, was invited to review her findings following receipt of Surgeon Commander Rees's report.

Survivability

18.13 The Blast Wave Panel of Experts were instructed to assess the available evidence and provide their conclusions on whether each of those who died may have survived, if they had received different medical care. The Panel defined the term "*unsurvivable*" as "*injuries so severe that even if the most comprehensive and advanced medical treatment [available in 2017] was initiated immediately after injury, survival was still deemed impossible*".⁵ I shall adopt this definition.

18.14 In the case of twenty of the twenty-two people who died, the Panel concluded that all of the evidence supports the conclusion that their injuries were unsurvivable. I accept this evidence. I record this fact in relation to each of those to whom it applies when I address the circumstances of their death.

18.15 The evidence was less conclusive in the cases of John Atkinson and Saffie-Rose Roussos. For this reason, it required more detailed analysis, which I will provide at paragraphs 18.154 to 18.234.

⁵ [161/3/6-4/23](#)

Alison Howe

- 18.16** Alison Howe was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.17** When the bomb detonated, Alison Howe was standing near to the Arena exit doors. She was approximately three metres from the seat of the explosion.⁶
- 18.18** Following the detonation, CCTV shows that Alison Howe was lying on her back on the floor of the City Room. After a short period, she was approached by a member of the public, who placed her in the recovery position.⁷
- 18.19** At 22:55, a Showsec staff member and a British Transport Police (BTP) officer gave Alison Howe chest compressions.⁸
- 18.20** A short time later, a paramedic assessed that Alison Howe's injuries were incompatible with life. CPR was stopped and Alison Howe was covered at 22:58.⁹
- 18.21** A tag was placed on Alison Howe at 23:34 to confirm that she was dead.¹⁰
- 18.22** As a result of the explosion, Alison Howe suffered multiple injuries. A post-mortem examination confirmed that Alison Howe's death was caused by a significant head injury. Her injuries were unsurvivable.¹¹

⁶ [152/11/19-20](#)

⁷ [152/11/21-12/2](#)

⁸ [152/12/14-20](#)

⁹ [152/13/2-3](#)

¹⁰ [152/13/11-13](#)

¹¹ [152/13/20-25](#)

Angelika and Marcin Klis

- 18.23** Angelika and Marcin Klis were unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.24** When the bomb detonated, Angelika and Marcin Klis were standing near to the Arena exit doors. Marcin Klis was approximately five metres from the seat of the explosion.¹² Angelika Klis was approximately four metres from the seat of the explosion.¹³
- 18.25** Following the detonation, Angelika and Marcin Klis were found lying on the floor of the City Room. They were together. Members of the public, Emergency Training UK (ETUK) first aiders and police officers checked on them. Both remained motionless.¹⁴
- 18.26** By no later than 22:50, Angelika Klis was covered.¹⁵ Marcin Klis was covered by no later than 22:59.¹⁶
- 18.27** A tag was placed on Angelika Klis at 23:39 to confirm that she was dead. A tag was placed on Marcin Klis at 23:40 to confirm that he was dead.¹⁷
- 18.28** A post-mortem examination confirmed that Marcin Klis's death was caused by chest injuries. A post-mortem examination confirmed that Angelika Klis's death was caused by multiple injuries. These injuries were sustained as a result of the explosion. Their injuries were unsurvivable.¹⁸

¹² [150/105/20-21](#)

¹³ [150/105/21-22](#)

¹⁴ [150/105/24-107/17](#)

¹⁵ [150/108/12-13](#)

¹⁶ [150/108/22-24](#)

¹⁷ [150/109/24-110/4](#)

¹⁸ [150/110/17-112/18](#)

Chloe Rutherford and Liam Curry

- 18.29 Chloe Rutherford and Liam Curry were unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.30 Following the detonation, Chloe Rutherford and Liam Curry were lying side by side. Neither showed signs of life.¹⁹
- 18.31 They were both covered shortly after 22:42.²⁰
- 18.32 A tag was placed on Chloe Rutherford at 23:40 to confirm that she was dead.²¹ A tag was placed on Liam Curry at 23:44 to confirm that he was dead.²²
- 18.33 Post-mortem examinations for Chloe Rutherford and Liam Curry confirmed that their deaths were caused by multiple injuries. These injuries were sustained as a result of the explosion. Their injuries were unsurvivable.²³

¹⁹ [154/99/11-20](#)

²⁰ [154/99/18-24](#)

²¹ [154/100/8-9](#)

²² [154/100/13-15](#)

²³ [154/100/19-101/17](#)

Courtney Boyle

- 18.34** Courtney Boyle was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.35** When the bomb detonated, Courtney Boyle was approximately four metres from the seat of the explosion.²⁴
- 18.36** Following the detonation, Courtney Boyle was lying on the floor of the City Room on her right side. She was not moving.²⁵
- 18.37** A member of the public checked on Courtney Boyle. She did not move or show any signs of life.²⁶
- 18.38** By 22:51, Courtney Boyle was covered.²⁷
- 18.39** A tag was placed on Courtney Boyle at 23:38 to confirm that she was dead.²⁸
- 18.40** A post-mortem examination confirmed that Courtney Boyle's death was caused by multiple injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.²⁹

²⁴ [150/118/10-11](#)

²⁵ [150/118/12-13](#)

²⁶ [150/118/18-25](#)

²⁷ [150/119/1-2](#)

²⁸ [150/119/8-11](#)

²⁹ [150/119/14-23](#)

Eilidh MacLeod

- 18.41 Eilidh MacLeod was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.42 When the bomb detonated, Eilidh MacLeod was approximately four metres from the seat of the explosion.³⁰
- 18.43 Following the detonation, Eilidh MacLeod was lying on her right side on the floor of the City Room. She was motionless.³¹
- 18.44 By 22:51, 20 minutes after the explosion, Eilidh MacLeod was covered with clothing.³² A police officer who saw Eilidh MacLeod believed she had died.³³
- 18.45 A tag was placed on Eilidh MacLeod at 23:45 to confirm that she was dead.³⁴
- 18.46 A post-mortem examination confirmed that Eilidh MacLeod's death was caused by multiple injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.³⁵

³⁰ [153/65/18-19](#)

³¹ [153/65/20-23](#)

³² [153/65/24](#)

³³ [153/66/11-15](#)

³⁴ [153/66/19-21](#)

³⁵ [153/67/2-23](#)

Elaine Mclver

- 18.47 Elaine Mclver was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.48 When the bomb detonated, Elaine Mclver was approximately four metres from the seat of the explosion.³⁶
- 18.49 Following the detonation, Elaine Mclver was seen lying face down. She was not moving. A few minutes later, Elaine Mclver was lying on her back.³⁷
- 18.50 An emergency responder checked on Elaine Mclver about six minutes after the explosion. There was a small, sharp movement of her head but she otherwise did not respond.³⁸
- 18.51 At 22:50, police officers attempted CPR. One of the officers noticed some movement to her mouth. Elaine Mclver did not respond to CPR.³⁹ By 22:55, she was covered.⁴⁰
- 18.52 A tag was placed on Elaine Mclver at 23:45 to confirm that she was dead.⁴¹
- 18.53 As a result of the explosion, Elaine Mclver suffered multiple injuries. A post-mortem examination confirmed that her death was caused by chest injuries. Her injuries were unsurvivable.⁴²

³⁶ [156/46/2-3](#)

³⁷ [156/46/4-8](#), [156/46/14-19](#)

³⁸ [156/46/20-47/1](#)

³⁹ [156/48/2-7](#), [156/49/3-50/6](#)

⁴⁰ [156/48/16-18](#)

⁴¹ [156/50/22-25](#)

⁴² [156/51/11-53/5](#)

Georgina Bethany Callander

- 18.54** Georgina Callander was unlawfully killed as a result of the Attack.
- 18.55** When the bomb detonated, Georgina Callander was approximately four metres from the seat of the explosion.⁴³
- 18.56** Georgina Callander suffered a very serious head injury in the explosion. She remained in the City Room until 23:26 when she was evacuated to the Casualty Clearing Station.⁴⁴
- 18.57** In the City Room, Georgina Callander was triaged as a P1 casualty, which meant that she was classified as priority one, among the most seriously injured, requiring immediate medical care.⁴⁵ She was breathing but she did not communicate with anyone who tried to help her.
- 18.58** Georgina Callander was carried into the Casualty Clearing Station at 23:28.⁴⁶ By this time, she was in cardiac arrest.⁴⁷ She was given CPR and a cardiac output was restored.⁴⁸
- 18.59** An ambulance took Georgina Callander to Manchester Royal Infirmary at 23:40.⁴⁹ On the journey to hospital, initially she had a pulse but was assessed as having a very low score on the Glasgow Coma Scale.⁵⁰ This indicated deep unconsciousness.
- 18.60** Georgina Callander's condition deteriorated further in the ambulance. She went into cardiac arrest shortly before the ambulance arrived at Manchester Royal Infirmary at 23:48.⁵¹
- 18.61** At the hospital, Advanced Life Support was given to Georgina Callander for 30 minutes.⁵² Georgina Callander remained in cardiac arrest. Her death was confirmed at 00:05 on 23rd May 2017.⁵³
- 18.62** A post-mortem examination confirmed that Georgina Callander suffered multiple injuries as a result of the explosion. Her death was caused by a head injury and her injuries were unsurvivable.⁵⁴

⁴³ [155/6/20-21](#)

⁴⁴ [155/28/16-18](#)

⁴⁵ [155/12/10-23](#), [155/45/20-48/4](#), [155/70/11-71/18](#)

⁴⁶ [155/22/7-29/11](#)

⁴⁷ [155/29/10-32/18](#)

⁴⁸ [155/32/19-33/15](#), [155/134/15-21](#)

⁴⁹ [155/35/21-25](#)

⁵⁰ [155/37/4-5](#)

⁵¹ [155/36/17-38/21](#), [155/142/25-145/8](#)

⁵² [155/39/23-40/7](#), [155/154/20-155/25](#)

⁵³ [155/40/8-23](#), [155/155/1-11](#)

⁵⁴ [155/41/13-42/19](#)

Jane Tweddle

- 18.63** Jane Tweddle was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.64** When the bomb detonated, Jane Tweddle was standing near to the box office. She was approximately 14 metres from the seat of the explosion.⁵⁵
- 18.65** Following the detonation, a friend helped Jane Tweddle across the City Room, but she collapsed on the ground near to the staircase leading towards Trinity Way.⁵⁶
- 18.66** A member of the public placed Jane Tweddle in the recovery position. An ETUK first aider and police officers gave CPR to Jane Tweddle for approximately 11 minutes. A defibrillator was used but could not detect any cardiac output.⁵⁷
- 18.67** CPR was stopped at 22:59.⁵⁸ Jane was covered with clothing at 22:59.⁵⁹
- 18.68** A tag was placed on Jane Tweddle at 23:47 to confirm that she was dead.⁶⁰
- 18.69** A post-mortem examination confirmed that Jane Tweddle's death was caused by neck injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.⁶¹

⁵⁵ [151/29/7-9](#)

⁵⁶ [151/29/10-14](#)

⁵⁷ [151/31/14-33/23](#)

⁵⁸ [151/33/24-25](#)

⁵⁹ [151/33/24-34/4](#)

⁶⁰ [151/34/10-12](#)

⁶¹ [151/34/23-35/6](#)

John Atkinson

- 18.70** John Atkinson was unlawfully killed as a result of the Attack.
- 18.71** When the bomb was detonated, John Atkinson was approximately six metres from the seat of the explosion.⁶² He suffered serious injuries, principally to his legs.
- 18.72** Following the detonation, John Atkinson attempted to drag himself across the floor of the City Room. He left an obvious trail of blood behind him.⁶³
- 18.73** A member of the public assisted John Atkinson very shortly after the blast. The member of the public made the first 999 call to report the Attack.⁶⁴ He was advised to apply a tourniquet to John Atkinson's right leg, which he did during the call using his wife's belt.⁶⁵ In order to help stem blood loss, police issue "leg restraints" were also applied around the top of both of John Atkinson's legs approximately 43 minutes after the explosion.⁶⁶
- 18.74** John Atkinson was in the City Room for 47 minutes after the explosion. He was conscious during that time and spoke to those helping him. Members of the public, Showsec employees, ETUK first aiders and police officers assisted John Atkinson. He was not triaged or treated by North West Ambulance Service (NWAS) paramedics while he was in the City Room.
- 18.75** It took eight minutes to move John Atkinson from the City Room to the Casualty Clearing Station. At 23:16, he was placed onto an advertising hoarding and was dragged from the City Room.⁶⁷ Between 23:19 and 23:20, attempts were made to manoeuvre John Atkinson on the advertising hoarding into the lift that joined the raised walkway to the station concourse. It was realised that the hoarding would not fit. At 23:21, after the advertising hoarding had given way, John Atkinson was lifted onto a metal barrier.⁶⁸ He was carried towards the Casualty Clearing Station at 23:22.⁶⁹ This was 52 minutes after the detonation.
- 18.76** John Atkinson remained in the Casualty Clearing Station for 24 minutes. At 23:47, while still waiting in the Casualty Clearing Station, he went into cardiac arrest.⁷⁰ NWAS paramedics and a doctor gave CPR.⁷¹ At 23:50, John Atkinson was placed into an NWAS ambulance. In the ambulance, the doctor performed a chest decompression upon John Atkinson. This did not change John Atkinson's

⁶² [158/7/12-13](#)

⁶³ [158/7/18-20](#)

⁶⁴ [158/8/25-9/19](#)

⁶⁵ [158/11/17-14/10](#)

⁶⁶ [158/33/8-34/7](#)

⁶⁷ [158/36/15-39/22](#)

⁶⁸ [158/50/8-51/8](#)

⁶⁹ [158/54/9-11](#)

⁷⁰ [159/16/24-17/3](#)

⁷¹ [159/17/4-23/6](#), [160/58/25-59/17](#)

cardiac output.⁷² The ambulance left Station Approach for Manchester Royal Infirmary at 00:00 on 23rd May 2017.⁷³ At approximately the same time, some degree of heart activity was detected,⁷⁴ but it is likely that this was merely intermittent activity and was in no sense a return to normal. On the contrary, circulation was continuing to reduce.⁷⁵ The cardiac arrest at 23:47 was, on the expert evidence to which I shall turn in paragraphs 18.165 to 18.173, the point beyond which John Atkinson was incapable of survival.

18.77 John Atkinson arrived at Manchester Royal Infirmary at 00:06.⁷⁶ By this time, he was again in cardiac arrest. He was taken to the resuscitation room and given Advanced Life Support.⁷⁷ This was unsuccessful. John Atkinson was declared dead by the treating clinicians at 00:24 on 23rd May 2017.⁷⁸

18.78 The view of Professor Crane and Dr Lumb, which I accept, was that John Atkinson's death was caused by the leg injuries he sustained in the explosion.⁷⁹ I also accept the opinion of the Blast Wave Panel of Experts, which was that those were injuries from which he would have survived if given prompt and expert medical treatment.⁸⁰ As I shall explain when dealing with survivability in paragraphs 18.174 to 18.190, such treatment should have been provided.

⁷² [159/23/7-19](#), [159/25/22-28/5](#)

⁷³ [159/29/11](#)

⁷⁴ [159/29/18-30/4](#)

⁷⁵ [161/56/4-58/3](#)

⁷⁶ [159/30/7-12](#)

⁷⁷ [159/30/20-34/11](#), [160/201/15-206/24](#)

⁷⁸ [159/34/12-15](#), [160/206/25-207/6](#)

⁷⁹ [159/41/17-43/7](#)

⁸⁰ [159/38/18-41/16](#)

Kelly Brewster

- 18.79** Kelly Brewster was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.80** When the bomb detonated, Kelly Brewster was approximately nine metres from the seat of the explosion.⁸¹
- 18.81** Following the detonation, Kelly Brewster was lying on the floor of the City Room.⁸² She was breathing erratically and was unconscious.⁸³ Kelly Brewster's sister, a member of the public, a TravelSafe officer, ETUK first aiders and police officers all sought to help her.⁸⁴
- 18.82** Kelly Brewster stopped breathing shortly after 23:00. She was given CPR but this was not successful. Following an assessment by a paramedic, CPR was stopped at 23:11.⁸⁵ She was covered by 23:12.⁸⁶
- 18.83** A tag was placed on Kelly Brewster at 23:45 to confirm that she was dead.⁸⁷
- 18.84** A post-mortem examination confirmed that Kelly Brewster's death was caused by head and abdominal injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.⁸⁸

⁸¹ [154/40/1-2](#)

⁸² [154/5/24-6/6](#)

⁸³ [154/26/21-27/7](#), [154/42/6-10](#)

⁸⁴ [154/6/7-10/24](#)

⁸⁵ [154/10/25-13/18](#), [154/14/3-18](#)

⁸⁶ [154/14/22-15/8](#)

⁸⁷ [154/22/1-4](#)

⁸⁸ [154/22/14-24/4](#)

Lisa Lees

- 18.85** Lisa Lees was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.86** When the bomb detonated, Lisa Lees was standing near to the Arena exit doors. She was approximately four metres from the seat of the explosion.⁸⁹
- 18.87** Following the detonation, Lisa Lees was lying on her back on the floor of the City Room.⁹⁰ Members of the public present in the City Room went to assist Lisa. The extent of her injuries meant that she could not be helped. At 22:43, about 12 minutes after the explosion, she was covered.⁹¹
- 18.88** A tag was placed on Lisa Lees at 23:39 to confirm that she was dead.⁹²
- 18.89** A post-mortem examination confirmed that Lisa Lees' death was caused by multiple injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.⁹³

⁸⁹ [152/4/18-19](#)

⁹⁰ [152/4/20-21](#)

⁹¹ [152/6/7-9](#)

⁹² [152/6/22-24](#)

⁹³ [152/7/10-24](#)

Martyn Hakan Hett

- 18.90** Martyn Hett was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.91** When the bomb detonated, Martyn Hett was approximately four metres from the seat of the explosion.⁹⁴
- 18.92** Following the detonation, Martyn Hett was lying on his front on the floor of the City Room. He was motionless. A TravelSafe officer checked on him but Martyn Hett did not respond.⁹⁵
- 18.93** Martyn Hett was seen on video footage subsequently, lying in the same position. He had not moved. By 22:53, Martyn Hett was covered.⁹⁶
- 18.94** A tag was placed on Martyn Hett at 23:44 to confirm that he was dead.⁹⁷
- 18.95** A post-mortem examination confirmed that Martyn Hett's death was caused by multiple injuries. These injuries were sustained as a result of the explosion. His injuries were unsurvivable.⁹⁸

⁹⁴ [156/9/17-18](#)

⁹⁵ [156/9/22-24](#)

⁹⁶ [156/10/6-7](#)

⁹⁷ [156/12/8-11](#)

⁹⁸ [156/12/14-13/9](#)

Megan Joanne Hurley

- 18.96** Megan Hurley was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.97** When the bomb detonated, Megan Hurley was approximately three metres from the seat of the explosion.⁹⁹
- 18.98** Following the detonation, Megan Hurley was lying on her front on the floor of the City Room. She was not moving.¹⁰⁰ Efforts were made to help Megan Hurley by her family, an ETUK first aider and police officers.¹⁰¹
- 18.99** By 22:53, she was covered.¹⁰² The covering was removed a few minutes later and, at approximately 23:00, Megan Hurley was given CPR. A defibrillator was used to check her cardiac output.¹⁰³
- 18.100** Following a discussion with an NWS paramedic, CPR was stopped at about 23:06.¹⁰⁴ Megan Hurley was covered again shortly afterwards.¹⁰⁵
- 18.101** Megan Hurley's father remained with her in the City Room until 01:02 on 23rd May 2017.¹⁰⁶ No tag was put onto Megan Hurley to record her time of death.
- 18.102** A post-mortem examination confirmed that Megan Hurley's death was caused by multiple injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.¹⁰⁷

⁹⁹ [153/5/8-9](#)

¹⁰⁰ [153/5/18-6/1](#)

¹⁰¹ [153/8/1-16/22](#)

¹⁰² [153/6/19-21](#)

¹⁰³ [153/8/14-17/12](#)

¹⁰⁴ [153/17/12-24](#)

¹⁰⁵ [153/17/23-18/1](#)

¹⁰⁶ [153/24/2-3](#)

¹⁰⁷ [153/24/17-25/11](#)

Michelle Kiss

- 18.103** Michelle Kiss was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.104** When the bomb detonated, Michelle Kiss was standing at the top of the steps leading to JD Williams. She was approximately 20 metres from the seat of the explosion.¹⁰⁸
- 18.105** Following the detonation, Michelle Kiss immediately fell to the floor. She was given assistance by those present in the City Room and emergency responders. Michelle Kiss did not respond and showed no signs of life.¹⁰⁹
- 18.106** By 22:48, Michelle Kiss was covered.¹¹⁰
- 18.107** A tag was placed on Michelle Kiss at 00:32 on 23rd May 2017 to confirm that she was dead.¹¹¹
- 18.108** A post-mortem examination confirmed that Michelle Kiss's death was caused by a head injury. This injury was sustained as a result of the explosion and was unsurvivable.¹¹²

¹⁰⁸ [151/23/5-6](#)

¹⁰⁹ [151/23/14-24/12](#)

¹¹⁰ [151/24/13-25](#)

¹¹¹ [151/24/13-25](#)

¹¹² [151/25/10-22](#)

Nell Jones

- 18.109** Nell Jones was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.110** When the bomb detonated, Nell Jones was approximately two metres from the seat of the explosion.¹¹³
- 18.111** Following the detonation, Nell Jones was lying on her front on the floor of the City Room. She was motionless.¹¹⁴
- 18.112** She made no response when a TravelSafe officer checked her two times. She was unresponsive when a police officer checked on her a short time after that.¹¹⁵
- 18.113** By 22:56, Nell Jones was covered with clothing.¹¹⁶
- 18.114** A tag was placed on Nell Jones at 23:41 to confirm that she was dead.¹¹⁷
- 18.115** A post-mortem examination confirmed that Nell Jones' death was caused by multiple injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.¹¹⁸

¹¹³ [152/26/10-11](#)

¹¹⁴ [152/26/12-16](#)

¹¹⁵ [152/26/17-27/3](#)

¹¹⁶ [152/27/4-10](#)

¹¹⁷ [152/27/20-22](#)

¹¹⁸ [152/27/25-28/20](#)

Olivia Paige Campbell-Hardy

- 18.116** Olivia Campbell-Hardy was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.117** When the bomb was detonated, Olivia Campbell-Hardy was approximately five metres from the seat of the explosion.¹¹⁹
- 18.118** Following the detonation, Olivia Campbell-Hardy was lying on her left side on the floor of the City Room. She appeared to be unconscious and was not moving.¹²⁰
- 18.119** By 22:53, Olivia Campbell-Hardy remained in the same position but was covered.¹²¹ She could later be seen in the same position, still covered, on the body-worn video footage of police officers.¹²²
- 18.120** A tag was placed on Olivia Campbell-Hardy at 23:45 to confirm that she was dead.¹²³
- 18.121** A post-mortem examination confirmed that Olivia Campbell-Hardy's death was caused by head and neck injuries. These injuries were sustained as a result of the explosion. Her injuries were unsurvivable.¹²⁴

¹¹⁹ [151/17/2-3](#)

¹²⁰ [151/17/4-11](#)

¹²¹ [151/17/12-13](#)

¹²² [151/17/14-17](#)

¹²³ [151/17/22-24](#)

¹²⁴ [151/18/2-15](#)

Philip Tron

- 18.122** Philip Tron was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.123** When the bomb was detonated, Philip Tron was approximately four metres from the seat of the explosion.¹²⁵
- 18.124** Following the detonation, Philip Tron was lying on his front on the floor of the City Room. He appeared to be unconscious.¹²⁶
- 18.125** An ETUK first aider and a police officer checked on Philip Tron but he was unresponsive. By 22:51, Philip Tron was covered with clothing.¹²⁷
- 18.126** A tag was placed on Philip Tron at 23:28 to confirm that he was dead.¹²⁸
- 18.127** A post-mortem examination confirmed that Philip Tron's death was caused by multiple injuries. These injuries were sustained as a result of the explosion. His injuries were unsurvivable.¹²⁹

¹²⁵ [151/8/19-21](#)

¹²⁶ [151/8/22-9/2](#)

¹²⁷ [151/9/5-13](#)

¹²⁸ [151/9/25-10/10](#)

¹²⁹ [151/10/13-22](#)

Saffie-Rose Roussos

- 18.128** Saffie-Rose Roussos was unlawfully killed as a result of the Attack.
- 18.129** When the bomb was detonated, Saffie-Rose Roussos was approximately five metres from the seat of the explosion.¹³⁰
- 18.130** Following the detonation, Saffie-Rose Roussos was lying on the floor of the City Room. She was close to her mother. Saffie-Rose Roussos briefly pushed herself up off the floor with her arms. She also raised her left arm.¹³¹
- 18.131** Saffie-Rose Roussos remained in the City Room for a period of 26 minutes.¹³² During that time, she drifted in and out of consciousness.¹³³ To the first member of the public who helped her, Saffie-Rose Roussos was able to give her name.¹³⁴ Members of the public, ETUK first aiders, Showsec staff and police officers helped her.¹³⁵ No tourniquets or leg splints were applied to her injuries.¹³⁶
- 18.132** At 22:56, police officers and two members of the public placed Saffie-Rose Roussos onto an advertising hoarding.¹³⁷ It was clear that she was conscious as this was done. A minute later, she was carried out of the City Room, down the stairs and through the Trinity Way link tunnel.¹³⁸
- 18.133** Saffie-Rose Roussos was carried onto Trinity Way at 22:58.¹³⁹ An NWS ambulance arrived on Trinity Way at 23:01.¹⁴⁰ Five minutes later, Saffie-Rose Roussos was placed into the ambulance.¹⁴¹ Her level of consciousness fluctuated.¹⁴² For the next 11 minutes, Saffie-Rose Roussos was given emergency care in the back of the ambulance.¹⁴³ At one stage, she briefly spoke.¹⁴⁴
- 18.134** At 23:17, 46 minutes after the detonation, the ambulance left Trinity Way for the Royal Manchester Children's Hospital.¹⁴⁵ The journey took six minutes.¹⁴⁶ From approximately 23:26, Saffie-Rose Roussos was treated by a trauma team in the

¹³⁰ [174/12/14-15](#)

¹³¹ [174/13/2-11](#)

¹³² [174/34/13-16](#)

¹³³ [174/15/12-13](#)

¹³⁴ [174/13/23-24](#)

¹³⁵ [174/13/23-26/3](#)

¹³⁶ [174/168/14-22](#), [174/234/10-18](#)

¹³⁷ [174/30/10-19](#)

¹³⁸ [174/30/20-38/14](#)

¹³⁹ [174/39/2-8](#)

¹⁴⁰ [174/50/7-10](#)

¹⁴¹ [174/65/6-16](#)

¹⁴² [174/82/24-83/17](#)

¹⁴³ [174/67/13-71/4](#)

¹⁴⁴ [174/87/18-88/1](#)

¹⁴⁵ [174/89-1-4](#)

¹⁴⁶ [174/92/6-9](#)

hospital's resuscitation room.¹⁴⁷ She went into cardiac arrest at about 23:26. Four cycles of CPR were completed but her heart was asystolic. This meant that there was no electrical activity.¹⁴⁸

18.135 Saffie-Rose Roussos was declared dead by the treating clinicians at 23:40 on 22nd May 2017.¹⁴⁹

18.136 The view of Dr Lumb and Professor Crane, which I accept, was that the death of Saffie-Rose Roussos was caused by the multiple injuries¹⁵⁰ that she sustained in the explosion. Whether those injuries made her death inevitable is a complex issue, to which I will turn in paragraphs 18.191 to 18.234.

¹⁴⁷ [174/96/2-7](#)

¹⁴⁸ [174/96/8-111/18](#), [175/199/8-216/21](#)

¹⁴⁹ [174/111/19-22](#)

¹⁵⁰ [176/45/22-46/5](#)

Sorrell Leczkowski

- 18.137** Sorrell Leczkowski was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.138** When the bomb was detonated, Sorrell Leczkowski was approximately six metres from the seat of the explosion.¹⁵¹
- 18.139** Following the detonation, Sorrell Leczkowski was lying on her right side on the floor of the City Room. She was not moving.¹⁵²
- 18.140** In the period that followed, efforts were made to help Sorrell Leczkowski by her mother, Showsec staff, ETUK first aiders and police officers.¹⁵³
- 18.141** Sorrell Leczkowski was given CPR for more than half an hour. CPR was stopped at 23:08 and Sorrell Leczkowski was covered with clothing a couple of minutes later.¹⁵⁴
- 18.142** A tag was placed on Sorrell Leczkowski at 23:46 to confirm that she was dead.¹⁵⁵
- 18.143** A post-mortem examination confirmed that Sorrell Leczkowski's death was caused by a neck injury. Her injuries were sustained as a result of the explosion. Her injuries were unsurvivable.¹⁵⁶

¹⁵¹ [153/71/23-24](#)

¹⁵² [153/72/6-12](#)

¹⁵³ [153/72/13-77/19](#)

¹⁵⁴ [153/72/13-77/19](#)

¹⁵⁵ [153/77/25-78/5](#)

¹⁵⁶ [153/78/8-18](#)

Wendy Fawell

- 18.144** Wendy Fawell was unlawfully killed on 22nd May 2017 in the City Room of the Manchester Arena in the Victoria Exchange Complex.
- 18.145** When the bomb was detonated, Wendy Fawell was approximately five metres from the seat of the explosion.¹⁵⁷
- 18.146** Following the detonation, Wendy Fawell was lying on her left side on the floor of the City Room. She was not moving.¹⁵⁸
- 18.147** A number of emergency responders checked on Wendy Fawell, but she was unresponsive. By 22:54, she was covered with clothing.¹⁵⁹
- 18.148** A tag was placed on Wendy Fawell at 23:44 to confirm that she was dead.¹⁶⁰
- 18.149** A post-mortem examination confirmed that Wendy Fawell's death was caused by a head injury. Her injuries were sustained as a result of the explosion. Her injuries were unsurvivable.¹⁶¹

¹⁵⁷ [152/18/3-4](#)

¹⁵⁸ [152/18/5-7](#)

¹⁵⁹ [152/20/4-5](#)

¹⁶⁰ [152/20/19-25](#)

¹⁶¹ [152/21/3-19](#)

Survivability

Key findings

- In the case of twenty of the twenty-two who died, I am sure that their injuries were unsurvivable. I am sure that inadequacies in the response did not fail to prevent their deaths.
- In the case of John Atkinson, his injuries were survivable. Had he received the treatment and care he should have, it is likely that he would have survived. It is likely that inadequacies in the emergency response prevented his survival.
- In the case of Saffie-Rose Roussos, it is highly unlikely that she could have survived her injuries. There was only a remote possibility that she could have survived with different treatment and care.

Introduction

18.150 I find the following people sustained unsurvivable injuries:

Alison Howe	Kelly Brewster
Angelika Klis	Lisa Lees
Marcin Klis	Martyn Hakan Hett
Chloe Rutherford	Megan Joanne Hurley
Liam Curry	Michelle Kiss
Courtney Boyle	Nell Jones
Eilidh MacLeod	Olivia Paige Campbell-Hardy
Elaine McIver	Philip Tron
Georgina Bethany Callander	Sorrell Leczkowski
Jane Tweddle	Wendy Fawell

18.151 Once the explosion had occurred, it was inevitable that each would die. I have set out in Parts 13 to 16 in Volume 2-I details in relation to the treatment and evacuation of some of these individuals on the night of the Attack. Any inadequacies in the emergency response, as set out in Parts 10 to 16 in Volume 2-I, did not contribute to their deaths.

18.152 For John Atkinson and Saffie-Rose Roussos, there was evidence about the possibility of their survival had the response been different. Due to its complexity, this requires a detailed analysis of the evidence.

18.153 Readers may find what follows particularly distressing.

THE CONTENT OF WHAT FOLLOWS IS PARTICULARLY DISTRESSING.
IT CONTAINS DETAIL ABOUT THE NATURE OF THE INJURIES
SUSTAINED BY JOHN ATKINSON AND HIS CAUSE OF DEATH

John Atkinson

Post-mortem examination

- 18.154** Dr Carter is a consultant forensic pathologist on the Home Office register. She was one of the team that carried out the post-mortem examinations of the twenty-two who died in the Attack.
- 18.155** Dr Carter performed the post-mortem examination of John Atkinson on 28th May 2017.¹⁶² In her written report of that examination, Dr Carter listed 47 external injuries. Of those, 16 were to the right leg and foot and 14 to the left leg.¹⁶³
- 18.156** Dr Carter concluded that John Atkinson had sustained very severe leg injuries as the result of penetration by multiple metal objects. These had shredded the musculature, damaged deep leg blood vessels and severely fractured the bones of the leg, particularly on the right side. While John Atkinson had suffered injuries to other parts of his body from penetrating objects, those injuries had not contributed to his death. Dr Carter's conclusion was that John Atkinson "*died principally of the effects of blood loss from his leg wounds*".¹⁶⁴
- 18.157** Surgeon Commander Rees, an expert in cardiology,¹⁶⁵ explained this in further detail during the oral evidence hearings. When a person suffers unchecked blood loss, their body will ultimately go into a state known as 'hypovolaemic shock'. This involves the body's circulation shutting down. Organs then fail, including the heart. In simple terms, blood loss causes hypovolaemic shock which causes cardiac arrest.¹⁶⁶ The view of Dr Carter was that this was the mechanism of John Atkinson's death.¹⁶⁷ The other experts agreed.¹⁶⁸
- 18.158** There was, however, a complicating factor identified by Dr Carter on her post-mortem examination. On her internal examination, she noted that John Atkinson had pre-existing heart disease. One of his coronary arteries contained a blockage and there was also scarring to his heart that had been present for months or years. In medical terms, John Atkinson had a condition known as 'ischaemic heart disease'. Dr Carter considered that this disease might have been a contributory factor in John Atkinson's death, either by making his

¹⁶² [161/21/13-16](#)

¹⁶³ INQ015996/6-13 [not published]

¹⁶⁴ INQ015996/17-18 [not published]

¹⁶⁵ [161/19/16-21/9](#)

¹⁶⁶ [161/26/8-27/17](#)

¹⁶⁷ INQ015996/18 [not published]

¹⁶⁸ [161/92/7-10](#)

heart more likely to fail in the context of the blood loss from his leg injuries and/or by reducing the chances of successful resuscitation.¹⁶⁹ Dr Carter was right to identify this as a potential issue.

Reports of the Blast Wave Panel of Experts in John Atkinson's case

18.159 The Blast Wave Panel of Experts carried out an assessment of survivability in the case of each of the twenty-two killed, including John Atkinson.

18.160 In their first report dated 27th September 2019, the Panel expressed the view that John Atkinson had “*potentially survivable*” injuries.¹⁷⁰ The Panel used that term to describe injuries which “*could prove fatal*”, but which they were aware of individuals surviving.¹⁷¹ Their assessment assumed that the right people with the right skills and right equipment would be available immediately after the injury had been sustained.¹⁷²

18.161 It follows that, in their first report, the Panel considered that John Atkinson might have survived with prompt and effective treatment. However, the Panel did raise a proviso, namely the potential impact on survivability of John Atkinson's pre-existing heart disease, as commented upon by Dr Carter.¹⁷³

18.162 After preparing their first report, the Panel were provided with additional material, in particular CCTV footage and footage from the body-worn video cameras of police officers.¹⁷⁴ In light of that material, they looked again at the issue of survivability and produced a second report dated 30th March 2020.¹⁷⁵ Of John Atkinson, they said:

“[He] sustained multiple secondary blast injuries with an overall high burden of injury ...

The PM [post-mortem] photos and medical imaging demonstrate severe leg injuries; these leg injuries were associated with severe compressible bleeding.

The video demonstrates catastrophic and continuing external bleeding; this appears amenable to treatment outside hospital.

Based on the video footage, witness statements, and the above information, we believe, John Atkinson could have potentially survived in this situation with earlier treatment (application of effective bilateral tourniquets).

