Significant Incident Report: London Luton Airport Terminal Car Park 2

10/10/2023, Terminal Car Park 2, Easy Way, Luton, Bedfordshire. GB-040100-2023

Bedfordshire Fire & Rescue Service

Contents

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Executive Summary

At 20:47 on Tuesday 10 October 2023, Bedfordshire Fire and Rescue Service (Bedfordshire FRS) received a 999 call alerting it to a car on fire on the third floor of Terminal Car Park 2 at London Luton Airport. Opened in 2019 with 2,700 car-parking spaces, the five-storey car park was a steel framed structure with reinforced concrete floors and open sides, located close to the main terminal building of the UK's fifth busiest airport, publicly owned by Luton Borough Council.

The fire originated in a privately owned car powered by a diesel fuelled internal combustion engine with the cause of fire determined to be accidental.

The first two fire engines from Luton and Stopsley Fire Stations arrived at 20:55 and were met with a rapidly developing fire involving multiple vehicles on the third floor. The first appliance from the London Luton Airport Fire Service arrived on scene at 20:55.

Despite offensive firefighting operations being adopted by the first arriving firefighting crews, clear signs of imminent structural collapse were observed in the protected staircases. This led the incident commander to order a tactical withdrawal of firefighters in the building, which was achieved by 21:26, and only external firefighting operations took place for the remainder of the incident.

No members of the public were injured during the incident. Four firefighters were injured, with two treated for heat exhaustion and a two for smoke inhalation. An employee of an agency operating at the airport was also treated for smoke inhalation.

The fire spread to involve 1,352 vehicles and led to a partial collapse of the structure, which was deemed unsafe and fully demolished following the fire.

There were three key phases of tactics used to tackle the fire:

- Phase 1 - The initial attack with crews committed internally to the car park;
- Phase 2 - Defensive firefighting to contain the fire to the third floor; and,
- Phase 3 - Defensive firefighting with the aim of containing the fire within the car park and preventing it from spreading to nearby aircraft and adjacent structures.

During the first phase of the incident, Bedfordshire FRS committed crews wearing breathing apparatus (BA) to the car park via the northwest stairwell. Water was supplied by LLA Fire Service via the dry riser, and they also attacked the fire externally using a High Reach Extendable Turret (HRET). The first BA team went under air at approximately 21:10. By 21:26 all crews had been withdrawn from the building as the signs of potential building collapse had been recognised by firefighters working in the northwest staircase. During this initial phase of the incident, additional resources were requested, with the incident being made up to 10 rescue pumps and two aerial platforms.

Following the withdrawal of BA crews, the incident moved to the second phase, which had a tactical aim of containing the fire to the third floor, and sectorisation of the incident was implemented. During this phase an additional aerial ladder, a high-volume pump (HVP) and two water carriers were requested. The fire was declared a major incident at 21:37. During this second phase an individual was spotted in Car Park 2 and was rescued. The individual worked in the terminal building (but was not an employee of LLAOL) and had entered the building approximately one hour after the start of the incident and had used their status as an airport worker to gain access to the building in an attempt to remove their car.

At approximately 22:30 the incident commander switched their firefighting strategy to the third phase. This was defensive firefighting with the aim of containing the fire within the car park and preventing it from spreading to nearby aircraft to the east side and the adjacent structures of Terminal Car Park One on the west side and the newly opened Direct Air-Rail Transit (DART) station on the north side.

A further make up of resources was made at 22:57 with a make pumps 15 message being sent to Fire Control. Firefighting continued throughout the night. By 05:28 on Wednesday 11 October 2023 the incident had been reduced to six rescue pumps and one ALP. By 07:29 all live sectors were damping down hotspots and by 09:13 all firefighting operations had ceased with crews monitoring for hotspots.

This was one of the more significant incidents to occur within Bedfordshire Fire and Rescue Service's area for many years and the multi-agency response was supported by fire and rescue services from Buckinghamshire, Cambridgeshire, Hertfordshire, London and Northamptonshire along with numerous other local and regional partners coordinated by Bedfordshire Local Resilience Forum.

The fire in Terminal Car Park 2 is not the first major fire in a multi-storey car park and it is unlikely to be the last. The fire spread quickly to several vehicles and a combination of the wind spreading the fire through the open-sided car park, the impact of running fuel fires, and the early onset of signs of structural collapse, all prevented internal offensive firefighting from continuing and contributed to the significant scale of the fire and subsequent financial loss. Given the significant structural collapse that occurred, the early recognition of the risk of collapse and the subsequent tactical withdrawal of firefighters certainly helped prevent any serious injury or loss of life. A significant number of cars within Car Park 2 were left visibly undamaged, the adjacent DART station and Car Park 1 building were successfully protected, and nearby aircraft was moved to a safe area.

Throughout the incident the Service worked well with partners including London Luton Airport Fire Service with a focus on the economic impact of the airport remaining closed. As

a result of the collective efforts of all partners, flights were able to resume from 15:00 on Wednesday 11 October.

At the time of construction of Terminal Car Park 2, both the local and national guidance for multi-storey car parks (MSCP) was based on the legislative requirements for life safety. The fire safety requirements set out in Approved Document B (Volume 2: Buildings Other Than Dwellings, 2013) for open sided car parks included heat and smoke management measures only. Consequently, Bedfordshire FRS did not recommend the installation of AWSS in Terminal Car Park 2.

However, academic research and the outcomes of reviews into fires occurring within MSCPs across the globe in the last decade has led to an increased awareness of the risks posed by these structures and the vehicles stored within them. For example, current designs do not take into consideration the fire loading of modern vehicles, electric vehicles and liquified petroleum gas vehicles, as well as the risk of running fuel fires from plastic fuel tanks. While there have been few instances of fatalities in car parks, there have been recorded fatalities to firefighters abroad due to structural collapse, and there are cases of firefighter injuries within the UK while attending car park fires.

Furthermore, evidence derived from global research, and research conducted by the Building Research Establishment (BRE) demonstrates the effectiveness of sprinklers in controlling fires in car parks. It shows that the incidence of fatalities and injuries is zero, and the property loss is about 95 per cent lower than that of an uncontrolled fire[1]. AWSS within enclosed car parks are common in Europe and also recommended by National Fire Protection Association Standard 88 (NFPA 88) in the USA.

The Independent Review of Buildings Regulations and Fire Safety led by Dame Judith Hackitt in 2018 found the regulatory system for buildings in England is not fit for purpose. There have been numerous major fires where the rate and scale of fire spread appears to

[1] https://nfcc.org.uk/wp-content/uploads/2023/07/Optimal_Sprinkler_Report-min.pdf

have been linked to the construction of the building, which has highlighted the need for strengthened fire safety requirements in buildings in England.

The National Fire Chiefs Council (NFCC) subsequently updated its position statement and associated guidance on AWSS in December 2020 [2] and most recently in May 2024[3] as well as calling for more research to be undertaken, particularly given the recent increase in vehicles powered by emerging technologies. It also continues to lobby for legislative change to make the provision of AFSS in certain high-risk buildings a mandatory requirement.

Bedfordshire FRS is aligned with the NFCC view that AFSS are the most effective way to ensure fires are suppressed or even extinguished before the fire and rescue service arrive. Bedfordshire FRS has recommended the installation of AWSS in multi-storey car parks since 2019 during the planning consultation phase and since 2022 during the building regulations consultation phase. Bedfordshire FRS also supports the NFCC in lobbying for a change in national guidance and legislation to make the provision of fire suppression systems, such as sprinklers, a requirement in new-build open sided multi storey car parks.

In January 2024, the Chief Fire Officer wrote to the operator of London Luton Airport and the Chief Executive of Luton Borough Council strongly recommending that an appropriate AWSS be included in the design of any new or replacement MSCP and that serious consideration be given to retrofitting AWSS in its other existing MSCPs. Bedfordshire FRS understands the MSCP which will replace Terminal Car Park 2 will include a suitable AWSS.

Bedfordshire FRS promotes its mission as *working together to keep Bedfordshire safe* and intends to utilise the knowledge, experience and learning gained from the fire in Terminal

[2] NFCC_AFSS_Position_Statement_-_November_2020_.pdf

[3] Automatic Water Suppression Systems Policy Statement - NFCC

Car Park 2 at London Luton Airport to work together with key stakeholders to conduct further research into fires in MSCPs, to ensure others learn from the Service's experience and to lobby for further improvements to building safety legislation with the sole aim of helping make all communities safer.

Introduction

At 20:42 on Tuesday 10 October 2023, CCTV captures a red Range Rover Sport arriving at the ticket barrier at London Luton Airport (LLA) Terminal Car Park 2. As the vehicle stops at the barrier, light smoke can be seen issuing from the vehicle. The smoke is light in colour and is issuing from the nearside of the engine compartment. The vehicle proceeds through the barrier and continues to drive internally to the third floor where the driver notices visible flames from the front of the vehicle, bringing it to a stop on the car park roadway.[4]

Figure 1CCTV showing the Range Rover before it stops at 20:42:30

[4] Group Commander FI, *Final Fire Investigation Report of Group Commander Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 12