¹⁶⁹ INQ015996/18 [not published]

¹⁷⁰ INQ025413/21 [not published]

¹⁷¹ INQ025413/20 [not published]

¹⁷² [161/3/6-4/23](#)

¹⁷³ INQ025413/21 [not published], INQ015996/18 [not published]

¹⁷⁴ [161/80/18-81/2](#)

¹⁷⁵ INQ032039 [not published]

*However, the post-mortem noted a pre-existing cardiac condition that reportedly reduced the chances of survival given the burden of injury. This reduction in chances of survival due to the pre-existing cardiac condition is a matter not within the expertise of the panel.*¹⁷⁶

- 18.163** In a third report dated 24th March 2021, the Panel clarified that the change of language from “potentially survivable” in the first report to “could have potentially survived” in the second report was deliberate.¹⁷⁷ They explained that it “reflects a strengthening of our opinion that timely medical intervention – the application of effective bilateral tourniquets – could have made a material difference for John Atkinson”.¹⁷⁸
- 18.164** However, the Panel’s opinion as to survivability in John Atkinson’s case continued to have a proviso. Throughout their reporting, the Panel made it plain that their opinion on survivability in his case was contingent upon the significance of his pre-existing ischaemic heart disease. In that regard, the Panel responsibly drew attention to the fact that the significance of that condition to survivability was outside their combined expertise.¹⁷⁹

The expert cardiological opinion

- 18.165** For that reason, I instructed Surgeon Commander Rees to provide his opinion on the significance of John Atkinson’s pre-existing heart disease.
- 18.166** Surgeon Commander Rees is an expert in cardiology, general internal medicine and pre-hospital emergency medicine. He works as a consultant cardiologist within Barts Heart Centre, at St Bartholomew’s Hospital in London, and undertakes regular duties with an air ambulance service. He also has military experience, having undertaken combat deployments including working in a field hospital in Afghanistan, and worked as a consultant leading the Medical Emergency Response Team, often treating those injured in explosions.¹⁸⁰
- 18.167** Surgeon Commander Rees gave evidence to the Inquiry.¹⁸¹ He agreed with Dr Carter that the problems in John Atkinson’s heart and coronary artery found in the post-mortem examination were not a consequence of the explosion but instead were pre-existing.¹⁸² John Atkinson had lived with the blockage in his artery for a substantial period prior to 22nd May 2017, and the scarring to his heart was pre-existing and likely the result of a heart attack at some point in the past. John Atkinson’s medical records contained no reference to any history of heart problems, let alone to a heart attack. Surgeon Commander Rees found this unsurprising. He explained that cardiology recognises the concept

¹⁷⁶ INQ032039/3 [not published]

¹⁷⁷ INQ041014/13 [not published]

¹⁷⁸ INQ041014/13 [not published]

¹⁷⁹ [161/81/3-84/4](#)

¹⁸⁰ [161/19/14-21/9](#)

¹⁸¹ [161/19/4-65/15](#)

¹⁸² [161/28/1-29/6](#)

of a silent heart attack in which the patient is wholly unaware that anything untoward has happened. Moreover, even where the patient has symptoms, they may mistake them for something trivial and make no report of them.¹⁸³

18.168 Notwithstanding that the problems in John Atkinson's heart and coronary artery identified on the post-mortem examination appear not to have caused him any or any significant difficulties in life, Surgeon Commander Rees agreed with Dr Carter that the findings were notable. However, he did not consider that they had made a contribution to John Atkinson's death.¹⁸⁴ His opinion was in three parts.

18.169 First, he did not think that the presence of ischaemic heart disease contributed to John Atkinson's blood loss.¹⁸⁵

18.170 Second, he did not think that the ischaemic heart disease made any material contribution to the cardiac arrest at 23:47.¹⁸⁶ The disease that was identified during the post-mortem was minor and was not interfering with John Atkinson's ability to conduct a normal life. He had what Surgeon Commander Rees described as a stable "bystander" disease.¹⁸⁷ Surgeon Commander Rees stated:

"[We] also know from the post-mortem that the area of scarring is very small, so he was left with the vast majority of his heart muscle able to function perfectly normally. What we also know from the post-mortem is that his other major cardiac arteries, his main heart arteries, were entirely normal and free from disease. So, in all likelihood, they were functioning perfectly well. So, in the context of having a very small area of scar, a very small area of narrowing in a relatively unimportant heart artery, I think the relative contribution of ischaemic heart disease here is actually very small, and the primary contributor to his very sad deterioration is the degree of hypovolaemic shock that we outlined earlier. I think that's by far the most significant contributor to him ending up in a state of cardiac arrest, and I think the role of ischaemic heart disease here is very small or negligible in terms of its overall contribution to deterioration to the point of cardiac arrest."¹⁸⁸

18.171 Third, ischaemic heart disease did not contribute to the inability to resuscitate John Atkinson once he went into cardiac arrest. The deciding factor on resuscitation was John Atkinson's state of hypovolaemic shock.¹⁸⁹ Surgeon Commander Rees considered that John Atkinson's survival after the cardiac arrest at 23:47 was "extremely unlikely".¹⁹⁰ That event marked the "point of no

¹⁸³ [161/29/16-31/20](#)

¹⁸⁴ [161/35/21-36/13](#)

¹⁸⁵ [161/33/4-18](#)

¹⁸⁶ [161/33/19-35/20](#)

¹⁸⁷ [161/34/14-35/20](#)

¹⁸⁸ [161/34/24-35/18](#)

¹⁸⁹ [161/35/21-36/8](#)

¹⁹⁰ [161/56/3-11](#)

return".¹⁹¹ Electrical activity detected at about 00:00 on 23rd May 2017, as John Atkinson was in the ambulance on his way to hospital¹⁹² was likely to have been intermittent and not reflective of a fully functioning heart. In no sense was it a return to the activity of a normal heart.¹⁹³

18.172 The evidence of Surgeon Commander Rees was measured, clear and persuasive. I accept his opinion that John Atkinson's ischaemic heart disease did not make any material contribution to his death. That removes the proviso that the Blast Wave Panel of Experts applied to their own opinion. That is of significance to the issue of survivability in the case of John Atkinson.

18.173 Surgeon Commander Rees was clear that his role was to address the cardiological aspects of the case. He recognised that the Blast Wave Panel of Experts were able to draw upon a broader range of expertise. In those circumstances, he considered that he ought to defer to them on the issue of survivability.¹⁹⁴ In my view, he was right to do so.

Survivability

18.174 In respect of John Atkinson's survivability, I heard further evidence from the pathologists and the Blast Wave Panel of Experts. They did not give evidence one after another, as is usual, but instead concurrently in a process sometimes referred to as 'hot-tubbing'. I used this approach on a number of occasions during the oral evidence hearings and found it an effective way of getting to the core of the expert issues.

18.175 The pathologists who gave evidence were Dr Lumb and Professor Crane. As I explained earlier in this Part, I instructed them to review the post-mortem evidence for each of the twenty-two killed in the Attack in light of all of the medical, scientific and available video evidence. Dr Lumb is a consultant forensic pathologist on the Home Office register and led the team that carried out the post-mortem examinations of those who died in the Attack.¹⁹⁵ Professor Crane was the State Pathologist for Northern Ireland between 1990 and 2014 and is currently Professor of Forensic Medicine at Queen's University Belfast.¹⁹⁶

18.176 Dr Lumb and Professor Crane were clear that Dr Carter's initial view that John Atkinson's ischaemic heart disease might have made a contribution to a death that was principally caused by blood loss from leg wounds was entirely reasonable on the basis of what she knew.¹⁹⁷ They were not critical of Dr Carter's original conclusion and nor am I. Dr Carter highlighted an important issue that

¹⁹¹ [161/57/23-58/3](#)

¹⁹² [159/29/11-30/6](#)

¹⁹³ [161/56/4-58/3](#)

¹⁹⁴ [161/42/17-43/9](#)

¹⁹⁵ [176/109/19-112/8](#)

¹⁹⁶ [161/2/16-24](#)

¹⁹⁷ [161/116/10-117/25](#)

undoubtedly required further investigation. However, Dr Lumb and Professor Crane had access to more evidence than Dr Carter, including the opinion of Surgeon Commander Rees.

- 18.177** In light of all of that evidence, Dr Lumb and Professor Crane had no doubt that John Atkinson's death was caused by the leg injuries he sustained and that the pre-existing heart disease from which he suffered played no part.¹⁹⁸
- 18.178** I accept that evidence. It means that the issue of survivability becomes focused on whether anything more could have been done to stem the bleeding from John Atkinson's leg injuries. It was this bleeding that led, ultimately, to his death.
- 18.179** Professor Bull and Colonel Clasper of the Blast Wave Panel of Experts gave evidence on the issue of John Atkinson's survivability. They set out the views of the Panel as a whole. Professor Bull is a bioengineer. He heads the Department of Bioengineering and the Centre for Blast Injury Studies at Imperial College London. The Centre brings together experts in medicine, engineering and other areas of science to investigate blast injuries.¹⁹⁹ Colonel Clasper is a consultant orthopaedic surgeon with considerable experience of major injuries in both a civilian and military context. He is a Visiting Professor within Professor Bull's department at Imperial College London and Clinical Lead for the Centre for Blast Injury Studies.²⁰⁰
- 18.180** Colonel Clasper explained how the views of the Blast Wave Panel of Experts on the survivability of John Atkinson had developed. He confirmed that the position of the Panel in light of all of the evidence, including the opinion of Surgeon Commander Rees, was that John Atkinson "*could have potentially survived*" his injuries.²⁰¹
- 18.181** Colonel Clasper agreed with Surgeon Commander Rees that there was "*no coming back from*" the cardiac arrest at 23:47.²⁰² He explained the timeline in John Atkinson's case by reference to the footage the Blast Wave Panel of Experts had seen.²⁰³ A belt had been applied as a tourniquet to John Atkinson's right leg within five to six minutes of the explosion.²⁰⁴ It was the view of Colonel Clasper that the member of the public who applied this makeshift tourniquet, Ronald Blake, "*did brilliantly*".²⁰⁵ Nonetheless, despite the heroic efforts of Ronald Blake, John Atkinson continued to lose blood.²⁰⁶ If additional early steps, in particular the application of bilateral tourniquets by properly qualified first responders, had been taken to stop or slow his blood loss, then that would probably have delayed John Atkinson going into a state of hypovolaemic shock

¹⁹⁸ [161/116/4-118/5](#)

¹⁹⁹ [150/3/3-4/1](#)

²⁰⁰ [161/65/24-67/21](#)

²⁰¹ [161/78/2-85/12](#)

²⁰² [159/16/24-17/3](#), [161/92/7-10](#)

²⁰³ [161/85/18-89/10](#)

²⁰⁴ [158/13/4-23](#), [INQ023493T/21](#)

²⁰⁵ [161/87/14-88/17](#)

²⁰⁶ [161/86/11-87/13](#)

and that, in turn, would probably have delayed the cardiac arrest, or even prevented it altogether.²⁰⁷ Colonel Clasper stated the following in answer to questions:

“Q. If this course had been delayed so that John had reached hospital in a state in which he was not in cardiac arrest, in your view would that have made a difference?”

A. Yes.

Q. What difference do you think it would have made?”

A. He had other severe injuries, but I think if he’d got to hospital without having had a cardiac arrest, given that the team were prepared for him, I think there’s a high chance he would have survived. I can’t give you an estimate of exactly how high, but I think it’s a high chance.”²⁰⁸

18.182 The fact that there was a “high chance” that John Atkinson would have survived if he had reached hospital prior to his cardiac arrest does not mean that that necessarily could have been achieved and does not mean that survival was, on a sensible analysis of what could be achieved, probable. Colonel Clasper was pressed on this important issue.²⁰⁹

18.183 In response, he described a “platinum 10 minutes” during which the best prospect of stemming significant bleeding exists.²¹⁰ However, Colonel Clasper was clear that it was not the case that intervention after ten minutes was incapable of making a difference.²¹¹ His evidence, which represented the views of the Blast Wave Panel of Experts as a whole, was clear (with emphasis added):

*“Q. ... bearing in mind John goes into cardiac arrest ... 1 hour and 16 minutes after the explosion and his injuries, bearing in mind that we know he was conscious and able to speak, what is your view about the window during which an intervention **would have made** a difference to John’s survivability?”*

A. I think there was a window up to about 40 minutes after the incident.”²¹²

18.184 Later, he extended that period up to 45 minutes.²¹³

18.185 I accept this evidence of Colonel Clasper. I therefore assess the issue of survivability on the basis that, if an intervention sufficient to slow substantially or stop bleeding had been undertaken before 23:16, that is, up to 45 minutes post-explosion, John Atkinson would probably have survived. That is because he would have arrived at hospital before his cardiac arrest.

²⁰⁷ [161/92/7-23](#)

²⁰⁸ [161/93/11-23](#)

²⁰⁹ [161/94/2-96/11](#)

²¹⁰ [161/91/4-13](#)

²¹¹ [161/94/2-10](#)

²¹² [161/94/11-25](#)

²¹³ [161/108/18-110/4](#)

- 18.186** My conclusion is that such an intervention should have occurred in one or both of two ways.
- 18.187** First, medical tourniquets should have been applied to both of John Atkinson's legs and haemostatic dressings applied to his wounds²¹⁴ well before 23:16. ETUK staff should all have been competent to use such treatments and equipped to do so. They were not or at least not sufficiently. Responsibility for that failure rests with the management of ETUK, namely Ian Parry, and SMG, who should have ensured that the event healthcare provider was competent. More NWS paramedics should have been in the City Room before 23:16, as I explained in Parts 10 and 14 in Volume 2-I. If that had occurred, it is likely that they would have identified the need for urgent treatment and/or evacuation of John Atkinson. That did not occur. Responsibility for that failure rests with NWS. Such treatment would, I am satisfied, have enabled John Atkinson to arrive at hospital prior to having a cardiac arrest and would probably have saved his life.
- 18.188** Issues also arise about whether the firearms officers and unarmed police officers should have provided such treatment. In future, they should do so, where the circumstances permit. However, for reasons I will address in Part 20, I am not critical of GMP or BTP for the fact that their officers did not do so on the night of the Attack.
- 18.189** Second, John Atkinson should have been evacuated from the City Room promptly. His evacuation in fact started at 23:17²¹⁵ and he did not arrive in the Casualty Clearing Station until 23:24,²¹⁶ following an extraction which, through no fault of those engaged in it, was entirely unsatisfactory. If firefighters had been in the City Room shortly after 22:45, as I have concluded in Parts 10 and 15 in Volume 2-I ought to have been the case, John Atkinson would have been prioritised for evacuation. If more ambulances had been present at the Victoria Exchange Complex shortly after 23:00, as I have also concluded in Parts 10 and 14 in Volume 2-I ought to have been the case, John Atkinson would have received treatment and would have been transported to hospital shortly after that time. Either way, he would have reached hospital before having a cardiac arrest and is likely to have survived.
- 18.190** In his opening remarks at the beginning of the oral evidence hearings, Counsel to the Inquiry explained that I would examine whether there were any inadequacies in the emergency response. I have found that there were. He went on to say that, if those inadequacies, or any one of them, led to the loss of even a single life, that would be entirely unacceptable. They did. John Atkinson would probably have survived had it not been for inadequacies in the emergency response.

²¹⁴ [161/37/10-22](#), [161/98/8-14](#)

²¹⁵ [158/38/14-40/7](#)

²¹⁶ [158/54/9-19](#)

THE CONTENT OF WHAT FOLLOWS IS PARTICULARLY DISTRESSING.
IT CONTAINS DETAIL ABOUT THE NATURE OF THE INJURIES
SUSTAINED BY SAFFIE-ROSE ROUSSOS AND HER CAUSE OF DEATH

Saffie-Rose Roussos

- 18.191 I heard expert evidence about the cause of the death of Saffie-Rose Roussos over the course of three days between 1st and 3rd December 2021. There was a significant disagreement between, on the one hand, the members of the Blast Wave Panel of Experts and, on the other hand, some of the additional experts I instructed. The former ultimately considered that there was no possibility that Saffie-Rose Roussos would have survived whatever treatment she had received. The latter felt that survival was not an impossibility with the best treatment. No one will benefit from a detailed recitation of that evidence, which was harrowing. Instead, I propose to record my conclusions, setting out the reasons for those conclusions in summary form. Even that will inevitably be distressing to read.
- 18.192 Dr Lumb performed the post-mortem examination on Saffie-Rose Roussos on 24th May 2017.²¹⁷ He identified 69 external injuries in addition to internal injuries. The internal injuries involved extensive damage to the musculoskeletal and vascular systems of Saffie-Rose Roussos, injuries to her lungs and liver, and internal bleeding.²¹⁸ In their work, the Blast Wave Panel of Experts utilised an internationally recognised system called the New Injury Severity Score. They did so by reference to the post-mortem report of Dr Lumb, the post-mortem photographs and the results of the computerised tomography (CT) scan that was undertaken, which included a reconstruction. This work ascribed a greater number of injuries to Saffie-Rose Roussos than Dr Lumb had, not because of any error on his part, but as a result of differences of description. Applying the New Injury Severity Score, the Panel identified that Saffie-Rose Roussos had suffered a total of 103 injuries that were “scorable”²¹⁹ against that system. They stated: “Graphically, this can be described as equivalent to the energy of more than 15 handgun bullets.”²²⁰
- 18.193 In considering the injuries that were causative of the death of Saffie-Rose Roussos, or potentially so, the experts focused on three categories of harm: the fractures to her pelvis and legs; the damage to her vascular system; and the damage to her lungs.

²¹⁷ [176/45/14-21](#)

²¹⁸ [176/53/4-71/8](#), [176/71/13-103/15](#)

²¹⁹ [176/208/4-5](#), [177/61/6-62/16](#), [177/63/3-64/3](#)

²²⁰ [177/63/22-64/3](#), [177/66/16-20](#)

Fractures to the pelvis and legs

18.194 Saffie-Rose Roussos sustained extensive fractures to her pelvis and legs.²²¹

These were the consequence of bolts penetrating her body and striking bone and/or bolts penetrating her body and depositing energy into the bone as they passed by.²²² I see no value in describing these injuries further given that all of the experts agreed about the severity of the injuries sustained.²²³ Dr Lumb described the fractures as “*extremely severe*”.²²⁴ All of these fractures, the experts agreed, will have bled.²²⁵

Vascular injury

18.195 The evidence identified four potential areas of significant vascular injury to Saffie-Rose Roussos: the popliteal arteries (the arteries behind the knees which extend upwards and into the thighs); the vessels in the area of the acetabulum (hip joint) on the left side; and the femoral arteries and associated vascular structures in the left thigh and the right thigh.²²⁶

18.196 The experts were agreed that there was vascular injury and consequent bleeding in the popliteal arteries.²²⁷ However, there was a dispute as to the existence of vascular injury and/or its severity in the area of the acetabulum and in the left and right thighs. The members of the Blast Wave Panel of Experts expressed the firm view that such injuries were present and were serious.²²⁸ They supported their opinion by reference to a presentation by Lieutenant Colonel Ballard, a consultant radiologist with considerable military and civilian experience.²²⁹ Dr Wellings, also a consultant radiologist, agreed with the Panel.²³⁰ Conversely, Lieutenant Colonel Park, Dr Davies and Mr Vasireddy, additional experts I instructed, all considered that there was no significant vascular injury in these areas. They did so on the basis that, in their experience, the presence of such injuries would have caused Saffie-Rose Roussos to die through blood loss much more quickly than in fact occurred.²³¹

²²¹ [176/96/7-98/1](#), [177/50/10-20](#), [177/61/6-62/16](#), [177/78/4-17](#), [177/88/4-19](#), [177/199/8-200/5](#), [177/224/11-226/22](#), [177/231/14-234/18](#), [178/162/15-164/7](#), [178/167/3-9](#)

²²² [176/97/21-98/1](#)

²²³ [176/102/10-21](#), [176/168/17-170/13](#), [176/171/11-172/12](#), [177/77/15-78/17](#), [177/224/11-226/22](#)

²²⁴ [176/97/7-20](#)

²²⁵ [176/115/4-21](#), [176/174/13-177/1](#), [176/208/18-209/10](#), [177/92/5-18](#), [177/152/10-20](#), [177/224/11-226/22](#), [177/233/14-235/10](#), [178/163/4-164/7](#), [178/167/3-18](#)

²²⁶ [176/61/17-22](#), [176/48/16-49/4](#), [176/89/13-93/7](#), [176/98/8-21](#), [176/100/11-101/13](#), [176/102/22-103/10](#), [176/110/12-114/13](#), [176/170/14-23](#), [176/180/22-183/11](#), [176/183/15-185/21](#), [176/190/16-193/22](#), [176/194/7-196/16](#), [176/197/6-198/25](#), [176/199/20-201/11](#), [176/204/2-206/18](#), [177/67/10-70/16](#), [177/78/22-79/25](#), [177/82/16-90/10](#), [177/93/2-96/14](#)

²²⁷ [176/199/20-201/11](#), [176/201/22-205/20](#), [176/205/22-206/18](#), [177/67/10-70/20](#), [177/233/14-235/16](#), [177/235/11-236/19](#), [178/110/19-111/21](#), [178/158/1-22](#)

²²⁸ [176/178/3-183/11](#), [176/183/15-185/21](#), [176/190/16-196/16](#), [176/197/6-198/25](#), [177/82/16-83/12](#)

²²⁹ [176/123/10-124/14](#), [177/17/22-18/20](#), [177/131/17-132/2](#)

²³⁰ [176/181/6-183/11](#), [176/183/15-184/9](#), [176/184/10-185/21](#), [176/194/24-195/9](#), [176/196/9-16](#), [176/199/20-201/11](#), [176/204/24-205/20](#)

²³¹ [178/85/2-86/7](#), [178/76/23-81/10](#), [177/222/11-224/17](#), [178/1/21-6/17](#)

- 18.197** On each side of this dispute were experts of high quality, each of whom had considerable relevant experience and each of whom, I have no doubt, was trying to help me to reach the right conclusion. However, both sides cannot be right.
- 18.198** On balance, I preferred the opinion of the Blast Wave Panel of Experts and Dr Wellings about the nature and extent of the vascular injuries. That is for the following two reasons.
- 18.199** First, I will consider the conclusions to be drawn from the CT scans. Computerised tomography (CT) scans combine a series of X-ray images taken from different angles around the body with computer processing, to create cross-sectional images of the body. CT scanning is of considerable diagnostic value in living patients. In the context of the Attack, CT scanning assisted the pathologists to identify where bolts had penetrated the body and the structures they had struck.
- 18.200** CT scanning may take a number of different forms.²³² One form is known as contrast CT scanning. This involves the introduction into the body of a dye known as a contrast medium. In a living patient, this is pumped around the veins and arteries of the body by the heart, enabling the vascular system to be seen on the CT scan.²³³ A second form of CT scanning is known as full-body CT scanning. This does not involve the introduction of a contrast medium. It enables the musculoskeletal system to be seen on the scan but not the vascular system.²³⁴
- 18.201** Dr Lumb and his team carried out full-body scans of Saffie-Rose Roussos and the others who died, rather than contrast CT scans. As the radiologists agreed, there were good reasons why this was the correct approach.²³⁵ The process of contrast CT scanning slows the post-mortem process and creates risks for those carrying it out. At the time, there were no clear indicators that it was necessary to carry out such scanning. In any event, the equipment to enable it to be done was not readily available. Even today, post-mortem contrast CT scanning is very much the exception and Dr Lumb described it as an area of research in forensic pathology.²³⁶
- 18.202** Although I am not at all critical of the decision to carry out only a full-body CT scan, the consequence is that the CT scanning of Saffie-Rose Roussos does not show her vascular system.²³⁷ That means that the scanning alone does not establish definitively whether she had sustained significant vascular damage in the area of her acetabulum and in the left and right thighs.²³⁸

²³² [176/46/22-47/4](#)

²³³ [176/47/15-50/23](#)

²³⁴ [176/47/5-14](#)

²³⁵ [176/46/22-51/15](#), [176/124/15-127/12](#)

²³⁶ [176/47/10-51/15](#), [176/124/15-127/12](#)

²³⁷ [176/124/23-125/7](#)

²³⁸ [176/46/25-51/15](#), [176/112/7-114/13](#)

18.203 However, the radiologists Lieutenant Colonel Ballard and Dr Wellings considered that the CT scans were of assistance in determining whether vascular damage had occurred in those areas. They pointed out that the scans showed that Saffie-Rose Roussos had sustained penetrating injuries in each of the relevant areas with consequent fracturing.²³⁹ It was their view that such injuries must have had cavitating effects.²⁴⁰ Such effects are, as Colonel Clasper of the Blast Wave Panel of Experts explained, rarely seen in civilian practice.²⁴¹ They involve a high-velocity projectile entering the body, transferring energy into the body, tearing and distorting the tissues, and creating a cavity beyond the wound track.²⁴² Lieutenant Colonel Ballard and Dr Wellings explained that these cavitating effects must have caused significant vascular damage to Saffie-Rose Roussos. In their view, it was not possible for such extensive damage to have been caused to the bone and soft tissue in these areas without the underlying blood vessels also having sustained significant damage.²⁴³

18.204 I accept that analysis.

18.205 Second, I will consider the conclusions to be drawn from the post-mortem examination. At the time of that examination, Dr Lumb reported on the vascular injury to the arteries behind the knees of Saffie-Rose Roussos.²⁴⁴ This was a reference to the popliteal arteries, which the experts agreed were the location of vascular damage. After completing his post-mortem report, Dr Lumb was asked whether he was able to say whether there had also been vascular damage in the thighs. In response, he explained that the thighs are "*richly vascular*".²⁴⁵ He expressed the strong view, based upon what he observed on his examination, that there was significant vascular damage to both thighs, describing such damage as "*inevitable*" in relation to the left thigh and "*almost certain*" in relation to the right thigh.²⁴⁶ He described the injuries to Saffie-Rose Roussos's legs as "*very severe*" and capable of causing death on their own.²⁴⁷ Professor Crane agreed that these injuries were sufficient on their own to cause death.²⁴⁸

18.206 I accept the evidence of Dr Lumb as to the presence of significant vascular damage in the thighs. It comes from the expert who actually carried out the post-mortem examination, supported by the opinion of a pathologist of long experience and undoubted expertise.

²³⁹ [176/117/18-221/20](#)

²⁴⁰ [176/117/18-221/8](#)

²⁴¹ [177/58/4-59/12](#)

²⁴² [177/59/13-23](#)

²⁴³ [176/180/22-185/21](#)

²⁴⁴ [176/89/3-93/12](#), INQ004704/18-19 [not published]

²⁴⁵ [176/75/7-13](#)

²⁴⁶ [176/89/18-93/12](#)

²⁴⁷ [176/100/11-101/7](#)

²⁴⁸ [176/101/20-22](#)

- 18.207** I gave careful consideration to the views of the experts who expressed the competing opinion that Saffie-Rose Roussos had sustained no significant vascular damage save behind the knees.²⁴⁹ Their experience is substantial, and their views were expressed with force and conviction. While I accept that they may have had different experience on which to draw, the overwhelming burden of the evidence demonstrated that significant vascular injury causing bleeding was present in each of the areas I have described.
- 18.208** The fact that Saffie-Rose Roussos did not die sooner through blood loss is explicable by reason of the following factors: she is likely to have bled rapidly in the period just after sustaining her injuries but then more slowly as her blood pressure dropped;²⁵⁰ her blood vessels may not have fully bled immediately or all of the time due to various mechanisms about which the various experts agreed;²⁵¹ Saffie-Rose Roussos's age will have made her more resilient;²⁵² and there is real-world experience of people with serious vascular injury surviving for the same length of time Saffie-Rose Roussos remained alive.²⁵³
- 18.209** Colonel Clasper of the Blast Wave Panel of Experts gave evidence on this final point.²⁵⁴ As I have set out, he is a consultant orthopaedic surgeon with particular knowledge and experience of injuries caused by explosions. He explained that the experience of the military is that a femoral artery injury does not always cause death swiftly. There is experience within the military of those with Saffie-Rose Roussos's burden of injury, including femoral artery injury, surviving for longer than 40 minutes, indeed for over an hour in some cases. Hence, the fact that Saffie-Rose Roussos survived for a little over one hour does not, in the view of Colonel Clasper, make her "*an outlier*".²⁵⁵ I accept his evidence.
- 18.210** For these reasons, I am satisfied that Saffie-Rose Roussos sustained significant vascular damage not only to the arteries behind her knees, but also in the area of her hip joint and in both thighs. Furthermore, I consider that these injuries were extremely serious.

Injury to the lungs

- 18.211** The experts agreed that Saffie-Rose Roussos had suffered lung damage as a result of the explosion, significantly worse on the right side than on the left.²⁵⁶

²⁴⁹ [178/160/1-4](#), [178/4/20-6/17](#), [178/157/4-169/13](#), [178/227/18-230/16](#)

²⁵⁰ [178/243/5-22](#), [178/240/15-242/17](#), [178/244/11-22](#)

²⁵¹ [178/240/15-244/22](#)

²⁵² [177/97/25-98/25](#), [177/218/23-220/12](#), [178/34/3-15](#), [177/154/20-156/8](#), [175/236/8-237/19](#), [175/244/19-246/13](#), [176/22/8-24/15](#)

²⁵³ [177/93/2-96/14](#), [177/155/19-156/8](#)

²⁵⁴ [177/93/2-96/14](#)

²⁵⁵ [177/93/2-94/20](#)

²⁵⁶ [176/77/20-79/1](#), [176/85/18-87/5](#), [176/146/7-147/16](#), [176/158/18-161/17](#)

- 18.212** The strong view of the Blast Wave Panel of Experts was that the cause of this lung damage was a condition known as blast lung.²⁵⁷ They explained that an explosion has a number of effects. The first is known as the primary blast.²⁵⁸ This is best described as a shock wave which surges out from the seat of the explosion. The interaction of this shock wave with the human body is capable of causing injury to the air-containing organs, such as the lungs, airway and bowel. Injury to the lungs is characteristic and, where it occurs, is known as blast lung.²⁵⁹ Such injury involves disruption of the structures of the lung, causing bleeding and a subsequent inflammatory reaction.²⁶⁰ It becomes progressively worse, is very dangerous and may be fatal, in particular where there is otherwise a high burden of injury.²⁶¹
- 18.213** At one stage, I had understood that there was a dispute as to whether the damage to the lungs of Saffie-Rose Roussos was the result of blast lung. As a result, I asked Professor Crane to consider that issue. He was a consultant forensic pathologist during much of the period of the Troubles in Northern Ireland and therefore has considerable experience of deaths as a result of explosions.²⁶² He examined photographs of the lung tissue of Saffie-Rose Roussos.²⁶³ He expressed the opinion that she had sustained "*severe primary blast lung injury to the right lung*".²⁶⁴ On the left there was also, in his view, blast lung, but not as extensive or serious as on the right.²⁶⁵ Dr Lumb agreed with Professor Crane.²⁶⁶
- 18.214** In light of the clear and unequivocal evidence of the pathologists, Dr Davies, who was on the other side of the survivability debate, realistically accepted that the damage to the right lung was severe and that a significant part of the cause was blast lung.²⁶⁷
- 18.215** On the basis of all the evidence I heard, it is my view that Saffie-Rose Roussos had severe damage to her right lung and some, but less extensive, damage to her left lung and that the cause of both was blast lung.
- 18.216** Although this fact was established by the evidence, an issue remained about the severity of the consequences of this for the ability of Saffie-Rose Roussos to survive. In particular, Lieutenant Colonel Park was unconvinced that the lung injury, serious though she accepted it was, had an effect on Saffie-Rose Roussos's ability to breathe to the extent that her life was imperilled by it.²⁶⁸

²⁵⁷ [176/215/15-218/7](#)

²⁵⁸ [177/24/8-26/5](#)

²⁵⁹ [177/25/4-27/7](#)

²⁶⁰ [177/120/17-121/25](#)

²⁶¹ [177/122/8-124/5](#)

²⁶² [176/87/6-21](#)

²⁶³ [176/82/10-14](#)

²⁶⁴ [176/85/18-86/7](#)

²⁶⁵ [176/86/8-87/5](#)

²⁶⁶ [176/87/22-88/5](#)

²⁶⁷ [178/130/5-133/24](#)

²⁶⁸ [178/134/2-135/25](#) (Dr Davies), [178/141/13-152/11](#) (Lieutenant Colonel Park)

She and Dr Davies attached importance to the footage from the body-worn video camera of, in particular, Police Constable (PC) Leon McLaughlin.²⁶⁹ They stated that they had been unable to detect in that footage any significant respiratory impairment on the part of Saffie-Rose Roussos and were of the view that the lung damage did not, therefore, have any significant physiological effect in the period before her death.²⁷⁰

18.217 I have viewed the footage. I do not consider that it establishes the point advanced by Lieutenant Colonel Park. Furthermore, the opinion of Lieutenant Colonel Park and Dr Davies is at odds with the evidence of lay witnesses who saw Saffie-Rose Roussos in the period before she was transported to hospital. That evidence is consistent with Saffie-Rose Roussos experiencing difficulties breathing.²⁷¹ PC McLaughlin gave evidence that, while Saffie-Rose Roussos was on the pavement on Trinity Way, her breathing was *“quite shallow, quite laboured”*.²⁷² Bethany Crook, an off-duty nurse who was with Saffie-Rose Roussos for a 14-minute period²⁷³ prior to her departure for hospital, expressed her concerns about the breathing of Saffie-Rose Roussos. She explained that there were times when it was very shallow and times when it was *“very pronounced and exacerbated ... that is an indication to me medically, in my training, that tells me that she’s having difficulties breathing”*.²⁷⁴ The lay witness evidence, in my view, was consistent with the effect that blast lung would generally be expected to produce, namely respiratory difficulties.

18.218 I consider that the evidence overall demonstrated that the damage to the lungs of Saffie-Rose Roussos was so severe that it must have significantly compromised her ability to get oxygen to her tissues, which was necessary for her to sustain life. This ability had already been compromised by her blood loss from the injuries to her pelvis and legs and to her vascular system.

Overall burden of injury

18.219 In all of the circumstances, I am satisfied that the views of the Blast Wave Panel of Experts about the disputed areas of injury, and about the severity of those injuries, were correct.

18.220 It is important to understand, as I explained at the beginning of this section, that these injuries formed just a part of what happened to Saffie-Rose Roussos. Overall, as all the experts agreed, she suffered an extremely high burden of injury.²⁷⁵ It is also important to recognise that all of those injuries were affecting Saffie-Rose Roussos at the same time and, as Dr Lumb explained, will therefore have had a compounding effect upon each other.²⁷⁶

²⁶⁹ [178/142/15-144/3](#)

²⁷⁰ [178/147/16-151/11](#)

²⁷¹ [177/139/9-142/16](#)

²⁷² [175/19/3-5](#)

²⁷³ [175/59/14-25](#)

²⁷⁴ [175/73/16-76/6](#)

²⁷⁵ [177/14/17-15/5](#) (Blast Wave Panel of Experts), [178/124/14-125/24](#) (Dr Davies)

²⁷⁶ [176/98/22-100/2](#), [177/61/6-63/2](#)

- 18.221** Alan Hepper was a member of the Blast Wave Panel of Experts. His background is in engineering. He is a Fellow with the Defence Science and Technology Laboratory, where his main responsibilities are for issues related to human vulnerability, injury assessment and injury modelling. He undertakes research on the effects of weapons, including bombs, on the human body in order to aid improvements in treatment.²⁷⁷
- 18.222** Alan Hepper carried out an assessment of the burden of injury sustained by Saffie-Rose Roussos, using the New Injury Severity Score system.²⁷⁸ This allocates a score to the three principal injuries suffered by a victim of trauma. These scores are then added together to provide an overall measurement. On the basis of her three principal injuries, the New Injury Severity Score produced a result of 41 in the case of Saffie-Rose Roussos.²⁷⁹ This is in itself a high score, and those on the database used by Alan Hepper who shared the same score, and had one or more injuries in common with Saffie-Rose Roussos, had generally, although not invariably, died.²⁸⁰ Alan Hepper emphasised, however, that 41 may not reflect the overall burden of Saffie-Rose Roussos's injuries because she had sustained many more than three injuries; he explained that some of those other injuries were very serious in their own right.²⁸¹
- 18.223** Care needs to be taken before drawing conclusions from a statistical tool such as the New Injury Severity Score. However, the Blast Wave Panel of Experts emphasised that they had not used the New Injury Severity Score as the foundation for their opinion about Saffie-Rose Roussos's survivability. Instead, once they had formed the view that her injuries were unsurvivable, they used the New Injury Severity Score as a check.²⁸² In my view, that was an appropriate approach and the New Injury Severity Score result was of some, albeit limited, weight in my conclusions.

Survivability

- 18.224** The important question at the end of all of this evidence is whether the injuries sustained by Saffie-Rose Roussos were ones that she could have survived with different care and treatment.
- 18.225** In their first report, the Blast Wave Panel of Experts expressed the view that the injuries sustained by Saffie-Rose Roussos were "*unlikely to be survivable*" with current advanced medical treatment.²⁸³ The Panel explained that the term "*unlikely to be survivable*" described:

²⁷⁷ [177/21/12-22/25](#)

²⁷⁸ [177/45/12-48/6](#)

²⁷⁹ [177/47/22-48/6](#)

²⁸⁰ [177/48/17-52/9](#)

²⁸¹ [177/47/22-48/24](#)

²⁸² [177/4/6-9/12](#), [177/45/12-50/9](#), INQ100090/1 [not published]

²⁸³ INQ025364/23 [not published], [177/161/15-162/21](#)

*"... individuals whose injuries were so severe that even if that same advanced and comprehensive medical treatment was initiated immediately after injury, we would not expect that person to survive, but at that point we could not say survival was impossible."*²⁸⁴

18.226 In their second report, the Panel reviewed their conclusion in relation to Saffie-Rose Roussos and found that her injuries were *"unsurvivable"*.²⁸⁵ Colonel Mahoney explained this term:

*"[I]t meant that we felt the injuries were so severe that even if the most comprehensive and advanced medical treatment was initiated immediately after injury, we believe that survival was impossible."*²⁸⁶

18.227 It follows that the Panel were initially unable to exclude the possibility of survival in the case of Saffie-Rose Roussos but then six months later felt confident in doing so. This change was naturally of concern to her family and those who represent them and led to the instruction by me of the additional experts to whom I have referred.

18.228 The Panel were pressed in evidence on their change in opinion.²⁸⁷ They explained that their first report made clear that it was a preliminary report that was always intended to be subject to any further evidence that was received.²⁸⁸ What had changed between the first and second report was that the Panel had received the footage from the CCTV and body-worn video cameras, as was recorded in Appendix 1 to that second report.²⁸⁹ That led Colonel Mahoney to conclude that Saffie-Rose Roussos had become *"very sick, very quickly"* with respiratory distress that was, he believed, a combination of lung injury and blood loss.²⁹⁰ In turn, that led the Panel to conclude that Saffie-Rose Roussos had suffered from blast lung, as outlined in paragraphs 18.211 to 18.218, which conclusion I have found to be correct.

18.229 It was appropriate that the Blast Wave Panel of Experts were pressed to explain their change in position. However, having heard their evidence, I am clear about what happened. The Panel expressed a preliminary opinion, making plain that they would review that opinion if further evidence was provided. Further evidence was provided of a type regarded by the Panel as significant. That altered the Panel's opinion and they said so. Not only was their approach understandable, it was also entirely responsible.

18.230 That does not mean, however, that the final conclusion of the Blast Wave Panel of Experts that survival was impossible is correct.

²⁸⁴ [150/68/9-16](#)

²⁸⁵ INQ032039/3-4 [not published], [177/15/16-16/23](#)

²⁸⁶ [150/67/7-68/8](#)

²⁸⁷ [177/163/10-181/8](#)

²⁸⁸ INQ025364/2 [not published]

²⁸⁹ INQ032042/5 [not published]

²⁹⁰ [177/173/15-174/19](#)

- 18.231** Even though I accept that the Blast Wave Panel of Experts were right about the nature and extent of the injuries suffered by Saffie-Rose Roussos, I do not consider that the evidence enables me to say that she had absolutely no chance of survival if the most comprehensive and advanced medical treatment had been initiated immediately after injury.
- 18.232** Lieutenant Colonel Park, Dr Davies and Mr Vasireddy were experienced and impressive experts. Their evidence about what consultants in pre-hospital emergency medicine can achieve out of hospital was striking.²⁹¹ The evidence of their experiences means that I cannot exclude the remote possibility that Saffie-Rose Roussos would have survived, notwithstanding the severity of her injuries, if she had received treatment from an experienced consultant in pre-hospital emergency medicine immediately, followed by swift evacuation to hospital and expert treatment there.
- 18.233** While I have recognised the dangers involved in seeking to apply statistical data, I noted that within the database utilised by Alan Hepper, one individual who sustained blast lung of a severity comparable to that sustained by Saffie-Rose Roussos survived, notwithstanding that this person had a total New Injury Severity Score of 66, significantly higher than that given by Alan Hepper to Saffie-Rose Roussos.²⁹² While I recognise that the score of 41 given to Saffie-Rose Roussos was described as conservative,²⁹³ this finding seems to me to underscore why I should not conclude that Saffie-Rose Roussos had no prospect of survival at all. Colonel Mahoney was asked about this example in the database.²⁹⁴ His answer did not persuade me that my analysis is flawed.
- 18.234** I make clear that what I am postulating is a remote possibility of survival. On the evidence that I have accepted, what happened to Saffie-Rose Roussos represents a terrible burden of injury. It is highly likely that her death was inevitable even if the most comprehensive and advanced medical treatment had been initiated immediately after injury.

²⁹¹ [177/211/25-245/19](#), [178/1/1-239/17](#)

²⁹² INQ100090/3 [not published]

²⁹³ [177/47/25-48/16](#)

²⁹⁴ [177/146/4-147/6](#)

Part 19

Understanding what happened and why

Introduction

- 19.1 During the Inquiry's oral hearings, I heard evidence from 267 witnesses, many of whom were called during the hearings relating to the emergency response. The hearings relating to the response took place between January and October 2021. Additionally, the accounts of many other witnesses involved in the response were read out or summarised. Behind that witness evidence was a very substantial body of documentary, audio and video material which had been assembled, organised and reviewed. I also received opening and closing statements, both written and oral, on behalf of Core Participants, including each of the bereaved families and the emergency services.
- 19.2 Having received and considered all this information, I have been able to reconstruct what happened on the night of 22nd May 2017 and to do so in considerable detail. This has enabled me to identify what went wrong.
- 19.3 The complexity of this process and the necessity to await the conclusion of the criminal trial of HA, coupled with some delay to the start of the oral evidence hearings by reason of the COVID-19 pandemic, meant this has taken considerable time. Over five years will have passed since the Attack by the time that Volume 2 of my Report is published.
- 19.4 In the course of the oral hearings, I received evidence from a number of very senior members of the emergency services. A number of these people stated that the process of the Inquiry had caused them to identify areas for improvement that had not previously been identified and to implement or start to implement change as a result.
- 19.5 For example, Sarah-Jane Wilson, the Head of North West Fire Control (NWFC), began her evidence by telling me that, following her review of the Inquiry's evidence:

"I would like the Inquiry to know that I have followed almost all of the evidence that has been given to the Inquiry. I have also worked through the documents and evidence on the Inquiry's portal, which is something I did before the Inquiry started and have continued to do ever since ...

It has become very clear to me that on the night of the Attack, North West Fire Control did not manage communications in the way that would have been expected of them by the public and by the Fire Service. The control room was responsible for significant failures in the management of information throughout that night ...

I have personally asked for those failures to be fully set out in a sequence of communications which North West Fire Control has provided the Inquiry with.”¹

19.6 Later in Sarah-Jane Wilson’s evidence, the following exchange took place:

“Q. ... has information come to light by reason of the Inquiry, which is relevant to North West Fire Control’s way of operating?

A. Yes, sir.”²

19.7 Deputy Chief Constable (DCC) Ian Pilling gave evidence on behalf of Greater Manchester Police (GMP). The following exchange took place during his evidence:

“Q. ... has the process of the Inquiry led to further relevant information coming to GMP’s attention?

A. Yes, it has.”³

19.8 DCC Pilling gave an example later in his evidence. He was asked about the gap in police officers’ knowledge about how other emergency services operate and why it took until February 2021 to create training materials to address this. His answer was significant: *“I think it’s probably a realisation of the gravity of the problem as we started to look at the evidence from the Inquiry.”⁴*

19.9 He also observed: *“[O]ne of the things that I’ve taken away from this Inquiry so far is around Plato and it needing a good dose of looking at.”⁵*

19.10 Assistant Chief Constable (ACC) Sean O’Callaghan gave evidence on behalf of British Transport Police (BTP). He was asked about changes which had been identified. This exchange followed:

“Q. And some of what you have already said is as a result, as I understand it, of what has come out in the Inquiry?

A. Absolutely, yes.”⁶

¹ [135/3/14-4/1](#)

² [135/94/4-8](#)

³ [130/169/19-170/1](#)

⁴ [130/207/6-18](#)

⁵ [130/217/1-7](#)

⁶ [139/62/13-16](#)

- 19.11** The Inquiry followed a number of earlier evidence-based investigations into what happened and why. Some commentators have questioned why it required a public inquiry to uncover some of these issues.
- 19.12** In this Part, I review why some of what went wrong only emerged as a result of the work of the Inquiry. The purpose is to show where areas for improvement in the emergency response to tragedies such as the Attack can be identified, without the need for a process as complex and lengthy as this Inquiry.

Record of events

Written notes

- 19.13** There was a requirement imposed by some organisations for written notes or decision logs to be kept relating to the response to the Attack. For example, firearms commanders were expected to keep a record of their decisions.⁷ Under the third edition of the Joint Operating Principles (JOPs 3), “*decision-makers*” were required to “*record the rationale and information sources for their tactical decisions*”.⁸ Police officers operated under a general expectation to keep notes in their pocket notebooks. North West Ambulance Service (NWAS) expected its commanders to keep a decision log. Greater Manchester Fire and Rescue Service (GMFRS) expected its officers to record decisions in a log or, where this was not possible, to record notes later and within 24 hours of an incident.⁹
- 19.14** A firearms officer gave evidence that advice had been given that those officers should “*just ... produce duty statements at [the] time that we were there at the incident, et cetera, but not in detail. At a later date we would give a detailed statement when requested to.*”¹⁰ This was not an assertion that I investigated in detail. However, if it accurately reflects the approach taken, it should be reviewed by GMP. The reason may be because of concern about the wellbeing of officers who had just been through a very traumatic experience, but detailed notes should normally be made as soon as is reasonably practicable.
- 19.15** Making accurate notes forms an important first stage in the recording of what happened and why decisions were made. The need for accuracy cannot be overstated. Inaccurate notes can be worse than no notes: they are presumed to paint an accurate picture but will have the opposite effect. It is through the making of accurate notes that errors will be identified and improvements to what worked well noted.
- 19.16** The timing of record-making is critical to achieving accuracy. NWAS, for example, required a decision log to be completed within 72 hours of an incident.¹¹ There may be good reason for this. It may be a national standard. However, in my view, this is too long a period to ensure accuracy. NWAS should reflect on this. Unless there are compelling reasons justifying a delay, such records should be completed within 24 hours of an incident.
- 19.17** Ideally, the making of such records should be prioritised so they are completed by the point of command handover. As JOPs 3 stated: “*[D]ecision logs can be used to assist future decision-making and ensure clarity of understanding of*

⁷ [108/27/4-28/5](#), [INQ029139/35](#)

⁸ [INQ008372/16](#)

⁹ [INQ026714/30-31](#) at paragraphs 135-137, [INQ026738/20](#) at paragraphs 127-131, [INQ025614/6-7](#) at paragraphs 38-39

¹⁰ [102/82/7-16](#)

¹¹ [INQ012848/72](#), [INQ014791/1](#)

*what will be a rapidly developing and complex situation.*¹² I see no reason why this statement of principle should be confined only to Major Incidents in which Operation Plato has been declared. It should be applied to all Major Incidents.

- 19.18** In Parts 14 and 15 in Volume 2-I, I set out occasions when inaccurate notes were made about the content of important telephone calls. I do not repeat them here. These notes were capable of obscuring the truth of what happened on the night of the Attack. It was only the fact that recordings of the calls existed that enabled the inaccuracies to be exposed and corrected.
- 19.19** Investigators, judges and other decision-makers have long regarded contemporaneous notes as a more reliable source of evidence than recollections repeated after discussions with others have taken place. As a result, it is all the more essential that accurate notes are made.
- 19.20** I recommend that all emergency services involved in the response to the Attack reflect on their approach to note-taking during and immediately following Major Incidents with a view to improving the current practice. I recommend that the Home Office, College of Policing, National Ambulance Resilience Unit and Fire Service College ensure that all commanders responding to a Major Incident are trained on the importance of recording their key decisions and rationale.
- 19.21** In the case of those who are responding at the scene, the timely taking of notes will be less practicable. For people in these roles, audio and/or visual technology can provide vital support. In saying this, I am not seeking to confine the use of audio and/or visual technology to those who attend a scene. They are the people who are likely to derive the most benefit from a recording but those remote from the scene, for example Strategic/Gold Commanders, will also see an advantage, as ACC Deborah Ford acknowledged.¹³

Audio and/or visual recordings

- 19.22** In Part 13 in Volume 2-I, I addressed the position of firearms officers and body-worn video. I will not repeat that here, but it forms an important part of what I say next.
- 19.23** Two of the most important pieces of evidence received by the Inquiry came from Dictaphone recordings. One was made by Chief Inspector Mark Dexter of GMP,¹⁴ the other by Inspector Dale Sexton of GMP.¹⁵ These recordings were an invaluable source of information for my investigation. They captured important conversations by those individuals. They allowed me to reach conclusions about how busy the people recorded on them were. They permitted me to make informed judgements

¹² [INQ008372/16](#)

¹³ [106/20/13-23](#)

¹⁴ [INQ025409](#)

¹⁵ [INQ024325](#)

about how challenging the environments were. They revealed something of the stress levels people were operating under. To some extent, they enabled the listener to put themselves in the situation that was being recorded.

- 19.24** There was inconsistency across the emergency services in relation to the use of Dictaphones. There were a number of important witnesses in command roles who had immediate access to a Dictaphone but did not use it, or used it for only a short period of time.¹⁶ There were also some in significant roles who did not have access to a Dictaphone on the night of the Attack.¹⁷
- 19.25** I have considered whether those individuals or their organisations should be criticised for this. I have concluded that it is more appropriately treated as an opportunity for improvement. The lack of a recording of what individuals said and heard did not impact on the quality or nature of the response to the Attack, but it may have had an impact on the ability to learn lessons.
- 19.26** There was no evidence to suggest that the use of a Dictaphone would have any adverse effect on any individual's performance. If anything, knowing that everything that is said is being recorded may lead to a person acting more deliberately and thoughtfully. It may also mean in certain circumstances that a written log is less important, given that a complete record will be captured through an audio recording. This will free up time to focus on more important command activities.
- 19.27** As technology advances and costs reduce, it may be that body-worn video equipment is regarded as a viable alternative to Dictaphones. A number of police officers who responded to the Attack were issued with such equipment as part of their tour of duty that day. This audio and video footage formed a vital part of reconstructing what happened in the City Room in particular. The content was often too distressing to play publicly. I have viewed a good deal of it. It enabled me to understand better how terrible an environment the City Room was in the period immediately after the Attack. The body-worn video recordings have been the subject of very detailed analysis.
- 19.28** I recommend that the Home Office, College of Policing, National Ambulance Resilience Unit and Fire Service College ensure that all those who may be required to take up a command position are issued with a means to record what they say, hear and, where appropriate, see. It may also be that key personnel within control rooms would benefit from having such equipment available for activation in the event of a Major Incident. Training should be given to all who are issued with such technology on the circumstances in which it should be used and the importance of its use. Exercises should include the use of contemporaneous recording devices in order to simulate how they will be used in practice.

¹⁶ [115/25/7-15](#), [121/57/17-58/11](#)

¹⁷ [104/77/1-78/25](#)

19.29 It is important to make clear that I do not regard the use of audio and visual recording equipment to be a complete substitute for the timely taking of notes. A recording of what occurred will not always capture why an individual made a given decision. Accurately capturing the rationale behind commanders' decision-making is important.

Conversations not conducted in person

19.30 Generally, radio transmissions and calls to control rooms on the night of the Attack were recorded. Collating these recordings was a substantial undertaking. Once this important work had been undertaken, these recordings formed a vital part of understanding how information moved within and between organisations.

19.31 However, as I set out in Part 15 in Volume 2-I, there were a significant number of conversations between senior GMFRS personnel which were conducted by mobile phone.¹⁸ The participants in these calls had different recollections as to what was said in a considerable number of those discussions.¹⁹ This required me to resolve disputes of fact, if that was possible, before I could identify where improvements might be made.

19.32 This only serves to underline the need for audio and/or visual recordings for commanders and other key personnel.

¹⁸ [132/167/5-25](#)

¹⁹ [132/167/5-25](#), [121/51/3-23](#), [121/88/4-20](#)

Debriefs

- 19.33 A number of debriefs took place following the Attack. Some were termed “*hot debriefs*”.²⁰ These were proximate to events and were intended to capture raw impressions of what had occurred. There were also more formal debrief processes where individuals completed questionnaires and attended debrief meetings.²¹
- 19.34 The debrief process provides an invaluable opportunity for organisations to understand what may have gone wrong and how improvements in their practices can be made. They must be conducted constructively and candidly. Given the importance of joint working, the debrief process of Major Incidents involving more than one emergency service should be overseen by the local resilience forum.
- 19.35 Particular care will need to be taken for debriefs following Major Incidents which may give rise to a criminal investigation. In these circumstances, the investigators will need to provide input on the management of those areas which might prejudice the investigation.
- 19.36 Operation Newtown was the name given by GMP to the response to the Attack. In a document dated 16th June 2017, GMFRS Deputy Chief Fire Officer Paul Argyle, Chair of the Greater Manchester Resilience Forum (GMRF), set out the principles, scope and process that were to be adopted for the Operation Newtown debrief.²² There were two stages. The first comprised a “*strategic multi-agency debrief*” undertaken by GMRF and “*tactical organisational debriefs*” conducted by individual GMRF member organisations.²³ The two elements were conducted in parallel. The second stage took place at multi-agency level and aimed at testing the findings, developing the learning and making recommendations.²⁴
- 19.37 A large number of Operation Newtown debrief questionnaires were completed during July 2017. Each questionnaire required the person completing it to identify what aspects of the multi-agency response did not go well, what aspects did go well and any key recommendations that they had.
- 19.38 Operation Manteline was the name given by GMP to the criminal investigation into the Attack. Debrief questionnaires were also completed within Operation Manteline.²⁵

²⁰ [121/131/12](#)

²¹ For example, [INQ000790](#), [INQ041168](#), [INQ022376](#), [INQ000788](#)

²² [INQ012576/1-4](#)

²³ [INQ012576/4](#)

²⁴ [INQ012576/1-4](#)

²⁵ For example, [INQ041168](#) (Inspector Sexton’s debrief questionnaire)

- 19.39** It is important that I acknowledge that an enormous amount of work went into all of the debrief processes following the Attack. I detected no lack of willingness by those who participated to get to an understanding of what went wrong, what went well and what recommendations might be made. However, I was struck by the lack of critical detail in the content of some of the debrief questionnaires prepared by witnesses who were called to give evidence. It is essential that everyone who needs to complete a debrief questionnaire is encouraged and supported to be constructive, objective, open and comprehensive.
- 19.40** ACC O’Callaghan was asked about the effectiveness of BTP’s debrief process and whether it was effective in revealing problems. His answer was that “[t]here’s certainly work still to be done in that area”.²⁶ He agreed that there was a danger that a debrief process could be defensive. This is an understandable reaction which is difficult to overcome. ACC O’Callaghan stated that BTP had retained an external consultant to ensure that BTP’s review of what has emerged from the Inquiry is robust.²⁷
- 19.41** I have a concern that the debrief processes following the Attack did not reveal several of the issues that they should have. It is beyond the scope of the Inquiry’s terms of reference for me to conduct a minute examination of why this was the case.
- 19.42** I recommend that each emergency service involved in the response to the Attack seek to understand why the issues considered in Volume 2 of my Report were not identified sooner. This is intended to be a constructive exercise aimed at improving the current system. I recognise that the answer to some may simply be attributable to the highly detailed and forensic process that the Inquiry has been able to undertake, but not all.

²⁶ [139/62/17-63/21](#)

²⁷ [139/62/17-63/21](#)

Witness statements

- 19.43 Operation Manteline took witness statements from those with evidence relevant to the criminal investigation. Inevitably, there was a substantial overlap between what was relevant to that investigation and the Inquiry's terms of reference.
- 19.44 For good reason, the focus of the criminal investigation was not on command decisions on the night of the Attack. As a result, witness statements were not taken from emergency services commanders until requests were made for them by me once I had been appointed as the Coroner for the inquests. This meant that many key witnesses did not make witness statements until several years after their involvement in the Attack. This included three people whose decisions I have needed to scrutinise in detail: the GMP Force Duty Officer (FDO), the NWS Operational Commander and the GMFRS duty National Interagency Liaison Officer (NILO).
- 19.45 For those witnesses who did not have recourse to comprehensive notes made at the time, this was unsatisfactory. Even where a recording exists, the rationale behind decision-making was not always captured. To take one example to illustrate this point: Inspector Sexton's first witness statement was dated 6th December 2019.²⁸ This was two and a half years after the Attack. As DCC Pilling observed, *"it obviously would have been more helpful"* if Inspector Sexton's full account had been captured earlier than this.²⁹
- 19.46 I recommend that the Home Office, College of Policing, National Ambulance Resilience Unit and Fire Service College take steps to ensure that all emergency services understand the importance of obtaining comprehensive accounts from commanders as part of the debrief process. This will not necessarily need to occur following every Major Incident. A threshold will need to be identified for this to be triggered. As a minimum, I would expect it to occur as a result of every terrorist attack and any Major Incident which results in death.

²⁸ [INQ029021](#)

²⁹ [131/49/2-13](#)

Kerslake Report

- 19.47** In July 2017, the Mayor of Greater Manchester set up an independent review chaired by Lord Kerslake.³⁰ The review was into Greater Manchester's preparedness for and emergency response to the Attack. Participation in the work of the review was voluntary. A substantial number of people who gave evidence to me also provided accounts and information to Lord Kerslake's team.
- 19.48** Lord Kerslake adopted a "*Fair Notice*" procedure before reporting. This followed the information-gathering stage. On 9th March 2018, Chief Constable Ian Hopkins wrote in response to the Fair Notice letter which he had received on behalf of GMP. In the course of that response, Chief Constable Hopkins stated: "*Relevant emergency service partners were informed of the declaration of Operation Plato.*"³¹ The letter went on to assert:
- "GMP can evidence that GMFRS, NWAS and the military were informed of the Plato declaration, via specified routes, within a few minutes of its declaration. These are the only partners specified in JOPS. We are not clear why this was not then communicated within these organisations, if this was the case.*
- ...
- ... [the FDO] was able to complete his key tasks, including the notification of Operation Plato.*"³²
- 19.49** Chief Constable Hopkins stated in evidence that the content of this letter was "*a very grave error*".³³ I agree. He explained that a team had been established run by DCC Pilling. The information had come from that team. He also pointed out that, on the next working day, an email correcting this error was sent to Lord Kerslake by DCC Pilling.³⁴
- 19.50** There was no opportunity for Lord Kerslake to be misled by this error due to the timely correction. What is of more concern to me is that, more than nine months after the Attack, the senior leadership of GMP had not realised that the FDO had not communicated the Operation Plato declaration to other emergency services. That was a highly significant fact which should have been identified by GMP at an early stage. GMP should have put greater effort into understanding why it had happened. Both Chief Constable Hopkins and DCC Pilling should have immediately known the letter to Lord Kerslake was incorrect.
- 19.51** On 27th March 2018, Lord Kerslake delivered his report.³⁵

³⁰ [INQ000009/14-17](#)

³¹ [INQ000633/2](#)

³² [INQ000633/3](#)

³³ [134/183/24-185/13](#)

³⁴ [134/183/24-185/13](#)

³⁵ [INQ000009](#)

19.52 I am grateful to Lord Kerlake and his team for making available the material collected as part of his process. It has assisted my investigation. I see my work as building on his review. With the powers, time, evidence and assistance available to me, I have been able to examine the response in much greater detail.

Media interviews

- 19.53 On 22nd May 2018, the BBC broadcast a documentary entitled *Manchester: The Night of the Bomb*.³⁶ In the course of the programme, interviews given by emergency responders from BTP and NWS setting out their account of events of the night of the Attack were played. The transcripts of the interviews were provided to the Inquiry.³⁷ They formed the basis of some of the questions asked during the oral evidence hearings. I am grateful for the co-operation I received from the BBC in relation to those transcripts being made available.
- 19.54 Representatives of the bereaved families raised issues about *Manchester: The Night of the Bomb*. Three issues in particular were raised. First, there was concern about “*the inclusion ... of graphic footage of the scene of the attack, from which [bereaved families] were able to identify their loved ones as they lay dead, and about which they received no warning*”.³⁸ Second, there was concern about whether it was appropriate for any emergency responder to have assisted in the making of the documentary at all. Third, there was a concern about the timing of the participation: it occurred when it was known that an investigation into the adequacy of the response would occur.³⁹
- 19.55 ACC O’Callaghan, on behalf of BTP, apologised for the involvement of BTP in this documentary.⁴⁰
- 19.56 In relation to the second concern, it was submitted to me on behalf of the bereaved families: “*The lesson to be learned is that greater communication with bereaved families is necessary when consideration is given to participation in documentaries and other media coverage following fatal incidents.*”⁴¹
- 19.57 Freedom of the press is an essential part of our democracy. It is not appropriate for me to seek to define the circumstances in which the media should interview emergency service personnel. Nor is it for me to suggest standards in relation to what material can or cannot be included. The Independent Press Standards Organisation provides some general guidance. However, having seen firsthand the upset this particular documentary caused, it is clear that consultation with bereaved families in fatality cases is capable of reducing any distress which may be caused.

³⁶ [INQ024284T](#)

³⁷ [INQ024278T/26-28](#)

³⁸ [INQ042546/45-46](#)

³⁹ [INQ042546/46](#)

⁴⁰ [139/91/9-92/7](#)

⁴¹ [INQ042546/47](#)

Period of the inquests and Inquiry

Introduction

- 19.58 In August 2018, I was appointed by the Lord Chief Justice and the Chief Coroner as the nominated judge to sit as the Coroner to conduct inquests into the deaths of the twenty-two people who died as a result of the Attack. Following a ruling I made in 2019, the Inquiry was established. The matters which were the subject of that ruling will be dealt with in Volume 3 of my Report.
- 19.59 Both as a Coroner and as a Public Inquiry Chairman, I was granted powers enabling me to carry out a full investigation. Paragraph 5 of the Inquiry's terms of reference set out the scope of my investigation in this area of the Inquiry.⁴²

Support from Operation Manteline

- 19.60 Supporting me in this investigation was a team of GMP officers from Operation Manteline. These officers were not involved in GMP's response to the Attack beyond the criminal investigation. The part of the Operation Manteline team supporting the inquests and subsequently the Inquiry was headed by Detective Superintendent Teresa Lam. Detective Inspector (DI) Michael Russell was responsible for those who gathered, collated and analysed the hundreds of hours of audio-visual material.⁴³
- 19.61 I am indebted to Detective Superintendent Lam, DI Russell and all those within their team. I received an extraordinary level of support and co-operation. I pay particular tribute to the work that was undertaken in reconstructing the period post-explosion. It was of a highly distressing nature. It was painstaking and protracted work. It enabled the clearest possible understanding of what happened to each of those who was killed following the detonation.

Getting to the truth

- 19.62 As I have set out above, there had been numerous reviews and debriefs aimed at identifying what happened on the night of the Attack. For that reason, some may have thought the Inquiry was going to be a re-analysis of already well-established facts. This proved not to be the case.
- 19.63 The forensic process of the Inquiry brought to light many new pieces of information which either had not previously been known or the importance of which had not previously been realised.

⁴² Appendix 1 in Volume 1

⁴³ [19/223/2-11](#)

19.64 A stark example of this was in relation to the important first decision within NWFC. Based upon what the panel was told, Lord Kerlake's report states:

*"On being told on the telephone by GMP at 22:35hrs that 'there had been an explosion and that a bomb has exploded', the North West Fire Control operator initially acted in accordance with the action plan for 'EXPLOSION' and created an incident log. Following the plan's instructions, they then opened the action plan for 'BOMB'."*⁴⁴

19.65 Lord Kerlake's report goes on to identify that the first action of the 'Bomb' action plan was to contact the duty NILO, which is what in fact occurred.⁴⁵

19.66 This account of what happened was maintained in witness statements submitted to me.⁴⁶ On 19th August 2020, in its opening statement, NWFC stated: *"Contrary to what is said in some of the material and evidence gathered, the control room operators at NWFC did not 'open' the action plan for 'BOMB – GENERAL'."*⁴⁷

19.67 Further witness statements were provided in support of NWFC's position.⁴⁸ These confirmed that the 'Bomb' action plan was never consulted and that the decision to contact the NILO was made without reference to any particular action plan.⁴⁹

19.68 It is most unfortunate that it was not until days before the oral evidence hearings began that the correct state of affairs was identified. I commend those responsible for identifying it and drawing it to the Inquiry's attention. However, whether or not a particular action was based on an existing plan formed an important part of establishing what happened. It is remarkable that it took over three years for this misconception to be dispelled.

19.69 As I have said, the above represents what is a stark example of an important factual revelation emerging after an extended period during which the opposite had been asserted. There were many other developments which I do not rehearse here. I do not raise this particular example with a view to criticising those who had previously been wrong in their recollection. I raise it because it further underlines the importance of accurate record-keeping about what was done and why. It also demonstrates the need for early, objective analysis of the known facts.

Post-Attack changes

19.70 On 30th January 2020, I issued a ruling directing that each of the public body and corporate Core Participants serve a statement setting out the changes which had been made since the Attack.

⁴⁴ [INQ000009/95](#) at paragraph 3.152

⁴⁵ [INQ000009/96](#) at paragraphs 3.153-3.154

⁴⁶ [INQ023881/6](#) at paragraph 4.9, [INQ023877/31](#) at paragraph 7.3, [INQ032856/3](#) at paragraph 2.2

⁴⁷ [INQ035485/15](#) at paragraph 10.1

⁴⁸ [INQ035438/1-2](#) at paragraph 8, [INQ035440/1](#) at paragraph 6

⁴⁹ [INQ037079/7-8](#) at paragraph 17, [INQ035440/1](#) at paragraph 6

- 19.71 Statements setting out post-Attack changes were served before the start of the oral evidence hearings, in April to June 2020.⁵⁰ I found these statements instructive. They demonstrated that there was a genuine commitment to improvement on the part of each of the emergency services.
- 19.72 My investigation did not involve a detailed analysis of the efficacy and appropriateness of the changes that have already been made. Its focus was on what the position was in May 2017. For this reason, I have deliberately refrained from commenting on whether any of the issues I have identified have yet been addressed, whether in full or in part.
- 19.73 In Volume 1, I identified particular recommendations as ones which I intended to monitor. In January 2022, I heard evidence in relation to those ‘monitored recommendations’.⁵¹ This evidence provided an opportunity for those who were the subject of monitoring to share their experience of making necessary improvements with a view to sharing their learning widely.
- 19.74 As I will set out in Part 21, I will adopt the same approach to particular recommendations that I make in Volume 2.

Approach to learning as a result of the Inquiry

- 19.75 I was particularly impressed by the evidence I heard from GMP and BTP about the structures that have been put in place in order to extract and disseminate learning as a result of the Inquiry.⁵²
- 19.76 As those efforts may be of more general application to emergency services, I comment on them further below.

GMP

- 19.77 Towards the end of 2019, DCC Pilling set up a team within GMP whose task was to review all the recommendations identified from the Attack and from debriefs. The purpose was “to ensure [GMP] could assure [itself] that the appropriate progress had been made”.⁵³ This team was called “the Arena Recommendations Review Team”.⁵⁴ DCC Pilling identified the need for this team when he began to prepare his statement for the Inquiry.
- 19.78 DCC Pilling stated that, out of the work of the Arena Recommendations Review Team, GMP developed what it termed the Organisational Learning Board. DCC Pilling explained:

“What I was conscious of was that given the volume of [the debriefs and reviews], that the organisation wasn’t always pulling them all together and spotting common threads. And the purpose of the organisational learning

⁵⁰ For example, [INQ033298](#) (DCC Pilling), [INQ032849](#) (Gerard Blezard)

⁵¹ [187/1/5-239/5](#), [188/1/5-35/13](#)

⁵² [INQ033298](#) (GMP), [139/1/18-106/6](#) (BTP)

⁵³ [131/13/2-11](#)

⁵⁴ [131/13/12-16](#)

*board ... was twofold: first of all, to ensure that we have an effective scanning process across all those threads ... The other was to have more of a lessons learning ethos within the whole organisation and encourage ... an approach more towards learning lessons.*⁵⁵

19.79 I was impressed by DCC Pilling's commitment to embedding learning within GMP. Establishing a structure of organisational learning officers across all districts and departments in GMP represented a step change for the better. He stated:

*"[M]y ethos is that most ... learning should take place at a low level, it is a localised piece of learning, but equally some learning will be more strategic and it is issues such as that which are brought to the organisational learning board."*⁵⁶

19.80 I recommend that GMP share its approach with other police services through the National Police Chiefs' Council.

BTP

19.81 ACC O'Callaghan gave evidence as part of the process of monitoring recommendations made in Volume 1. In January 2021, following the oral evidence hearings relevant to Volume 1, BTP created the "SABRE programme". SABRE is an acronym which stands for "situational awareness, briefing, response and events".⁵⁷

19.82 ACC O'Callaghan explained the genesis of the SABRE programme in this way:

*"British Transport Police started the journey of correcting some of the wrongs as early back as when the Kerslake Inquiry was sitting and started developing some of those streams at that point. And then as further streams were picked up through this Inquiry, they were added to that programme, and those combined pieces of work are what became the SABRE programme."*⁵⁸

19.83 A number of those workstreams related to issues with BTP's involvement in the emergency response. I take two examples from within one of those workstreams to illustrate the approach taken by BTP. First, BTP recognised that there was "a lack of familiarity" with the Major Incident Manual.⁵⁹ I have set out my conclusions in relation to this in Part 13 in Volume 2-I. This led to BTP making changes in its approach.

19.84 Second, BTP developed its approach to the use of tourniquets. ACC O'Callaghan told me: "I have now changed my position on [tourniquets] having listened to or watched [Brigadier Hodgetts'] evidence and indeed watching ... the video

⁵⁵ [131/20/14-21/1](#)

⁵⁶ [131/21/12-17](#)

⁵⁷ [187/178/3-12](#)

⁵⁸ [187/180/8-15](#)

⁵⁹ [187/194/23-195/2](#)

on the citizenAID website.⁶⁰ He went on to say that he had met with Brigadier Timothy Hodgetts and that BTP had recommended all frontline BTP officers be issued with, and trained in the use of, tourniquets.⁶¹ I shall return to the issue of tourniquets in Part 20.

19.85 I commend BTP's approach to learning from the Inquiry. I was impressed by ACC O'Callaghan's commitment to change.

19.86 I recommend that BTP share its approach with other police services through the National Police Chiefs' Council.

Warning letter process

19.87 I am required by Rule 13 of the Inquiry Rules 2006 to send a warning letter to any person who may be the subject of explicit or significant criticism. Rule 15 requires that a warning letter should state what the criticism or proposed criticism is; contain a statement of the facts that are considered to substantiate the criticism or proposed criticism; and refer to any evidence which supports those facts.

19.88 I was concerned at the outset of the Inquiry that the requirements of the warning letter process may impact on the timetable for publication of my Report. The requirement to identify every potential criticism and supporting evidence is onerous. It means that warning letters can only be issued when the drafting of the report is well advanced. The responses to warning letters can be lengthy and complex. All this increases the risks of delay while issues are reviewed and the Report updated. That has happened at this stage of the Inquiry.

19.89 I have nonetheless found the warning letter process a useful one. As I noted in Volume 1, I have not taken into account fresh evidence or new arguments that were provided in warning letter responses and which could have been, but were not, put forward during the Inquiry's evidence hearings or in written and oral submissions.

19.90 I have adopted that general approach because it is not the purpose of Rule 13 to provide those who may be criticised with an opportunity to reopen matters in order to justify their conduct or to advance submissions that could have been made openly, on notice to the Inquiry and other Core Participants and subject to submissions, but were not.

19.91 Over the course of an inquiry's investigation, the importance of matters may change. New issues may arise. That is how inquiries work. They are not the same as an adversarial process where the issues should be clear before the hearing starts. In an inquiry, issues and proposed criticisms may come into focus only when the report is written. If they have not been explored in evidence, that is

⁶⁰ [139/42/4-7](#)

⁶¹ [187/184/16-186/4](#)

a factor I have had in mind when deciding whether or not it is fair and appropriate to make a particular finding. The warning letter process has ensured I have been able to raise matters as potential criticisms which have not been fully explored in evidence and allow an opportunity for a response before I decide whether to include them in my Report. I consider that to be a fair process and one that is essential to enable me to prepare a comprehensive report.

- 19.92** I understand that any person or organisation warned that they may be criticised in a public inquiry report may be distressed by this. I also understand that, where a person does not believe they should be criticised, this distress may be greater. It is important that those subject to potential criticism have the opportunity to respond.
- 19.93** I have found it particularly helpful to be told in an objective, dispassionate way why a proposed criticism is said not to be justified. That is a reasonable and proper use of the warning letter process. Some of the responses to warning letters were phrased in this helpful way; others were not.
- 19.94** Throughout the Inquiry's public hearings, every organisation committed to assist me in the search for the truth. I am grateful to all those who approached the warning letter process constructively. However, I am concerned that the attitude of others as expressed during a confidential process may stand in the way of further change.
- 19.95** I considered carefully whether to disclose the warning letter responses after the publication of this Report. I have decided not to do so but it is an important reason why I intend to monitor certain recommendations from this Report. It will ensure that everyone considers and reflects on the conclusions in the Report in a constructive manner and with the intention of ensuring that the same mistakes are not made again.

Part 20

The Care Gap

Introduction

- 20.1 In the event of a mass casualty incident, the public expect ambulances to travel to the scene quickly and in large numbers. The public also expect that, once on the scene, paramedics will attend to casualties immediately, with treatment starting within minutes of the incident occurring. The evidence demonstrates that, following the current approach, this is unlikely ever to be achieved. That is the case for at least four reasons.
- 20.2 First, the reality of the resourcing of ambulance services around the UK is that ambulances do not wait around for a Major Incident to occur. In the event of a mass casualty incident, it is inevitable that all, or at least most, ambulances in the geographical area of the incident will already be engaged in dealing with other events. That is likely to lead to a delay in the deployment to the scene of the number of ambulances and ambulance personnel needed to deal comprehensively with the incident.
- 20.3 Second, even when ambulance personnel begin to arrive at the scene of a mass casualty incident, the treatment of casualties is unlikely to commence immediately. Long-established policy within the ambulance service is that the first paramedic on the scene of a Major Incident will become the acting Operational Commander.¹ In that role, they are instructed not to treat casualties.² Instead, the acting Operational Commander is expected to assess the scene and pass a METHANE message to the control room, then seek to establish command and control, before co-ordinating with incident commanders from the police and fire and rescue services.³ All of that takes time.
- 20.4 Third, once the command structure at the scene is in place, the expectation is that triage will commence. The nature of a mass casualty incident is that the needs of the casualties will almost certainly exceed the capacity of the paramedic resource initially available. The seriousness of the injuries may well vary considerably. Established practice is that it is vital that those in most need of medical intervention are identified quickly. This is the purpose of triage. It should be undertaken before any treatment, except for urgently required life-saving interventions. Once again, this takes time.