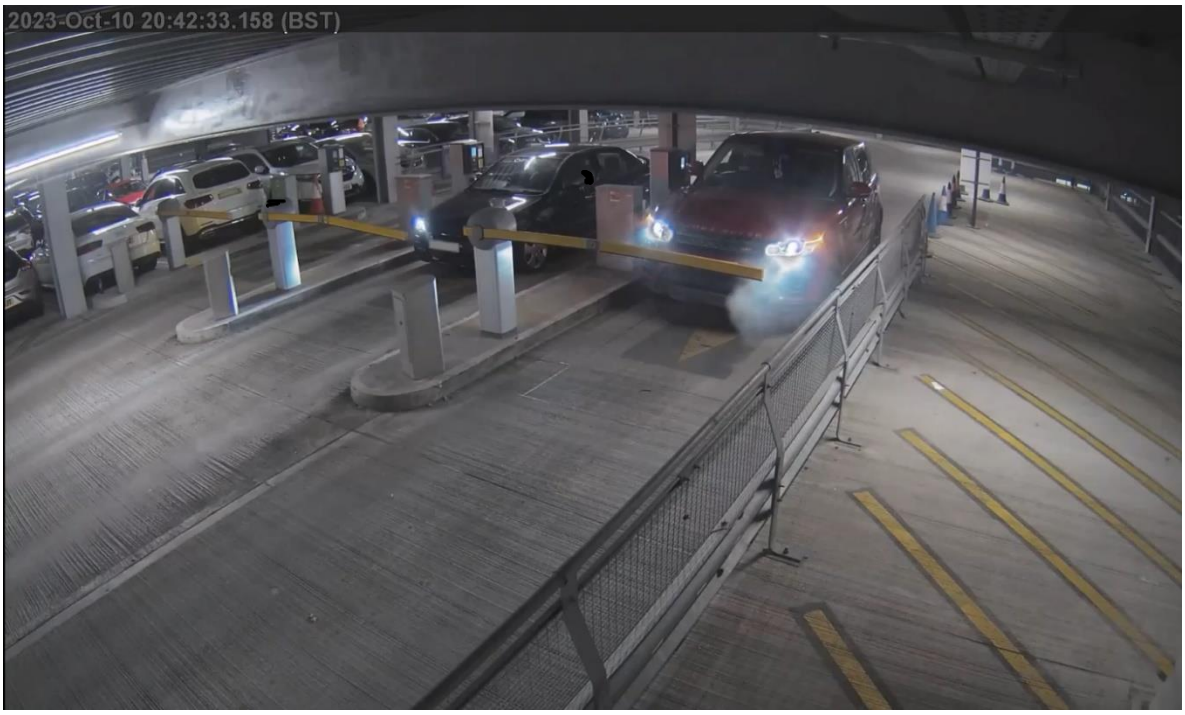

Figure 2: CCTV showing vehicle stopped at the ticket barrier with smoke from the bonnet at 20:42:33

At 20:47:20 Bedfordshire Fire and Rescue Service (FRS) Control received an initial call to a car fire on the third floor of the multi storey carpark located at LLA, Terminal Car Park 2, Easy Way, Luton, Bedfordshire. The Service responded with its pre-determined attendance (PDA) of two rescue pumps (callsign - 08P1 based at Luton, 12P1 based at Stopsley) supported by a drone, with both rescue pumps booking in attendance at 20:57:09.[5] By 21:24:24 an informative message was sent from the fire ground to service control stating that approximately 25 cars were involved in the fire.[6] By 21:37:21 approximately 80 per cent of the third floor was involved in fire and a major incident was declared.[7]

Car Park 2 was a 'five storey building containing four floors and a ground floor drop off area consisting of a steel framed structure with reinforced concrete floors and open sides. Four protected escape routes positioned on the external frame of the car park included dry riser provision.'[8] The car park was a short stay, serving the passenger terminal at LLA which is the UK's fifth busiest airport handling 6 per cent of passengers at all UK airports in the period February 2022 - January 2023.[9]

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[5] Group Commander D, *Duty Group Commanders Report (DGCR)* 2023, Page 2
[6] Document *LLA Terminal Car Park Messages*, page 1
[7] Document *LLA Terminal Car Park Messages*, page 2
[8] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Stopsley Green 19990619* page 1
[9] Civil Aviation Authority *Size of Reporting Airports February 2022 - January 2023 Comparison with previous year* Table_01_Size_of_UK_Airports_PDF.rdl (caa.co.uk) accessed 17/01/2024

LLA is owned by Luton Rising (which is the trading name of London Luton Airport Limited, a company owned by Luton Council). In 1998, London Luton Airport Operations Limited (LLAOL) entered into a Concession Agreement with Luton Rising and Luton Council for the management, operation and development of the airport. This agreement lasts until 2032 and LLAOL is responsible for the operation of the airport during this time.[10]

London Luton Airport is a category 7 airfield meaning it can 'safely handle aircraft up to 49 metres in length along a fuselage width of 5 metres.'[11] As such, the airport is required to provide a fire service with 'at least seven crew to be on duty at a time.'[12] Although, these resources exist predominately for the airside risk, Luton Airport Fire Service deployed its fire appliances and firefighters to the car park to support the response from Bedfordshire FRS.

Incident Details

The initial 999 call was 'received by Bedfordshire FRS Service Control at 20:47:20 hrs by Crew Manager Service Control B from the driver of the Range Rover that was on fire. When questioned by Service Control, the caller advised their car was a diesel Range Rover that it was located on the third floor.'[13] The subsequent fire investigation confirmed that the vehicle was powered by a diesel non-hybrid internal combustion engine.

[10] London Luton Airport Operations Limited Ownership Profiles (london-luton.co.uk) accessed 17/01/2024
[11] Kumar, A. *Luton Airport Fire Station: Behind the scenes | SHP (shponline.co.uk)* November 2018, Accessed 10/05/2024
[12] Kumar, A. *Luton Airport Fire Station: Behind the scenes | SHP (shponline.co.uk)* November 2018, Accessed 10/05/2024
[13] Bedfordshire Fire and Rescue Service *Recording of Initial 999 Call* 10/10/2023

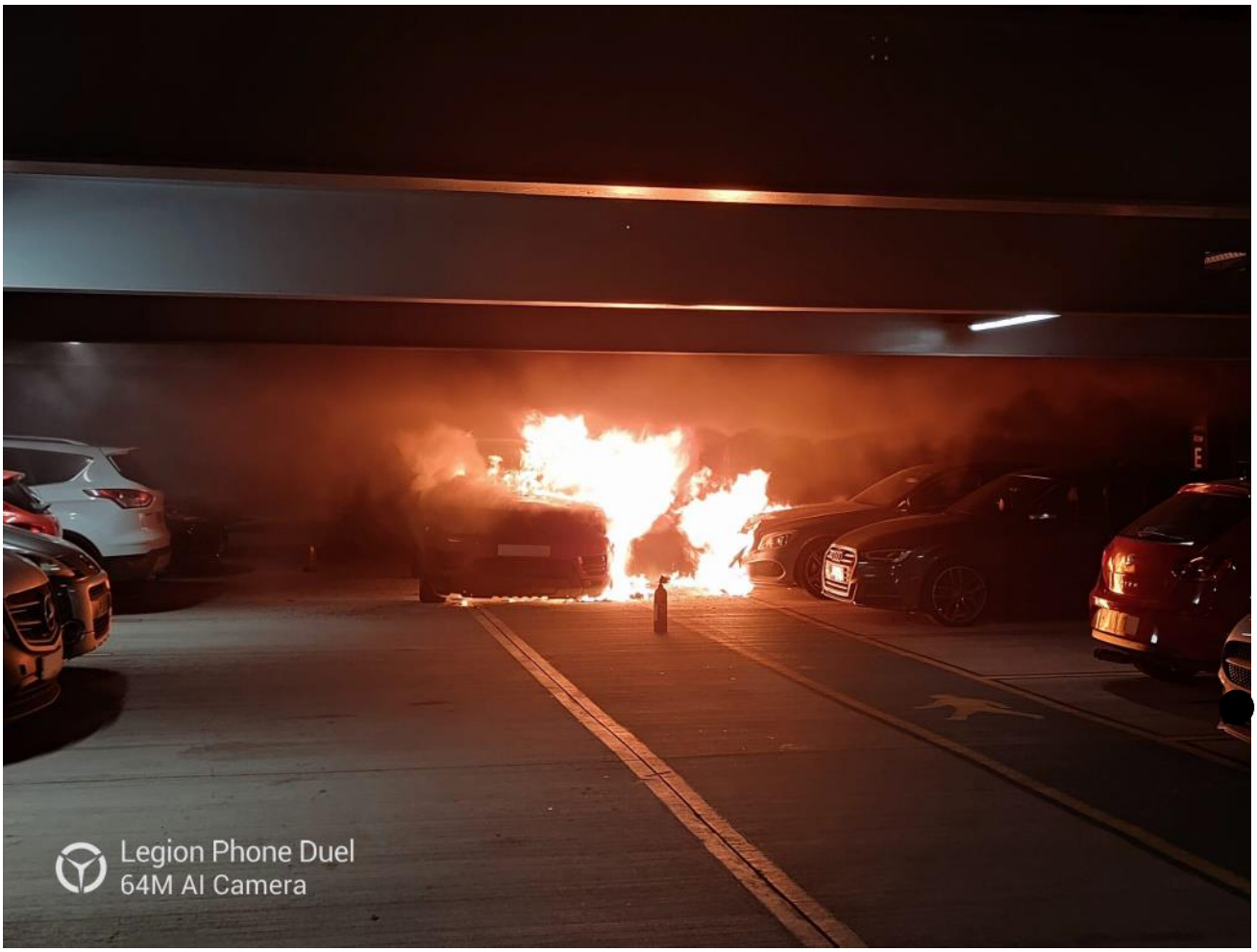

Figure 3 - Car park employee digital image – Red Range Rover on third floor TCP2 on fire

The PDA of two rescue pumps (08P1 Luton, 12P1 Stopsley, drone 05D1 and a flexi duty officer) were mobilised. Both rescue pumps were booked in attendance by control at 20:57:09, however a review of the Automatic Vehicle Location System (AVLS) data shows that 12P1 arrived at 20:55:00 and 08P1 at 20:55:58.[14]

The fire was towards the northern end of the car park. The road layout around Terminal Car Park 2 sees vehicles approach up the main access road. Vehicles travel along the northern side of the structure heading East and travel in a clockwise direction around the building. 12P1 arrived up the main access road meaning the first stairwell they encounter that would allow access close to the fire is the northeast stairwell. The crews from LLA Fire Service who responded came across the airfield and crossed landside using a vehicle gate to the south of the car park, they then followed the one-way system to reach the northwest stairwell.

[14] Author A, *Notes from Interview of Watch Commander Control B*

'Initial crews in attendance were faced with multiple cars involved in fire on the third floor (approximately three were visible from ground level) at that time and began to put in place firefighting media and initially resourcing the incident.'[15]

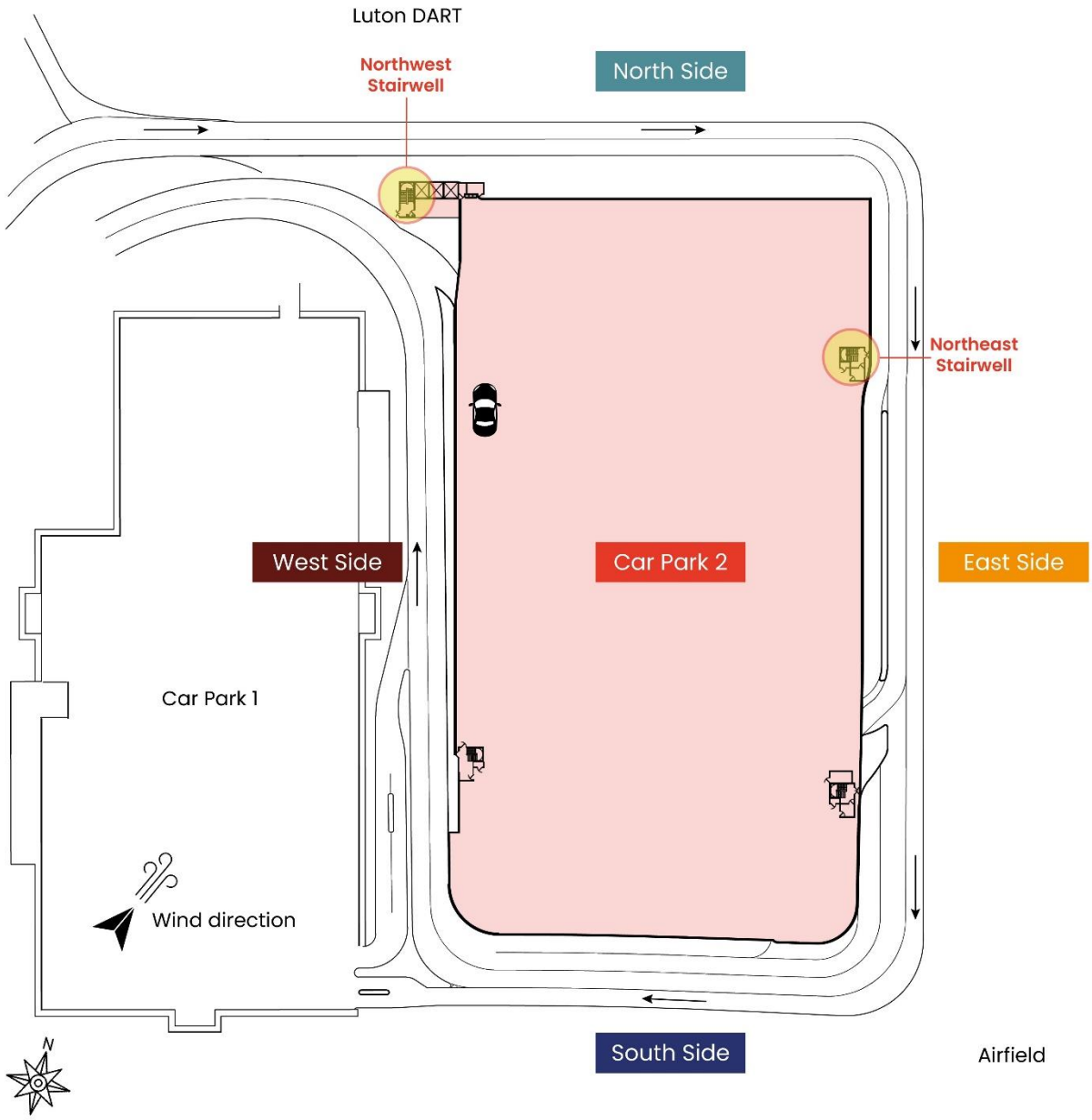

Figure 4 Map of site showing the approximate location on the third floor of the vehicle of origin (vehicle not to scale)

Bedfordshire FRS crews attempted to attack the fire from the northeast stairwell. However, it was not possible to open the door to this stairwell from the outside without a key. Crew

[15] Group Commander D, *Duty Group Commanders Report (DGCR)* 2023, Page 2

Commander A was informed by Luton Airport staff that the Airport Fire Crews on the northwest stairwell had 'already secured a water source which was supplying a LLA appliance which in turn was ready to supply the dry riser.'[16] Due to the need of implementing a rapid intervention, Crew Commander A decided to change his tactical plan and to use the northwest stairwell (where LLA fire crews had secured water supplies) with crews briefed to move to the new location.[17]

The crews in attendance quickly recognised the need for additional resources with 12P1 requesting an ALP at 20:56 prior to booking in attendance and Crew Commander A requesting a full high-rise PDA seven minutes later at 21:03.[18] At the time of the incident, the high-rise PDA in Bedfordshire was four rescue pumps, an ALP and the Incident Command and Control Unit.

'During this initial phase of the incident Bedfordshire FRS crews set up firefighting jets to make an internal fire attack on the third floor using the protected stairwell, whilst LLA Fire Service used their HRET (High Reach Extendable Turret) to make an external fire attack.'[19]

Group Commander A booked in attendance at 21:07:56 and received a brief of the incident from Crew Commander A at approximately 21:10. In their contemporaneous notes Group Commander A recorded the following about Crew Commander A's briefing:

> *'I asked him how many cars were involved and what his current actions were, to which he stated he was not certain of the exact number other than what we could see, but at least 6 on [the] 3rd floor were believed to be involved at this time.*
>
> *From ground level it was difficult to gain a good view of the third floor, I could see hazard lights flashing on 4 or 5 cars and smoke issuing, but the wind was pushing the smoke away from our vantage point and it was dark, so it was difficult to build a full picture of the extent of the fire.*
>
> *Crew Commander A stated crews were setting into a riser around the other side of the building with the Stopsley and Luton appliances.'*[20]

[16] Crew Commander A, *Fire Investigation Witness Record* 14/10/23 Page 3
[17] Crew Commander A *Fire Investigation Witness Record* 14/10/23 Page 3
[18] Document *Incident Message Log* Page 1.
[19] Group Commander D, *Duty Group Commanders Report (DGCR)* 2023, Page 2
[20] Group Commander A *Notes LLA* Page 2

Group Commander A also notes that ‘at the same time as this I could see HRET from Airport FRS externally firefighting into the third floor in what would become sector four’[21] At approximately 21:10 Bedfordshire FRS crews progressed with internal firefighting and BA Alpha Team one went under air.[22]

At 21:16:13 Group Commander A sends an assistance message of ‘make pumps 10 AP x two.’[23] This was followed by an informative message at 21:24:24 which stated that ‘approx 25 cars involved in fire on third storey of multi storey six BA under stage 1, two airport javelin [panther] for external fire suppression’[24]

Crew Commander A returned from conducting a 360° assessment of the building and stated to Group Manager A that the ‘fire was spreading rapidly across the third floor around the building.’[25] Shortly after this Watch Commander A (located in the northwest stairwell) stated via radio that ‘internally the incident was escalating and there were signs of internal structural damage within the stairwell and concrete floor.’[26] Based on this information Group Commander A took the decision to ‘evacuate all crews from internal firefighting and to reassess our tactics’[27] An informative message was sent to Service Control at 21:26:46 that stated ‘all crews now withdrawn from structure external FF now in place awaiting AP TMD [tactical mode delta]’[28]

[21] Group Commander A *Notes LLA* Page 2
[22] BFRS Health & Safety Team, Safety event report LLR 18.10.2023 Luton Green Page 1
[23] Document *Incident Message Log* Page 1.
[24] Document *Incident Message Log* Page 1.
[25] Group Commander A *Notes LLA* Page 2
[26] Group Commander A *Notes LLA* Page 2
[27] Group Commander A *Notes LLA* Page 3
[28] Document *Incident Message Log* Page 1.

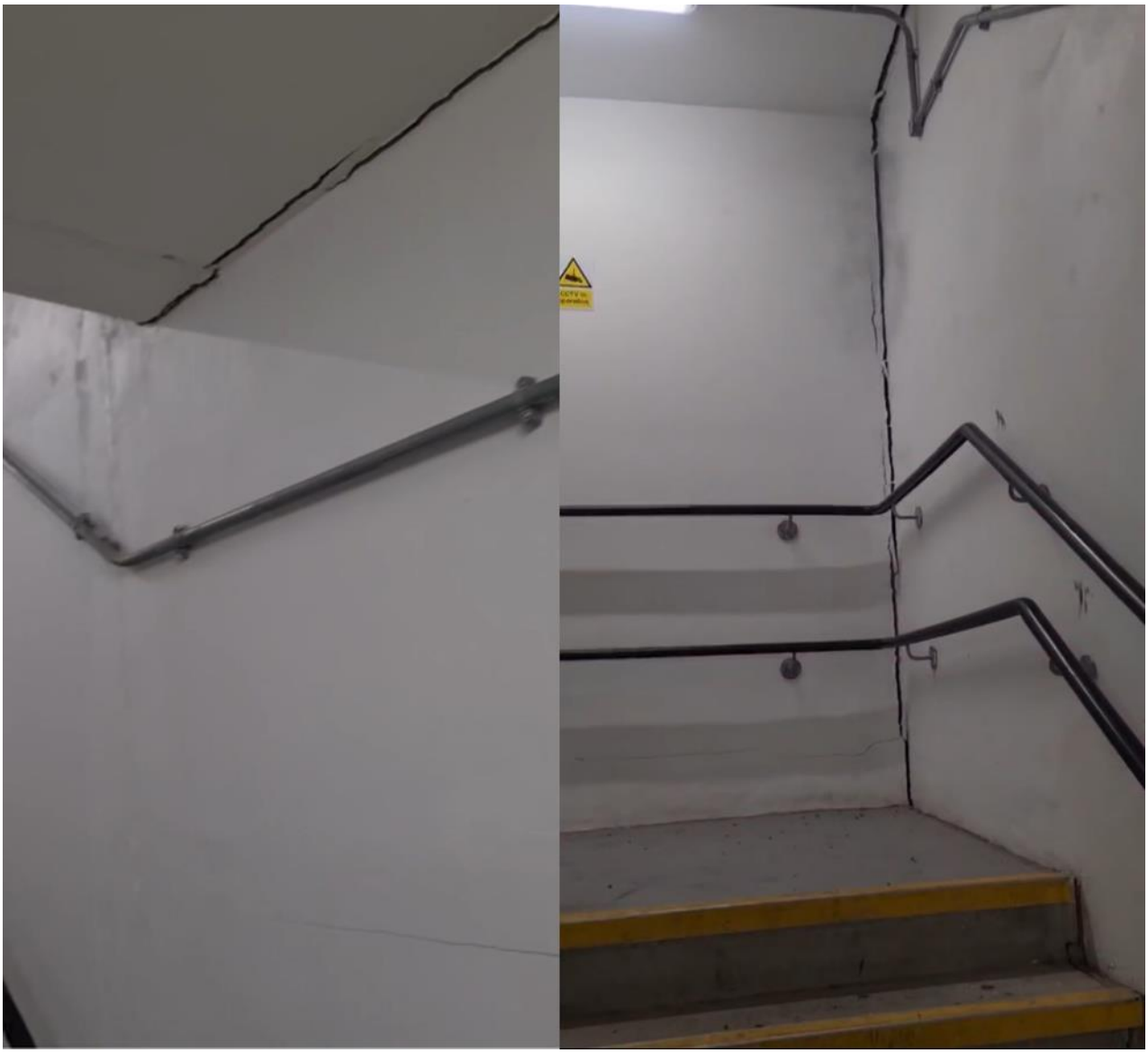

Figure 5 Signs of structural damage in the Northwest Stairwell

Station Commander A booked in attendance at 21:26:50[29] and was briefed by Group Commander A that he would be taking the role of Operations Commander and that Crew Commander C had been tasked to send a METHANE message as Group Commander A was declaring it a major incident.[30]