¹ [INQ032665/36-37](#), [INQ032665/44](#)

² [INQ013422/2](#)

³ [INQ032665/44](#)

- 20.5 Fourth, where the mass casualty incident causes the police to declare Operation Plato, that is likely to have an impact on the time it takes for the treatment of casualties in any hot or warm zone. That is so even though the current Joint Operating Principles (JOPs) provide greater flexibility for forward deployment than was the position in 2017.
- 20.6 Witnesses explained that the consequence of these factors is that, in a mass casualty incident, it is inevitable that there will be a delay in paramedics and/or other healthcare staff arriving at the scene and commencing treatment.⁴ During the Inquiry, this period was described as ‘the Care Gap’.
- 20.7 I heard from witnesses with the expertise and experience to assist me on two issues: first, how is the Care Gap to be made as short as possible? And, second, how are we to achieve a situation in which those who are present at the scene before professional clinical staff arrive are able to provide vital life-saving interventions?
- 20.8 One witness, Philip Cowburn, the Medical Advisor to the National Ambulance Resilience Unit (NARU), summarised these two issues as “*narrowing the gap*” and “*filling the gap*”.⁵ I will use these terms but I consider that there are some matters relating to treatment that do not fall neatly into either category. I will deal with the issues in the following order: matters that will narrow the gap; matters relating to treatment during the gap; and matters that will fill the gap.

⁴ [68/20/10-25](#), [INQ041868/7](#) at paragraph 26, [INQ042671/1](#) at paragraph 5

⁵ [INQ042711/8](#)

Narrowing the gap

Introduction

- 20.9 If the Care Gap is to be made as short as possible, ambulances and specialist ambulance resources need to reach the scene of a mass casualty incident without delay. Ambulance personnel need to work collaboratively with their colleagues from the other emergency services. Specialist resources will be required and many witnesses advocated a consultant-led response.⁶
- 20.10 Where the incident is terrorist in nature and of a type such that Operation Plato has been declared, the affected area needs to be zoned accurately and the hot and warm zones need to be shrunk as quickly as possible. All casualties, whatever zone they are in, must be triaged and treated promptly and evacuated to hospital as speedily as possible. That includes the triage, treatment and evacuation of those in the hot zone.

Ambulance service resources generally

- 20.11 Getting ambulance personnel to casualties quickly in the event of a mass casualty incident is an obvious way of shortening the Care Gap. For that to happen, ambulances need to be available to deploy immediately and in sufficient numbers. Currently, that does not normally happen. That is because, around the UK, ambulance services are always “*playing catch-up*”: at any moment each ambulance in the country will be dealing with an incident, with other emergencies building up behind that incident in order of priority.⁷
- 20.12 Ambulance services generally do not have any spare capacity within their frontline resources. As the Ambulance Service Experts noted: “*They are normally stacking emergencies with multiple emergencies waiting to be assigned to a particular ambulance.*”⁸ This means that, in the event of a mass casualty incident, it is likely that the number of ambulances necessary for the care and treatment of the casualties will not be available to attend immediately or anything like immediately.
- 20.13 The night of the Attack on 22nd May 2017 is an example of that. Of the 319 North West Ambulance Service (NWAS) vehicles available that night, only seven were able to deploy straightaway,⁹ far fewer than was needed. The Ambulance Service Experts considered that, with the existing resources available to ambulance services and current levels of demand, such a situation would almost inevitably be replicated if a similar incident were to occur again anywhere in the country. I was informed that, over the course of the last ten years, the demand on

⁶ [192/22/13-28/21](#), [192/85/11-86/19](#), [192/133/14-134/19](#), [192/137/11-140/1](#), [192/151/11-153/15](#), [192/227/7-19](#)

⁷ [144/24/14-25/13](#)

⁸ [145/120/7-11](#)

⁹ [INQ040952/1](#)

ambulance services has doubled, with the trend of increasing demand continuing.¹⁰ So, this problem is only going to get worse if left unchecked. That is a very concerning state of affairs.

- 20.14** Ensuring that ambulances reach the scene of any mass casualty incident swiftly is a critically important part of making the Care Gap as short as possible. Not only do ambulances contain the personnel and equipment able to provide many life-saving interventions, but they are also the vehicles by which casualties are best transported to hospital. If ambulances do not attend the scene quickly and in sufficient numbers, lives will be lost.
- 20.15** It is not for me to dictate to central government or to the NHS how finite resources should be spent. However, I consider that all ambulance service trusts should review their capacity to respond to a mass casualty incident. Having done so, they should make recommendations to their NHS commissioners about the additional and/or different resources they require in order to ensure that they are able to respond effectively to a mass casualty incident in the numbers required.¹¹ The Department of Health and Social Care (DHSC) should give urgent consideration to any recommendations made by the trusts and the NHS commissioners.

Ambulance service specialist resources

- 20.16** Connected with this review is the issue of specialist ambulance service resources.
- 20.17** Where the mass casualty incident is the result of a terrorist attack, there may be sound reasons why only those with specialist skills and equipment should be deployed forward, at least initially. Ambulance services introduced Hazardous Area Response Team (HART) operatives to address this issue.¹² As I explained in Part 14 in Volume 2-1, a HART crew comprises specially recruited personnel who are trained and equipped to provide the ambulance response to high-risk and complex emergency situations.
- 20.18** They are able to work in dangerous areas during or after a terrorist attack. They are therefore vital to making the Care Gap as short as possible in such a situation. There may be respects in which the training of HART operatives could be improved. Furthermore, strong voices have advocated the view that the clinical response to a terrorist attack should be consultant-led. I will address those issues below. None undermines the importance of HART in narrowing the gap.
- 20.19** Given the importance of HART in any response to a terrorist attack, it was concerning to hear evidence that this specialist resource is not always available to respond as swiftly as expected. Keith Prior is the Assistant Chief Ambulance Officer in the West Midlands. He is also a Director of NARU,

¹⁰ [INQ042167/5](#) at paragraphs 27 and 28

¹¹ [INQ042167/5-6](#) at paragraph 28, [188/44/13-46/16](#)

¹² [144/218/2-10](#)

which works nationally on behalf of each ambulance service trust in England to provide a co-ordinated approach to emergency preparedness, resilience and response.¹³ He gave evidence that ambulance services around the country are “*struggling*” to maintain the minimum levels of HART staff.¹⁴ He said that, of all the ambulance service trusts, only one is able to achieve that minimum level routinely.¹⁵

- 20.20** Keith Prior’s view was that there are not sufficient numbers of HART personnel.¹⁶ He explained that NARU’s view is that there needs to be an increase in the membership of HART if a proper response to an incident such as the Attack is to be achieved.¹⁷ Also, he considered that there is currently a lack of understanding on the part of ambulance commanders about what HART can provide in the response to a terrorist attack.¹⁸ NARU has been taking steps to address this lack of understanding, but Keith Prior explained that more remains to be done.¹⁹ I accept the evidence of Keith Prior that these are real issues that need to be addressed.
- 20.21** The Ambulance Service Experts identified an increasing tendency in recent years for HART resources to be deployed for less serious calls. They describe this as a problem²⁰ and observe that the deployment of HART to a Major Incident should be mandatory.²¹ I agree that, in the event of any Major Incident, it is highly undesirable that HART should be delayed in attendance by being engaged in another incident that does not require specialist resources.
- 20.22** I recognise that steps are being taken to increase certain other specialist resources of the ambulance service. However, HART operatives have particular skills and capabilities that would be invaluable in the event of a terrorist attack.
- 20.23** The review of resources I identified at paragraphs 20.11 to 20.15 should encompass an assessment of whether each ambulance service trust has an adequate number of trained specialist personnel to respond effectively to a mass casualty incident.²² On the evidence I heard, the numbers are currently not sufficient.
- 20.24** DHSC and NARU should also develop procedures to ensure that, so far as possible, each ambulance service trust is able to deploy or call upon HART resources immediately in the event of a Major Incident.

¹³ [190/1/19-3/17](#)

¹⁴ [190/11/25-13/1](#)

¹⁵ [190/11/25-12/21](#)

¹⁶ [190/12/22-13/1](#)

¹⁷ [190/13/2-7](#)

¹⁸ [190/14/24-16/8](#)

¹⁹ [190/17/8-18/8](#)

²⁰ [INQ042167/9](#) at paragraph 33

²¹ [INQ042167/9](#) at paragraph 35

²² [INQ042167/5-6](#) at paragraph 28, [188/44/13-46/16](#)

- 20.25 As part of that, DHSC and NARU should develop procedures to ensure that, so far as possible, each ambulance service trust can call upon cross-border support in respect of HART resources immediately in the event of a Major Incident.
- 20.26 NARU has developed new national standards and training courses for ambulance commanders.²³ Their purpose is to improve standards and standardise command competence. I welcome that.
- 20.27 I recommend that DHSC and NARU ensure that all ambulance commanders receive regular Major Incident training. The training should include training on HART capabilities, on all the command roles and where they will be located, on how to gain situational awareness through the deployment of sector commanders and other roles, and on the importance of getting ambulance personnel to casualties without delay.

Joint Operating Principles

- 20.28 At the time of the Attack, the third edition of the *Responding to a Marauding Terrorist Firearms Attack and Terrorist Siege: Joint Operating Principles for the Emergency Services* (JOPs 3) was in force.²⁴ In Parts 11 and 12 in Volume 2-1, I addressed the detail of that edition of JOPs and its position in a hierarchy that involves the *Joint Doctrine: The Interoperability Framework* (the Joint Doctrine)²⁵ above it, and, below it, at a national level, the Counter Terrorism Policing Headquarters (CTPHQ) Operation Plato guidance,²⁶ and, at the local level, Greater Manchester Police's (GMP's) Operation Plato plans.²⁷ JOPs 3 dealt with the response to a Marauding Terrorist Firearms Attack. This addressed zoning and the fact that, as of 2017, specialist resources such as HART were able to enter the Operation Plato warm zone, but not the Operation Plato hot zone.²⁸ For that reason, zoning is of importance to the Care Gap. Casualties will almost inevitably be present in the Operation Plato hot zone. The quicker this zone is shrunk and then reclassified to warm or cold, the quicker the casualties within it will be treated. Similar and connected considerations apply to the Operation Plato warm zone. Casualties are also likely to be in that location. Shrinking and then reducing the warm zone to cold will enable a broader range of emergency responders to enter and therefore speed up the treatment of casualties there as well.
- 20.29 Since the Attack, changes have been made to JOPs. The fourth edition was issued in November 2017. Then, in 2019, there was a shift away from the concept of a Marauding Terrorist Firearms Attack to the broader concept of a Marauding Terrorist Attack. That led the edition numbering to restart.

²³ [190/14/24-18/9](#)

²⁴ [INQ008372/1](#)

²⁵ [INQ004542](#)

²⁶ [INQ013767](#) (2012 guidance), [INQ016688](#) (refreshed guidance)

²⁷ [INQ040146](#) (SOP 47 v.4), [INQ039970](#) (SOP 47 v.5), [INQ029178](#) (Whittle Plan)

²⁸ [INQ008372/13](#)

In March 2019, the first edition of the Marauding Terrorist Attack Joint Operating Principles was issued. In December 2020, a second edition was issued.²⁹ That is the edition currently in force (the current JOPs).

- 20.30** Chief Inspector (CI) Richard Thomas was the Head of Specialist and Counter Terrorism Armed Policing Capabilities at CTPHQ in 2017. He remained in that post as a civilian when he gave evidence in January 2022.³⁰ His evidence gave rise to issues of operational sensitivity so it was necessary for some of it to be heard in a restricted session. However, CI Thomas confirmed in open evidence that the current JOPs and the current CTPHQ Operation Plato guidance simplify the description of each zone. They provide greater clarity in relation to the deployment of both non-specialist and specialist resources into zones.³¹ The evidence overall indicates that the current JOPs provides not just greater clarity but also greater flexibility to commanders in relation to the forward deployment of both non-specialist and specialist resources.³²
- 20.31** This greater clarity and flexibility is desirable. However, the evidence revealed that some senior emergency service commanders continue to lack confidence that the approach contained in the current edition of JOPs will necessarily work to produce a better outcome. Mark Hardingham is Chair of the National Fire Chiefs Council, which provides advice to government about matters that have a bearing on fire and rescue services and which seeks to provide the professional voice for those services.³³ He explained that the National Fire Chiefs Council considers that JOPs ought to include specific reference to the Care Gap and the steps commanders need to take to minimise the gap.³⁴
- 20.32** NARU also considers that JOPs would benefit from improvement.³⁵ The substantive changes NARU considers should be made are as follows.³⁶
- 20.33** First, greater emphasis should be placed in JOPs on the rapid deployment forward of all emergency services to save lives. Rather than waiting for the ideal conditions to deploy forward, the presumption should be to deploy forward. In particular, the need to deploy specialist paramedics and doctors into hazardous areas, where that is necessary to assist casualties, must be prioritised.
- 20.34** Second, the emergency services need to work together to align their perception and understanding of risk. Overall, there needs to be a greater tolerance of risk across the emergency services.

²⁹ [141/102/12-22](#)

³⁰ [60/1/12-2/14](#)

³¹ [141/104/10-23](#)

³² [189/56/18-57/6](#), [189/141/9-142/8](#), [190/7/3-10](#)

³³ [189/133/23-134/21](#)

³⁴ [189/142/13-145/13](#)

³⁵ [190/7/11-8/6](#)

³⁶ [INQ042707/1-2](#)

- 20.35 Third, in the aftermath of a terrorist attack, the possibility of a secondary device will often, if not always, exist. The presumption should be on deployment unless there is a proper basis for believing that a real risk of a secondary device exists. JOPs should make clear that this is the position. A hypothetical chance should never prevent deployment.
- 20.36 NARU's points, all of which have force, highlight an issue that featured throughout the emergency response evidence. That issue is: how is a situation in which commanders from different emergency services assess risk differently to be addressed? The Joint Doctrine and the current JOPs assume that commanders will agree both the risk and the forward deployments that are appropriate based on that risk. The evidence I heard reveals that this assumption may not be correct. The different emergency services may have different appetites for risk, and certainly individual commanders may do. The emergency response to the Attack demonstrates how this is capable of creating a problem and a delay in deploying responders forward.
- 20.37 To give just one example, shortly before 01:00 on 23rd May 2017, a Joint Emergency Services Interoperability Principles (JESIP) huddle took place between CI Mark Dexter, the GMP Ground Assigned Tactical Firearms Commander; Stephen Hynes, the NWS Operational Commander; and Station Manager Andrew Berry, the Greater Manchester Fire and Rescue Service (GMFRS) National Interagency Liaison Officer. The GMFRS Chief Fire Officer, Peter O'Reilly, participated by telephone. The issue of zoning was the focus of the discussion. It is impossible to listen to the recording of that discussion without concluding that, even at that late stage, nearly two and a half hours post-detonation, there was no joint understanding of risk across the three emergency services.³⁷
- 20.38 In the course of the evidence, the question of whether this situation should be resolved by JOPs giving one of the commanders a trump card or casting vote was examined.³⁸ I am satisfied that there would be significant problems in doing so in a formal sense. However, I am also satisfied that there should be a working assumption that in certain situations particular commanders should take the lead and that their views should prevail, unless there is a compelling reason not to follow them.
- 20.39 For example, in an Operation Plato situation, the views of the police commander about which resources can and cannot be deployed into particular areas should be followed, unless there is a compelling reason not to do so. The current JOPs has sought to achieve greater clarity in relation to this situation. However, the evidence I heard indicates that if clarity has been achieved in the document itself, that clarity has not been communicated adequately to those who will actually have to respond to events such as the Attack.

³⁷ [INQ040657/67-71](#)

³⁸ [146/36/14-43/1](#)

- 20.40 Decisions about zoning and the forward deployment of specialist and non-specialist resources will be critical to the treatment of casualties in an Operation Plato situation. They will be capable of dictating whether lives are or are not saved. In the circumstances, the Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services (HMICFRS), the College of Policing, the Fire Service College, NARU and JESIP should review and, as necessary, update the Joint Doctrine and JOPs. The following matters should be considered in that review.
- 20.41 First, achieving a situation in which commanders understand that the critical decisions of the commander most directly concerned in the issue under consideration are followed, unless there is a good reason for not doing so.
- 20.42 Second, achieving a situation in which risk appetite, by which I mean the understanding, acceptance and management of risk, is common across the three emergency services.
- 20.43 Third, achieving a situation in which deployment forward of specialist resources is the presumption, to be displaced only in the presence of a properly evidenced basis for not deploying resources forward.
- 20.44 Fourth, achieving a situation in which the possibility of a secondary device does not delay forward deployment of resources unless there is a proper basis for believing that such a device exists.
- 20.45 Fifth, achieving a situation in which the three emergency services all use the same terminology to describe the Operation Plato hot, warm and cold zones and all have a common understanding of those terms. That need also arises in Major Incident situations in which Operation Plato is not declared. In the same way, a situation must be achieved in which the three emergency services work jointly, using common terminology and sharing an understanding of those terms.
- 20.46 I recommend that the Home Office, HMICFRS, the College of Policing, the Fire Service College, NARU, individual police services and JESIP review what changes need to be made to the CTPHQ Operation Plato guidance and Major Incident Plans in order to achieve those aims. This calls for an urgent response.

High-fidelity training

- 20.47 The observations I have just made relate to the extent to which JESIP can help to reduce the Care Gap. In Part 21, I will make some further and more general recommendations in relation to JESIP, the Joint Doctrine and JOPs. However, changing policy and guidance is not, of itself, enough. The changes need to become embedded in those who may actually be called upon to respond in the event of an Operation Plato situation. That requires training and multi-agency exercising.

- 20.48 In her evidence, Lieutenant Colonel Dr Claire Park, a consultant in pre-hospital care and critical care and anaesthesia who has worked closely with the firearms teams of the Metropolitan Police Service,³⁹ described her involvement in the design and delivery of Major Incident training. She explained that this involves the use of simulated casualties, designed to test whether those with particular injury patterns get the required treatment when they need it. It explores whether deaths could have been prevented.⁴⁰ It also helps to prepare those who will be required to respond to a mass casualty incident for the significant assault on their senses that the incident will involve.⁴¹
- 20.49 Lieutenant Colonel Park described this as “*high-fidelity*” training.⁴² I consider such training to be vital. The Home Office, CTPHQ and the College of Policing should consider introducing the use of regular high-fidelity training to give emergency responders better experience of the stress, pressure and pace of a no-notice attack.
- 20.50 Training is not enough. Areas for improvement need to be identified and change implemented. The local resilience forums have an important role to play in this, as do each of the individual emergency services and the control rooms. Training is not an end in itself. One of the important purposes of training is to drive change, and that needs to be understood across the emergency services.

Embedding medics with police firearms officers

- 20.51 I heard evidence about the approach taken by nine other countries to the Care Gap. Each of those countries faces a substantial terrorist threat. I am grateful for the level of co-operation I received. It was necessary for me to hear most of this evidence in a restricted session because to have heard it in an open session may have assisted terrorists to mount further or more deadly attacks in the countries concerned. I have taken that evidence into account in the conclusions I have reached. I set that evidence out in my Report to the extent that it is responsible to do so.
- 20.52 On the face of it, an effective way of narrowing the Care Gap would be to embed doctors with the police firearms officers who can enter an Operation Plato hot zone. That would involve the doctors deploying into an area where the most seriously injured casualties were likely to be. This would get around all of the delays and difficulties created by the designation of zones. Such doctors would need to be highly skilled and trained so as to enable them to carry out triage, emergency treatment and evacuation in circumstances of extreme danger and stress.

³⁹ [178/67/7-69/20](#)

⁴⁰ [191/85/21-86/20](#), [192/61/17-64/16](#)

⁴¹ [191/86/25-87/15](#)

⁴² [191/85/21-88/13](#)

- 20.53 This is what happens in France, where doctors are embedded with police firearms teams with the job of entering the highest-risk areas, akin to our Operation Plato hot zones. I am able to say this without breaching operational sensitivity because the work of the counter-terrorism unit of the French National Police is public knowledge. That team is known as RAID. This stands for Recherche, Assistance, Intervention, Dissuasion, which translates into English as Search, Assistance, Intervention, Deterrence.⁴³
- 20.54 France has experienced much violent Islamist extremist terrorism. In the course of the evidence relating to security for the Arena, I heard about the events of the night of 13th November 2015, when ten ISIS terrorists launched co-ordinated attacks in Paris. Three men went to the Stade de France, where France and Germany were playing football. Each man was wearing an explosive device.
- 20.55 Each of the attackers detonated their device and died. A passer-by was killed and others injured. Within minutes, further terrorists armed with automatic weapons launched an attack at sites in the city centre, murdering nearly 40 people. Shortly afterwards, a further group of terrorists arrived at the Bataclan theatre, armed with military-grade firearms and wearing explosives vests. They shot dead three people outside and then entered the theatre, opening fire on the crowd.
- 20.56 It was during this phase of the Paris attacks that RAID was engaged. Members of the RAID team entered the Bataclan along with commandos of a second police team, the Brigade de Recherche et d'Intervention. This translates into English as the Brigade for Research and Intervention. They did so in order to neutralise the threat, just as police firearms officers would do in a comparable situation in the UK. The difference in France is that embedded within each RAID team is a highly trained physician.
- 20.57 In 2015, Dr Matthieu Langlois was the Chief Physician of RAID. On 13th November, he formed part of the RAID team that entered the Bataclan. He entered the theatre along with his RAID colleagues and a fellow medic from the Brigade de Recherche et d'Intervention, Dr Denis Safran. As other members of the teams sought out and engaged the terrorists, the two doctors performed triage in the combat zone.⁴⁴
- 20.58 They carried out what is described in an article in the journal *Critical Care* as "salvage therapies".⁴⁵ Tourniquets were applied to 15 patients and a further 15 underwent wound compression with haemostatic dressings; two patients received subcutaneous morphine and two received tranexamic acid (TXA); two thoracic exsufflations were performed. All this occurred in the combat zone.⁴⁶

⁴³ [191/4/21-5/4](#)

⁴⁴ [191/34/22-37/7](#)

⁴⁵ [INQ042566/1](#)

⁴⁶ [191/37/12-38/19](#)

- 20.59 Having completed the salvage therapies, the doctors set about managing the evacuation of the injured to hospital, stopping in an area in the entrance to the theatre where additional treatments could be undertaken if absolutely necessary to prevent death before arrival at hospital. All of the casualties were evacuated even before the threat had been neutralised.⁴⁷ What was achieved was remarkable.
- 20.60 I heard evidence from Dr Langlois. I am grateful to him for being prepared to assist me. He qualified as an intensive care anaesthetist in 2000 and thereafter worked in the accident and emergency department of a major hospital in Paris. In 2008, he joined RAID, initially alongside his existing responsibilities as a hospital consultant. In 2012, he became the Chief Physician of RAID. In that post, he was responsible for the selection and training of RAID's members and for its operational management. He developed the tactical response plan of RAID and led the tactical emergency care during all counter-terrorism interventions in France between 2012 and 2021, of which, sadly, there were many.⁴⁸ He was able to speak from a position of considerable authority.
- 20.61 Dr Langlois explained that RAID doctors are carefully selected to ensure that they have the physical and psychological qualities necessary to enable them to act effectively in situations of extreme stress.⁴⁹ Following selection, the doctors are highly trained and thereafter undergo regular further training and take part in exercising.⁵⁰
- 20.62 In the event of a terrorist attack such as that which occurred at the Bataclan, the RAID doctors deploy into the area that broadly equates with an Operation Plato hot zone, along with and at the same time as those whose role it is to neutralise the threat. The doctor will triage the casualties and carry out any life-saving interventions that are needed. The casualties will then be extracted to a 'forward casualty nest' at the edge of the hot zone, where the risk is acceptable and the casualties can be reassessed. Further treatment can be provided here if necessary to save life before the casualty is extracted to the 'casualty collection point' in the green, safe zone and then on to hospital.⁵¹ The casualty will stop at these points prior to hospital only if absolutely necessary to ensure that they are able to survive the extraction.⁵²
- 20.63 The French describe this as the casualty flow. It is designed to get the casualty from the hot zone to treatment at hospital as quickly as possible.⁵³ I will consider at paragraphs 20.88 to 20.96 what lessons can be learned from the approach in France, which is not unique, to the issue of evacuation to hospital.

⁴⁷ [191/31/2-6](#)

⁴⁸ [INQ042478/1](#)

⁴⁹ [191/6/9-20](#)

⁵⁰ [191/7/17-8/3](#)

⁵¹ [191/13/4-21/2](#)

⁵² [191/20/24-25/2](#)

⁵³ [191/19/7-20/23](#)

- 20.64 At an early stage, it seemed to me that an obvious way of narrowing the Care Gap was for the UK to adopt a RAID-style model. However, the evidence has persuaded me that the situation is by no means as straightforward as I had thought and hoped. There are a number of cogent reasons why such a model may not transfer across to the UK. It is not possible for me to explain all of those reasons in an open report, but I can say the following.
- 20.65 In the UK, Armed Response Vehicles provide the primary response to no-notice incidents such as a terrorist attack. Firearms officers have neutralised the threat during most recent terrorist attacks in the UK. There has been substantial investment in the development of a significant Armed Response Vehicle network. It is not practicable to embed a doctor within each Armed Response Vehicle team. That is a summary of evidence given by CI Thomas in a restricted evidence session on 17th January 2022.⁵⁴ There was widespread agreement with his view from other witnesses. Lieutenant Colonel Park has, as I have explained, substantial experience working with the Metropolitan Police Service firearms teams. John Lawrie is a research analyst with expertise in counter-terrorism; he conducted the analysis into the approach taken by different countries to the Care Gap. Both agreed with CI Thomas.⁵⁵
- 20.66 Counter Terrorist Specialist Firearms Officers (CTSFOs) provide a specialist firearms capability in counter-terrorism and organised crime operations. They will deploy in support of Armed Response Vehicles at incidents if the initial Tactical Firearms Commander decides that their specialist skills and/or equipment would be of value. Because Armed Response Vehicle officers provide the primary response to no-notice incidents, including Marauding Terrorist Attacks, it is unlikely that a CTSFO team with an embedded clinician would form part of the initial response during the critical stages of the golden hour, the first hour of the emergency response.⁵⁶ Indeed, it is almost inevitable that the CTSFO teams would arrive after HART operatives. Although on the night of 22nd May 2017, the CTSFOs did in fact arrive at the Arena before HART, Lieutenant Colonel Park agreed that this is contrary to what could reasonably be expected to occur in general. Normally, they would arrive later.⁵⁷
- 20.67 CTPHQ maintained that embedding doctors with CTSFOs would therefore bring no material benefit to the response to a terrorist attack and that clinical care is best provided under the control of the NHS and ambulance services.⁵⁸ CTSFOs, CTPHQ asserted, would be of no assistance in the early stages of an incident because they would be unlikely to be there. By the time a CTSFO doctor arrived, work should already be under way by HART operatives.

⁵⁴ [191/27/8-30/16](#) [restricted]

⁵⁵ [192/29/2-7](#), [188/69/9-70/7](#) [restricted], [188/73/14-19](#) [restricted]

⁵⁶ [191/30/8-16](#) [restricted], [INQ042637/5](#)

⁵⁷ [192/27/7-14](#), [192/29/21-30/4](#), [192/30/23-31/10](#)

⁵⁸ [191/31/23-32/22](#) [restricted]

- 20.68** CTPHQ's position was that if a greater level of skill and training is required of HART, that is a matter for DHSC, the NHS and ambulance services. The level of HART skill highlights an important issue, to which I will turn in paragraphs 20.86 and 20.87.
- 20.69** A number of further practical issues with embedding doctors within police firearms teams were expressed by other witnesses. Philip Cowburn of NARU, for example, explained that he does not consider there to be, currently, a sufficient number of doctors with expert skills in pre-hospital emergency medicine within the UK to provide a cadre of embedded doctors. He points out that pre-hospital emergency medicine is a relatively new sub-speciality in the UK, compared with France.⁵⁹ It is his view that it is vital to find a way of getting experts in pre-hospital emergency medicine forward quickly, but he considers that a RAID-style model is not the way of achieving this.⁶⁰
- 20.70** The best place for someone with severe injuries to be treated is in hospital. The quicker they get there, the better. Sometimes, it will be necessary for that person to receive treatment at the scene to enable them to survive to hospital. First responder interventions, namely haemorrhage control and airway opening,⁶¹ may suffice and most people can be trained to do those.⁶² I will turn to that issue in further detail at paragraphs 20.149 to 20.159. However, more sophisticated treatments may be required, such as bridging interventions like chest decompressions or gaining intravenous access to provide analgesia, and these must be done by a healthcare professional.⁶³
- 20.71** Sometimes, the patient will not survive to hospital unless given enhanced care interventions at the scene.⁶⁴ Such interventions typically involve addressing internal bleeding. They include the use of advanced techniques such as chest decompressions and thoracotomy. These can be carried out only by those with a high level of skill and training, normally consultants in pre-hospital emergency medicine.⁶⁵
- 20.72** Accordingly, it is clear that, if all of those capable of surviving a mass casualty incident are to be given the greatest chance of doing so, clinicians able to provide all three levels of intervention must reach them urgently. On the evidence I heard, the adoption of a RAID-style model is not necessarily the solution. However, I am not satisfied that we have reached the stage in the UK at which such an approach should be discounted altogether.

⁵⁹ [192/232/2-19](#)

⁶⁰ [192/232/2-233/14](#)

⁶¹ [191/99/11-101/5](#)

⁶² [192/1/20-24](#)

⁶³ [192/2/18-3/18](#)

⁶⁴ [192/22/13-23/21](#)

⁶⁵ [192/24/2-9](#)

- 20.73 Lieutenant Colonel Park considered that a RAID-style model was worthy of further examination⁶⁶ and John Lawrie agreed.⁶⁷ It was clear to me that CI Thomas was dubious but accepted that further consideration might be of value.⁶⁸
- 20.74 Given the very considerable benefits that RAID brought to the response to the Bataclan attack and to other terrorist attacks in France, I consider that this model, or parts of it, should not be rejected until more work has been done. For example, while I accept that it will not be feasible to embed doctors in all Armed Response Vehicle teams, and while it is unlikely to be appropriate to embed doctors in all CTSFO teams, there may be value in doctors being embedded in one or the other type of team in some locations or on some occasions. As is perfectly obvious, some locations and/or occasions may represent more attractive targets for terrorists.
- 20.75 I recommend that CTPHQ review the evidence heard during the Inquiry, including that heard in restricted sessions, to consider the advantages and disadvantages of embedding doctors with some police firearms teams, and if so, how that could be achieved. CTPHQ should also review the experience of other jurisdictions that embed medics with police firearms officers, such as RAID in France, to understand how their systems operate and whether they ought to be replicated in the UK or some further learning taken from them.

Alternatives to embedding doctors with police firearms officers

- 20.76 I recognise that the result of that further consideration may be that a decision is made that doctors should not be embedded with police firearms teams. It is therefore necessary to consider other ways in which a consultant-led response to a terrorist attack can be achieved. Two proposals were explored in the evidence, which merit consideration.
- 20.77 First, around the country, a number of air ambulance organisations operate. Most within England are charities and the extent to which they have links to the NHS varies between the organisations. In Wales and Scotland, air ambulance services are entirely state-funded.⁶⁹ The air ambulance organisations form part of the UK's frontline emergency response service, providing life-saving treatment to those in urgent need of pre-hospital emergency medicine.
- 20.78 I understand that most of these organisations provide a consultant-led pre-hospital emergency medicine response rapidly, either by helicopter or, where more appropriate, by rapid-response car.⁷⁰ Most are therefore able to provide the three levels of intervention to which I have referred, namely

⁶⁶ [192/66/16-70/11](#)

⁶⁷ [188/74/9-75/10](#) [restricted], [188/83/6-8](#) [restricted]

⁶⁸ [191/35/2-5](#) [restricted]

⁶⁹ [190/121/22-122/12](#)

⁷⁰ [190/90/24-91/13](#), [190/105/20-24](#)

first responder interventions, bridging interventions and enhanced care interventions. These interventions are the ones that will save the greatest number of lives in a mass casualty situation.

- 20.79** Many witnesses considered that air ambulance organisations have a role to play in narrowing the Care Gap in a mass casualty situation resulting from a terrorist attack. Those witnesses included Dr Andrew Curran, Medical Director of the North West Air Ambulance Charity,⁷¹ Dr Thomas Hurst, Medical Director of London's Air Ambulance Charity,⁷² Dr Gareth Davies, who has been responsible for the medical governance of a number of air ambulance organisations, including London's Air Ambulance Charity,⁷³ and Lieutenant Colonel Park, who has considerable experience of a number of air ambulance operations.⁷⁴ They represented a body of opinion with considerable experience and authority on the point.
- 20.80** Dr Hurst was unequivocal: air ambulance organisations have a valuable role to play in a situation such as that which occurred on 22nd May 2017. That role includes, he considers, both providing life-saving interventions to casualties and providing leadership and advice to the ambulance personnel present at the scene.⁷⁵ Lieutenant Colonel Park further explained the value of air ambulances and those who staff them. She described how they *"add a very significant decision-making capability on scene, are less likely to be overwhelmed by the critically injured patient, and are used to dealing with multiple seriously injured patients simultaneously and making rapid decisions during evolving events"*.⁷⁶
- 20.81** I accept this evidence. I also accept that, for air ambulance operations to make the contribution that they plainly are capable of making in the aftermath of a terrorist attack, and, indeed, to any mass casualty incident, some things need to change.
- 20.82** Dr Curran explained that air ambulance provision is not available 24 hours each day in every part of the UK.⁷⁷ He considers that this is inequitable and that there should be 24-hour pre-hospital emergency medicine provision in all parts of the country.⁷⁸ Dr Hurst agreed.⁷⁹
- 20.83** Witnesses generally made clear that air ambulance personnel, with some exceptions, are not usually trained in entering or equipped to enter the zones of greatest danger in the event of an Operation Plato incident.⁸⁰ If they are to

⁷¹ [INQ042646](#)

⁷² [INQ042684](#), [190/89/8-17](#)

⁷³ [INQ042597](#), [192/123/15-124/7](#), [192/140/2-141/3](#)

⁷⁴ [INQ042598](#), [192/32/24-37/6](#)

⁷⁵ [190/96/4-97/6](#)

⁷⁶ [INQ042598/13](#) at paragraph 75

⁷⁷ [INQ042646/3](#) at paragraph 10

⁷⁸ [INQ042646/3](#) at paragraph 14

⁷⁹ [190/95/4-96/8](#)

⁸⁰ [192/86/13-87/9](#), [INQ042684/2](#) at paragraph 7

perform this role, they will require training and equipment. They would have to be trained with the other emergency services that will deploy in response to a terrorist incident.

- 20.84** I was impressed by the dedication and resourcefulness of those who staff the air ambulances in this country. Most in England are charitable organisations, but they all have a potentially important role to play in the response to a terrorist attack. They are capable of providing the kind of rapid consultant-led response that will be needed. Lieutenant Colonel Park explained that London's Air Ambulance had deployed in the emergency response to the terrorist attack at Fishmongers' Hall on 29th November 2019 and had been able to make a significant contribution.⁸¹ That evidence supported me in my view about the potential value of this resource.
- 20.85** I recommend that DHSC, NHS, NARU, ambulance service trusts, Air Ambulances UK, CTPHQ and JESIP consider how air ambulance organisations might be integrated into the emergency response to a terrorist attack. I further recommend that those organisations consider what training and resources would be required to integrate air ambulance organisations into the emergency response to a terrorist attack. I regard these as potentially important improvements in the emergency response to a terrorist attack and work needs to be done to achieve them urgently.
- 20.86** Second, it was explained to me that it is possible to train some HART operatives up to the level of providing bridging interventions.⁸² However, it is unlikely that they could be trained to provide complex interventions such as the use of a thoracotomy.⁸³ Such training would not provide a complete solution to the problem. Despite that fact, this is an issue worth considering.
- 20.87** DHSC and NARU should consider further training of HART personnel so that at least one member on every HART deployment has the ability to deliver most enhanced care interventions.