Group Commander A and Station Commander A discussed the resources required to implement sectorisation of the incident and agreed that a HVP should be requested 'and two

[29] Document *Timeline*
[30] Station Manager A, *Notes LLA* Page 1

water carriers, along with Hazardous Materials Advisor (HMA) and ambulance for crew welfare.'[31]

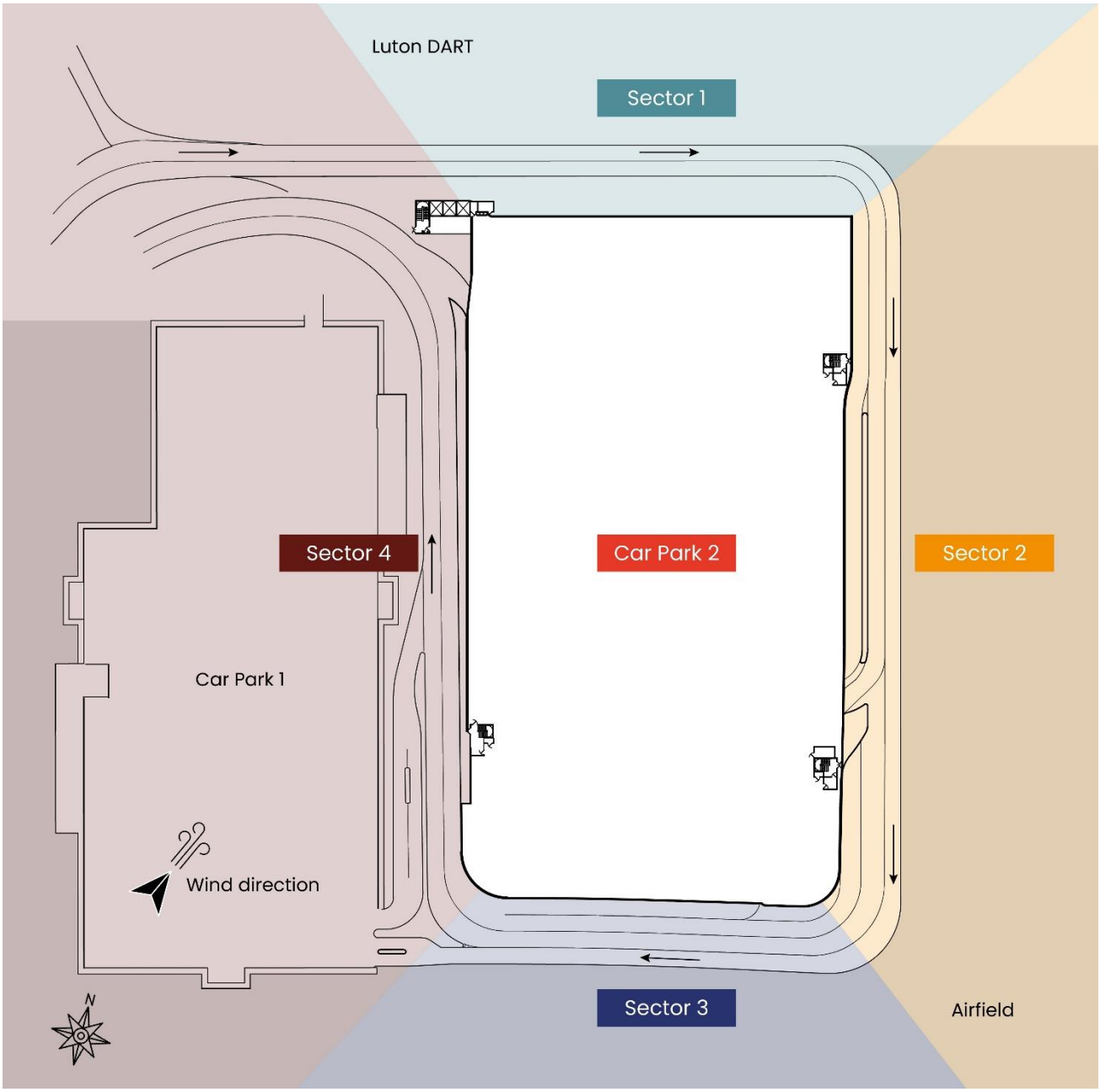

Figure 6 – Sectorisation of Incident

By 21:37:21 approximately 80 per cent of the third floor was involved in fire and a major incident was declared with a METHANE message being sent.[32]

[31] Group Commander A *Notes LLA* Page 3
[32] Document *LLA Terminal Car Park Messages*, page 2

At approximately 22:00 Group Commander A briefed all agencies in attendance, detailing the tactical plan to contain the fire on the third floor with external firefighting and agreed priorities for each agency.[33]

Shortly after this meeting the Airport Operations Manager approached Group Commander A to convey that Air Traffic Control could see cars moving on the top floor. Crew Commander D was sent to the top of the Air Traffic Control Tower so that they could brief Group Commander A and Station Commander A of signs of building collapse by radio.[34]

As a result of discussions between Station Commander B who was sector commander in sector 2 and Station Commander A[35], a request for a third AP was made at 22:09:55.[36]

Station Commander A notes that:

> *'At some point, I was made aware by Police that a person had been spotted within the car park. I radioed Watch Commander A to establish if this was one of our personnel or, a member of the public. Watch Commander A got back to me very quickly and confirmed that they had located a LLA worker and they were now out of the building.'*[37]

It has since been established that the LLA worker referred to in Station Commander A's contemporaneous notes worked for another organisation and was based in the terminal building. This individual entered the car park in an attempt to retrieve their car which was parked on level 3.[38] They told Watch Commander A who rescued them that they had used their position as a worker at the airport to gain access. [39] It is estimated that the entry of the worker into the car park and the subsequent rescue occurred between 21:30 and 22:17.

A HVP Tactical Adviser (Tac Ad) from Hertfordshire Fire and Rescue Service arrived and was briefed by Group Commander A (who requested that additional water supplies were provided via the HVP). The tactical adviser told Group Commander A that he would investigate the 120,000ls ground tank that was contained airside and would come back to him with a plan once the resources had arrived from Northamptonshire Fire and Rescue

[33] Group Commander A *Notes LLA* Page 4
[34] Group Commander A *Notes LLA* Page 4
[35] Group Commander A *Notes LLA* Page 4
[36] Document *LLA Terminal Car Park Messages*, page 3
[37] Station Commander A *Notes LLA* Page 3
[38] Document, Worker Witness Statement 13/10/2023 Page 2
[39] Watch Commander A Email: RE: Luton Airport 07/02/2024

Service.[40] Hertfordshire Fire and Rescue Service were unable to send their own HVP as they did not have the required vehicle (prime mover) available to move it.[41]

At 22:12 an informative message was sent by Group Commander A as Officer in Charge stating 'multi storey car park fire on 3rd [floor] approx 80 per cent involved in fire external firefighting in progress 2 AP in use'[42]

In his contemporaneous notes Station Commander A states that:

> *'Around 22:20/30 Group Commander A and I reviewed our tactical plan and where we thought the incident could progress to or be within the next hour. It was agreed that this was the first opportunity due to the high tempo of the incident, to conduct a full 360 of the building to support our full situational awareness of the building and how it was improving/escalating, which would support our decision making when it comes to potentially changing firefighting tactics and, what resources we had on route and considerations as to what resources we might require moving forward.'*[43]

Station Commander A also captures that whilst undertaking the 360° of the building that he was:

> '*informed by (I believe the LLA Commander) that there were two planes, airside in sector 2 and that airport staff were unwilling to move them as they were worried about the fire situation. I asked if they knew if the planes were fully fuelled [sic] or there as they required refilling. They did not know this information. I requested that he prioritised getting these moved.'*[44]

Crews in sector 2 were tasked with providing fire protection for the two aircraft that were roughly 30 metres from the car park. This was by means of water curtains and wetting the aircraft until they could be moved.[45]

As a result of the information gained from the 360° process the fireground tactics were changed from containment of the fire on the third floor, to defensively containing it within

[40] Group Commander A *Notes LLA* Page 4
[41] Document *LLA Terminal Car Park Messages*, page 3
[42] Document *LLA Terminal Car Park Messages*, page 3
[43] Station Commander A *Notes LLA* Page 4
[44] Station Commander A *Notes LLA* Page 5
[45] Station Commander A *Notes LLA* Page 5

Terminal Car Park 2 to prevent it from spreading to other buildings such as the DART (Direct Air Rail Transit) Station and Car Park 1 and to protect the two aircraft in sector 2.[46]

Crew Commander D radioed from the air traffic control tower to inform Group Commander A and Station Commander A that 'there were some signs of collapse within the centre of the building on the top floor and that cars were visibly moving.'[47]

Figure 7 – Image showing building collapse post fire. Image is used courtesy of Bedfordshire Police

Group Commander A and Station Commander A discussed the information received and both agreed that 'that there was a real risk of structural collapse.'[48]

The Incident Commander informed Station Commander B who was in charge of sector 2 to 'move his resources back to 15 meters [sic] and that there will now be a cordon in place around the entry and exit road and that no vehicles or personnel were to operate in this

[46] Station Commander A *Notes LLA* Page 5
[47] Group Commander A *Notes LLA* Page 5
[48] Group Commander A *Notes LLA* Page 5

area.'[49] Station Commander A asked Crew Commander E (Sector Commander for sector 1) to make a tactical withdrawal.[50] Sector 3 was told to relocate to behind the airside wall immediately. All resources were removed from sector 4 as it was the access road between the two car parks, and it was not possible to be 15 metres away from Terminal Car Park 2.

The worker who was rescued from the building and three firefighters were taken to the Luton and Dunstable Hospital by ambulance at 22:28:05.[51]

At 22:57:12 Group Commander A sent an assistance message to make pumps 15.[52] This was to ensure there were sufficient rescue pumps and personnel to support the water supply of the 3 APs until the HVP was in place.[53]

At 23:04:47 an informative message was sent to control that Area Commander A had taken over as Officer in Charge.[54] Group Commander A became the Operational Commander and Station Commander A became the Command Support Officer.[55]

Shortly after this there was a loud noise and elements of the structure and burning cars could be seen dropping down to ground level into the area used as the drop off and pick up area of the car park. [56]

In a new role as Operational Commander, Group Commander A had a conversation with the HVP Tac Ad which was captured in Group Commander A's contemporaneous notes as follows:

> *He informed me that the LLA Airport water supply we had spoken about would not be sufficient to supply the three aerial platforms due to its 1,000lpm [litres per minute] capability. He said he had looked at alternatives and that best option was on Vauxhall way and a booster on airport way. A discussion was had in relation to how long this would take to set in, the distance and the fact it was at the bottom of the hill. Although not ideal, it was clear that the Tac Ad thought this was the best option.*[57].[58]

The HVP booked in attendance at 23:38.[59]

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[49] Group Commander A *Notes LLA* Page 5
[50] Station Commander A *Notes LLA* Pages 5 -6.
[51] East of England Ambulance Service NHS Trust, SARs Report 16/09/2024 Page 4
[52] Document LLA Terminal Car Park Messages, page 4
[53] Station Commander A *Notes LLA* Pages 6
[54] Document LLA Terminal Car Park Messages, page 4
[55] Station Commander A *Notes LLA* Pages 7
[56] Group Commander A *Notes LLA* Page 6
[57] Group Commander A *Notes LLA* Page 6
[58] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 1.
[59] Bedfordshire Fire and Rescue Service *IRS Report GB-040100-2023* Page 19

At 00:00:39 on Wednesday 11 October 2023, Area Commander A sent an informative message to control. At this stage of the incident the fire on the third floor had spread to floors one and two due to the collapse of the structure. The incident had been sectorised into four sectors. In sector 1 there were no firefighting operations. In sector 2 an ALP was in place and firefighting in progress with two large aircraft being protected using a water curtain. In sector 3 the Hertfordshire Fire and Rescue Service ALP had been deployed and was firefighting. In sector 4 there were three uncrewed ground monitors in use for firefighting, which had been set in place prior to the sector being evacuated by personnel. The police drone was in use for incident monitoring.[60]

At 00:48 an informative message was sent stating airport tanks were being used as water sources.[61]

At a multi-agency meeting the two aircraft in sector 2 were discussed and acknowledged as a risk.[62] Following the meeting, this operational concern was escalated as a strategic concern via the Deputy Chief Fire Officer (DCFO) who was in attendance, with LLAOL asked to get the aircraft moved as quickly as possible.[63] LLA Fire Service also considered the issue post meeting and came up with a 'plan of a buddy/buddy in breathing apparatus with the tug drivers to help them move these planes.'[64] Two members of the LLA fire crew were tasked with returning to LLA Fire Station to make up some BA sets for this plan. They then headed towards the south stands but the aircraft were 'already being moved at this time.'[65]

Group Commander A summarises the next few hours of incident as follows:

> *'Up until 03:00 a series of further collapses occurred throughout the building as [the] fire continued to break out across all sectors throughout the night. Ground monitors, HRETs, APs and TTLs were used to suppress this fire spread. I held a series of conversations with the HVP Tac Ad throughout the night who was struggling to secure the water supply running into various issues.'*[66]

The HVP Tac Ad asked Affinity Water representatives to 'test the water pressure and flow output from the 8" main [on Vauxhall Way] at the time we established it, and it was sufficient to supply water to the fireground. This included overcoming a 40m head. Once the water

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[60] Document LLA Terminal Car Park Messages, page 5.
[61] Document LLA Terminal Car Park Messages, page 5.
[62] LLA Station Commander *Fire Report from Station Manager RFFS OiC on the evening 10-10-2023* Page 2
[63] Author A, Document *Notes from Interview with DCFO conducted on 11/07/2024*
[64] LLA Station Commander *Fire Report from Station Manager RFFS OiC on the evening 10-10-2023* Page 2
[65] LLA Station Commander *Fire Report from Station Manager RFFS OiC on the evening 10-10-2023* Page 3
[66] Group Commander A *Notes LLA* Page 6

reached the fire ground, we were supplying approx. 4000lpm at 0.5bar.'[67] At 02:16:55 an informative message was sent stating the 'HVP was now in place.'[68] This message was sent 2 hours and 38 minutes after the HVP had arrived at the incident.

The HVP Tac Ad states that 'We were asked for an increase in pressure, in the HVP world we wouldn't usually do this, we try to provide flow rather than pressure, however with the persistence of requests we placed the Hydrosol at the bottom of the hill to provide a boost to pressure on the fireground. This took time due to having to drain the contents of 1.5km of hose to allow for couplings to be undone.'[69]

At 03:12 Group Commander A took over as Incident Commander[70]

At 03:51 Group Commander B took over as Incident Commander[71]

At 04:40:34 a further informative was sent stating the HVP was in operation again.[72]

By 05:28:18 the incident had been reduced to six rescue pumps, one AP and one HART (Hazardous Area Response Team) vehicle (crewed by East of England Ambulance Service NHS Trust). Sector 2 was inactive. Defensive firefighting was taking place in sectors 1, 3 and 4. The airport fire service was continuing to provide support with two of its fire engines working in sector 3. The AP was in sector 1 and being used to extinguish hotspots. By 07:29:30 all live sectors were damping down hotspots and by 09:13:22 all firefighting operations had ceased with crews monitoring for hotspots.[73]

[67] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3
[68] Document *LLA Terminal Car Park Messages,* page 6.
[69] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3
[70] Document *Incident Message Log,* Page 5
[71] Document *LLA Terminal Car Park Messages*, page 6.
[72] Document LLA Terminal Car Park Messages, page 6.
[73] Document LLA Terminal Car Park Messages, page 7

Figure 8 Car Parks 1 and 2 following the fire. Image courtesy of Bedfordshire Police

At 09:59:40 an informative message was sent to control by Group Commander B stating that the incident was 'now no longer declared a major incident by [the] fire service. Now business as usual, LLA entering recover mode.'[74]

Table 1 contains details of all the resource requests during the incident and includes information on the length of time it took to get the resources in place.

[74] Document *LLA Terminal Car Park Messages*, page 7

PDA/Make Up	Last resource to book in attendance	Time for Pumps to book in attendance (excluding special appliances)	Time for full resources to book in attendance
20:47: PDA 2 Pumps + Drone	Luton P1 and Stopsley P1 both book in attendance at 20:57. Harrold Drone – 21:34	10 Minutes	47 Minutes
20:56 ALP	ALP Bedford – 21:32	N/A	36 Minutes
21:03 Full High Rise PDA	Last Pump: Dunstable – 21:14 Leighton Buzzard – Command and Control Unit – 21:38	11 Minutes	35 Minutes
21:16 Make Pumps 10 ALP 2	Last Pump Shefford – 21:56 ALP Stevenage – 21:57	40 Minutes	41 Minutes
21:40 High Volume Pump, Water Carriers 2, Foam	Northamptonshire - High Volume Pump – 23:38	N/A	1 hour and 58 Minutes
22:09 Make AP's 3	West Ashland ALP – 22:47 (Estimated)	N/A	38 Minutes
22:57 Make Pumps 15	Leighton Buzzard P2 – 23:22 (Estimated)	25 Minutes	25 Minutes

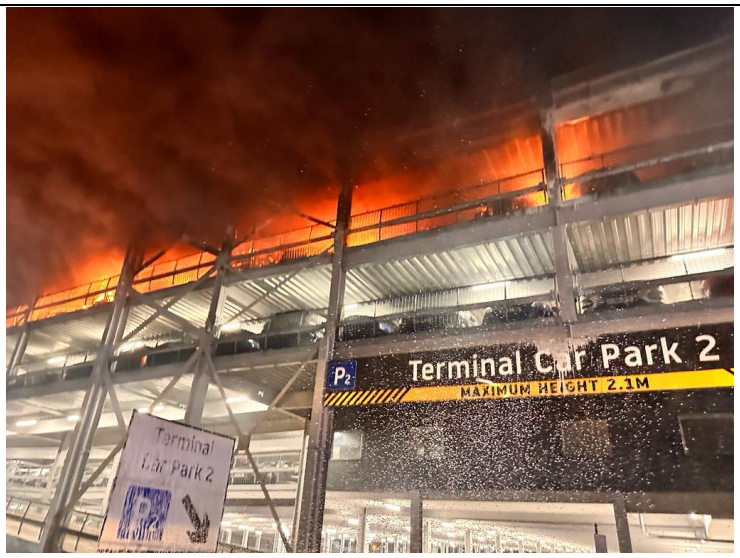
Table 1 Resource Times

Incident Timeline

Date	Time	Event
10/10/2023	20:47:20	Time of 999 call – owner of vehicle.
10/10/2023	20:49:00E	Call from Fire Control to LLA Ops.
10/10/2023	20:51:00E	Second 999 call member of the public, Level 3 confirmed by caller. Still one car involved
10/10/2023	20:52:00E	Third 999 call, LLA ATC, Car in road, spread to three cars that are parked. Bedfordshire FRS control highlight they have spoken to the Airport “operational firefighters”
10/10/2023	20:53:46	Bedfordshire Police informed
10/10/2023	20:54:42	From the Airport Air Traffic Control, fire now spreading to 3 other cars and on the western side at the northern end, passed to ongoing appliances.
10/10/2023	20:56:36	Assistance AP Required
10/10/2023	20:57:09	FGB12P1 (Stopsley) in attendance
10/10/2023	20:57:09	FGB08P1 (Luton) in attendance
10/10/2023	21:03:31	Assistance full high-rise PDA
10/10/2023	21:07:44	Informative: 12P1 Crew Commander A SA Multiple cars well alight on 3rd floor of car park, crews at work implementing high rise measures Tactical Mode Offensive
10/10/2023	21:07:56	Group Commander A in attendance