Evacuation to hospital

- 20.88** In dealing with the approach of RAID in France, I explained that the focus is on the quickest evacuation from the scene to hospital at the expense of treatment, unless that treatment is necessary to enable the casualty to reach hospital alive.
- 20.89** The current system within the UK ambulance services is based heavily on the idea that triage will take place a number of times and in different places. At its most basic, our current model involves primary triage. This is also known as

⁸¹ [192/33/15-34/4](#), [192/44/21-45/7](#)

⁸² [192/228/16-231/20](#)

⁸³ [192/229/18-231/21](#)

'triage sieve'. Primary triage will take place where the casualty is located or at the Casualty Collection Point. It will be followed by secondary triage, or 'triage sort', at some safer location, usually the Casualty Clearing Station.⁸⁴

- 20.90** Primary triage involves the casualty being given a designation from P1, the most seriously injured, to P3, walking wounded. Treatment should be given only if vital to save life: for example, the application of a tourniquet to stem catastrophic bleeding or the opening of an airway.⁸⁵ Those who have died should also be identified during this process.⁸⁶ Secondary triage involves the reassessment of the casualty using a more sophisticated method of observation and the application of a wider range of treatments.⁸⁷ All of this occurs before the casualty is even in an ambulance. The events of the Attack demonstrate that this process may cause significant delays in casualties arriving at hospital.
- 20.91** Some countries take a different approach and have a much stronger emphasis on the rapid evacuation of casualties to hospital. France falls into that category.⁸⁸ At least one other country has an even stronger focus on evacuation: prioritising the extraction of casualties without delay and with no deference to zoning.⁸⁹
- 20.92** This is a complicated issue. The evidence I heard does not provide a complete answer. The emphasis in the UK is on ensuring that there are no hold-ups when a casualty arrives at hospital. There was a detailed system in Manchester to ensure that casualties arrived at the most suitable hospital for their treatment and that the hospitals had time to prepare for their arrival. In almost every case, this system as designed worked well on the night of the Attack.
- 20.93** Arrival at the most suitable hospital is, however, different from arriving at that hospital at an appropriate time. On 22nd May 2017, there were lengthy delays in some casualties arriving at hospital. It may be that other countries deal with the evacuation of casualties to hospital more effectively than the UK does, with their emphasis being on getting casualties to hospital, using whatever vehicles are available, as soon as possible rather than waiting until hospitals are ready.
- 20.94** One practice that I was told about concerned me. It was explained to me that more ambulances than there were casualties requiring transportation to hospital were needed at a scene before transportation could take place. This is because when the first ambulances arrive at the scene of a Major Incident, all of the paramedics are required to leave their ambulances and go to assist with treating casualties in the Casualty Clearing Station. That leaves no one to drive or look after patients on the journey to hospital: the ambulances remain empty and parked. It is necessary to wait for further ambulances containing paramedics

⁸⁴ [144/134/18-137/25](#)

⁸⁵ [144/136/22-137/4](#), [68/99/16-100/8](#)

⁸⁶ [110/38/1-12](#)

⁸⁷ [144/137/5-7](#)

⁸⁸ [191/18/4-20/3](#)

⁸⁹ [188/58/8-60/13](#) [restricted]

who are not required to assist in the Casualty Clearing Station to arrive before any patient can be moved to hospital. If none of the ambulances is double-crewed, it will take more ambulances to arrive before transportation begins.

- 20.95 This does not seem to me to be a satisfactory system, as it builds in additional delay. This delay is made even more severe when ambulance services around the country are already running at, or beyond, their full capacity and it may take a very long time for sufficient additional ambulances to arrive. In evidence I explored whether it were possible for other people, such as police officers, to drive ambulances to reduce the number of paramedics required. I was told that this was not possible, but it seems to me that there must be a workable solution to this problem.
- 20.96 In the circumstances, I recommend that DHSC, the Faculty of Pre-Hospital Care, the College of Paramedics and NARU review the current model operated in the UK by reference to the different approaches around the world in order to see whether triage at different times and in different places remains best practice, or whether there should be a greater emphasis on rapid evacuation to hospital.

Early scene triage tool

- 20.97 Philip Cowburn has expertise and experience in a number of areas of relevance to the Care Gap. He is a long-serving consultant in emergency medicine at a busy inner-city emergency department and trauma Team Leader at a major regional trauma centre. He was involved in setting up and developing the Great Western Air Ambulance Charity and has been Acute Care Medical Director of a regional ambulance service for over ten years. He was actively involved in the development, education and governance of HART and now oversees the medical component of those teams from a national perspective. He has worked as medical adviser and clinical governance lead to specialist police teams within the South West for 15 years. He has been Medical Advisor to NARU since 2021.⁹⁰
- 20.98 At paragraph 20.90, I explained the existing approach to triage. Philip Cowburn told me in evidence that many clinicians in his area of practice had developed a concern that these existing triage tools were “*slow and cumbersome*”.⁹¹ What was required, they considered, particularly in a mass casualty situation, was something that was very rapidly deployable.⁹²
- 20.99 NHS England oversees the budgeting, planning, delivery and day-to-day operation of the commissioning side of the NHS in England. Part of NHS England’s role involves ensuring that the NHS is properly prepared for dealing with an emergency. NHS England developed the Emergency Preparedness,

⁹⁰ [192/214/17-219/5](#)

⁹¹ [192/219/13-25](#)

⁹² [192/219/25-220/2](#)

Resilience and Response Framework to provide a structure within which all NHS-funded organisations could meet the requirements of the Civil Contingencies Act 2004, among other requirements.⁹³

- 20.100** As part of that work, NHS England established a group to consider whether a fresh approach to triage was needed. That was a sensible step. Philip Cowburn was appointed to lead this group. Lieutenant Colonel Park is a member of the group and also gave evidence to me about its work.⁹⁴ The group has benefited from contributions from experienced military and civilian clinicians in pre-hospital and Major Incident management and from academic experts in the field.⁹⁵
- 20.101** When Philip Cowburn gave evidence to the Inquiry, he explained that an early scene triage tool had emerged from the work of his group. This was described by him as a simple concept, designed to enable the identification, at speed and by people under stress, of those casualties whose lives are truly at risk. Its purpose is to improve upon and replace primary triage.⁹⁶
- 20.102** Lieutenant Colonel Park explained in evidence that this tool is based on six main principles: it is simple to use; it prioritises the use of first responder interventions, namely haemorrhage control and airway opening; it removes the requirement to take physiological measurements; it prioritises those with penetrating torso trauma for early evacuation; it does not allow any person other than a healthcare professional to label a casualty as dead; and it involves a straightforward system for the tagging of casualties involving the use of coloured cards to provide visible identification of the priority of patients.⁹⁷
- 20.103** The evidence I heard about what happened in the City Room left me in no doubt that effective triage is vital in a mass casualty situation. It will narrow the Care Gap. That is for the obvious reason that in such circumstances there will be patients who will die unless treated promptly, and others, although in need of treatment, whose survival is not at immediate risk. The early identification of the time-critical casualties will enable effective prioritisation. It will make sure that those who need treatment urgently receive it.
- 20.104** On hearing the evidence, I regarded the development of the early scene triage tool as significant. That was particularly so because it was explained to me that the intention is that this tool be used by all first responders, not just paramedics.⁹⁸

⁹³ [13/2/20-4/3](#)

⁹⁴ [192/47/5-54/20](#)

⁹⁵ [INQ042789/6-7](#)

⁹⁶ [192/219/19-221/20](#)

⁹⁷ [192/52/15-53/21](#)

⁹⁸ [192/54/4-55/7](#), [192/220/22-221/20](#)

- 20.105** At the time when he gave evidence, Philip Cowburn's expectation was that major progress would be made in relation to the development of this tool during 2022. In fact, progress was expected both in relation to the early scene triage tool and in relation to the issue of triage more generally.⁹⁹
- 20.106** As a result, in July 2022, I sought an update from Philip Cowburn.
- 20.107** Philip Cowburn provided me with a comprehensive report in writing on 3rd August 2022. This sets out a proposal for major change in the approach to triage at the scene of a Major Incident.¹⁰⁰
- 20.108** A concept called the Major Incident Triage Tool has been devised. This tool, which will be known as MITT, was field-tested in August 2021. The testing used both quantitative gauges and qualitative gauges. The former involved identifying how long triage had taken. The latter involved asking what those who had used the new tool in the field test thought of it. MITT proved to be superior to the existing system for triage on both gauges. It is proposed that MITT entirely replace the existing approach of primary and secondary triage. That proposal has the support of NHS England.¹⁰¹
- 20.109** While Philip Cowburn's group regarded MITT as a significant improvement on the existing procedures, the group identified an additional need. In the event of a mass casualty situation, there was a risk of responders being overwhelmed by the sheer number of casualties that they needed to triage. What was needed, the group concluded, was an additional tool that was capable of being applied rapidly and by a broader range of responders in a mass casualty situation.¹⁰² This is the early scene triage tool that Philip Cowburn explained was under development at the time when he gave evidence.
- 20.110** Work has progressed since then. What the group has now devised is both quick and easy to use. It is designed to provide an element of control and structure to the inevitable confusion that will ensue in the early stages of a Major Incident. Importantly, it can be used by any responder with the ability to provide first responder interventions, not just the staff of an ambulance service.¹⁰³
- 20.111** Based on the material currently available, it appears to me that Philip Cowburn's group has identified a triage tool that allows the rapid assessment of multiple casualties, while prioritising life-saving interventions. Those interventions are ones that must be delivered quickly to maximise the survival of critically injured patients. The working title of this new tool is 'Ten Second Triage'. If that name endures, it will be known as TST.¹⁰⁴

⁹⁹ [192/222/20-224/8](#)

¹⁰⁰ [INQ042789](#)

¹⁰¹ [INQ042789/5-6](#)

¹⁰² [INQ042789/6](#)

¹⁰³ [INQ042789/7](#)

¹⁰⁴ [INQ042789/9](#)

- 20.112** If all first responders present in the City Room on the night of the Attack had been trained in TST, it would have made a difference. Triage would have been much more efficient.
- 20.113** The early indications are that TST has the support of the representative bodies of the ambulance service, police, fire and rescue service, and military. By the time Volume 2 of my Report is published, a field test based around a terrorist attack will have been undertaken in relation to TST. As part of that field test, the relationship between MITT and TST will be assessed. I cannot prejudge the outcome of that field test, but it is important that, once the field test has concluded, NARU and the representative bodies of the other emergency services should analyse what has been learned as quickly as possible and implement change swiftly.¹⁰⁵
- 20.114** The work of Philip Cowburn's group has been guided by experts in the field. It has been undertaken to a standard of excellence. Philip Cowburn's report to me indicates that the emergency services have expressed a commitment to implementing MITT and TST.
- 20.115** I recommend that the representative bodies of the emergency services review the proposals of Philip Cowburn's group urgently and, in the event that they agree that they represent an improvement on the existing approach to triage, implement them as soon as possible. The bodies to whom I direct this recommendation are: the College of Policing, the College of Paramedics, the Fire Service College, the National Police Chiefs' Council, the National Ambulance Resilience Unit and the National Fire Chiefs Council and also, given its oversight role, the Home Office.

¹⁰⁵ [INQ042789/9](#)

Other matters relating to treatment

Introduction

- 20.116 As I have explained, a number of issues were raised during the evidence that do not strictly fit into either narrowing the gap or filling the gap. Instead, they relate to the treatment of those injured in a mass casualty incident.
- 20.117 Those issues are: analgesia; blood; freeze-dried plasma; and TXA. It is convenient to deal with them at this point in my Report before turning to the steps that need to be taken to fill the Care Gap: in other words, the steps that need to be taken to empower those who happen to become caught up in the aftermath of a terrorist attack.

Analgesia

- 20.118 Lea Vaughan was one of two HART operatives who entered the City Room during the critical period of the response.¹⁰⁶ Following the Attack, she prepared a PowerPoint presentation. The purpose of this was to provide training, although no such training was in fact provided.¹⁰⁷
- 20.119 In a section of the presentation headed "*Problems faced*",¹⁰⁸ she identified an issue that was subsequently explored at various stages in the evidence. Lea Vaughan confirmed that no analgesia was provided to those in the City Room. She considered that it would have been highly desirable to have been able to give analgesia to casualties, but she explained that, once given, it requires the casualty then to be monitored. This prevents the paramedic from moving on to another patient.¹⁰⁹ In other words, the provision of analgesia causes delay.
- 20.120 Christopher Hargreaves, the HART operative who entered the City Room with Lea Vaughan, echoed her views.¹¹⁰
- 20.121 Both HART operatives considered that steps need to be taken to identify a form of analgesia that can be given to casualties in a situation like the one that existed in the City Room. That analgesia must not delay the work of paramedics in dealing with others.
- 20.122 Lieutenant Colonel Park had a clear and well-informed view about this issue. She explained that, where a casualty is gravely injured, analgesia has a number of benefits. Relieving pain has its own humanitarian value, but it also assists in evacuating casualties who might otherwise not be able to be moved. There is a further way in which pain relief can assist. Splinting a limb and applying traction

¹⁰⁶ [INQ035612/258-259](#)

¹⁰⁷ [79/15/4-17/22](#)

¹⁰⁸ [INQ022850/12](#)

¹⁰⁹ [79/36/3-24](#)

¹¹⁰ [112/183/18-184/22](#)

can reduce bleeding. However, these can be very painful processes. Providing adequate pain relief enables these processes to happen when otherwise they might not be possible.¹¹¹

- 20.123** Lieutenant Colonel Park recognised the difficulty with administering intravenous analgesia as described by Lea Vaughan but explained that the British Army had found a solution. All soldiers now deploy with fentanyl lozenges, which are sometimes called fentanyl lollipops.¹¹² Fentanyl is a strong opioid painkiller, used to treat severe pain, even in children. Lieutenant Colonel Park described lozenges that simply dissolve in the patient's mouth. Studies in the US military and also within London's Air Ambulance have found fentanyl lozenges to be practical and safe and to provide effective pain relief even for those with extremely serious injuries.¹¹³
- 20.124** The British Army is able to provide fentanyl lozenges to its soldiers because of a dispensation within the regulatory framework. No such dispensation exists for ambulance services; not even HART operatives are able to deploy with fentanyl lozenges.¹¹⁴ It was clear to me that Lieutenant Colonel Park regarded that situation as anomalous, as did Philip Cowburn.
- 20.125** Philip Cowburn explained that the inability of those in civilian practice to use fentanyl lozenges was a "*massive hindrance*" in dealing with a mass casualty incident.¹¹⁵ In writing following his evidence, he expressed the view that fentanyl lozenges or sufentanil sublingual tablets are ideal for mass casualty situations. They are rapidly absorbed, they can be self-administered or easily given and they do not require supervision of the casualty.¹¹⁶
- 20.126** Philip Cowburn regards a situation in which the military can use such analgesia while paramedics and other pre-hospital care professionals cannot as incongruous and unacceptable. He considers that the current situation deprives those injured in a mass casualty incident of the safe and effective analgesia to which they are entitled.¹¹⁷ I found his views and those of Lieutenant Colonel Park persuasive.
- 20.127** Some of those awaiting evacuation from the City Room were conscious and in severe pain. If effective pain relief can be provided to such casualties without harming their chances of survival or the overall rescue effort, it should be. Both Lieutenant Colonel Park and Philip Cowburn consider that this can be achieved and each speaks from a position of authority and experience.

¹¹¹ [192/21/6-16](#)

¹¹² [192/15/4-17/2](#)

¹¹³ [192/17/3-20](#)

¹¹⁴ [192/17/21-18/20](#)

¹¹⁵ [192/231/9-13](#)

¹¹⁶ [INQ042711/6](#)

¹¹⁷ [INQ042711/6](#)

20.128 I recommend that DHSC, the Home Office and the Medicines and Healthcare products Regulatory Agency (MHRA) give urgent consideration to whether the regulatory regime should be altered to enable this to occur. If the decision is that it should, I recommend that NARU consider urgently whether the use of fentanyl lozenges should be rolled out to all HART and other specialist operatives as part of their basic equipment and quite possibly to paramedics more generally.

Blood

20.129 Obviously, where a casualty has suffered an injury that has caused a catastrophic or heavy bleed, the priority must be to stop the bleeding. The evidence made that very clear; it is, in any event, common sense. However, as the circumstances of the Attack make clear, effective action to stop a bleed may not occur. Also, not all catastrophic haemorrhages can be easily controlled.¹¹⁸ Instinctively, it would therefore seem sensible that ambulances should carry blood or blood products to replace lost volume and help maintain life until the casualty's arrival at hospital.

20.130 The evidence, however, demonstrated that, in practice, a situation in which all frontline ambulances carry blood or blood products cannot be achieved. That is so for a variety of reasons explained by a number of witnesses, all of whom agreed. Among those witnesses were Dr Timothy Smith, an Associate Medical Director of NWS and an Enhanced Pre-Hospital Care Consultant with the North West Air Ambulance Charity,¹¹⁹ Philip Cowburn of NARU¹²⁰ and Lieutenant Colonel Park.¹²¹

20.131 Two principal objections arise, one clinical and the other logistical.

20.132 First, the clinical objection. Pre-hospital blood transfusion is a recognised practice within the UK. However, the decision whether to administer blood is complex and is one that must usually be made by a senior doctor. Lieutenant Colonel Park told me that the decision whether or not to transfuse a patient is sometimes difficult, even for a senior clinician.¹²²

20.133 It is right that some specialist paramedics are able to deal with this procedure, having received advanced training. However, it is not feasible to train all paramedics in the administration of blood replacement. Philip Cowburn explained that frontline paramedics would be likely to encounter a situation in which a patient required pre-hospital blood less than once a year.¹²³

¹¹⁸ [192/234/1-16](#)

¹¹⁹ [INQ042524](#)

¹²⁰ [192/234/1-252/20](#)

¹²¹ [192/56/4-60/18](#)

¹²² [192/58/4-59/11](#)

¹²³ [192/238/1-239/17](#)

- 20.134** While I acknowledge that he was indicating a view that was not based on research, Philip Cowburn's considerable experience entitles him to express the opinion that training all such personnel would be disproportionate, particularly since there are other ways of dealing with the issue. I have already dealt in paragraphs 20.76 to 20.87 with one of the other potential ways of dealing with the issue, namely having a consultant-led clinical response to a terrorist incident. Below, in paragraphs 20.139 and 20.140, I will deal with another potential way of dealing with the issue, namely the use of freeze-dried plasma. Other witnesses agreed that it was not feasible to train all ambulance personnel or even all specialist staff in the administration of blood.¹²⁴ I accept their common view.
- 20.135** Second, the logistical objection. The challenges involved in the movement of blood in the pre-hospital environment are significant. It is not necessary for me to go into the detail of this, but, in simple terms, blood must be stored in particular circumstances and then heated prior to use. This requires bespoke equipment, which is expensive.¹²⁵ More importantly, it takes time to prepare.¹²⁶ Procedures are established for air ambulances to carry and transfuse blood¹²⁷ but there simply are not the resources available to scale this up so that all or most ambulances have the same capacity.¹²⁸
- 20.136** Significant issues arise in relation to the traceability of blood products and also, importantly, the scale of supply. Philip Cowburn explained that blood is a precious resource and that having blood in frontline ambulances would give rise to a significant risk of wastage that might result in lives being lost in a hospital environment.¹²⁹ Dr Hurst of London's Air Ambulance Charity agreed.¹³⁰
- 20.137** On the evidence, I accept that equipping all frontline ambulances, or even just all HART vehicles, with blood is not feasible.
- 20.138** Philip Cowburn's view was that the solution is not to equip all ambulances with blood or blood products, but instead to ensure that there exist mobile resources, such as air ambulances, that possess suitably qualified and equipped staff to transfuse blood into those patients who need it.¹³¹ This provides a yet further reason for ensuring that a consultant-led response occurs as soon as possible. I have already recommended that ways of achieving this must be considered.

¹²⁴ [INQ042524/12](#) at paragraph 30, [192/238/25-241/23](#), [192/60/12-18](#), [192/144/17-145/4](#)

¹²⁵ [192/242/21-243/25](#)

¹²⁶ [192/234/21-25](#)

¹²⁷ [192/246/24-247/16](#), [192/250/23-252/20](#), [190/106/8-20](#)

¹²⁸ [192/143/24-146/13](#)

¹²⁹ [192/244/1-16](#), [192/246/16-23](#)

¹³⁰ [190/106/21-107/6](#)

¹³¹ [192/246/16-247/16](#)

Freeze-dried plasma

- 20.139** While he does not consider that HART should carry blood or blood products, Philip Cowburn believes that consideration should be given to all HART operatives carrying freeze-dried plasma.¹³² Freeze-dried plasma is a solution to which water is added in order to reconstitute it. It is then warmed. While it does not carry oxygen, this plasma replaces volume and has an impact on clotting, although not to the same extent as whole blood.¹³³ Overall, it has the potential to benefit those who have experienced catastrophic blood loss in a mass casualty incident.
- 20.140** I recommend that DHSC, the Faculty of Pre-Hospital Care, the College of Paramedics and NARU consider whether all HART operatives should be deployed with freeze-dried plasma and trained on its use. This recommendation is dependent on the benefits of the use of plasma being confirmed by research. In considering this recommendation, regard should be had to the following article published online in *The Lancet Haematology* on 7th March 2022: 'Resuscitation with blood products in patients with trauma-related haemorrhagic shock receiving prehospital care (RePHILL): a multi-centre, open-label, randomised, controlled, phase 3 trial'.¹³⁴ This article addresses the benefits of the use of pre-hospital blood products generally.

Tranexamic acid

- 20.141** TXA is a medication that helps blood to clot. It is useful in a number of situations, including in treating blood loss caused by major trauma.¹³⁵ TXA was administered to some of those injured in the Attack.¹³⁶ It was also used in the response to the Bataclan attack.¹³⁷
- 20.142** Intravenous administration of TXA may be difficult in patients lacking sufficient volume of blood. It takes approximately ten minutes to administer, during which period the paramedic must remain with the patient. That will cause delay in the treatment of other patients in a mass casualty situation. Both problems could be solved by the use of intramuscular as opposed to intravenous TXA.¹³⁸
- 20.143** Philip Cowburn considered that a review should be carried out into whether frontline ambulances should carry intramuscular TXA.¹³⁹ I agree. I recommend that the review be undertaken by DHSC, the Faculty of Pre-Hospital Care, the College of Paramedics and NARU.

¹³² [192/249/4-250/22](#)

¹³³ [192/248/8-249/3](#)

¹³⁴ [INQ042724](#)

¹³⁵ [161/68/14-69/6](#)

¹³⁶ [138/120/19-25](#), [159/8/20-24](#)

¹³⁷ [191/38/10-15](#)

¹³⁸ [192/252/21-253/18](#), [192/259/4-260/4](#)

¹³⁹ [192/252/21-253/6](#)

Filling the gap

Introduction

- 20.144 It is inevitable that members of the public will be caught up in the aftermath of a terrorist attack. The government advice for those embroiled in such a situation is *“Run, Hide, Tell”*.¹⁴⁰ Run: run to a place of safety. Hide: it is better to hide than confront. Tell: tell the police by calling 999.
- 20.145 Nothing I say in this Part of my Report is intended to undermine that advice. However, experience from the UK and around the world demonstrates that some members of the public choose not to run and hide, but instead to remain at the scene and help. Others will run towards danger to provide their assistance. These people are sometimes known as zero responders or immediate responders.¹⁴¹
- 20.146 The Attack showed that people other than members of the public, such as event medical staff or unarmed police officers, will also run to the scene of a terrorist attack and that police firearms officers are likely to attend quickly.
- 20.147 The evidence reveals that it is vital that all of those who choose to be present in the aftermath of a terrorist attack in any of these ways are able to provide what I have referred to already as first responder interventions.
- 20.148 Lieutenant Colonel Park explained the concept of first responder interventions and their significance.¹⁴² An obstructed airway or a catastrophic bleed may kill within minutes, long before professional clinical care is likely to arrive.¹⁴³ These conditions may be capable of management by the application of simple techniques, which any member of the public can be taught. In my view, there needs to be widespread education about what those techniques are. That will save lives.

Educating the public

- 20.149 We need to ensure that as many members of the public as possible have the skills needed to provide first responder interventions so that if they wish to provide life-saving assistance they can. I am satisfied that much work is already being done to achieve this, but more can and should be done.
- 20.150 The charitable sector has done extraordinary work to bring the need for better public education to the forefront. I heard from Brigadier Timothy Hodgetts.¹⁴⁴ Since he gave evidence, Brigadier Hodgetts has been appointed

¹⁴⁰ [INQ042678](#) at paragraph 7

¹⁴¹ [188/38/17-23](#)

¹⁴² [191/99/11-101/5](#)

¹⁴³ [191/98/6-9](#)

¹⁴⁴ [68/1/24-114/12](#)

as the Surgeon-General of the UK Armed Forces, the most senior medical officer within the armed forces, and he now holds the rank of Major General. He is also Chair of Trustees of citizenAID, a position he has held since that charity's inception.¹⁴⁵

- 20.151** Brigadier Hodgetts explained that the aim of citizenAID is to provide the public with the knowledge to enable people both to keep safe in deliberate attack situations and to prioritise and treat the seriously injured. citizenAID is designed to empower the public to save lives in the critical minutes before the emergency services are able to attend: in other words, during the Care Gap.¹⁴⁶ Its work and that of other charities is invaluable. The website of citizenAID can be found at <https://www.citizenaid.org/>.
- 20.152** While I welcome the work of citizenAID and other charities in this regard, it is the state that has the primary responsibility for ensuring that members of the public have the knowledge necessary to save lives in a mass casualty incident.
- 20.153** I acknowledge that counter-terrorism policing has introduced its own initiative. The National Counter Terrorism Security Office has commenced work to encourage employers to train their employees to understand the basics of first aid.¹⁴⁷ That is to their credit, but much more needs to be done. I recommend the following.
- 20.154** First, the young must have the skills needed to provide life-saving interventions in a mass casualty situation. As of September 2020, all primary and secondary school pupils were required to be taught health education, including first aid, as part of the National Curriculum. This involves children aged over 12 being taught CPR.¹⁴⁸ I agree that this is necessary. The Department for Education should ensure that it continues.
- 20.155** I understand that children and young people are not currently taught to deal with catastrophic bleeds or airway impairment.¹⁴⁹ I consider it vital that training in such matters is provided to young people. This training should be received before they leave secondary school; the earlier it can responsibly be provided, the better. The Department for Education should consider extending the National Curriculum requirement on first aid to incorporate this.
- 20.156** I recommend that the Department for Education give consideration to including training in all first responder interventions in the National Curriculum.
- 20.157** Second, until children and young people have all been educated in first responder interventions, there will be a gap. Those who have already left school may lack the necessary skills. That situation needs to be addressed. The public at large cannot be forced to undertake training in first aid interventions. However,

¹⁴⁵ [68/2/2-7](#)

¹⁴⁶ [68/19/8-20/13](#)

¹⁴⁷ [189/83/22-89/6](#)

¹⁴⁸ [INQ042678/5](#) at paragraph 10

¹⁴⁹ [192/100/2-101/19](#)

something needs to be done to encourage greater awareness within the general population of what can be done to save lives in situations such as the Attack and indeed more generally.

20.158 I recommend that the Home Office consider a public education programme and the introduction of a requirement into law, perhaps through regulations issued under the Health and Safety at Work etc. Act 1974, that employers have a duty to train all employees, or certain categories of employees, in first responder interventions.

20.159 I emphasise that everything that can reasonably be done to educate the general population in first responder interventions should be done.

Control rooms

20.160 The operators within control rooms are able to provide guidance to members of the public who telephone seeking assistance. For example, North West Fire Control had guidance documents providing advice relating to certain risks.¹⁵⁰ These documents enabled operators to provide assistance to callers confronted by building fires, incidents involving collapsed or collapsing structures, wildfires, flooding and acid attacks. Operators were encouraged to deploy this guidance by way of a series of prompts provided by their systems. That is all sensible.

20.161 As the circumstances of the Attack reveal, in the aftermath of a terrorist attack, the control rooms of all the emergency services will receive multiple calls. Control Room Operators may have a valuable contribution to make in providing guidance on first responder interventions. Such advice is capable of empowering those uninjured members of the public who choose to remain in the aftermath of a terrorist attack by providing them with the assistance they require in order to help the casualties.

20.162 I recognise that Control Room Operators working for the ambulance services already have skills and/or training in this regard, but I consider that there is value in those who work in the control rooms of all three emergency services having the ability to provide advice on basic trauma care. I recommend that the College of Policing, the Fire Service College and National Fire Chiefs Council consider devising training packages for operators within police and fire and rescue service control rooms that achieve this aim, and that DHSC and NARU take steps to ensure that the existing training for ambulance service operators is fit for this purpose.

20.163 Those who work in control rooms should not seek to subvert the government's *"Run, Hide, Tell"* message, but experience shows that many members of the public will in fact choose to stay and help. Control Room Operators are well placed to provide them with guidance.

¹⁵⁰ [INQ042676/1](#) at paragraph 4

Training of unarmed police officers

- 20.164** I will next turn to the position of unarmed police officers. I will address the position of firearms officers at paragraphs 20.175 to 20.183.
- 20.165** Often, unarmed police officers will arrive at the scene of a terrorist attack before the professional clinical response. The response to the Attack is an example of that. Officers of British Transport Police (BTP) were within the Victoria Exchange Complex when the bomb was detonated.¹⁵¹ Within minutes of the explosion they had rushed to the City Room, entering within about two minutes.¹⁵² GMP officers arrived at the scene within a short time of their armed colleagues. By 22:48, GMP unarmed officers had entered the City Room.¹⁵³
- 20.166** Police officers such as these should be able to provide first responder interventions, including applying a tourniquet and opening an airway. However, the evidence I heard reveals that the unarmed officers generally lacked the skills to deliver the help they desperately wanted to provide. The footage I watched from body-worn video cameras of the unarmed officers and the evidence more generally demonstrates that the officers were frustrated by their inability to do more to help.
- 20.167** All unarmed police officers should be trained to provide first responder interventions. I heard evidence from a series of police officers of Chief Officer rank. In light of that evidence, I believe that there has now developed an understanding that this is so.
- 20.168** It is not necessary for me to rehearse all the evidence I heard on this issue. I will, however, refer to the evidence of Assistant Chief Constable Iain Raphael, the Director for Operational Standards in the College of Policing.¹⁵⁴ The College of Policing is the body that sets the standards for policing and develops guidance and policy for policing. That involves the College setting standards for the training of police officers, including in first aid.¹⁵⁵
- 20.169** ACC Raphael explained that the College of Policing was undertaking a review of its First Aid Learning Programme (FALP) and that there is an expectation that, from January 2023, the first aid training of all police officers will include training in first responder interventions. This will include the application of tourniquets and the opening of airways.¹⁵⁶ Some police services, including GMP, have improved their training in this regard ahead of the conclusion of the review.

¹⁵¹ [INQ035612/3](#)

¹⁵² [INQ035612/14-16](#)

¹⁵³ [INQ035612/112-113](#)

¹⁵⁴ [192/165/14-17](#)

¹⁵⁵ [192/166/1-169/22](#)

¹⁵⁶ [192/183/13-187/24](#)

- 20.170** To assist the review and with a view to ensuring that expectation becomes reality, I recommend that the Home Office and the College of Policing ensure that all newly recruited and existing police officers and all frontline police staff, such as Police Community Support Officers (PCSOs), are trained in first responder interventions. That training should be provided urgently.
- 20.171** The evidence I heard left me unconvinced that the amount of time allocated to first aid training under the current system is sufficient to allow for proper instruction in these new skills. Each police service must ensure that adequate time is allocated to training in this crucial topic. The Home Office and the College of Policing should regularly assess and appraise the training on first responder interventions given by each police service to ensure that it is of an appropriate quality and that adequate time is allocated to it.
- 20.172** I have already referred to TST, the ‘Ten Second Triage’ tool. Philip Cowburn and Lieutenant Colonel Park consider that this tool should be capable of use by unarmed police officers and firearms officers.¹⁵⁷ The aftermath of the Attack demonstrated that police officers would have benefited from training in the use of this tool. It would have enabled them to identify those in greatest need of help and to prioritise them for treatment or to direct paramedics to them, if paramedics had been there in sufficient numbers.
- 20.173** I recommend that the College of Policing ensure that it includes training in TST in its first aid training programme when, and if, it is adopted. This is even more important while paramedics and unarmed police officers have different views as to the degree of risk that it is acceptable to take.
- 20.174** I recommend that the College of Policing keep the national first aid training for all officers, including firearms officers, under continual review with a view to continuous improvement.

Firearms officers: Care Under Fire

- 20.175** In her evidence, Lieutenant Colonel Park explained the concept of Care Under Fire.¹⁵⁸ Every soldier in the British Army is taught that, when a fellow soldier is shot on the battlefield, the uninjured soldiers should return fire in order to neutralise or manage the threat, but then as soon as possible provide first responder interventions for their injured colleague.¹⁵⁹
- 20.176** While the concept is known as Care Under Fire, it obviously applies to other situations in which a soldier is dealing with a threat. For example, it follows from the evidence I heard that where a soldier has been injured by an Improvised Explosive Device (IED), their colleagues would be expected to provide them with life-saving interventions alongside dealing with any secondary device.

¹⁵⁷ [192/47/22-50/24](#), [192/219/13-221/20](#)

¹⁵⁸ [191/99/11-105/8](#)

¹⁵⁹ [191/101/6-102/10](#)

- 20.177** I heard evidence that police firearms officers within the UK have been trained in first responder interventions.¹⁶⁰ Members of Armed Response Vehicle teams will commonly respond at an early stage to a terrorist attack. On the night of the Attack, the first firearms officers had entered the Arena itself by 22:43, just over ten minutes after the explosion.¹⁶¹
- 20.178** The view of senior police officers is that such firearms officers should provide Care Under Fire, giving that term its broad meaning. Matthew Twist is Deputy Assistant Commissioner (DAC) within Specialist Operations, which is part of National Counter Terrorism Policing.¹⁶² He explained that he would expect Armed Response Vehicle officers, as they sought to neutralise a threat, to be considering whether they were able to start providing care to the injured.¹⁶³ CI Thomas expressed similar views.¹⁶⁴
- 20.179** I do not doubt that DAC Twist and CI Thomas, each of whom was experienced and expert, expressed their genuinely held views. However, on the evidence I heard, I do not believe that the firearms officers who formed Armed Response Vehicle teams on the night of the Attack had a sufficient understanding that part of their role was to provide Care Under Fire.
- 20.180** The firearms officers who initially attended the Arena provided no treatment to any casualty. Indeed, the only firearms officers who provided any treatment did not arrive at the scene until 23:09, 38 minutes after the explosion.¹⁶⁵ They helped to treat a casualty on the raised walkway at 23:12 and a casualty in the City Room at 23:25.¹⁶⁶ I do not criticise the firearms officers, who behaved bravely that night. Rather, I am identifying an apparent disconnect between the expectations of senior officers and the understanding on the ground.
- 20.181** Lieutenant Colonel Park, who is heavily involved in the training of the armed assets of the Metropolitan Police Service, confirmed that, although firearms officers are trained in basic life-saving interventions, the need to provide those interventions in the response to a terrorist incident is not well enough understood by those officers.¹⁶⁷ The events of the night of the Attack suggest that Lieutenant Colonel Park is right.
- 20.182** The capacity of firearms officers to provide first responder interventions will help to fill or shorten the Care Gap because they will generally be on the scene at a very early stage. It is important that they should understand that, having neutralised the threat or having established that there is no threat, they should where possible provide basic life-saving interventions to casualties. I do not

¹⁶⁰ [191/22/9-25/3](#) [restricted]

¹⁶¹ [INQ035612/75](#)

¹⁶² [189/54/1-10](#)

¹⁶³ [189/117/17-119/4](#), [189/126/15-128/19](#)

¹⁶⁴ [191/56/11-24](#) [restricted]

¹⁶⁵ [INQ042686/1](#)

¹⁶⁶ [INQ042686/1-3](#)

¹⁶⁷ [191/102/11-105/8](#), [192/80/22-83/12](#)

believe that this is currently adequately understood by the firearms officers on the ground. I recommend that the College of Policing and CTPHQ ensure that this important issue is urgently addressed in the training of all firearms officers.

20.183 Lieutenant Colonel Park raised the prospect that firearms officers might be deployed with analgesia.¹⁶⁸ She pointed out that a number of police services had been trialling methoxyflurane, a non-opioid painkiller used for the emergency relief of moderate to severe pain.¹⁶⁹ She stated that consideration ought to be given to rolling this out nationally.¹⁷⁰ Given the early stage at which firearms officers are likely to reach those most seriously injured in a terrorist incident, and given the likelihood that many they encounter will be in pain, this proposal has obvious value. The College of Policing and CTPHQ should review whether firearms officers should be deployed with and trained to use analgesia as part of providing Care Under Fire.

Training of firefighters

20.184 There was widespread agreement that firefighters have a vital role to play in the event of a terrorist attack. They have particular skills in the evacuation of casualties and those skills need to be maintained. They also have first aid skills. I consider that they should be trained to provide first responder interventions. This particularly applies to the specialist resources of the fire and rescue services who may be deployed forward in an Operation Plato situation. But, as with the police, this should also be the position with all firefighters. The National Fire Chiefs Council expressed the view that this was necessary.¹⁷¹ I agree.

20.185 I recommend that the National Fire Chiefs Council and the Fire Service College take steps to devise a training scheme that educates all firefighters in first responder interventions. The National Fire Chiefs Council and the Fire Service College should ensure that the training scheme is implemented first to specialist responders, then to all other firefighters. This should be applied nationally. Finally, the National Fire Chiefs Council and the Fire Service College may find it helpful to consult with the College of Policing when considering the scheme since it is apparent that the College of Policing has already undertaken a good deal of work in relation to this issue as part of its review.

20.186 Philip Cowburn and Lieutenant Colonel Park considered that TST should also be capable of being used by firefighters.¹⁷² There is no doubt that there will, in the future, be situations in which casualties would benefit from firefighters having the knowledge that this tool would give them. Accordingly, I recommend that the National Fire Chiefs Council and the Fire Service College consider including training in this tool in its first aid training programme.