Date	Time	Event
10/10/2023	21:08:00E	
10/10/2023	21:09:22	Informative: Caution travelling up underpass is in the process of being shut
10/10/2023	21:10:22	Reverse running under the under pass. Road being closed by airport security and facilitated
10/10/2020	21:10:55	Reverse running passed to all ongoing appliances
10/10/2023	21:12:03	FGB08P2 (Luton) in attendance
10/10/2023	21:14:50	FGB04P1 (Dunstable) in attendance
10/10/2023	21:16:13	Group Commander A make pumps 10 AP 2
10/10/2023	21:18:00E	Fourth 999 call
10/10/2023	21:24:24	Informative: 04P1 Group Commander A SA Approx 25 cars involved in fire on 3rd storey of multi storey, 6 BA under stage 1, 2 airport javelin external fire suppression. TMO 04P1 control point for incident.
10/10/2023	21:26:46	Informative: 04P1 Group Commander A SA all crews now withdrawn from structure external FF now in place awaiting AP TMD.
10/10/2023	21:26:50	Station Commander A in attendance
10/10/2023	21:30-22:17	Member of the public (who worked at the airport) enters car park, is spotted found and rescued
10/10/2023	21:32:41	FGB02A7 (Bedford) AP in attendance
10/10/2023	21:34:41	FGB05D1 (Harrold Drone) in attendance

Date	Time	Event
10/10/2023	21:34:45	Watch Commander C TCG Loggist @ Bedfordshire FRS Control
10/10/2023	21:34:45	Group Commander D, DGC @ Bedfordshire FRS Control
10/10/2023	21:34:45	Station Commander Control G Service Control Liaison @ Bedfordshire FRS Control
10/10/2023	21:34:47	FGB13P1 (Toddington) in attendance
10/10/2023	21:35:06	GH02P1 (Herts FRS Markyate) in attendance
10/10/2023	21:37:21	METHANE: Major Incident Declared, 80% of 3rd storey car park involved in fire. Luton Airport CAT0 full closure. Hazards fire and risk of building collapse. Access via Luton Airport approach road. Holding area Airport Approach Road. No casualties involved. Emergency Services in attendance. Fire Police and Airport Fire Service.
10/10/2023	21:38:04	FGB04P2 (Dunstable) in attendance
10/10/2023	21:38:12	FGB07P1 (Leighton Buzzard) in attendance
10/10/2023	21:38:19	FGB07C1 (Command & Control Unit) in attendance
10/10/2023	21:38:59	GH22P1 (Herts FRS Harpenden) in attendance
10/10/2023	21:40:08	High Volume Pump, 2x Water Carriers Foam
10/10/2023	21:43:01	FGB01P1 (Ampthill) in attendance
10/10/2023	21:45:45	Ambulance Requested
10/10/2023	21:46:00E	HAZMAT Advisers x 2
10/10/2023	21:52:31	FGB09S1 (Potton) in attendance
10/10/2023	21:53:00E	METHANE: message announced on AEEA ESICTRL
10/10/2023	21:54:02	Station Commander B in attendance
10/10/2023	21:56:50	FGB11P1 (Shefford) in attendance
10/10/2023	21:57:25	GH23A1 (Herts FRS Stevenage AP) in attendance

Date	Time	Event
10/10/2023	21:59:30	Area Commander A in attendance
10/10/2023	22:02:00E	
10/10/2023	22:09:55	Make AP's 3
10/10/2023	22:12:46	Informative 07C1 SA Group Commander A multi storey carpark fire 3rd approx. 80% involved in fire, external firefighting in progress. 2 Ariel Platforms in use, incident now sectorised Station Commander A now Ops Commander, steady progress being made. TMD
10/10/2023	22:17:00E	Worker found
10/10/2023	22:19:05	NRFC have asked for updates to be added to the reporting tool on NR website as Home Office requires immediate updates.
10/10/2023	22:21:50	FGBB002 DCFO in attendance
10/10/2023	22:22:23	FGB06W8 (Kempston Water Carrier) in attendance
10/10/2023	22:23:41	Mechanic in attendance
10/10/2023	22:26:59	Station Commander D in attendance
10/10/2023	22:28:05	Three firefighters sent to A&E

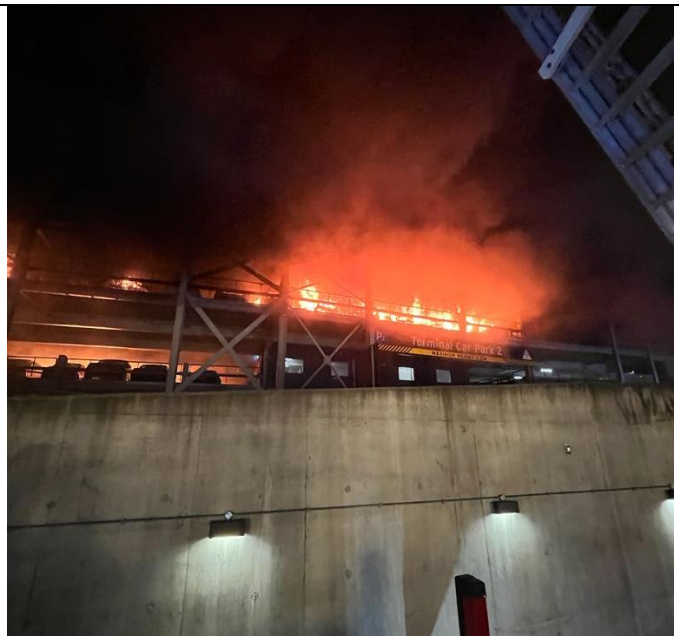
Date	Time	Event
10/10/2023	22:28:24	CAT0 Called LLA ATC and confirmed full stop on all planes in area. Drone safe to fly. Just inform ATC if drone goes up so they can inform the airport authority.
10/10/2023	22:30:45	Group Commander B updated on LLA ATC confirming drone is safe to fly, no planes flying but they believe it's just the software stopping the drone.
10/10/2023	22:35:15	Environment Agency requested to contact Group Commander C
10/10/2023	22:38:17	Affinity water informed of situation
10/10/2023	22:40:45	DACFO in attendance
10/10/2023	22:42:29	Station Commander C in attendance
10/10/2023	22:47:39	JC16P1 (Bucks FRS West Ashland) in attendance
10/10/2023	22:47:39E	West Ashland AP in attendance
10/10/2023	22:48:06	JC31P1 (Bucks FRS Broughton) in Attendance
10/10/2023	22:48:40	Environment Agency informed reference number 02193306
10/10/2023	22:54:00E	
10/10/2023	22:57:12	Make Pumps 15

Date	Time	Event
10/10/2023	23:00:01	Duty NRAT Officer called for an update, said he has pressure from Home Office for a cause, advised of what was passed during initial call regarding this being a Range Rover on fire from the owner of vehicle also advised of MP15
10/10/2023	23:02:00E	First media enquiry - Guardian
10/10/2023	23:04:47	Informative: 07C1 Area Commander A SA, Area Commander A now Officer in Command. Group Commander A now Ops Commander. Tact Mode D.
10/10/2023	23:05:00E	JESIP Meeting planes stopped for 6 hours, 5 people treated for smoked inhalant (4 BFR)
10/10/2023	23:07:48	Informative: 07C1 Area Commander A SA Partial building collapse. Roll call being completed.
10/10/2023	23:10:13	FGB13W8 (Toddington) in attendance
10/10/2023	23:10:16	FGB14P1 (Woburn) in attendance
10/10/2023	23:11:01	GH01P2 (Herts FRS Hemel Hempstead) in attendance
10/10/2023	23:12:00E	
10/10/2023	23:13:39	FGB06P1 (Kempston) in attendance
10/10/2023	23:15:00	First SCG meeting

Date	Time	Event
10/10/2023	23:19:45	Informative: 07C1 Area Commander A SA multi storey car park fire 80% involved, partial building collapse, crews investigating tact withdrawal to implement 15-meter cordon.
10/10/2023	23:20:00E	Northamptonshire FDS Officer in attendance
10/10/2023	23:22:00E	FGB07P2 (Leighton Buzzard) in attendance
10/10/2023	23:24:05	METHANE: updated message sent via AEEA ESICTRL - update included make pumps 15, RVP roundabout at Airport Way, partial building collapse
10/10/2023	23:26:58	FGB07S2 (Leighton Buzzard Foam)
10/10/2023	23:30:00	EM12P2 (Northamptonshire, Corby, HVP Support Pump) in attendance
10/10/2023	23:27:02	OTB Gh Water Carrier Welwyn Garden in attendance
10/10/2023	23:37:02	Cambridgeshire FGC10P3 (Sawston) in attendance
10/10/2023	22:38:00	EMN980 (Northamptonshire HVP) in attendance
10/10/2023	22:38:00	EMN990 (Northamptonshire Hose Layer) in attendance
10/10/2023	23:42:04	BLRF Log started
10/10/2023	23:55:00E	JESIP Meeting - Road closure extended to Kimpton Road
11/10/2023	00:00:39	Informative 07C1 Area Commander A SA Fire in multi storey car park, consisting of 5 floors, fire on 3rd floor now spread to floors 1 and 2 due to floor collapse. Incident sectorised 1, 2, 3, 4 all defensive tactical implemented withdrawal due to unsafe structure, sector 1 no Firefighting operations. sector 2 floor aerial ladder platform firefighting in progress, sector 4, 3 ground monitors firefighting in progress. Safety Officers in all sectors, Airport Fire Service assisting and previous used

Date	Time	Event
		foam attack. Full Airport closure and evacuations. 3 firefighters and 1 member of Airport Staff taken to hospital with smoke inhalation. 1 firefighter accessed by paramedics on scene and discharged overall safety officer, marshalling officer, 2 HMEPA [HMA], 1 NILO and Incident command support officer all allocated TMD
11/10/2023	00:08:44	Informative: 07C1 Area Commander A SA 3rd floor still well alight. Horizontal fire spread involved large number of vehicles. Further collapse of building. Firefighting operations still continuing whilst waiting for water supply from hose layer. Police road closures in place. Sector 1 no firefighting operations. Sector 2 Bucks fire AP and water curtain in use. Sector 3 Herts AP in use. Sector 4 ground monitoring being established. Role call complete. All personnel accounted for. Full airport closure in place. Rapid relief team set up. Tact mode D.
11/10/2023	00:08:46	Informative: 07C1 Area Commander A SA HVP Now in attendance firefighting ops in sector 2 now moved to airside via gate 6 for better access and advantage points. Airport fire tank being used as water source. Sector 1, 2, 3 and 4 tact mode D. Further JESIP meeting underway.

Date	Time	Event
11/10/2023	00:17:00E	
11/10/2023	00:26:05	Area Commander A requested Structural Engineer
11/10/2023	00:28:33	GH12P1 (Herts FRS Redbourn) in attendance
11/10/2023	00:30:00	JESIP Meeting - Further collapse ongoing, LLA cancel flight until 02:30
11/10/2023	00:33:00E	
11/10/2023	00:48:44	07C1 Area Commander A SA 3rd floor still well alight. Horizontal fire spread involving large number of vehicles. Further collapse of building. Firefighting operations still continuing whilst waiting for water supply from hose layer. Police road closures in place, Sector 1 no firefighting operations, Sector 2 Bucks FRS AP and water curtain in use. Sector 3 Herts AP in use. Sector 4 ground monitors established. Roll call complete. All

Date	Time	Event
		personnel accounted for. Full airport closure in place. Rapid Relief Team Set up. Tact Mode D
11/10/2023	01:21:53	Station Commander A 5 pump relief required at 03:00hrs
11/10/2023	01:30:54	GH21P1 (Herts FRS Wheathampstead) relief crew in attendance
11/10/2023	01:33:06	GH11P2 (Herts FRS St. Albans) relief crew in attendance
11/10/2023	01:41:48	Informative: 07C1 Area Commander A SA Fire still progressing horizontally and vertical further multiple collapse of building structural engineer in attendance and monitoring HVP and hose layer still establishing water supply. Sector 1 total evacuation due to potential building collapse. Sector 2 AP and water monitor in use. Sector 3 2 AP standing by awaiting water supply. Sector 4 ground monitors and jets being used from adjacent car park, power to building isolated. TMO.
11/10/2023	01:55:00E	

Date	Time	Event
11/10/2023	02:10:09	Informative: 07C1 Crew Commander D Relief crews hold at the junction of gate 6 at the traffic lights then make contact with 07C1 via radio to let them know they are in attendance
11/10/2023	02:16:55	Informative: 07C1 Area Commander A SA HVP now in place, recommencing start firefighting operations. Water supply has now been established. Sector 1 02A7 in use. Sector 2 not in use due to collapse and all vehicles burnt out. Sector 3 Herts and Bucks AP in use. Sector 4 2 monitors in use. Continued partial collapse TMD
11/10/2023	02:30:00	JESIP Meeting
11/10/2023	02:37:00	GC30P3 (Cambourne, Cambridgeshire FRS) in attendance
11/10/2023	02:40:00	GC10P3 Sawston, Cambridgeshire FRS in attendance
11/10/2023	02:41:00	Cambridgeshire FDS Officer 1 in attendance
11/10/2023	02:41:54	Station Commander F in attendance
11/10/2023	02:47:48	Crew Commander Control B in attendance
11/10/2023	02:51:05	FGB03P3 (Biggleswade) in attendance
11/10/2023	03:01:02	FGB10P1 (Sandy) in attendance
11/10/2023	03:11:58	FGB03P1 (Biggleswade) in attendance
11/10/2023	03:12:00	Informative: 07C1 Group Commander A is now OiC
11/10/2023	03:22:55E	Station Commander X in attendance
11/10/2023	03:51:08	Informative: 07C1 Group Commander B now Incident Commander
11/10/2023	03:51:12	Group Commander B in attendance
11/10/2023	04:10:00	JESIP Meeting - Fire collapses ongoing, exclusions zone 20 metres. Ongoing issues with water supply.

Date	Time	Event
11/10/2023	04:27:58	Informative: 07C1 Group Commander B SA Update on function rolls as follows, Ops commander Station Commander F. Sector 1 Commander Watch Commander E Safety Officer, Firefighter F Sector 2 inactive. Sector 3 Commander Station Commander K. Safety Officer Crew Commander G. Sector 4 Commander Crew Commander H Safety Office Firefighter E Command Support and Safety Commander Crew Commander Control B
11/10/2023	04:40:34	Informative: 07C1 SA good progress being made in section 1,3 and 4, sector inactive HVP in operation supplying sector 3 primary focus on firefighting operations remains in sector 3. Airport closure until at least 12:00. JESIP multi agency briefing continue to take place TMD
11/10/2023	04:46:18	Informative: 07C1 Group Commander B SA 2 firefighter in aerial platform cage in sector 1 operating at safe distance in respiratory protection half masks monitoring and identifying hotspots. TMD
11/10/2023	05:00:00	London Fire Brigade HVP Crew from Mill Hill in attendance.
11/10/2023	05:15:00	JESIP Meeting - Good water supply established. HVP still in place collapse still ongoing
11/10/2023	05:28:18	Informative: 07C1 Group Commander B SA incident now reduced to 6 RP 1 AP 1 HART vehicle sectors 1, 3 and 4 in use defensive firefighting sector 2 remaining inactive sector 3. 2 airport tenders in operation., hotspots being extinguished by AP in sector 1. TMD

Date	Time	Event
11/10/2023	05:29:49	FGB01P3 (Ampthill) in attendance
11/10/2023	05:30:57	E1114 London GC now in attendance
11/10/2023	06:09:00E	Cambridgeshire FDS Officer 2 in attendance
11/10/2023	06:14:00	GC11P3 (Gamlingay, Cambridgeshire FRS) in attendance
11/10/2023	06:47:56	LFB pump from Stanmore in attendance
11/10/2023	07:03:11	FGBB001 CFO in attendance
11/10/2023	07:04:54	LFB appliance a401 (Northolt) in attendance
11/10/2023	07:29:30	Informative: 07C1 Group Commander B SA steady progress being made crews damping down hotspots sectors 1, 3 and 4 in use TMD.
11/10/2023	07:37:00	GC02P3 (Cottenham, Cambridshire FRS) in attendance
11/10/2023	08:20:00	JESIP Meeting 1404 Vehicles involved. HVP review @ 10:00
11/10/2023	09:13:22	Informative: 07C1 Group Commander B SA all firefighting operations now seized, crews monitoring for hotspots TMD
11/10/2023	09:46:51	Station Commander H in attendance
11/10/2023	09:51:15	FGB04P1 (Dunstable) in attendance
11/10/2023	09:52:06	FGB12P1 (Stopsley) in attendance
11/10/2023	09:58:27	FGB14P1 (Woburn) in attendance
11/10/2023	09:59:40	Informative: 07C1 Group Commander B SA Incident now no longer declared major incident by fire service. Now business as usual LLA now entering recovery mock. No firefighting operations taking place in any sectors. Crews continuity to monitor hotspots. HVP and ambulance Service stood down tact Mode D.
11/10/2023	10:02:32	FGB06P1 (Kempston) in attendance

Date	Time	Event
11/10/2023	10:11:31	Station Commander D in attendance
11/10/2023	11:07:29	Informative: 07C1 Station Commander E now Officer in Command
11/10/2023	11:16:49	EA requested to attend incident to meet with Station Commander M for Environmental Cell at 12:15
11/10/2023	11:42:30	Informative: 07C1 Station Commander E SA no firefighting taking place in any sector. Continuing to monitor hot sports. Incident being scaled down to two pumps and AP. Tact Mode D
11/10/2023	11:55:31	Station Commander M in attendance
11/10/2023	12:14:09	Informative: 07C1 Station Commander E SA Continuation of monitoring of hot spots being carried out by Fire Service. Hazmats advisor and EA reviewing national environmental risk assessment. Tact mode D
11/10/2023	12:57:26	Informative: Station Commander E London Luton Airport. Hotspots being monitored by Beds Fire Service and Airport Fire Service. High Volume pump from Hertfordshire and Northamptonshire being made up. Tactical mode Delta
11/10/2023	13:21:46	Station Commander J in attendance
11/10/2023	13:30:15	Informative: 07C1 Station Commander E S/A Road closure being scaled back to terminal building. Police managing traffic. Tactical mode D
11/10/2023	14:04:19	FGB04P2 (Dunstable) in attendance
11/10/2023	14:20:19	FGB02P1 (Bedford) in attendance
11/10/2023	15:01:02	Informative: 07C1 Station Commander J LLA. Hotspots being monitored by Beds Fire and Airport Fire. HVP hose being made up. Herts FRS now leaving scene. AP

Date	Time	Event
		being used for Fire Investigation, Airport now open and up and running TMD
11/10/2023	16:08:00	Informative: 07C1 Station Commander J LLA. SA Hotspots being monitored by Beds Fire and Airport Fire. HVP hose being made up by Northamptonshire. Fire investigation being delayed until tomorrow. Tact mode D.
11/10/2023	17:21:27	Informative: 07C1 Station Commander J. SA Hotspots being monitored by crews. HVPs now made up. Roads now open. Tier 2 Fire Investigation concluded for the day and will recommence 12/10/23, 09:00
11/10/2023	17:51:56	FGB08P2(Luton) in attendance
11/10/2023	18:27:59	Informative: Station Commander F now Officer in Command
11/10/2023	19:06:23	Stop Message – 08P2 Station Commander F Luton Terminal Car Park, Major incident declared. 15 pumps, 3 AP's, 2 Water Carriers, 2 drones, ICU, 2 HVP's, 2 Hose layer lorries in attendance. Fire in car park, partial collapse, 6 BA, 2 ground monitors in use. 3 firefighters injured, taken to hospital by ambulance. 1 injured airport worker taken to hospital. EA, HART and Police in attendance. Incident to remain to 1 pump reliefs, 5 hours apart to remain through night. Tact Mode Delta PUC MP4
11/10/2023	23:19:34	Informative: 08P2 Watch Commander D Luton Airport. Further minor collapse in sector 2. Hot spots identified on ground floor with reading of 60 degrees. FS to monitor. Airport FS made aware. Tact Mode D.