¹⁶⁸ [192/19/3-9](#)

¹⁶⁹ [192/19/11-15](#)

¹⁷⁰ [192/19/11-21/5](#)

¹⁷¹ [189/149/16-152/17](#)

¹⁷² [192/54/4-55/2](#), [192/219/13-221/20](#)

Training of event staff licensed by the Security Industry Authority

- 20.187** Many events will require the presence of stewards and other security staff and some of those personnel will require a licence issued by the Security Industry Authority (SIA). That body is the subject of examination and recommendations in Parts 3 and 8, respectively, of Volume 1 of my Report.
- 20.188** Not every member of security personnel is required to be registered by the SIA, so no recommendation I make to the SIA can ensure that every such member of staff is trained in first responder interventions. However, every single additional person who has the necessary skills is capable of making a difference. I consider that all SIA staff should have those skills.
- 20.189** I recommend that the SIA take steps urgently to devise a training scheme in first responder interventions that educates all of those licensed with it, both existing licensees and applicants for a licence. The SIA may find it helpful to consult with the College of Policing in this, since it is apparent that the College has already undertaken a good deal of work in this regard. I also recommend that the SIA take steps to encourage the security industry generally to ensure that even those members of staff who do not require an SIA licence develop skills in basic trauma care.
- 20.190** The Home Office has a working group with the SIA.¹⁷³ I recommend that the Home Office take the action available to it to ensure that all of those licensed or to be licensed by the SIA have appropriate first aid training as I have described it.

Event healthcare services

- 20.191** This section can be dealt with briefly because, although important, there was widespread agreement across all Core Participants about what was required.
- 20.192** In Part 16 in Volume 2-I, I set out why the provision of event healthcare services at the Arena on 22nd May 2017 was inadequate. I have little doubt that such serious shortcomings occurred elsewhere at other venues. I fear that they continue to happen. At least in part, they were and are the result of inadequate regulation by the state. That needs to be remedied.
- 20.193** There should be regulation that addresses the following.
- 20.194** First, a standard should be set for the level of event healthcare services that are required for any particular event. The evidence does not enable me to state what that standard should be, but the standard will inevitably have regard to the size of the crowd likely to attend an event and the profile of the event.

¹⁷³ [188/100/13-101/21](#)

- 20.195** I recommend that DHSC consider what that standard should be. I do not consider that it is a standard that should be contained only within guidance. Serious consideration should be given to putting it on a statutory footing. The consequences of failing to meet the standard could be fatal.
- 20.196** Second, the standard should be capable of enforcement by a regulator. The Care Quality Commission (CQC) is the principal regulator of the health and social care sector. Clear and compelling evidence was given by Dr Edward Baker, the Chief Inspector of Hospitals at the CQC.¹⁷⁴ He stated that the CQC considers that it is the appropriate body to regulate this area of activity.¹⁷⁵ The CQC has made this point to DHSC in plain terms, but there have been delays in implementing the necessary changes.¹⁷⁶ In my view, these changes should happen urgently.
- 20.197** I recommend that DHSC give urgent consideration to making the necessary changes in the law so as to enable the CQC to carry out the work it wishes to undertake in this important area.
- 20.198** Third, regulation of this area should have teeth. Those who provide event healthcare services may be responsible for the lives of very many people. If they breach the standard of services that the state decides to impose, there is a strong argument that there should be both civil and criminal consequences.
- 20.199** I recommend that DHSC consider, together with the CQC, whether the consequence of breaching the standard of provision for event healthcare services should be penal, including the possible imposition of custodial sentences.
- 20.200** All of these matters should be considered as a matter of urgency.
- 20.201** I recognise that some time is going to pass before the change I recommend is implemented. In the meantime, the licensing regime has a role to play. I acknowledge that this is not a complete answer because not all venues will be subject to licensing requirements. Even where they are, changing existing licences is not straightforward.
- 20.202** I recommend that the Department for Levelling Up, Housing and Communities review the guidance given to all licensing authorities on the decisions they make in relation to venues that hold events, and on what level of event healthcare services may be required at the events likely to be held at those venues. The guidance should indicate appropriate licence conditions to be used. The licensing authorities should then impose conditions accordingly or make those standards a requirement to meet existing conditions.

¹⁷⁴ [190/125/3-11](#)

¹⁷⁵ [190/127/6-15](#), [190/131/23-132/5](#)

¹⁷⁶ [190/133/11-135/18](#)

Ambulance Liaison Officer

- 20.203** Jeremy Cowen is an Emergency Planning Officer with the Northern Ireland Ambulance Service. He has a special interest in event and venue safety, and experience and expertise in that area. He provided a witness statement to the Inquiry.¹⁷⁷ It contains his informed views about how the Care Gap should be addressed. I am grateful to him for the valuable contribution he has made to the Inquiry's work.
- 20.204** Among Jeremy Cowen's suggestions was that, where a particular risk threshold for an event is reached, an Ambulance Liaison Officer should be physically present. That person will be a member of the ambulance service. In the event of a Major Incident, the Ambulance Liaison Officer should be able to gain good situational awareness quickly and therefore pass an early METHANE message. The Ambulance Liaison Officer will also be able to initiate the ambulance service's Major Incident Plan.¹⁷⁸
- 20.205** It seems to me that the Ambulance Liaison Officer may be able to perform the role of NWS Operational Commander until someone dedicated to that role arrives. I have no doubt that, on the night of 22nd May 2017, an Ambulance Liaison Officer would have made a valuable contribution to the emergency response.
- 20.206** There was considerable support for the view of Jeremy Cowen. Keith Prior made clear that NARU agreed that Ambulance Liaison Officers are capable of providing real benefit.¹⁷⁹ The Ambulance Service Experts agreed in principle that Ambulance Liaison Officers are a good idea.¹⁸⁰ I also agree.
- 20.207** The Ambulance Service Experts explained that work remains to be done to make sure that Ambulance Liaison Officers work in practice. In my view, two broad issues need to be addressed. First, there needs to be a mechanism by which the threshold at which an Ambulance Liaison Officer must be present at an event is identified. The most important factor will be the number of attendees, but there are likely to be other factors of relevance such as audience profile. Second, there needs to be a mechanism by which a requirement to appoint an Ambulance Liaison Officer in appropriate circumstances can be imposed on venue operators.
- 20.208** I recommend the following. In the first instance, DHSC and NARU should consider the scope of the role of an Ambulance Liaison Officer and issue guidance to ambulance services. The Home Office and DHSC should consider how the threshold for a requirement that an Ambulance Liaison Officer be present is to be identified.

¹⁷⁷ [INQ041868](#)

¹⁷⁸ [INQ041868/6](#)

¹⁷⁹ [190/40/1-41/1](#)

¹⁸⁰ [144/71/22-76/24](#)

20.209 If this scheme is going to work, ambulance services will need to be prepared to make members of their staff available to fill the role of Ambulance Liaison Officer. The resources of ambulance services are already stretched. The Home Office, DHSC and NARU should consider how this situation is to be resolved. It is likely, it seems to me, that venue operators will need to fund the presence of an Ambulance Liaison Officer where one is required. The Home Office should also consider how the presence of an Ambulance Liaison Officer in appropriate circumstances can be made mandatory. It may be that this should form part of the Protect Duty, which I deal with extensively in Volume 1 of my Report, or part of the regulation of event healthcare services.

Equipment

20.210 Another aspect of ensuring preparedness in the event of a terrorist attack is making sure that those who will provide assistance have the equipment they need. That applies to zero responders, to paramedics including members of HART, to police officers whether armed or unarmed, to event medical service providers and to others who may fill the Care Gap. The evidence revealed that, at the moment, there is a risk that some or all of these groups may lack the equipment they require in the event that a mass casualty incident occurs.

Public Access Trauma kits

20.211 The concept of Public Access Trauma (PACT) first aid kits was explained by DAC Twist in his evidence.¹⁸¹ The idea is that they are available in publicly accessible locations and contain the equipment that would be required to provide first responder interventions. The kits also provide basic instructions. They are designed for ready use, even by untrained members of the public.¹⁸² These are plainly an excellent idea.

20.212 CTPHQ has been working with others, including charities, to promote these kits. I commend both CTPHQ and the charities for that work, but so important is this equipment that more needs to be done.

20.213 I recommend that DHSC consider the equipment that ought to be included within a PACT kit. It is not clear to me that the CTPHQ kit necessarily contains all the equipment that might be used by a zero responder to carry out first responder interventions. In particular, while it does contain tourniquets and instructions, it is not clear to me that it contains instructions and equipment to enable an airway to be opened.

¹⁸¹ [189/84/5-89/6, INQ042442](#)

¹⁸² [189/86/4-87/6](#)

- 20.214** Brigadier Hodgetts described a “*grab bag*” that citizenAID makes available.¹⁸³ While he was envisaging something that might be used by the organiser of an event as opposed to a member of the public, he described things such as a stretcher that might usefully be included.¹⁸⁴ The contents of PACT kits need to be given further consideration.
- 20.215** I recommend that the Home Office and DHSC consider how a situation is to be achieved in which PACT kits are available in all locations in which they are most likely to be needed. It may be that this is something that can be addressed as part of the Protect Duty, or alternatively as part of the work that I have recommended DHSC undertake to ensure that there is an appropriate standard imposed on those who provide event healthcare services.
- 20.216** Ultimately, how this is to be achieved is a matter for government. But it is clearly a matter of importance. I do recognise the difficulties in balancing the need for public accessibility against the risks of theft or vandalism which sadly exist. Such risks will need to be accommodated in the government’s plans, but my expectation is that such issues will have arisen in many other contexts, such as publicly available defibrillators and emergency throwlines, and solutions may be available.
- 20.217** Connected with PACT kits, which allow equipment to be available permanently within publicly accessible locations, DAC Twist raised the concept of “*drop bags*”.¹⁸⁵ These are, as I understood it, essentially the same as PACT kits, but they are designed to be carried by members of Armed Response Vehicle teams and dropped as they enter the scene of a terrorist attack. The aim is that they will then be used by members of the public in the same way as PACT kits. NARU supports their introduction¹⁸⁶ and I agree that they are a good idea. DAC Twist explained that they are already in use in a number of police service areas, with full implementation expected by 1st October 2022.¹⁸⁷ I hope very much that implementation by that date will be achieved.

Hazardous Area Response Team equipment

- 20.218** As I have explained, Lieutenant Colonel Park described treatments called “*bridging interventions*”.¹⁸⁸ These are interventions that a member of the public would not be able to perform.¹⁸⁹ They require specialist skills and equipment. They involve the splinting and carrying out of traction on broken limbs.¹⁹⁰ This is an important procedure because it reduces the casualty’s pain, enabling them to be moved, and also because it reduces bleeding, which can cause death.¹⁹¹

¹⁸³ [68/71/22-72/21](#)

¹⁸⁴ [68/72/3-5](#)

¹⁸⁵ [189/89/7-90/11](#)

¹⁸⁶ [190/39/10-15](#)

¹⁸⁷ [189/89/15-25](#)

¹⁸⁸ [192/2/22-3/18](#)

¹⁸⁹ [192/2/15-21](#)

¹⁹⁰ [192/3/11-14](#)

¹⁹¹ [192/3/21-4/10](#)

20.219 Lieutenant Colonel Park explained that members of HART would not commonly take into hazardous areas equipment that enables them to carry out bridging interventions.¹⁹² It was her view that consideration should be given to the specialist resources of ambulance services carrying such equipment into those zones.¹⁹³ I agree. I recommend that DHSC, the Faculty of Pre-Hospital Care, the College of Paramedics and NARU consider issuing guidance on how to ensure that specialist paramedics take with them into a warm zone equipment that enables them to carry out bridging interventions.

Stretchers

20.220 Once triage and any treatment needed for immediate life-saving purposes, such as the application of a tourniquet or airway release, has been undertaken, casualties need to be evacuated. The means by which this is done is relevant both to the speed at which it will occur and to the safety and comfort of the casualty. What happened on the night of the Attack was unacceptable, with casualties carried away from the City Room on unstable advertising hoardings. The Home Office, DHSC, the Department for Transport and the Department for Levelling Up, Housing and Communities should conduct a review to ensure that stretchers that are appropriate in design and adequate in number are always available for use by the emergency services and in appropriate locations in the event of a mass casualty incident.

20.221 In 2019, Dr Langlois and colleagues in France carried out an assessment of the types of stretcher that best enable rapid extraction of casualties in mass casualty incidents.¹⁹⁴ The results of that analysis are informative. They are publicly available and should be read by all of those who may have responsibility for the response to any mass casualty incident, including a terrorist attack.

20.222 The technology may have moved on since the work of Dr Langlois and his colleagues, and, in any event, different types of stretcher may be appropriate to different kinds of environments. I consider that work ought to be undertaken in the UK in order to identify the type of stretcher that is of greatest utility in the event of a mass casualty incident. That work should be undertaken by DHSC, with input from other bodies as DHSC considers appropriate. The product of that research should be rolled out to all those with responsibility for the response to a mass casualty incident, including a terrorist attack, whether in the public or private sector.

¹⁹² [192/11/16-24](#)

¹⁹³ [192/11/25-13/21](#)

¹⁹⁴ [INQ042572](#)

Part 21

Volume 2 conclusions and recommendations

- 21.1 There are three sections to Part 21. The first section will set out my overall conclusions. These are drawn from across Volume 2. The second section will list my Recommendations. The third will identify my approach to monitoring the progress of particular Recommendations I make in Volume 2 (Monitored Recommendations).
- 21.2 The Monitored Recommendations are all in areas where substantial progress can be made during the period I have set for monitoring them.
- 21.3 The fact that I have not listed a Recommendation as a Monitored Recommendation does not mean that it should not be the subject of prompt attention. There is a great deal of work that needs to be done to address the issues I have identified, which include systemic issues. All those with a responsibility to keep the public safe need to address areas for improvement as a matter of urgency.

Conclusions

- 21.4 As I said in the Preface to this Volume of my Report, in the immediate aftermath of the Attack on 22nd May 2017 there were heroic acts by numerous people. These were members of the public who were in or around the Arena; people who worked at the Arena or in the Victoria Exchange Complex; and members of the emergency services who went into the City Room in the early stages. These people ignored the risks to their own safety to try to do what they could to help the dying and the injured. They had no protective clothing but they went into the City Room, even though they must have realised that they were putting themselves at risk in doing so. Those acts were acknowledged by me during the Inquiry and I do so again now in this conclusion. Everyone who heard the evidence has great respect and admiration for the people who acted so bravely.
- 21.5 While not overlooking those acts, I have inevitably been concerned with determining what went wrong and why things went wrong, and making recommendations to try to ensure that they do not go wrong again.
- 21.6 The evidence I have heard revealed that a great deal went wrong in the emergency response to the Attack on 22nd May 2017.
- 21.7 Previous tragedies had not resulted in necessary change being implemented. Each of the emergency services had drawn up plans. Those plans had been created with the intention of ensuring that people affected by a terrorist attack would receive the greatest possible assistance. However, on 22nd May 2017, those plans were not known by everyone who should have known about them. Many of those who did respond to the explosion, the non-specialists, had little or no knowledge of the plans that had been devised. But when the plans were known about, they were not always as clear as they might have been. And when they were clear, they were not always properly understood. And when they were known and understood, they were not always put into practice.
- 21.8 Some of the failures that occurred in the emergency response were down to mistakes made by individuals. It is understandable that individuals under the immense pressure and stress that a terrible incident such as a bombing creates will make mistakes. It is all the more important in those circumstances that there are checks and balances in place. These will ensure that all the things that need to be done have been done, and that the right decisions have been made.
- 21.9 The almost universal response from senior commanders during the Inquiry's oral evidence hearings was that it was not their job to ensure that their subordinates had done what they ought to have done. Again that is understandable: checking up on others takes time and may show a lack of belief in the abilities of subordinates. Nevertheless, it is necessary. In at least two of the emergency services, there were single points of failure. Had checks been made by more senior officers as they took up their position in the command structure, serious omissions could have been quickly rectified.

- 21.10** The response to the explosion started well. Greater Manchester Police (GMP) directed firearms officers in numbers to the site of the explosion. They were quickly able to establish that there were no armed terrorists in the City Room and, by placing armed guards on the entrances to that location, were able to ensure that none could enter. Unarmed and unprotected British Transport Police (BTP) and GMP officers were quickly on the scene doing what they could.
- 21.11** From that start, it ought to have been possible to get medical assistance to the injured in the City Room speedily. This would have allowed victims to be removed safely on stretchers to the station entrance; from there they could have been put into ambulances and taken to hospital, where they would have received the best treatment.
- 21.12** That is not what happened.
- 21.13** One of the most emotional and upsetting parts of the Inquiry was listening to the evidence of people in the City Room, both rescuers and the injured, who heard the sirens of the ambulances outside and expected to see paramedics arriving imminently, and then hearing of their despair when so many fewer than they reasonably expected actually arrived in the City Room. The failure of the paramedics to arrive in numbers was a terrible disappointment to the injured and the rescuers in the City Room, who did not have the skills to triage the injured and give them the life-saving medical help they might need prior to being moved. Paramedics had these skills. The injured were desperate for help, not realising that decisions that had been made meant they would not see paramedics in the City Room in the numbers hoped for and expected. I set out in Part 17 of my Report the experiences of the injured and those with the deceased in the City Room as they waited in vain for help to arrive.
- 21.14** Three paramedics went into the City Room to carry out triage and any life-saving interventions that had to take place before the injured were moved. No stretchers were taken from the ambulances to assist with the removal of the injured. Instead, police officers and members of Arena staff and the public carried the injured along the raised walkway and down a series of stairs to the entrance hall of the station on anything they could find. Advertising hoardings, crowd barriers and tables were used. It was a painful and unsafe way of moving the injured. On the station concourse, a treatment centre was set up where the other paramedics re-triaged and gave much-needed treatment to the injured, including stabilising them sufficiently for the trip to hospital.
- 21.15** The situation was undoubtedly difficult, but the evacuation of the City Room would have worked much better for everyone if there had been a more co-ordinated response. No one wanted the injured and dying to suffer more than they needed. Everyone involved in the emergency no doubt thought that they were doing their best. In some cases, and for reasons I set out in my Report, their best was not good enough.

- 21.16** Members of the fire and rescue services are trained to give assistance in circumstances such as those in the City Room. They would have been of great help. They have stretchers that are suitable for use in such situations. Their absence was significant, as they could have provided very substantial assistance in the safe removal of the injured from the City Room. The fact that most of the members of the other emergency services did not notice that Greater Manchester Fire and Rescue Service (GMFRS) officers were not there helping in the rescue suggests a lack of appreciation of the part that fire and rescue services can and do play. If the Joint Emergency Services Interoperability Principles (JESIP) had been fully embedded in the muscle memory of responders, that would not have happened.
- 21.17** The suggestion was made during the Inquiry's oral evidence hearings that the reason GMFRS did not turn up and North West Ambulance Service (NWAS) did not go into the City Room in numbers was because they were risk averse.
- 21.18** None of the firefighters I heard from were risk averse. Rather, I heard from a number of very angry firefighters who were ashamed of the fact that they did not get to join in the rescue. They desperately wanted to get involved. I am also satisfied that paramedics would have gone into the City Room, if asked to do so, in order to carry out their work of saving lives.
- 21.19** It is one thing to take risks on your own behalf, but it is quite another for a commander to send people under his or her command into a situation where they may be at risk of death or serious injury. There needs to be an assessment of that risk before others are potentially placed in danger. None of the commanders I heard from was risk averse for his or her own safety, but some were for the people who might be put at risk by carrying out their orders. All members of the emergency services take risks in the course of their work, and do so willingly, but the extent of that risk needs to be properly assessed by commanders before committing rescuers forward. Evaluating the degree of risk that is acceptable is very difficult. Detailed guidance and assistance needs to be available.
- 21.20** The best risk assessment is a joint risk assessment between all the emergency services that are on scene. They need to pool their knowledge. While no service is bound to accept the risk assessment of another, it is important that they listen to the views of others. Where one rescue service has more situational awareness than others, there would need to be a good reason for that assessment not to be accepted by everyone. BTP and GMP had the best situational awareness of the risk of working in the City Room as unarmed police were in there in numbers without any special protection. The GMP Operational/Bronze Commander's view was that it was safe enough for rescuers without special protection to work there. He was right, but nobody from GMP or the other emergency services asked for his opinion. Firearms officers who were present also thought it was safe enough for such rescuers to be present. Their views were not sought. The only paramedic present in the first 44 minutes thought the same.

- 21.21** Other inquiries, inquests and investigations have emphasised the importance of the emergency services working together to provide the best result for the injured. Detailed policies, such as JESIP, have been devised, and people trained to put them into practice.
- 21.22** JESIP emphasises the need for co-ordination, either by locating commanders at the same place and, if that is not possible or is still to happen, by having effective communication between all the emergency services. Manuals have been written on what is needed to make JESIP work; everyone is meant to be trained on the principles. JESIP still failed on 22nd May 2017. Commanders did not co-locate. There was no effective communication. This is not the first incident in which JESIP has failed.
- 21.23** At one stage during the hearing of evidence, the failures on the night and the failures in JESIP in the past led me to suggest that it should be abandoned.
- 21.24** However, it was the evidence from all of the witnesses at the Inquiry hearings that the application of the principles of JESIP was the best way to assist the injured and get them treated quickly. I accept that it is, in light of that evidence, but it is necessary to ensure that JESIP works in practice and not just in theory. I have made recommendations in my Report about how to achieve this. More training, more practice, and the right sort of practice, are needed. Lessons need to be learned when things go wrong in exercises or in a real emergency, and change implemented as a result. Most importantly, individual emergency services must not operate alone. They must respect and understand the contribution that can be made by other emergency services and they must respect the views of others, particularly when it comes to assessing risk.
- 21.25** The failure of JESIP on 22nd May 2017 meant that those who were having to make decisions assessing risk did not receive information from those who were in the best position to provide the necessary situational awareness to assess that risk. That should not have happened.
- 21.26** Had there been good communication and co-location on 22nd May 2017, many of the problems that did arise would not have.
- 21.27** The evidence heard at the Inquiry has led me to the view that necessary changes were not always identified and implemented as the result of past mistakes, partly because the debrief processes were not as effective as they might have been, and even when shortcomings were identified they were not always put right. In the Inquiry, I heard evidence of exercises where things had gone wrong that were similar to the things that went wrong on 22nd May 2017. This needs to be improved, and I have made a number of recommendations, which I hope will, if accepted, result in improvements.
- 21.28** There were problems with the debriefing process after 22nd May 2017. It was alarming to hear evidence that the Chief Constable of GMP had informed Lord Kerlake, during his review of the preparedness for and emergency response to the Attack, that GMP could demonstrate that Inspector Dale Sexton had notified

the other emergency services of the declaration of Operation Plato. That was incorrect. Inspector Dale Sexton had not done so. The Chief Constable was not deliberately trying to deceive Lord Kerlake; it was what he had been told. It is difficult to understand how that had happened on such a crucial issue.

- 21.29** What I hope was a constructive part of this Inquiry dealt with what I described as 'the Care Gap'. There will always be a time lag between the emergency having happened and the arrival of the emergency services that are able to assist the casualties. That is a critical time when lives can be lost if no action is taken to save casualties. This makes it essential that as much help as possible can be provided on site by people who are in the vicinity and prepared to help. This means that it is vital that establishments of a similar size to the Arena have a reasonable number of adequately trained and equipped medical staff on hand to give emergency care, to bridge the gap before the ambulance service and the fire and rescue service can arrive. Standards need to be laid down and enforced to ensure that this happens. There needs to be liaison between site operators and event healthcare staff and the ambulance service to co-ordinate their responses to an emergency. The in-house healthcare provision at the Arena on 22nd May 2017 was inadequate.
- 21.30** Police officers, who are often first on the scene, should have trauma training so that they can provide life-saving treatment and do not find themselves in the position that the unarmed officers did on 22nd May 2017. They wanted to provide assistance to casualties but they did not have the necessary training to do so. The same applies to members of the public, who found themselves wishing they had greater first aid skills. Encouragement should be given to the public generally to acquire the skills needed to help casualties who are in a life-threatening condition. The National Curriculum should include education in first responder interventions and there ought to be incentives to those who have left school to develop those skills.
- 21.31** I have considered in my Report whether different procedures can be adopted by the emergency services themselves to reduce the effect of the Care Gap. The emphasis in the present system is on ensuring that hospitals are ready for the patients before sending them there. I heard about other countries, such as France, where they operate a different system, aiming to get the injured to hospital as soon as possible by whatever means they can.
- 21.32** It is important that we do not close our eyes to new ideas. There is still much work to be done on reducing, as far as possible, the Care Gap and its consequences. The witnesses I heard giving evidence about the Care Gap were very impressive. There is a great deal of innovative thinking going into the reduction of the problems caused by the Care Gap. It is very important that the ideas coming out of the new research are considered with an open mind.

- 21.33** The most important issue in the Inquiry has been whether a more effective rescue effort could have saved the lives of any of those who died. I deal with that question in Part 18 of my Report and I invite readers to read that to get the full detail. As can be seen, I have concluded that one of those who died, John Atkinson, would probably have survived had the emergency response been better. In the case of Saffie-Rose Roussos, I have concluded that there was a remote possibility that she could have been saved if the rescue operation had been conducted differently. The evidence was conclusive that there was no possibility that any of the others could have survived the murderous actions of SA.
- 21.34** While we do need to consider whether we should move to different systems to get the injured to hospital more quickly, I accept that the draft hospital dispersal plan activated by NWAS worked well. It meant that casualties were sent to the specific hospital best equipped to deal with their particular injuries, and staff were there waiting to receive them. Despite this, I was concerned about the time it took to get patients to hospital. The evidence of the injured, who seemed to wait for a very long time in the City Room and then in the station entrance before going to hospital, was very moving and telling.
- 21.35** A constant criticism of some of the emergency services during this Inquiry has been that they were defensive and, rather than join in a genuine search for what went wrong, they tried to insist that everything they did was correct and, where something went wrong, to blame it on others. If criticism is unjustified, then it does not help a search for the truth simply to accept it. Conversely, it is a natural human reaction to try to avoid blame for some terrible disaster and find some explanation that excuses it, even if it puts the blame on someone else. The real test will be whether action is taken to put right what went wrong, and not just in the short term but until the terrible threat of terrorism has been eradicated.
- 21.36** I believe that I have got to the truth of what happened on that dreadful night. I have certainly had assistance from many clever, hardworking and motivated people to do so. I am very grateful to them all. I also hope fervently that what comes out of this Inquiry will make a difference, and I ask all those concerned with what happens next to ensure that it does.

Recommendations

- 21.37 I set out below the recommendations I make arising out of my investigation into the emergency response on 22nd May 2017 (the Recommendations).
- 21.38 Against each Recommendation I have added a cross-reference. These are mostly to paragraphs within specific Parts of Volume 2, and sometimes to statements from the Emergency Response Experts. These cross-references are intended to assist the reader, and any organisation to which the Recommendation is directed, to understand the issue the Recommendation is seeking to address. The cross-referencing is not exhaustive and each one of the Recommendations should be understood in the context of Volume 2 as a whole. All organisations should, in any event, review the whole of Volume 2 in order to identify what I consider is required of them.

Issues arising at a local level in Greater Manchester

Greater Manchester Resilience Forum

R1	The Greater Manchester Resilience Forum should oversee, at least every six months, a regular tri-service review of the Major Incident plans used by Greater Manchester Police, Greater Manchester Fire and Rescue Service and North West Ambulance Service. The purpose of that review should be to ensure that there is a common understanding by each emergency service of the plans of the other emergency services. It should also ensure that the importance of joint working is embedded within each emergency service.	12.4 to 12.81
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British Transport Police

R2	British Transport Police should ensure that all its Inspectors are trained to undertake the Bronze Commander role in the event of a Major Incident.	12.98 to 12.106
R3	British Transport Police should review its procedures to ensure the prompt appointment of a Bronze Commander during a Major Incident.	12.98 to 12.106
R4	British Transport Police should ensure that all its Sergeants are trained in what is required of a Bronze Commander in the event of a Major Incident. This will help to make sure that the first Sergeant on scene can undertake the initial steps in the emergency response, prior to the arrival of an Inspector.	12.98 to 12.106

R5	<p>British Transport Police should work with the Home Office police services with which it shares policing responsibilities at or for a particular location:</p> <ol style="list-style-type: none"> to agree which police service has primacy in the event of a Major Incident; to put in place appropriate plans to make clear the responsibilities of each police service in the event of a Major Incident; to conduct regular exercises, including joint exercises, to test those plans; and to ensure that all police officers and police staff are adequately trained in what will be required of them. 	12.107 to 12.113
R6	The role of the Senior Duty Officer in a Major Incident should be clearly defined and explained in the British Transport Police Major Incident Manual. This role should have a corresponding action card.	12.112 to 12.113
R7	British Transport Police should reflect on its approach to record-making during and immediately following a Major Incident, with a view to improving the current practice.	19.13 to 19.42
Greater Manchester Police		
R8	Greater Manchester Police should ensure that its role cards are always immediately accessible to the officers who are to perform those roles.	12.173
R9	Greater Manchester Police's Major Incident Plan should be reviewed to ensure that it includes clear guidance on the capabilities of Greater Manchester Fire and Rescue Service, including its Specialist Response Team, as well as on the importance of joint working.	12.200 to 12.202
R10	Greater Manchester Police's Major Incident Plan should be reviewed to ensure that it includes clear guidance on the capabilities of North West Ambulance Service, including its Hazardous Area Response Team, Ambulance Intervention Team and Special Operations Response Team, as well as on the importance of joint working.	12.200 to 12.202

R11	Greater Manchester Police should ensure that its plans for responding to a Major Incident, including a terrorist incident, are reviewed regularly by those with the appropriate skills and experience to make meaningful improvements to each plan. This must include a regular review of the Operation Plato plan, which must include obtaining the views of those with experience of firearms policing and of performing the role of Force Duty Officer.	12.235
R12	Greater Manchester Police should review its Operation Plato plans to ensure that there is only a single plan to which all can work and that this plan gives clear and consistent guidance on how to respond to an Operation Plato incident.	12.303 to 12.310
R13	Greater Manchester Police should reflect on its approach to record-making during and immediately following a Major Incident, with a view to improving the current practice.	19.13 to 19.42
North West Ambulance Service		
R14	North West Ambulance Service should review its Major Incident Response Plan to consider whether it should be updated to include a pre-determined attendance for Major Incidents.	12.448
R15	North West Ambulance Service should review its Major Incident Response Plan to consider whether, in order to speed up mobilisation, it should provide pre-determined attendances for the Hazardous Area Response Team, Ambulance Intervention Team and Special Operations Response Team crews for Major Incidents.	12.449
R16	North West Ambulance Service should ensure that it has up-to-date site-specific plans for all large, complex or high-risk locations within its area.	12.455 to 12.459
R17	North West Ambulance Service should ensure that all its site-specific plans are multi-agency and that all Category 1 responders operating in the areas it serves have contributed to them.	12.455 to 12.459
R18	North West Ambulance Service should ensure that it has a policy that sets out the circumstances in which an Operational Commander may be relieved and how that should occur and be communicated to the outgoing Operational Commander and beyond.	12.480
R19	North West Ambulance Service should train its Operational Commanders on the appropriate practice for relieving another of command and being relieved of command.	12.480

R20	North West Ambulance Service should ensure that non-specialist ambulance personnel are involved in multi-agency exercising.	12.500
R21	North West Ambulance Service should review its Major Incident Response Plan to make clear that the first resource on scene should assume the role of Operational Commander only once they have achieved situational awareness.	14.121
R22	North West Ambulance Service should ensure that its commanders are adequately trained in the use of operational discretion.	14.214
R23	North West Ambulance Service should review its policies for mobilising the Hazardous Area Response Team resource, to ensure that this team is available as soon as possible for an emergency where its specialist skills are required.	14.25
R24	North West Ambulance Service should review how it rosters Tactical Advisors and National Interagency Liaison Officers so as to ensure that there is adequate geographical coverage enabling those on duty to arrive promptly at the scene of any Major Incident.	14.542
R25	North West Ambulance Service should review the number of Tactical Advisors and National Interagency Liaison Officers it has, and whether the number of such specialists, both generally and on call, should be increased.	14.574
R26	North West Ambulance Service should review its procedures with local NHS trusts to ensure that it has effective policies in place for quickly dispatching patients injured in a Major Incident to an appropriate hospital.	12.370 to 12.373 14.503
R27	North West Ambulance Service should reflect on its approach to record-making during and immediately following a Major Incident, with a view to improving the current practice.	19.13 to 19.42
North West Fire Control		
R28	North West Fire Control should take steps to ensure that it is involved in multi-agency exercises, particularly those that test mobilisation and the response to a Major Incident in line with the Joint Emergency Services Interoperability Principles (JESIP).	12.554 12.749
R29	North West Fire Control should ensure that it regularly tests how it operates, by ensuring that its staff participate in regular exercises and practical tests. These should include multi-agency exercises.	12.602 12.749

R30	All North West Fire Control staff should be trained on the best practices for responding to a Major Incident, as identified through its participation in exercises. North West Fire Control should ensure that learning is kept under review.	12.602 12.749
R31	North West Fire Control should review the way it captures and records key information on its incident logs in order to ensure that the information is stored in one place and is readily accessible at all times by those who need it.	15.407
R32	Greater Manchester Fire and Rescue Service and North West Fire Control should conduct a joint review of the circumstances in which it is appropriate for Greater Manchester Fire and Rescue Service personnel to check the North West Fire Control incident log. Policies should be written by both organisations to reflect the outcome of this review. Training should be delivered to embed it into practice.	15.309 to 15.315
R33	North West Fire Control should review its guidance and policies on how it receives and passes on information during a Major Incident. It is important that, for any update given, it is established when the last time the person receiving the update was provided with information, to ensure that they are completely up to date. See also R38.	15.172
R34	North West Fire Control should review how it allocates the best-trained and most suitable Control Room Operators to roles during a Major Incident. It should consider whether it is beneficial to allocate a Control Room Operator to monitor communications on a multi-agency control room talk group and another Control Room Operator as the specific point of contact for the fire and rescue service. Both roles could be supervised by a Team Leader.	15.210 to 15.211
R35	North West Fire Control should reflect on its approach to record-making during and immediately following a Major Incident, with a view to improving the current practice.	19.13 to 19.42
Greater Manchester Fire and Rescue Service		
R36	Greater Manchester Fire and Rescue Service should ensure that its commanders are adequately trained in the use of operational discretion.	12.654 to 12.655
R37	Greater Manchester Fire and Rescue Service should review the policy by which the Incident Commander takes up the role, in light of the shortcomings I have identified in the policy in operation on 22 nd May 2017.	15.215 15.568

R38	Greater Manchester Fire and Rescue Service should review its guidance and policies on how it receives and passes on information during a Major Incident. It is important that, for any update given, it is established when the last time the person receiving the update was provided with information, to ensure that they are completely up to date. See also R33.	15.172
R39	Greater Manchester Fire and Rescue Service should reflect on its approach to record-making during and immediately following a Major Incident, with a view to improving the current practice.	19.13 to 19.42
Counter Terrorism Policing Headquarters		
R40	Counter Terrorism Policing Headquarters should review the procedures by which it is notified of a terrorist attack to ensure that all police services know that this is an early priority.	13.643
SMG		
R41	SMG should review its processes to ensure that it shares with Greater Manchester Police, Greater Manchester Fire and Rescue Service, British Transport Police and North West Ambulance Service its most current emergency response plans and policies for dealing with an incident at the Arena. It should apply this approach more generally to its operations.	16.30
R42	SMG should ensure that the healthcare service provider at the Arena has a strong working relationship with North West Ambulance Service.	16.74 to 16.75
R43	SMG should ensure that the healthcare service provider at the Arena has adequate staffing and skill levels for every event at that location.	16.19 to 16.22
R44	SMG should review its approach to the provision of healthcare service equipment at the Arena to ensure that adequate equipment is always available.	16.54 to 16.63

Issues arising at a national level		
Joint Doctrine and Joint Operating Principles		
R45	<p>The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College, the National Ambulance Resilience Unit and JESIP should review and, as necessary, update the <i>Joint Doctrine: The Interoperability Framework</i> (the Joint Doctrine) and <i>Responding to a Marauding Terrorist Firearms Attack and Terrorist Siege: Joint Operating Principles for the Emergency Services</i> (the Joint Operating Principles). The following matters should be considered in that review:</p> <ol style="list-style-type: none"> a. achieving a situation in which commanders understand that the critical decisions of the commander most directly concerned in the issue under consideration are followed, unless there is a good reason for not doing so; b. achieving a situation in which risk appetite is common across the three emergency services – this will require collaborative work; c. achieving a situation in which forward deployment of specialist resources is the presumption, to be displaced only in the presence of a properly evidenced basis for not deploying resources forward; and d. achieving a situation in which the possibility of a secondary device does not delay forward deployment of resources, unless there is a proper basis for believing that such a device exists. 	20.40 to 20.45
R46	<p>The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College, the National Ambulance Resilience Unit, individual police services and JESIP should review what changes need to be made to the Major Incident plans and Counter Terrorism Policing Headquarters Operation Plato guidance in order to achieve the aims set out in R45.</p>	20.46
R47	<p>The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College, the National Ambulance Resilience Unity, individual police services and JESIP should develop a nationally agreed format for all plans, placing JESIP at their centre.</p>	<u>INQ042283/3</u>

Multi-agency preparedness		
R48	The Home Office and the Department for Levelling Up, Housing and Communities should ensure that there exist robust national and local systems to identify and record the lessons learned from all multi-agency exercises and ensure that change is implemented as a result, where change is indicated.	12.758
R49	The Home Office and the Department for Levelling Up, Housing and Communities should ensure that there exist robust national and local systems and sufficient resources to make sure that the debrief process following multi-agency exercises is effective to capture the lessons that need to be learned.	12.749 to 12.758
R50	The Home Office, Counter Terrorism Policing Headquarters, the College of Policing, the Fire Service College and the National Ambulance Resilience Unit should consider introducing the use of regular 'high-fidelity training' to give emergency responders better experience of the stress, pressure and pace of a no-notice attack.	20.49
R51	The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College, the National Ambulance Resilience Unit and all local resilience forums should take steps to ensure, whether through multi-agency training and exercising or otherwise, that the members of each emergency service are aware of the specialist capabilities of every other emergency service.	13.432
R52	The Home Office, the National Ambulance Resilience Unit, the College of Policing and the Fire Service College should develop guidance as to where commanders should locate during a spontaneous Major Incident. Steps should be taken to ensure that a consistent approach is taken so that equivalent commanders locate in the same place. During the response to a terrorist attack, the need for commanders on scene who are not engaged in directing individual actions should be recognised and accommodated.	10.134 to 10.136 12.99 12.190 to 12.197 12.625 to 12.626 13.76 13.495 to 13.497 14.453 to 14.457
Multi-agency communication		
R53	The emergency services should prepare, train and exercise for how they will maintain effective radio communications between emergency responders on the ground, commanders and control rooms, during the response to a Major Incident.	Parts 12 and 13

R54	All police services should ensure that they have made adequate provision for Airwave Tactical Advisors, in particular that an identified Airwave Tactical Advisor is either on duty or on call at all times.	12.679 to 12.683 INQ042283/6
R55	The Home Office, the College of Policing, the Fire Service College and the National Ambulance Resilience Unit should consider together whether an app giving ready access to the contact details for all on-duty and on-call commanders is feasible and, if so, likely to be of benefit in the response to a Major Incident.	13.133 to 13.134
R56	The College of Policing and Counter Terrorism Policing Headquarters should take steps to ensure that each police service establishes a hotline that enables those within the command structure of the three emergency services to make contact with the Force Duty Officer in the event of a declaration of Operation Plato.	13.501
R57	The College of Policing, the Fire Service College and National Fire Chiefs Council should consider devising training packages for operators within control rooms, to enable them to give guidance on basic trauma care to 999 callers.	20.160 to 20.163
Planning by police services		
R58	His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing and the Home Office should work together to put in place robust systems, policies and guidance to ensure that all police services have sufficient resources dedicated to the development of operational and contingency plans, particularly for responding to Major Incidents, including terrorist attacks.	12.309 to 12.310
R59	His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing and the Home Office should issue guidance for all police services on how often operational plans for responding to a Major Incident, including a terrorist incident, should be reviewed, how that review should be conducted, and what rank and experience the officers involved should have.	12.309 to 12.310
R60	All police services should ensure that they have robust version control arrangements in place for all plans.	INQ042283/2 12.303 to 12.310

The funding of police services		
R61	The Inquiry heard evidence that the impact of public funding cuts fell disproportionately hard on metropolitan police services, such as Greater Manchester Police, compared with non-metropolitan services. In the event that public funding cuts are in the future considered necessary by the government, the Home Office should consider whether some funding arrangement for police services different from that applied in the post-2010 period is necessary.	12.143 to 12.148
Operation Plato		
R62	<p>The Home Office, the College of Policing and Counter Terrorism Policing Headquarters should ensure that all police officers to be appointed to the role of Force Duty Officer or Force Incident Manager attend a comprehensive training course dedicated to Operation Plato before they take up their role. Such courses must ensure that those attending understand the exceptional demands that will be placed upon them in the event of an Operation Plato declaration. Any course should include training in the following:</p> <ol style="list-style-type: none"> a. the need, following a declaration of Operation Plato, to carry out regular reviews of that declaration; b. the need to identify with clarity the Operation Plato zones at the scene or scenes covered by the declaration; c. the need to communicate those zones to all emergency services promptly; d. the need to keep zoning decisions under review; and e. the need to work jointly with emergency service partners in the response to an Operation Plato situation. 	12.315 to 12.316
R63	Given the broad command responsibilities that the Force Duty Officer or Force Incident Manager will have in the early stages of the response to a Major Incident, the Home Office and the College of Policing should develop nationally accredited training to prepare those officers for that role.	<u>INQ042283/5</u>

R64	Counter Terrorism Policing Headquarters and the College of Policing should ensure that all firearms officers, including firearms commanders, receive adequate training in Operation Plato, including in what such a declaration means and the demands it will place upon them. This should include instruction in the importance of zoning, communicating zoning decisions to other emergency services and joint working with those other services in the course of the response to an Operation Plato situation.	12.362 13.585
R65	Counter Terrorism Policing Headquarters and the College of Policing should ensure that all unarmed frontline police officers receive training in what Operation Plato is and what will be expected of them following such a declaration. The training should include the importance of zoning, the identification of who can ordinarily work in different zones and the importance of joint working.	12.336 to 12.347 13.486
R66	The College of Policing should issue guidance to all police services to ensure the following, in the event of a Major Incident: <ul style="list-style-type: none"> a. The Force Duty Officer is not expected to deal with media enquiries. b. The important task of ensuring that the media is kept informed is done in a way that does not interfere with the work of the police control room. 	13.250
Common terminology		
R67	The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College, the National Ambulance Resilience Unit and JESIP should ensure that all emergency services use common terminology to describe the Operation Plato hot, warm and cold zones and all have a common understanding of those terms.	20.45
R68	Those organisations should consider what changes need to be made to the Counter Terrorism Policing Headquarters Operation Plato guidance in order to achieve those aims.	20.46

R69	The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College, the National Ambulance Resilience Unit and JESIP should ensure that all emergency services use common terminology to describe the zoning of hazardous areas in non-Operation Plato Major Incident situations and that all services have a common understanding of those terms. The terms should be different from those used when Operation Plato is declared.	20.45
R70	Those organisations should consider what changes need to be made to Major Incident plans in order to achieve those aims.	20.46
Action cards		
R71	<p>The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, the College of Policing, the Fire Service College and the National Ambulance Resilience Unit should oversee the development and implementation of action cards for the police, fire and rescue service, and ambulance service for use in a Major Incident. This should include the following:</p> <ol style="list-style-type: none"> a. ensuring that all control room staff and commanders are trained in the use of the action cards; b. ensuring that action cards act as a checklist, setting out the key functions of each command role, the role of control room staff and the need for joint working; c. ensuring that action cards are available immediately to commanders and control room staff during the course of the response to a Major Incident, whether in hard copy or electronically; d. ensuring that the use of action cards is tested regularly through exercising; and e. ensuring that the action cards within the control rooms include a prompt to the first commander on scene to co-locate with other emergency service commanders. 	12.165 to 12.166 13.253

Gold and Silver Control Rooms and Strategic Co-ordinating Group meetings		
R72	Counter Terrorism Policing Headquarters and the College of Policing should review the advantages and disadvantages of a combined Silver and Gold Control Room as opposed to separate rooms, and issue guidance for all police services on best practice.	13.505
R73	The Home Office should consider the introduction of a national standard requiring a meeting of the Strategic Co-ordinating Group to take place no more than two hours after the declaration of a Major Incident where more than one emergency service is engaged in the response to that incident.	<u>INQ042283/4</u>
Embedding medics with police firearms officers		
R74	Counter Terrorism Policing Headquarters should review the evidence heard during the Inquiry, including that heard in restricted sessions, to consider the advantages and disadvantages of embedding doctors with some police firearms teams, and how, if that is advantageous, it could be achieved.	20.75
R75	Counter Terrorism Policing Headquarters should review the experience of other jurisdictions that embed medics with police firearms officers, such as Recherche, Assistance, Intervention, Dissuasion (RAID) in France, to understand how their systems operate and whether they ought to be replicated in the UK or some further learning taken from them.	20.75
Role of air ambulance services		
R76	The Department of Health and Social Care, the NHS, the National Ambulance Resilience Unit, ambulance service trusts, Air Ambulances UK, Counter Terrorism Policing Headquarters and JESIP should consider whether air ambulances should be integrated into the emergency response to Major Incidents, including terrorist attacks, and, if so, how that is to be achieved.	20.85
R77	The Department of Health and Social Care, the NHS, the National Ambulance Resilience Unit, ambulance service trusts, Air Ambulances UK, Counter Terrorism Policing Headquarters and JESIP should consider what staff training and resources would be required to integrate air ambulance organisations into the emergency response to Major Incidents, including terrorist attacks.	20.85

Police command structure		
R78	Counter Terrorism Policing Headquarters and the College of Policing should issue guidance on the circumstances in which a police officer or officers with responsibility for the tactical/silver command of the unarmed officers at the scene or scenes of a Major Incident should deploy to that scene or scenes.	13.461 13.497 13.540
R79	The College of Policing and His Majesty's Inspectorate of Constabulary and Fire and Rescue Services should ensure that each police service has in place a system that means appropriately qualified and experienced personnel are rostered 24 hours each day so that, in the event of a terrorist attack or any Major Incident, a prepared and effective command structure can be geared up swiftly.	13.548
Use of explosives detection dogs		
R80	The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, Counter Terrorism Policing Headquarters and the College of Policing should take steps to ensure that all police services have in place effective systems for the prompt deployment of explosives detection dogs in circumstances in which such animals are needed.	13.359 to 13.364
Notification of pre-planned events		
R81	The Home Office, the College of Policing and His Majesty's Inspectorate of Constabulary and Fire and Rescue Services should develop a system for ensuring that the duty command structure in each police service has notice of any significant pre-planned event, such as a major concert or sports match, taking place within the police service area.	13.491
R82	The Department of Health and Social Care and the National Ambulance Resilience Unit should develop a system for ensuring that the duty command structure in each ambulance service has notice of any significant pre-planned event, such as a major concert or sports match, taking place within the ambulance service area.	14.100
R83	The Home Office, His Majesty's Inspectorate of Constabulary and Fire and Rescue Services, and the Fire Service College should develop a system for ensuring that the duty command structure in each fire and rescue service has notice of any significant pre-planned event, such as a major concert or sports match, taking place within the fire and rescue service area.	14.100

Record-keeping		
R84	The Home Office, the College of Policing, the National Ambulance Resilience Unit and the Fire Service College should ensure that all those who may be required to take up a command position in the event of a Major Incident are issued with a means to record what they say, hear and see unless there are good reasons why they should not be so equipped.	19.22 to 19.29
R85	Consideration should also be given by those organisations to the provision of such equipment to key personnel within control rooms.	19.22 to 19.29
R86	The Home Office, the College of Policing, the National Ambulance Resilience Unit and the Fire Service College should ensure that training is given to all who are issued with such equipment, on the circumstances in which it should be used and the importance of its use.	19.22 to 19.29
R87	The Home Office, the College of Policing, the National Ambulance Resilience Unit and the Fire Service College should ensure that, in the course of exercises, such equipment is used by those who would use it in the circumstances of a real-life incident.	19.22 to 19.29
R88	The Home Office, the College of Policing, the National Ambulance Resilience Unit and the Fire Service College should take steps to ensure that all emergency services understand the importance of promptly obtaining comprehensive accounts from commanders as part of the debrief process following a Major Incident.	19.43 to 19.46
R89	The College of Policing should assess whether delays in the provision of written accounts by some firearms officers involved in the response to the Attack were due to Post-Incident Procedures. If so, those procedures should be reviewed.	19.14
R90	The Home Office, Counter Terrorism Policing Headquarters and the College of Policing should consider whether firearms officers should be equipped routinely with body-worn video cameras.	13.316

Police training and training records		
R91	The Home Office and College of Policing should ensure that any police officer whose position carries with it the expectation that they will assume a Tactical/Silver Commander role in the event of a spontaneous Major Incident (e.g. Night Silver in Greater Manchester Police) has undertaken an accredited course preparing them for that role.	INQ042283/4-5
R92	The College of Policing should consider whether the current process for maintaining and storing training records for all police officers can be improved. That should include assessing the following: <ul style="list-style-type: none"> a. the introduction of electronic training records in a standard form across all police services; b. the introduction of centrally held electronic training records for all police officers; and c. the introduction of a system whereby each police officer is required to view their record each year and identify any errors or omissions within it. 	13.488 to 13.490 INQ042283/4
First aid		
R93	The Home Office and College of Policing should ensure that all newly recruited and existing police officers and all frontline police staff, such as Police Community Support Officers, are trained in first responder interventions.	20.170 to 20.174
R94	Each police service must ensure that adequate time is allocated to the training of all police officers and frontline police staff in first responder interventions.	20.170 to 20.174
R95	The Home Office and the College of Policing should regularly assess and appraise the training on first responder interventions provided by each police service to ensure that it is of an appropriate quality and that adequate time is allocated to it.	20.170 to 20.174
R96	The College of Policing and Counter Terrorism Policing Headquarters should ensure that all firearms officers are trained to understand that, while their primary role in an Operation Plato situation is to neutralise any armed terrorist, their role also involves providing Care Under Fire.	20.175 to 20.182
R97	The College of Policing and Counter Terrorism Policing Headquarters should review whether firearms officers should be deployed with analgesia and trained in its use, as part of providing Care Under Fire.	20.183

Local resilience forums at a national level		
R98	Local resilience forums have a vital role in the preparation for the response to any Major Incident. The Cabinet Office and the Home Office should consider implementing an independent inspection regime for local resilience forums.	INQ042283/1 12.78 to 12.81
R99	Each emergency service should ensure that it is represented at a senior level at every meeting of a local resilience forum.	12.21 12.44 to 12.61
R100	Local resilience forums should monitor attendance and participation at their meetings, and flag promptly any concerns about attendance by members to the leadership of the organisation concerned. The Home Office should ensure that this is being done by local resilience forums.	12.21 12.44 to 12.61
R101	The Home Office should consider empowering the leadership of local resilience forums to compel the attendance of a senior representative of its Category 1 and Category 2 responders at all local resilience forum meetings. Inspections by His Majesty's Inspectorate of Constabulary and Fire and Rescue Services should include an analysis of a service's engagement with its local resilience forum or forums. Consideration should be given to putting this on a statutory footing.	12.21 12.44 to 12.61
R102	The Home Office should consider how local resilience forums are to be funded consistently and sufficiently to enable them to do their important work.	12.39
R103	The Home Office should consider, together with local resilience forums, how they are to have sufficient staff and resources to enable them to function effectively.	12.40
R104	Local resilience forums should establish procedures to ensure that they oversee the process of identifying the lessons to be learned from major exercises, or serious incidents, in their areas, and that they are responsible for overseeing the debriefing of those events.	12.74 to 12.77
Ambulance services at a national level		
Resources		
R105	Ambulance service trusts should review their capacity to respond to a mass casualty incident. That should include an assessment of whether they have an adequate number of trained specialist personnel to respond effectively to a mass casualty incident.	20.11 to 20.23

R106	Having carried out that review, the trusts should make recommendations to their NHS commissioners about the additional and/or different resources they require in order to ensure that they are able to respond effectively to a mass casualty incident in the numbers required.	20.11 to 20.23
R107	The Department of Health and Social Care should give urgent and close consideration to any recommendations made by the trusts and the NHS commissioners.	20.11 to 20.23
Hazardous Area Response Team (HART)		
R108	The Department of Health and Social Care and the National Ambulance Resilience Unit should develop procedures to ensure that, so far as possible, each ambulance service trust is able to deploy or call upon HART resources immediately in the event of a Major Incident. As part of that, the Department of Health and Social Care and the National Ambulance Resilience Unit should develop procedures to ensure that, so far as possible, each ambulance service trust can call upon cross-border support in respect of HART resources immediately in the event of a Major Incident. There may be some incidents that are so significant that an individual ambulance service will need to mobilise its own HART resources and also draw upon cross-border support. Procedures need to accommodate this.	20.24 to 20.25 INQ042167/9
R109	All ambulance service trusts should undertake training and exercising with neighbouring ambulance service trusts to ensure that cross-border support is efficient and effective.	INQ042167/10
R110	The Department of Health and Social Care and the National Ambulance Resilience Unit should ensure that all ambulance commanders receive regular Major Incident training. The training should include training on HART capabilities, on all the command roles and where they will be located, on how to gain situational awareness through the deployment of sector commanders and other roles, on the importance of getting ambulance personnel to casualties without delay and on the circumstances in which they may use operational discretion.	20.26 to 20.27 14.214
R111	The Department of Health and Social Care and the National Ambulance Resilience Unit should consider ensuring that there is further training of HART personnel so that at least one member on every HART deployment has the ability to deliver the most enhanced care interventions.	20.86 to 20.87

New triage tools		
R112	The team led by Philip Cowburn has devised a tool that is designed to replace the existing systems of primary and secondary triage. It is known as the Major Incident Triage Tool. It already has the support of NHS England. The National Ambulance Resilience Unit and all ambulance services should consider introducing the Major Incident Triage Tool as a matter of urgency.	20.108
R113	The team led by Philip Cowburn has devised a tool that is designed for use by a wide range of emergency responders in a mass casualty situation. It is known as Ten Second Triage. The National Ambulance Resilience Unit, the College of Policing and the Fire Service College should consider as a matter of urgency whether all of their frontline staff should be trained in the use of Ten Second Triage.	20.109 to 20.115
Other matters relating to ambulance services		
R114	The Department of Health and Social Care and the National Ambulance Resilience Unit should consider whether the Advanced Medical Priority Dispatch System is fit for purpose and, if it is, whether it can be improved. Particular consideration should be given to how the system prioritises emergency calls.	14.101 to 14.104
R115	The Department of Health and Social Care, the Faculty of Pre-Hospital Care, the College of Paramedics and the National Ambulance Resilience Unit should review the current model for evacuation to hospital operated in the UK by reference to the different approaches around the world in order to see whether triage at different times and in different places remains best practice, or whether there should be a greater emphasis on rapid evacuation to hospital.	20.88 to 20.96
R116	A significant issue in a mass casualty situation is that all of those paramedics who have arrived in ambulances may be required for the treatment of casualties, so that no paramedic is available to drive patients to hospital. The Department of Health and Social Care and the National Ambulance Resilience Unit should consider how to resolve that problem. Consideration should be given to the training of other emergency service personnel in driving ambulances.	20.94 to 20.95 <u>INQ042167/6-8</u>

R117	The Department of Health and Social Care and the National Ambulance Resilience Unit should consider whether the Basic Life Support and Advanced Life Support bags used by paramedics should contain SMART Triage Tags or an equivalent.	14.112
R118	The Department of Health and Social Care and the Medicines and Healthcare products Regulatory Agency (MHRA) should consider urgently whether the regulatory regime should be altered to enable analgesia, such as fentanyl lozenges or sufentanil sublingual tablets, to be given by paramedics to injured persons.	20.118 to 20.128
R119	If the decision is that the regulatory regime should be altered in this way, the National Ambulance Resilience Unit should consider urgently whether the use of such analgesia should be rolled out to all Hazardous Area Response Team and other specialist operatives, as part of their basic equipment, and to paramedics more generally.	20.118 to 20.128
R120	The Department of Health and Social Care, the Faculty of Pre-Hospital Care, the College of Paramedics and the National Ambulance Resilience Unit should consider whether all Hazardous Area Response Team operatives should be deployed with freeze-dried plasma and trained in its use.	20.139 to 20.140
R121	The Department of Health and Social Care, the Faculty of Pre-Hospital Care, the College of Paramedics and the National Ambulance Resilience Unit should undertake a review into whether frontline ambulances should carry intramuscular tranexamic acid or TXA.	20.141 to 20.143
R122	The Department of Health and Social Care and the National Ambulance Resilience Unit should review whether stretchers should be carried on National Capability Mass Casualty Equipment Vehicles.	14.461
R123	The Department of Health and Social Care, the Faculty of Pre-Hospital Care, the College of Paramedics and the National Ambulance Resilience Unit should consider issuing guidance on how to ensure that specialist paramedics take with them, into a warm zone, equipment that enables them to carry out bridging interventions.	20.218 to 20.219
R124	All ambulance service trusts should consider appointing a person within their control rooms who, in the event of a Major Incident, has the sole role of gathering and collating all available information and intelligence, and sharing it internally and externally to the extent appropriate.	INQ042167/11

R125	The terms Casualty Collection Point and Casualty Clearing Station are capable of being confused, one for the other, particularly in circumstances of stress. That happened on the night of the Attack. The National Ambulance Resilience Unit should consider whether different and more distinct terms should be used for these two locations.	14.230 14.335 to 14.349
Ambulance Liaison Officers		
R126	The Department of Health and Social Care and the National Ambulance Resilience Unit should consider the scope of the role of an Ambulance Liaison Officer and issue guidance to ambulance services in that regard.	20.203 to 20.209
R127	The Home Office and the Department of Health and Social Care should consider how the threshold for a requirement that an Ambulance Liaison Officer be present at an event is to be identified.	20.203 to 20.209
R128	The Home Office, the Department of Health and Social Care and the National Ambulance Resilience Unit should consider how to ensure that the role of an Ambulance Liaison Officer is properly resourced and also whether venue operators should fund the presence of an Ambulance Liaison Officer where one is required.	20.203 to 20.209
R129	The Home Office should consider how the presence of an Ambulance Liaison Officer in appropriate circumstances may be made mandatory. This may need to be put on a statutory footing.	20.203 to 20.209
Fire and rescue services at a national level		
R130	The National Fire Chiefs Council and the Fire Service College should establish a scheme for ensuring that all fire fighters are trained in first responder interventions.	20.184 to 20.185
R131	All fire and rescue services should consider appointing a person within their control rooms who, in the event of a Major Incident, has the sole role of gathering and collating all available information and intelligence, and sharing it internally and externally to the extent appropriate.	<u>INQ042111/6</u>

Event healthcare services at a national level		
R132	The Department of Health and Social Care should establish the standard for the level of healthcare services required at events. Consideration should be given to putting that standard on a statutory footing.	20.194 to 20.195
R133	That standard needs to be regulated and enforced. The Care Quality Commission is the appropriate body to provide regulation and enforcement. The Department of Health and Social Care should give urgent consideration to making the necessary changes in the law to enable the Care Quality Commission to become the regulator for this sector.	20.196 to 20.197
R134	The Department of Health and Social Care together with the Care Quality Commission should consider what the consequences of breaching the appropriate standard should be. That should include consideration of whether the sanction should be criminal in nature.	20.198 to 20.199
R135	The Department of Health and Social Care and the Care Quality Commission should consider introducing guidelines to ensure that all event healthcare staff who work at events are trained in first responder interventions.	16.57
R136	The Department of Health and Social Care should consider issuing guidance on the first aid equipment that event providers should have available on the relevant premises, as well as where that equipment should be stored to ensure that it is readily accessible when required and how often it should be checked to ensure that it is up to date and in good working order.	16.63
R137	The Department for Levelling Up, Housing and Communities should review the guidance given to all licensing authorities on the decisions they make in relation to venues that hold events, and on what level of event healthcare services may be required at the events likely to be held at those venues. The guidance should indicate appropriate licence conditions to be used. The licensing authorities should then impose conditions accordingly or make those standards a requirement of meeting existing conditions.	20.201 to 20.202
R138	The Home Office should consider whether the requirement for adequate healthcare provision at events is a topic that should also be addressed by the Protect Duty.	16.63, 20.209 and 20.215

R139	Guidance should be provided to event healthcare providers, to emergency service responders other than paramedics and to the public generally about the circumstances in which those who are believed to be dead should be covered. The guidance should make clear that this step should only be taken by a paramedic or other healthcare professional. The guidance should also make clear that paramedics at the scene of a mass casualty incident should inform others present that only healthcare professionals should cover those believed to be dead. The Department of Health and Social Care and the National Ambulance Resilience Unit should provide guidance addressing this important issue.	14.187 to 14.188
Security Industry Authority		
R140	The Security Industry Authority should take urgent steps to devise a training scheme in first responder interventions that educates all of those licensed by it, both existing licensees and new licence applicants. The Security Industry Authority may find it helpful to consult with the College of Policing in this, since it is apparent that the College of Policing has already undertaken a good deal of work in this regard.	20.189
R141	The Security Industry Authority should take steps to encourage the security industry generally to ensure that even those members of staff who do not require a licence from the Security Industry Authority develop skills in basic trauma care.	20.189
The public		
R142	As of September 2020, all primary and secondary school pupils were required to be taught health education, including first aid, as part of the National Curriculum. This involves children aged over 12 being taught CPR. This is necessary. The Department for Education should ensure that it continues.	20.154
R143	The Department for Education should consider extending the National Curriculum to ensure that pupils, once of an appropriate age, receive education in all first responder interventions.	20.155 to 20.156
R144	The Home Office should consider the introduction of a public education programme to educate the public in first responder interventions.	20.158

R145	The Home Office should consider the introduction of a requirement into law, for example through regulations issued under the Health and Safety at Work etc. Act 1974, that employers train all employees, or certain categories of employees, in first responder interventions.	20.158
Public Access Trauma kits		
R146	The Department of Health and Social Care should take steps to ensure that Public Access Trauma kits contain the equipment that is necessary to enable first responder interventions to be undertaken.	20.213
R147	The Home Office and the Department of Health and Social Care should consider how to ensure Public Access Trauma kits are available in all locations where they are most likely to be needed.	20.215
Stretchers		
R148	The Home Office, the Department of Health and Social Care, the Department for Transport and the Department for Levelling Up, Housing and Communities should conduct a review to ensure that stretchers that are appropriate in design and adequate in numbers are always available for use by the emergency services and in appropriate locations in the event of a mass casualty incident.	20.220
R149	The Department of Health and Social Care should undertake a review, with input from other bodies as the Department considers appropriate, in order to identify the type of stretcher that is of the greatest utility in the event of a mass casualty incident. The product of that research should be rolled out to all of those with responsibility for the response to a mass casualty incident, including a terrorist attack, whether in the public or private sector.	20.222

Monitored Recommendations

- 21.39 Of the Recommendations I have made above, I indicate below those I propose to monitor. The numbering is not intended to indicate importance or priority.
- 21.40 I have grouped the Volume 2 Recommendations together thematically. The effect of this is that there are Monitored Recommendations, which comprise more than one of the Recommendations I made above. This means that some reporting organisations are only expected to report back against specific Recommendations within a Monitored Recommendation. I have identified below which organisations I expect to address each Monitored Recommendation.
- 21.41 As I did for Volume 1, I shall take a staged approach to monitoring the Recommendations arising out of Volume 2.
- 21.42 First, I will require an update as to progress from those reporting against the Monitored Recommendations. This will be due approximately three months after the publication of Volume 2. Responses will be added to the Inquiry's website.
- 21.43 Second, I will require witness statements from named individuals within each reporting organisation. Each statement will be required approximately six months after the publication of Volume 2. The witness statements will be added to the Inquiry's website.
- 21.44 Third, the Solicitor to the Inquiry will inform those who made the witness statements, as well as all Core Participants, which of those witnesses I intend to hear live evidence from. I will permit a brief window for submissions to be made on this.
- 21.45 Fourth, I will receive live evidence from those witnesses from whom I consider I should hear. I anticipate hearing that evidence during the summer of 2023.
- 21.46 The Solicitor to the Inquiry will contact those organisations who are the subject of the Monitored Recommendations and provide exact dates for each stage and to assist in the identification of the individual who can provide witness evidence.
- 21.47 As I said in Volume 1, it should be understood that I intend to scrutinise what has been done in response to the Monitored Recommendations and use all of the powers available to me, if required, to achieve transparency and accountability.

Monitored Recommendations		Reporter
MR10	British Transport Police Recommendations R2, R3, R4, R5, R6, R7	<ul style="list-style-type: none"> BTP
MR11	Greater Manchester Police Recommendations R8, R9, R10, R11, R12, R13	<ul style="list-style-type: none"> GMP
MR12	North West Ambulance Service Recommendations R14, R15, R16, R17, R18, R19, R20, R21, R22, R23, R24, R25, R26, R27	<ul style="list-style-type: none"> NWAS
MR13	North West Fire Control Recommendations R28, R29, R30, R31, R32, R33, R34, R35	<ul style="list-style-type: none"> NWFC GMFRS
MR14	Greater Manchester Fire and Rescue Service Recommendations R36, R37, R38, R39	<ul style="list-style-type: none"> GMFRS
MR15	SMG Recommendations R41, R42, R43, R44	<ul style="list-style-type: none"> SMG
MR16	Operation Plato Recommendations R62, R63, R64, R65, R66	<ul style="list-style-type: none"> Home Office College of Policing CTPHQ
MR17	Use of explosives detection dogs Recommendation R80	<ul style="list-style-type: none"> Home Office HMICFRS CTPHQ College of Policing
MR18	First aid Recommendations R93, R94, R95, R96, R97	<ul style="list-style-type: none"> College of Policing Home Office CTPHQ
MR19	New triage tools Recommendations R112, R113	<ul style="list-style-type: none"> NARU

Monitored Recommendations		Reporter
MR20	<p>Other matters relating to ambulance services</p> <p>Recommendations R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125</p>	<ul style="list-style-type: none"> • DHSC • NARU • Faculty of Pre-Hospital Care • College of Paramedics • MHRA
MR21	<p>Event healthcare services at a national level</p> <p>Recommendations R132, R133, R134, R135, R136, R137, R138, R139</p>	<ul style="list-style-type: none"> • DHSC • CQC • DLUHC • Home Office • NARU

Appendices

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Appendix 9: List of abbreviations

Organisations

ACPO	Association of Chief Police Officers
ACPO (TAM)	Association of Chief Police Officers (Terrorism and Allied Matters)
BTP	British Transport Police
CQC	Care Quality Commission
CPS	Crown Prosecution Service
CTPHQ	Counter Terrorism Policing Headquarters
CTPNW	Counter Terrorism Policing North West
DHSC	Department of Health and Social Care
DLUHC	Department for Levelling Up, Housing and Communities
ETUK	Emergency Training UK
GMFRS	Greater Manchester Fire and Rescue Service
GMP	Greater Manchester Police
GMRF	Greater Manchester Resilience Forum
HMG	Her Majesty's Government (prior to 8 th September 2022)/ His Majesty's Government (from 8 th September 2022)
HMICFRS	Her Majesty's Inspectorate of Constabulary and Fire and Rescue Services (prior to 8 th September 2022)/His Majesty's Inspectorate of Constabulary and Fire and Rescue Services (from 8 th September 2022)
HMPPS	Her Majesty's Prison and Probation Service (prior to 8 th September 2022)/His Majesty's Prison and Probation Service (from 8 th September 2022)
LFB	London Fire Brigade
LFRS	Lancashire Fire and Rescue Service
MHRA	Medicines and Healthcare products Regulatory Agency
MPS	Metropolitan Police Service
NARU	National Ambulance Resilience Unit
NWAS	North West Ambulance Service
NWCTU	North West Counter Terrorist Unit
NWFC	North West Fire Control
SIA	Security Industry Authority

Individuals

SA	Salman Abedi
HA	Hashem Abedi

Ranks and roles

ACC	Assistant Chief Constable
ACSO	Assistant Commissioner Specialist Operations
CI	Chief Inspector
CTSFO	Counter Terrorist Specialist Firearms Officer
DAC	Deputy Assistant Commissioner
DC	Detective Constable
DCC	Deputy Chief Constable
DCI	Detective Chief Inspector
DCS	Detective Chief Superintendent
DI	Detective Inspector
DS	Detective Sergeant
EMT	Emergency Medical Technician
EMT-A	Emergency Medical Technicians Advanced
EMT-B	Emergency Medical Technicians Basic
FDO	Force Duty Officer
NILO	National Interagency Liaison Officer
PC	Police Constable
PCSO	Police Community Support Officer

Other







AMPDS	Advanced Medical Priority Dispatch System
CSCATTT	Command and Control; Safety; Communication; Assessment; Triage; Treatment; Transport
CT	computerised tomography
CT2	Counter-Terrorism Policing Part 2
FALP	First Aid Learning Programme
FCP	Forward Command Post
HART	Hazardous Area Response Team (NWS)
HQ	Headquarters
IED	Improvised Explosive Device
JESIP	Joint Emergency Services Interoperability Principles
JOPs	Joint Operating Principles
MEN	Manchester Evening News
METHANE	Major Incident; Exact Location; Type of Incident; Hazards; Number of Casualties; Emergency Services (see Figure 23 in Part 11 in Volume 2-I)
MIMMS	Major Incident Medical Management and Support
MITT	Major Incident Triage Tool
PACT	Public Access Trauma (first-aid kit)
PDA	pre-determined attendance

PPE	personal protective equipment
PTSD	post-traumatic stress disorder
RAID	Recherche, Assistance, Intervention, Dissuasion team
REBOA	resuscitative endovascular balloon occlusion of the aorta
RVP	Rendezvous Point
SOP	Standard Operating Procedure
SORT	Special Operations Response Team
TATP	triacetone triperoxide
TST	Ten Second Triage
TXA	tranexamic acid

Appendix 10: Key events in the emergency response – chronology

- A10.1** In this chronology, I have recorded the key events of the emergency response on 22nd and 23rd May 2017. My intention is that this chronology will give a reader an understanding of how the different emergency services' responses developed over time and in relation to each other.
- A10.2** The considerable assistance given to me by Operation Manteline has meant that many of the timings have been checked and confirmed against the evidence. There are other timings where such a check has not been possible. In relation to these, I have recorded the most likely time based upon the surrounding evidence.

Key

-  British Transport Police (BTP)
-  Greater Manchester Police (GMP)
-  Greater Manchester Fire and Rescue Service (GMFRS)
-  North West Fire Control (NWFC)
-  North West Ambulance Service (NWAS)
-  Emergency Training UK (ETUK)

Time	Event
22nd May 2017	
22:31	GMP received its first 999 call from a member of the public. ¹
22:32	NWAS received its first 999 call from a member of the public. ²
	The first emergency responder, BTP Police Constable (PC) Jessica Bullough, entered the City Room. ³

¹ [52/125/14-126/13, INQ023493T/19-22](#)

² [52/127/22-128/11, INQ015293T](#)

³ [52/131/16-22, INQ035612/14](#)

Time	Event
22nd May 2017	
22:34	The first BTP patrol vehicle arrived at the Victoria Exchange Complex on Station Approach. ⁴
	The first ETUK medic, Elizabeth Woodcock, entered the City Room. ⁵
	GMP Inspector Dale Sexton became aware of the Attack and simultaneously became GMP Tactical/Silver and Strategic/Gold Commander. ⁶
	GMP Inspector Michael Smith was informed of the Attack by GMP Control. ⁷
	NWFC received its first notification of the Attack from GMP . ⁸
22:36	Director of ETUK , Ian Parry, entered the City Room. ⁹
22:37	NWAS Control notified NWFC of the Attack. ¹⁰
22:38	During the call with GMP , NWFC created an incident log which sent a pre-alert to GMFRS Manchester Central Fire Station. ¹¹
	NWAS on-call Tactical Commander Annemarie Rooney was informed of the Attack. ¹²
22:39	BTP Force Incident Manager, Inspector Benjamin Dawson, declared a Major Incident. ¹³
	GMP Temporary Superintendent Arif Nawaz (Night Silver) was informed of the Attack by GMP Force Duty Supervisor Ian Randall. ¹⁴
22:40	NWFC informed the GMFRS duty National Interagency Liaison Officer (NILO), Station Manager Andrew Berry, of the Attack. Station Manager Berry instructed NWFC to mobilise GMFRS crews to Philips Park Fire Station as a muster point. ¹⁵
	GMP Inspector Sexton granted Firearms Authority and assumed the role of Initial Tactical Firearms Commander and Strategic Firearms Commander. ¹⁶
	NWAS Tactical Commander Annemarie Rooney telephoned NWAS Strategic Commander Neil Barnes to notify him of the Attack and left a voicemail message. ¹⁷

⁴ [52/133/21-134/7, INQ035612/21](#)

⁵ [52/134/10-14, INQ035612/22](#)

⁶ [INQ007214/8](#)

⁷ [102/176/21-177/13, INQ018514T/4](#)

⁸ [122/177/24-178/7, INQ001231/2](#)

⁹ [52/145/2-6, INQ035612/43](#)

¹⁰ [53/4/12-5/9, INQ001218/1](#)

¹¹ [122/177/21-179/9, 69/133/22-134/15, INQ008376/3](#)

¹² [115/114/12-20, INQ015353T](#)

¹³ [92/58/12-60/13, INQ002000/30](#)

¹⁴ [99/193/10-19, INQ018839T/5-6](#)

¹⁵ [53/9/14-24, INQ001198](#)

¹⁶ [INQ029021/10](#)

¹⁷ [115/14/19-16/9, INQ014791/4](#)

Time	Event
22nd May 2017	
22:41	NWFC received its only 999 call from a member of the public. ¹⁸
	First two GMP Armed Response Vehicles recorded on Station Approach. ¹⁹
	BTP informed NWAS that it had declared a Major Incident. ²⁰
	NWAS Tactical Commander Annemarie Rooney informed NWAS Consultant Paramedic Daniel Smith of the Attack. ²¹
22:42	GMP PC Troy Tyldesley and PC James Dalton entered the Victoria Exchange Complex. They were the first firearms officers to do so. ²²
	First NWAS paramedic, Patrick Ennis, arrived outside the Victoria Exchange Complex in a rapid response vehicle. ²³
22:43	GMP firearms officers PC Lee Moore and PC James Simpkin conducted a 'raw check' of the City Room ²³
	BTP nominated the Fishdock car park as a Rendezvous Point. ²⁴
	NWAS informed BTP that it was sending crews to Manchester Central Fire Station. ²⁵
22:44	BTP Chief Superintendent Allan Gregory was informed of the Attack by BTP Senior Duty Officer, Chief Inspector (CI) Antony Lodge. ²⁶
	GMP Operational/Bronze Commander, Inspector Michael Smith, arrived at the Victoria Exchange Complex. ²⁷
22:45	NWAS declared a Major Incident. ²⁸
22:46	GMP Operational Firearms Commander, PC Edward Richardson, entered the City Room. ²⁹
22:47	GMP Inspector Sexton declared Operation Plato. ³⁰
	GMP Operational/Bronze Commander, Inspector Michael Smith, entered the City Room. ³¹

¹⁸ [123/149/10-12, INQ001165](#)

¹⁹ [53/14/4-18, INQ035612/67](#)

²⁰ [53/14/20-15/7, INQ028932/9-11](#)

²¹ [110/79/25-80/19, INQ014791/4](#)

²² [INQ035612/78, 102/85/6-22](#)

²³ [76/62/14-63/8](#)

²⁴ [74/97/1-8, INQ028932/15](#)

²⁵ [INQ015145T](#)

²⁶ [93/106/9-107/10](#)

²⁷ [53/24/12-20, INQ035612/89](#)

²⁸ [53/27/11-28/22](#)

²⁹ [INQ035612/101-103](#)

³⁰ [53/36/2-17, INQ024325/1](#)

³¹ [102/191/10-192/1, INQ035612/113](#)

Time	Event
22nd May 2017	
22:50	NWAS Advanced Paramedic Patrick Ennis entered the Victoria Exchange Complex. ³² Within seconds, he informed NWAS Control that all ambulances should come to Hunts Bank. ³³
	GMP PC Grace Barker approached NWAS Advanced Paramedic Patrick Ennis and advised all NWAS paramedics to go to "the booking office". ³⁴
	NWAS Consultant Paramedic Daniel Smith instructed NWAS Control to maintain Manchester Central Fire Station as the Rendezvous Point. ³⁵
22:51	GMP Control informed NWAS Control that all available ambulances should go to "Hunts Bank". ³⁶
22:52	GMP CI Mark Dexter assumed the role of Ground Assigned Tactical Firearms Commander and agreed that GMP Temporary CI Rachel Buckle would become the Tactical Firearms Commander at GMP Headquarters (GMP HQ). ³⁷
	GMP Strategic/Gold Commander, Assistant Chief Constable (ACC) Deborah Ford, was informed of the Attack by GMP Tactical/Silver Commander, Temporary Superintendent Nawaz. ³⁸
	GMFRS duty Group Manager Dean Nankivell was informed of the Attack by NWFC . ³⁹
22:53	NWAS Advanced Paramedic Patrick Ennis entered the City Room for the first time. ⁴⁰
22:54	NWAS Advanced Paramedic Patrick Ennis sent a METHANE message to NWAS Control. ⁴¹
	First GMFRS Manchester Central Fire Station appliance arrived at Philips Park Fire Station. ⁴²
	GMP Counter Terrorist Specialist Firearms Officers arrived at the Victoria Exchange Complex. ⁴³
22:55	First GMP Tactical Aid Unit of eight officers, led by Sergeant Kam Hare, entered the City Room. ⁴⁴

³² [53/45/15-23](#), [INQ035612/130](#)

³³ [INQ035612/132](#), [INQ032872T](#)

³⁴ [76/78/10-79/12](#)

³⁵ [INQ015056T](#)

³⁶ [INQ015139T/1](#), [INQ015139T/2](#)

³⁷ [106/146/9-21](#)

³⁸ [105/39/17-21](#), [104/38/20-39/8](#)

³⁹ [INQ001224](#)

⁴⁰ [INQ035612/143](#)

⁴¹ [INQ015070T](#)

⁴² [INQ004284/4](#)

⁴³ [53/61/20-62/6](#)

⁴⁴ [INQ035612/151](#), [78/46/18-49/7](#)

Time	Event
22nd May 2017	
22:56	BTP Gold Commander, ACC Robin Smith, was informed of the Attack by BTP CI Lodge. ⁴⁵
22:57	Saffie-Rose Roussos was carried out of the City Room on a makeshift stretcher. ⁴⁶
22:58	First NWAS ambulance arrived at the Victoria Exchange Complex. ⁴⁷
	Saffie-Rose Roussos was carried out of the Victoria Exchange Complex onto Trinity Way. ⁴⁸
	BTP Force Incident Manager, Inspector Dawson, received a METHANE message from BTP Sergeant David Cawley. ⁴⁹
22:59	NWAS Consultant Paramedic Daniel Smith arrived at the Victoria Exchange Complex. ⁵⁰
23:00	NWAS Control instructed all vehicles responding to the Attack to go to Hunts Bank. ⁵¹
23:03	NWAS Consultant Paramedic Daniel Smith appointed himself NWAS Operational Commander. ⁵²
23:06	Saffie-Rose Roussos was placed into NWAS Ambulance A344, ⁵³ which departed from the Victoria Exchange Complex 11 minutes later. ⁵⁴
	GMFRS Group Manager Ben Levy received a pager message from NWFC notifying him of the Attack. ⁵⁵
	Six NWAS ambulances at Manchester Central Fire Station set off in convoy for Hunts Bank. ⁵⁶
	First NWAS HART operatives from the HART crew based in Greater Manchester arrived on Hunts Bank. ⁵⁷
	NWAS HART crew covering Cheshire and Merseyside agreed with NWAS Control to mobilise to the incident. ⁵⁸

⁴⁵ [94/102/18-103/6, INQ041119/3](#)

⁴⁶ [174/34/13-15](#)

⁴⁷ [53/73/1-7, INQ035612/162](#)

⁴⁸ [174/39/2-8](#)

⁴⁹ [INQ032071](#)

⁵⁰ [53/74/19-75/7, INQ035612/169](#)

⁵¹ [INQ015093T](#)

⁵² [INQ035612/194](#)

⁵³ [174/65/6-16](#)

⁵⁴ [174/89/1-2](#)

⁵⁵ [121/154/20-156/23](#)

⁵⁶ [81/84/15-88/6](#)

⁵⁷ [INQ040616/4](#)

⁵⁸ [81/115/15-118/6](#)

Time	Event
22nd May 2017	
23:07	The first casualty arrived at the Casualty Clearing Station following evacuation from the City Room. ⁵⁹
23:08	GMFRS Chief Fire Officer Peter O'Reilly was informed of the Attack by GMFRS Group Manager Nankivell. ⁶⁰
	NWAS ambulances travelling from Manchester Central Fire Station began to arrive at Hunts Bank. ⁶¹
23:10	GMP Tactical/Silver Commander, Temporary Superintendent Nawaz, arrived at the Silver Control Room in GMP HQ. ⁶²
23:11	NWAS HART operatives Simon Beswick, Christopher Hargreaves and Lea Vaughan convened on Station Approach. ⁶³
23:12	NWAS Tactical Commander, Annemarie Rooney, arrived at the Silver Control Room in GMP HQ. ⁶⁴
	BTP Chief Superintendent Gregory notified BTP Superintendent Kyle Gordon of the Attack and appointed him as BTP Bronze Commander. ⁶⁵
23:13	Two NWAS HART operatives, Christopher Hargreaves and Lea Vaughan, entered the Victoria Exchange Complex. ⁶⁶
23:15	NWAS HART operatives Christopher Hargreaves and Lea Vaughan entered the City Room. ⁶⁷
	GMP Strategic/Gold Commander, ACC Ford, arrived at GMP HQ. ⁶⁸
	NWAS Tactical Commander Annemarie Rooney was briefed by GMP Tactical/Silver Commander Temporary Superintendent Nawaz that a suicide bomber was responsible for the Attack, that there were 20 fatalities including the bomber, and that it was not a shooting incident. ⁶⁹
23:17	John Atkinson was carried out of the City Room on a makeshift stretcher. ⁷⁰
23:18	GMP Tactical Firearms Commander, Temporary CI Buckle, arrived in the Silver Command Room at GMP HQ. ⁷¹

⁵⁹ [INQ041266](#)

⁶⁰ [132/1/22-3/10](#), [INQ004348/66](#)

⁶¹ [81/84/15-88/6](#)

⁶² [104/52/15-19](#)

⁶³ [77/25/4-/26/8](#)

⁶⁴ [115/122/6-7](#), [INQ014791/5](#)

⁶⁵ [93/168/25-169/12](#)

⁶⁶ [53/98/10-25](#), [INQ035612/252](#)

⁶⁷ [INQ035612/258](#)

⁶⁸ [105/86/13-16](#)

⁶⁹ [115/122/6-124/5](#)

⁷⁰ [155/40/11-13](#)

⁷¹ [100/131/18-20](#), [INQ029004/5](#)

Time	Event
22nd May 2017	
23:20	GMP Force Duty Supervisor, Ian Randall, left GMP Control to set up the Silver Command Room at GMP HQ. ⁷²
23:23	NWAS Operational Commander Daniel Smith provided a METHANE message to NWAS Control. ⁷³
	NWAS Ambulance A344 carrying Saffie-Rose Roussos arrived at the Royal Manchester Children's Hospital. ⁷⁴
	GMP Ground Assigned Tactical Firearms Commander, CI Dexter, arrived at the Victoria Exchange Complex. ⁷⁵
23:24	John Atkinson arrived at the Casualty Clearing Station. ⁷⁶
23:25	GMFRS Group Manager Carlos Meakin arrived at Philips Park Fire Station. ⁷⁷
	GMP Ground Assigned Tactical Firearms Commander, CI Dexter, entered the City Room for the first time. ⁷⁸
23:26	Georgina Callander was carried out of the City Room on a makeshift stretcher. ⁷⁹
23:28	Georgina Callander arrived at the Casualty Clearing Station. ⁸⁰
23:34	BTP Chief Superintendent Gregory took over as Silver Commander from BTP Inspector Dawson. ⁸¹
23:35	GMFRS Group Manager Levy arrived at Philips Park Fire Station. ⁸²
23:39	Georgina Callander was placed into NWAS Ambulance A347, ⁸³ which departed from the Victoria Exchange Complex one minute later. ⁸⁴
	The last living casualty was evacuated from the City Room. ⁸⁵
23:40	GMFRS duty Assistant Principal Officer, Area Manager Paul Etches, was the first to arrive at the GMFRS Command Support Room. ⁸⁶
	GMFRS Station Manager Berry arrived at Philips Park Fire Station. ⁸⁷

⁷² [99/175/11-12](#)

⁷³ [53/106/20-107/11](#), [INQ034313/1](#)

⁷⁴ [174/92/6-9](#)

⁷⁵ [53/108/17-24](#), [INQ035612/302](#)

⁷⁶ [155/54/9-11](#)

⁷⁷ [121/83/23-84/7](#), [INQ004300/3](#)

⁷⁸ [INQ035612/310](#)

⁷⁹ [155/28/16-21](#)

⁸⁰ [155/29/10-11](#)

⁸¹ [92/124/1-9](#)

⁸² [121/190/10-11](#)

⁸³ [155/34/11-13](#)

⁸⁴ [155/35/21-22](#)

⁸⁵ [54/8/11-12](#)

⁸⁶ [129/189/16-20](#)

⁸⁷ [119/195/22-196/11](#), [INQ004300/1](#)

Time	Event
22nd May 2017	
23:41	GMFRS Group Manager Nankivell arrived at the Command Support Room. ⁸⁸
23:43	NWAS Cheshire and Merseyside HART leader Ronald Schanck arrived at Manchester Central Fire Station. ⁸⁹
23:44	In a call to NWFC , GMP requested the attendance of a GMFRS NILO in the Silver Control Room at GMP HQ. ⁹⁰
23:45	GMP Superintendent Craig Thompson arrived at GMP HQ. ⁹¹
	GMFRS Group Manager Levy informed GMFRS Station Manager Berry that he was now the Incident Commander. ⁹²
23:47	BTP PC Philip Healy and Police Dog Mojo entered the City Room. ⁹³
23:48	NWAS Ambulance A347 carrying Georgina Callander arrived at Manchester Royal Infirmary. ⁹⁴
23:49	GMFRS Chief Fire Officer O'Reilly and GMFRS Group Manager John Fletcher arrived at the Command Support Room. ⁹⁵
23:50	John Atkinson was placed into NWAS Ambulance A368, ⁹⁶ which departed from the Victoria Exchange Complex ten minutes later. ⁹⁷
	NWAS Deputy Director of Operations, Stephen Hynes, arrived at the Victoria Exchange Complex on Station Approach. ⁹⁸
23:54	GMFRS Station Manager Berry requested a Forward Command Post from GMP and was told it was the Boddingtons car park. ⁹⁹
23:56	BTP CI Andrea Graham was identified on CCTV for the first time at the Victoria Exchange Complex, walking along the raised walkway towards the City Room. ¹⁰⁰
23:57	Stephen Hynes replaced Daniel Smith as NWAS Operational Commander. ¹⁰¹
23:58	GMP Silver Control Room Operators used the proposed multi-agency control room talk group to see which other agencies were listening. NWFC replied to say that it was. ¹⁰²

⁸⁸ [INQ004300/4](#)

⁸⁹ [81/119/6-9](#)

⁹⁰ [54/7/17-24](#)

⁹¹ [108/26/19-27/3](#)

⁹² [122/14/22-15/5](#)

⁹³ [54/10/22-11/8](#), [INQ035612/392](#)

⁹⁴ [155/38/15-17](#)

⁹⁵ [128/49/19-50/8](#)

⁹⁶ [159/18/2-6](#)

⁹⁷ [159/29/8-10](#)

⁹⁸ [54/14/5-11](#), [INQ035612/405](#)

⁹⁹ [54/13/3-19](#)

¹⁰⁰ [54/19/21-20/15](#), [INQ035612/419](#)

¹⁰¹ [54/20/16-21/1](#)

¹⁰² [54/22/15-23/4](#)

Time	Event
23rd May 2017	
00:00	GMP Temporary Superintendent Nawaz handed over tactical/silver command to GMP Temporary Superintendent Christopher Hill. ¹⁰³
00:02	First GMFRS appliance arrived at Manchester Central Fire Station. ¹⁰⁴
00:05	GMFRS NILO, Station Manager Michael Lawlor, arrived at GMP HQ. ¹⁰⁵
	GMFRS Station Manager Berry arrived at Manchester Central Fire Station. ¹⁰⁶
00:06	NWAS Ambulance A368 carrying John Atkinson arrived at Manchester Royal Infirmary. ¹⁰⁷
00:15	GMP Tactical/Silver Commander, Temporary Superintendent Hill, informed GMFRS Station Manager Lawlor that Operation Plato had been declared. ¹⁰⁸
	GMFRS Group Manager Levy instructed NWFC to record him as Officer in Charge (Incident Commander) and enquired whether Operation Plato had been declared. NWFC said that it had not. ¹⁰⁹
00:18	GMP Force Duty Officer Inspector Sexton handed over the Tactical Firearms Commander role to GMP Superintendent Thompson. ¹¹⁰
	GMP Tactical/Silver Commander, Temporary Superintendent Hill, informed NWAS Tactical Commander Annemarie Rooney that Operation Plato had been declared. ¹¹¹
	GMFRS Station Manager Lawlor informed Group Manager Fletcher of the Operation Plato declaration. ¹¹²
00:30	NWAS Strategic Commander Barnes arrived at the Silver Control Room at GMP HQ. ¹¹³
00:36	First GMFRS fire appliance arrived at the Victoria Exchange Complex on Station Approach. ¹¹⁴
00:38	GMFRS Station Manager Berry arrived outside the Victoria Exchange Complex. ¹¹⁵

¹⁰³ [104/208/5-7](#)

¹⁰⁴ [INQ004284/13](#)

¹⁰⁵ [INQ026726/1](#)

¹⁰⁶ [INQ004284/14](#)

¹⁰⁷ [159/30/7-12](#)

¹⁰⁸ [INQ026726/2](#)

¹⁰⁹ [INQ001204/1](#)

¹¹⁰ [98/1/24-2/8](#), [INQ024325/50-51](#)

¹¹¹ [115/133/24-134/20](#), [INQ014791/9](#)

¹¹² [128/81/14-19](#), [INQ004348/37](#)

¹¹³ [115/49/7-10](#)

¹¹⁴ [54/40/19-24](#), [INQ035612/469](#)

¹¹⁵ [54/41/6-22](#), [INQ035612/470](#)

Time	Event
23rd May 2017	
00:54	GMP CI Dexter declared the scene was “ <i>warm going cold</i> ” in conversation with GMFRS Station Manager Berry and NWAS Operational Commander Stephen Hynes. ¹¹⁶
	NWAS Tactical Commander, Annemarie Rooney, informed NWAS Operational Commander, Stephen Hynes, of the Operation Plato declaration. ¹¹⁷
00:57	GMP Temporary Superintendent Hill declared a Major Incident on behalf of GMP . ¹¹⁸
01:16	GMP Strategic/Gold Commander, ACC Ford, agreed with BTP Gold Commander, ACC Robin Smith, that GMP was the lead agency in the response. ¹¹⁹
01:23	BTP Bronze Commander, Superintendent Gordon, arrived at the Victoria Exchange Complex. ¹²⁰
01:53	BTP CI Susan Peters arrived at GMP HQ and assumed the role of Silver Control liaison. ¹²¹
02:10	GMFRS Chief Fire Officer O’Reilly arrived at GMP HQ. ¹²²
02:50	The last casualties were transported from the Casualty Clearing Station to hospital by ambulance. ¹²³
04:15	A Strategic Co-ordinating Group meeting was held at GMP HQ following the arrival of all Strategic/Gold Commanders. ¹²⁴

¹¹⁶ [INQ040657/69-70](#), [INQ035612/522](#)

¹¹⁷ [115/140/19-23](#), [INQ014791/11](#)

¹¹⁸ [INQ022399/11](#)

¹¹⁹ [94/133/15-136/4](#)

¹²⁰ [95/66/9-16](#)

¹²¹ [INQ002000/102](#)

¹²² [INQ026726/2](#)

¹²³ [INQ041266](#)

¹²⁴ [105/206/4-14](#)

Appendix 11: Emergency Response Experts

A11.1 I will set out below a summary of the relevant expertise of those who assisted me in relation to the emergency services response. It reflects the position when they gave evidence in 2021.

Fire and Rescue Expert

Matthew Hall

A11.2 Matthew Hall served in the Royal Navy before joining the London Fire Brigade (LFB) in 1990. While holding the rank of Station Manager between 2002 and 2005, he became an instructor for the Institution of Fire Engineers¹ and qualified as a Tactical/Silver Commander.²

A11.3 He was part of the Special Operations Group at LFB³ before being seconded to the Department for Communities and Local Government in early 2006 to assess the operational service delivery of the UK Fire and Rescue Service. Later that year, he became Staff Officer to the LFB Deputy Commissioner.⁴ In 2008, he was promoted to Group Manager and led on a number of special projects, such as strategic response arrangements and Strategic/Gold Commander training.⁵

A11.4 From 2011 to 2014, he was the National Interagency Liaison Officer (NILO) Co-ordinator.⁶ He delivered NILO training courses as an Associate of LFB Enterprises Limited between 2016 and 2019. In his last two years of service with LFB, he was part of the Technical and Service Support Unit, focusing on the development of technology for equipment and more efficient emergency responses.⁷

A11.5 During his service, he conducted the review into the emergency response to the Marchioness disaster on behalf of LFB⁸ and was involved with the review following the 7/7 attack.⁹ Ahead of the 2012 Olympics, he was the UK Fire and Rescue Service representative in the multi-agency joint operational group for Marauding Terrorist Firearms Attack response. He led on the development and delivery of the role of the Fire and Rescue Service within the National Olympic Co-ordination Centre, contributing to Joint Operating Principles at the time.¹⁰

¹ [142/4/24-5/14](#)

² [142/5/20-23](#)

³ [142/6/5-7](#)

⁴ [142/7/4-13](#)

⁵ [142/7/4-8/1](#)

⁶ [142/8/8-13](#)

⁷ [142/9/13-21](#)

⁸ [142/5/15-19](#)

⁹ [142/6/8-11](#)

¹⁰ [142/8/14-9/7](#)

A11.6 He retired as Deputy Assistant Commissioner in 2016. Since then, he has provided multi-agency and interoperability training to a variety of bodies, including government departments and the armed forces.¹¹

Ambulance Service Experts

Christian Cooper

A11.7 Christian Cooper served as an ambulance officer and paramedic for the Great Western Ambulance Service between 2000 and 2007. He was Resilience Manager for the South West Strategic Health Authority until 2009. In 2009, he became the Hazardous Area Response Team and Specialist Operations Manager for the Great Western Ambulance Service.¹²

A11.8 From 2013, he was the Head of Quality and Improvement for the National Ambulance Resilience Unit.¹³ At the time of giving evidence to the Inquiry in September 2021, he was the National Head of Operations for the Unit. In this role he had responsibility for overseeing the development of the national and contractual standards that apply to ambulance trusts, to enable them to respond effectively to Major Incidents.¹⁴

Michael Herriot

A11.9 Michael Herriot worked in nursing between 1976 and 1980¹⁵ before becoming a paramedic for the East Sussex Ambulance Service. By 1995, he was the Assistant Chief Ambulance Officer for the Scottish Ambulance Service.¹⁶

A11.10 Between 1995 and 1997, he worked at the Home Office Emergency Planning College¹⁷ as a course director.

A11.11 Since April 1997, he has been the Associate Director for Special Operations and Emergency Planning at the Scottish Ambulance Service, where he is responsible for special operations and emergency planning.¹⁸

¹¹ [142/10/8-18](#)

¹² [144/3/9-21](#)

¹³ [144/3/22-24](#)

¹⁴ [144/4/9-18](#)

¹⁵ [144/5/1-3](#)

¹⁶ [144/5/6-8](#)

¹⁷ [144/5/9-11](#)

¹⁸ [144/5/12-15](#)

Policing Experts

Scott Wilson

A11.12 Scott Wilson was a Detective Superintendent in Counter-Terrorism Command for the Metropolitan Police Service (MPS) between 2008 and 2010.¹⁹ On promotion to Detective Chief Superintendent in 2010, he became the Head of Emergency Planning. This role included preparing for the London Olympics in 2012.²⁰

A11.13 He was the Head of the MPS Intelligence Bureau between 2013 and 2014.²¹ Between 2014 and 2018, he was the National Co-ordinator for Protect and Prepare, having strategic oversight of the National Counter-Terrorism Security Office and leading the policing response to high-risk threats. During this time, he worked domestically and internationally, setting up an international team in 2015 following the terrorist attacks in Tunisia.²²

A11.14 In his role as National Co-ordinator, he conducted a full review of police strategies and capabilities, including firearms capacity, command and control, and protective security.²³ He developed the national police counter-terrorism awareness campaigns from 2014 to 2018 and operated as the strategic lead for Operation Temperer.²⁴ He was responsible for the management of counter-terrorism exercising²⁵ and co-authored the third edition of the Joint Operating Principles in January 2016.²⁶

A11.15 He was one of the Senior Investigating Officers for the Glasgow Airport attack in 2007 and the Senior Identification Manager for the London Bridge attack in 2017.²⁷ He retired from the MPS as a Detective Chief Superintendent in 2018.²⁸

Iain Sirrell

A11.16 Iain Sirrell began his career with the MPS in 1988, transferring to North Yorkshire Police in 1992 before retiring from the MPS as a Chief Inspector in 2018. He was the Police Training College Manager between 2006 and 2008.²⁹

A11.17 He was a control room Force Incident Manager from 2008 until 2010 and from 2013 to 2016. During this time, he also qualified as a Silver Commander and made major changes to the control room in relation to its counter-terrorism response.³⁰

¹⁹ [146/2/19-21](#)

²⁰ [146/2/22-3/5](#)

²¹ [146/3/6-8](#)

²² [146/3/9-20](#)

²³ [146/3/21-25](#)

²⁴ [146/4/8-15](#)

²⁵ [146/4/21-23](#)

²⁶ [146/5/18-20](#)

²⁷ [146/5/5-13](#)

²⁸ [146/2/13-18](#)

²⁹ [146/6/5-12](#)

³⁰ [146/6/12-21](#)

A11.18 He was occupationally trained as a counter-terrorism security co-ordinator and had responsibility for command and control in a national counter-terrorism programme for police and military exercises.³¹

Ian Dickinson

A11.19 Ian Dickinson had a long career in policing, rising to the rank of Deputy Chief Constable in Lothian and Borders Police before retiring as Assistant Chief Constable.³²

A11.20 He has substantial experience in strategic command, having been the Deputy National Co-ordinator for counter-terrorism in Scotland. He was in post as a Strategic Commander at the time of the Glasgow Airport attack in 2007.³³

A11.21 He now works at the Emergency Planning College, along with Scott Wilson and Iain Sirrell. As part of the Cabinet Office Civil Contingencies Secretariat, the Emergency Planning College delivers training courses from an operational, tactical and strategic level to local authorities and emergency services in the UK and internationally.³⁴

Supporting research analyst

John Lawrie

A11.22 John Lawrie is a researcher and analyst who supported Matthew Hall in the preparation of his expert reports into the response of the Greater Manchester Fire and Rescue Service to the Attack.³⁵

A11.23 He worked in law enforcement for 25 years and was engaged in specialist roles for the majority of that time. He held the positions of Staff Officer, Contingency Planner and Emergency Planning Officer. He has been a firearms instructor³⁶ and has delivered firearms command and control processes to police services since the 1990s.³⁷

A11.24 He has been a Tactical Advisor in two national forces as well as in the National Crime Agency, the Regional Crime Squad and the London Flying Squad.³⁸ He was engaged in operations throughout one of the busiest periods of counter-terrorist operations in the UK.³⁹

³¹ [146/6/22-25](#)

³² [146/7/9-18](#)

³³ [146/7/21-8/3](#)

³⁴ [146/8/11-22](#)

³⁵ [142/11/12-19](#)

³⁶ [142/11/24-12/7](#)

³⁷ [142/12/12-14](#)

³⁸ [142/12/7-11](#)

³⁹ [142/12/15-18](#)

- A11.25** For a number of years, he researched and authored cross-government reports as an intelligence analyst in Whitehall. He has acted as a delegate to the United States, the Middle East and Europe. John Lawrie now operates as a consultant, specialising in threat, risk, and political and religious extremism. He is a keynote speaker on UK NILO courses and has given lectures to the European Commission.⁴⁰
- A11.26** During his time as an intelligence analyst, he specialised in firearms, weapons-effects and ballistics, and terrorist tactics and training. In partnership with the Home Office, he worked with all three emergency services supporting investment in the preparation for terrorist attacks.

⁴⁰ [142/12/19-13/11](#)

Appendix 12: Medical and Survivability Experts

A12.1 I will set out below a summary of the relevant expertise of those who assisted me in relation to the injuries which were sustained by those who died. It reflects the position when they gave evidence in 2021.

Forensic pathology

Philip Lumb

A12.2 Dr Philip Lumb is a Home Office-registered forensic pathologist.¹ He was Lead Pathologist in response to the Attack, with responsibility for co-ordinating the team of pathologists in the early stages of the investigation.²

A12.3 Before 2017, Dr Lumb was regularly involved in planning and preparation for the pathological response to mass casualty incidents.³ He was involved in the response to the Selby rail disaster in 2001 and the inquests into the Hillsborough disaster.⁴

Jack Crane

A12.4 Professor Jack Crane is a medical doctor and forensic pathologist.⁵ He was State Pathologist for Northern Ireland between 1990 and 2014.⁶ He is a Professor of Forensic Medicine at Queen's University Belfast.⁷

Blast Wave Panel of Experts

Mark Ballard

A12.5 Lieutenant Colonel Dr Mark Ballard is a Lieutenant Colonel in the Royal Army Medical Corps⁸ and a Fellow of the Royal College of Radiologists.⁹ He has deployed to Afghanistan as both a general duties medical officer and a consultant radiologist.¹⁰

¹ [149/105/24-25](#)

² [149/110/4-24](#)

³ [149/108/7-109/1](#)

⁴ [149/109/2-10](#)

⁵ [161/2/16-18](#)

⁶ [161/2/19-21](#)

⁷ [161/2/22-24](#)

⁸ [176/117/22-24](#)

⁹ [176/118/5-6](#)

¹⁰ [176/118/16-22](#)

A12.6 Since 2013, he has been a consultant radiologist at the Queen Elizabeth Hospital, Birmingham.¹¹ He was the Consultant Adviser in Radiology to the British Army between 2015 and 2019 and has consulted for the Ministry of Defence since 2019.¹²

A12.7 Lieutenant Colonel Ballard has published and lectured nationally on the topics of ballistic injuries, blast images and tourniquets.¹³ He is a contributor to the NHS England clinical guidelines on Major Incidents and mass casualty events.¹⁴

Anthony Bull

A12.8 Professor Anthony Bull is a bioengineer and Head of the Department of Bioengineering at Imperial College London, where he leads the Centre for Blast Injury Studies. The Centre is cutting-edge in its interdisciplinary approach to conducting research. With embedded military and medical personnel, it is the only centre of its kind.¹⁵

A12.9 Professor Bull has extensive experience in trauma research and was awarded a fellowship with the Royal Academy of Engineering in 2014. He is a member of the World Council of Biomechanics.¹⁶

Jonathan Clasper

A12.10 Colonel Professor Jonathan Clasper was a serving officer with the British Royal Army Medical Corps until 2019.¹⁷ He was a consultant in orthopaedic surgery at Frimley Park Hospital until 2021¹⁸ and is a Fellow of the Royal College of Surgeons of Edinburgh and London.¹⁹

A12.11 He is a visiting professor in bioengineering at Imperial College London and Clinical Lead for the Royal British Legion Centre for Blast Injury Studies.²⁰ He has extensive operational experience of military trauma, having treated and researched injuries from the military conflicts in Iraq and Afghanistan.²¹

Alan Hepper

A12.12 Since 2002, Alan Hepper has been an engineer at the Defence Science and Technology Laboratory,²² where he undertakes research to understand the effect of injuries from military weapons.²³

¹¹ [176/117/25-118/4](#)

¹² [176/118/7-12](#)

¹³ [176/119/2-6](#)

¹⁴ [176/119/7-9](#)

¹⁵ [150/3/3-23](#)

¹⁶ [150/4/2-7](#)

¹⁷ [161/66/2-8](#)

¹⁸ [161/66/12-15](#)

¹⁹ [161/66/9-11](#)

²⁰ [161/66/16-21](#)

²¹ [161/67/10-15](#)

²² [177/21/14-21](#)

²³ [177/21/22-22/3](#)

A12.13 He has provided expert witness evidence to the Special Investigation Branch of the Royal Military Police²⁴ and contributed to the evidence in the inquests into the 7/7 attack and Birmingham bombings in 1974.²⁵

Peter Mahoney

A12.14 Colonel Professor Peter Mahoney joined the Territorial Army in 1980²⁶ and is a member of the reserve forces.²⁷ He has deployed to Iraq and Afghanistan, where he was involved in the clinical management of casualties with blast and ballistic injuries.²⁸

A12.15 He is a consultant in anaesthesia with fellowships in pre-hospital care and anaesthesia. He has obtained a PhD in defence and security²⁹ and a postgraduate diploma in forensic investigation.³⁰

Cardiology

Paul Rees

A12.16 Surgeon Commander Dr Paul Rees is a consultant in cardiology, general internal medicine and pre-hospital emergency medicine³¹ at the Barts Heart Centre in St Bartholomew's Hospital, London. He performs intervention and cardiology duties as part of a high-volume 24-hour heart attack centre team.³²

A12.17 He is a Surgeon Commander in the Royal Navy,³³ with three years' experience as a submarine medical officer.³⁴ He has deployed with a Commando Brigade in Iraq and served in Afghanistan, where he worked in the field hospital and as a consultant leading the Medical Emergency Response Team.³⁵

A12.18 He regularly undertakes flying duties with the East Anglian Air Ambulance. He is also Co-lead for the British Cardiovascular Interventional Society focus group on out-of-hospital cardiac arrests.³⁶

²⁴ [177/22/4-7](#)

²⁵ [177/22/11-15](#)

²⁶ [150/4/25-5/4](#)

²⁷ [150/4/14-16](#)

²⁸ [150/5/4-7](#)

²⁹ [150/4/21-23](#)

³⁰ [150/5/8-9](#)

³¹ [161/19/16-18](#)

³² [161/19/21-20/3](#)

³³ [161/19/19-20](#)

³⁴ [161/20/15-18](#)

³⁵ [161/20/19-24](#)

³⁶ [161/20/6-12](#)

Radiology

Richard Wellings

A12.19 Dr Richard Wellings graduated as a medical doctor in 1982 and became a consultant in 1993.³⁷ He is a consultant radiologist at the University Hospital of Coventry and Warwickshire³⁸ and a Fellow of the Royal College of Radiologists.³⁹

A12.20 He is an honorary clinical lecturer at the University of Warwick.⁴⁰ He has peer-reviewed articles in relation to radiology and has published on the subject for the Royal College of Physicians.⁴¹

Pre-hospital care and orthopaedic trauma surgery

Aswinkumar Vasireddy

A12.21 Mr Aswinkumar Vasireddy is a pre-hospital care consultant involved in the management of critically injured patients, and has led on the complex trauma referral system for five years.⁴² He is also an orthopaedic fellow and trauma surgeon at King's College Hospital, specialising in the management of complex trauma.⁴³

A12.22 He works as a research lead and lectures at the Institute of Pre-Hospital Care at London's Air Ambulance. He is an honorary clinical lecturer in the Medical School at Queen Mary University of London.⁴⁴ Mr Vasireddy teaches nationally and internationally in orthopaedics and general and pre-hospital trauma care.⁴⁵

A12.23 He is a non-executive director for an NHS trust and has memberships with the British Orthopaedic Association and the Orthopaedic Trauma Societies of the UK and USA.⁴⁶ He has also completed core training in anaesthesia, intensive care and emergency medicine.⁴⁷

³⁷ [176/120/23-121/1](#)

³⁸ [176/120/20-22](#)

³⁹ [176/121/4-6](#)

⁴⁰ [176/120/17-19](#)

⁴¹ [176/121/10-21](#)

⁴² [177/213/3-14](#)

⁴³ [177/212/15-21](#)

⁴⁴ [177/213/15-25](#)

⁴⁵ [177/214/11-14](#)

⁴⁶ [177/214/1-10](#)

⁴⁷ [177/214/22-215/1](#)

Pre-hospital care and emergency medicine

Gareth Davies

A12.24 Dr Gareth Davies is a consultant in emergency medicine and pre-hospital care.⁴⁸ He was Medical Director of London's Air Ambulance from 1996 to 2018, with responsibility for the care and treatment strategies of over 40,000 seriously injured patients.⁴⁹ During this time, he attended and provided medical treatment at numerous Major Incidents.⁵⁰

A12.25 He is the Co-developer and Convenor of the Royal College of Surgeons' pre-hospital and resuscitative thoracotomy course. Dr Davies also led the team which delivered the resuscitative endovascular balloon occlusion of the aorta (REBOA) initiative.⁵¹ He has contributed to national working groups on trauma and major incidents⁵² and has published over 60 peer-reviewed papers.⁵³ He lectures in pre-hospital care at Queen Mary University of London.⁵⁴

Claire Park

A12.26 Lieutenant Colonel Dr Claire Park is a consultant in pre-hospital care, critical care and anaesthesia in the British Army. She has deployed to Afghanistan three times as a member of the Medical Emergency Response Team and to North Africa with a small forward surgical team.⁵⁵

A12.27 She was the Clinical Governance Lead for the Medical Emergency Response Team between 2013 and 2016.⁵⁶ She has held consultant roles within the NHS and was the Major Incident Lead with London's Air Ambulance. She was also the Post-incident Lead for the Fishmongers' Hall and London Bridge attacks.⁵⁷

A12.28 She is a consultant in critical care and trauma at King's College Hospital⁵⁸ and provides clinical governance to the MPS and the National Police Clinical Governance Panel.⁵⁹

⁴⁸ [178/59/24-60/1](#)

⁴⁹ [178/60/4-13](#)

⁵⁰ [178/62/8-63/6](#)

⁵¹ [178/63/12-24](#)

⁵² [178/63/16-18](#)

⁵³ [178/66/6-8](#)

⁵⁴ [178/66/23-25](#)

⁵⁵ [178/67/7-25](#)

⁵⁶ [178/68/1-3](#)

⁵⁷ [178/68/8-15](#)

⁵⁸ [178/68/22-24](#)

⁵⁹ [178/69/15-19](#)

Appendix 13: Acknowledgements

- A13.1** I wish to acknowledge my gratitude to the members of the Greater Manchester NHS Resilience Hub. It was set up in response to the Attack in 2017 to co-ordinate care and support for thousands of children, young people and adults whose mental health or emotional wellbeing was affected. That is a role the Hub continued to perform throughout the Inquiry. It provided tireless assistance to witnesses, families and others to support them through the traumatic evidence that was heard about the Attack and the emergency response. I am greatly indebted to them.
- A13.2** The Inquiry was assisted by many contributions from members of the public who followed the evidence and provided helpful insights on aspects of the hearings. I wish in particular to thank those who took the time to contact the Inquiry and share their own experiences with my team. I would especially wish to thank Jeremy Cowen, whose experiences of working as a paramedic provided an important contribution to the evidence I heard on the Care Gap and the recommendations I have made.