Date	Time	Event
12/10/2023	18:22:50	Tier 2 Fire investigation now complete FCA
12/10/2023	18:22:50	Incident Stop
12/10/2023	20:30:09	Informative: Crew Commander F S/A Incident now handed over to LLA. Completed electronic handover detailing hazards, risks and measures to be carried out

Observations

1. Pre-Determined Attendance (PDA)

A Pre-Determined Attendance (PDA) is the resources mobilised to an incident based on the incident type to allow an effective response with sufficient resources to implement safe systems of work.

The PDA for a car on fire in London Luton Airport Terminal Car Park 2 was two rescue pumps, a drone and a flexi duty system (FDS) officer. Bedfordshire Service Control mobilised:

- 12P1 mobile: 20:49:58hrs, in attendance: 20:57:09hrs
- 08P1 mobile: 20:50:24hrs, in attendance: 20:57:09hrs
- FDS Officer (Group Commander A) in attendance 21:07hrs
- 05D1 (drone) mobile: 20:53:36hrs, in attendance: 21:34hrs[75]

It is unclear why 05D1 (drone) was part of the PDA. If the PDA had been sufficient to extinguish the fire without making up for additional resources, the drone would have been unable to fly due to the restrictions on the airspace above Terminal Car Park 2. This is due to its proximity to the airfield. It was not until 22:28 that London Luton Airport Air Traffic Control confirmed a full stop on all aircraft in the area and that the drone was safe to fly.[76] By this time the Incident Command Unit GB07C1 was in attendance (booked in attendance at 21:38:19)[77] and this unit carries its own drone. Mobilisation of 05D1 was not the most efficient use of resources at the time, as this required a blue light drive of more than 30 miles and would have had a small but unnecessary financial cost and environmental impact. Furthermore, the two firefighters crewing the Harrold drone were no longer available to crew other appliances at Harrold.

[75] Group Commander D, *Duty Group Commanders Report (DGCR)* 2023, Page 2
[76] Document *LLA Terminal Car Park Messages* Page 3
[77] Document *Appliance Times* Page 1

On Sunday 31st December 2017, Merseyside Fire and Rescue Service attended a similar major incident at the Kings Dock Car Park in Liverpool. The Kings Dock Car Park was 'severely damaged by fire and 1150 vehicles are thought to have been destroyed.'[78] Merseyside Fire and Rescue Service initially responded to this fire with a PDA of two appliances.[79] Following the Fire, Merseyside Fire and Rescue reviewed the PDA with considerations given 'to the similarities between the structure of a concrete multi storey car park and a high-rise building. Firefighting techniques within the two building types are consistent with the utilisation of dry risers and crews committed from a bridgehead. Further consideration was also given to the fire loading when multi storey car parks are close to capacity and the short distance between parked cars. This undoubtedly contributed to the rapid fire spread within the Kings Dock fire.'[80]

As a result, Merseyside Fire and Rescue Service took the decision to 'increase the PDA to fires reported in multi storey car parks to a Level 2 High Rise PDA; 4 x rescue appliances and a CPL.'[81]

Meeting minutes from the Service Delivery Management Team meeting held on Monday 29 January 2018 evidence that Bedfordshire FRS considered the interim report into the King Dock Car Park incident and discussed the 'potential is for a similar incident to occur in Bedfordshire and whether the Service's prevention, protection and response arrangements for multi storey car parks are appropriate to the risk.'[82] Whilst some actions were put in place in response to the interim report there is no record of a specific decision to review the PDA for multi storey car parks.

Since the fire in Terminal Car Park 2 Bedfordshire FRS has revised its PDA for fires at Car Parks 1 and 2 at London Luton Airport to four rescue pumps, a water carrier, the incident command unit, two station commanders and the drone.[83]

It should be noted that the need for additional resources on Tuesday 10 October 2023 was identified quickly by the crew of 12P1 requesting an AP at 20:56 as they approached the car park (prior to booking in attendance) and Crew Commander A requested a full high-rise PDA just seven minutes later at 21:03 (due to the internal firefighting dry risers being utilised for initial firefighting tactics).[84] In addition the initial response was supported by assets from London Luton Airport Fire Service. As such it is unlikely that the PDA had a significant bearing on the outcome of the incident.

Observation/Action

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[78] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 6
[79] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 6
[80] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 15
[81] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 15
[82] Meeting Minutes, *Service Delivery Management Team Meeting Held on 29 January 2018* Page 6
[83] Document *Pre-determined Attendance and Premises Information Amendment 20024861* Page 3
[84] Document *Incident Message Log* Page 1.

- Observation – The inclusion of the drone on the PDA was unnecessary due to airspace restrictions. There are a number of airports and airfields within Bedfordshire that create exclusion zones for drones.

- Action – Response to review the inclusion of a drone in PDAs to ensure that they are not included for locations where it is highly unlikely that the drone can be deployed.

- Observation – The Service has revised the PDA for the multi storey car parks at London Luton Airport but not at other multi storey car parks in Bedfordshire.

- Action – The Service should assure itself that the PDAs on all multi storey car parks are suitable and sufficient.

2. Site Specific Risk Information

The Service holds Site Specific Risk Information (SSRI) for buildings in Bedfordshire that details operational information about a building that helps support fire crews to formulate an appropriate risk assessment of the situation and to inform the tactical plan. An SSRI may include a Site Specific Risk Plan (SSRP).

During the internal debrief it was identified that the SSRI information for Terminal Car Park 2 at London Luton Airport was 'problematic to locate and access.'[85] This is because the information for the car park was recorded against the information held for the terminal building. Staff fed back that 'after the incident the available information was located but it was limited. The SSRP for the car park consisted of a single bullet point and was located within the SSRP for a fire within the terminal building'[86]

It should be noted that in addition to the SSRI, crews had access to a Premises Type Risk Information (PTRI) for Enclosed Car Parks (multi storey). PTRI's contain risk information that is common across a building type and avoids repetition of the same information within individual SSRI's. The PTRI for Enclosed car Parks (multi storey) had recently been updated and was issued on Thursday 14 September 2023.[87] Since the Terminal Car Park 2 fire Bedfordshire FRS has withdrawn PTRI's and replaced them with National Operational Guidance (NOG) Scenarios as part of its wider adoption of NOG.

[85] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023* Version 0.1 2024 Page 16
[86] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023* Version 0.1 2024 Page 17
[87] Document *Premises Type Risk Information Enclosed Car Parks (Multi Storey).*

Observation/Action

- Observation - Crews did not access the information held on Terminal Car Park 2 because it was attached to the risk information for the terminal building.

- Action – Creation of separate SSRIs for Car Park 1 at Luton Airport.

  Action – For all multi-storey car parks the Service should consider if an SSRI is required in addition to the information available to crews through the adoption of National Operation Guidance Scenarios.

3. Water Supplies

There were fire hydrants located near to Terminal Car Park 2. This was sufficient for the initial phases of the incident. However, as the incident escalated to three aerial platforms at its peak, this was not a sufficient supply to maintain the firefighting tactics deployed.

Following the declaration of a major incident at 21:37:21 an assistance message was sent requesting a high-volume pump and two water carriers at 21:40:08.[88] This was to ensure there was sufficient water needed to implement sectorisation of the incident. The HVP was a national asset requested through the National Resilience Fire Control (NRFC). The National Resilience Programme 'provides specialist capabilities, personnel and resources which enhance the ability of the sector to respond effectively to large-scale or critical incidents.'[89]

The initial plan was to use the HVP to draw water from the large water tank situated adjacent to the LLA Fire Station. However, when the Tactical Advisor investigated this, it was not possible as water could only be pumped from the tank using the tanks own pump which was limited to 1,000 lpm which was not sufficient to supply the three aerial platforms.[90]

An alternative plan was agreed to pump water up the hill from an 8-inch main on Vauxhall Way.[91]

In the interim, the water carriers and various rescue pumps were utilised to supply dams with water for the aerial platforms by drawing water from tanks situated on the airfield.

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[88] Document *LLA Terminal Car Park Messages*, page 2
[89] HM Government, *Fire and National Resilience* | *Fire England* Accessed 24/09/2024

[90] Group Commander A *Notes LLA* Page 6
[91] Group Commander A *Notes LLA* Page 6

Figure 9 Water damn in use

At 23:38 the HVP booked in attendance.[92]

At 00:48 an informative message was sent stating that the HVP was now in attendance.[93]

The initial work to set up the HVP was hampered by an initial reluctance by the Police to close the road. A police sergeant did arrive and then directed the roads to be closed and stayed to assist.[94]

The HVP Tac Ad asked Affinity Water representatives to 'test the water pressure and flow output from the 8-inch main at the time we established it and it was sufficient to supply water

[92] Bedfordshire Fire and Rescue Service *IRS Report GB-040100-2023* Page 19

[93] Document LLA Terminal Car Park Messages, page 5.
[94] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3

to the fireground. This included overcoming a 40m head. Once the water reached the fire ground, we were supplying approx. 4,000lpm at 0.5bar.'[95] At 02:16:55 an informative message sent stating that the 'HVP was now in place.'[96] This message was sent 2 hours and 38 minutes after the HVP had arrived at the incident.

The HVP Tac Ad states that 'We were asked for an increase in pressure, in the HVP world we wouldn't usually do this, we try to provide flow rather than pressure, however with the persistence of requests we placed the Hydrosub at the bottom of the hill to provide a boost to pressure on the fireground. This took time due to having to drain the contents of 1.5km of Hose to allow for couplings to be undone.'[97]

At 04:40:34 a further informative was sent stating that the HVP was in operation again.[98]

An attempt was made to supplement the water supply from 8-inch main on Vauxhall Way with the use of the 6-inch main situated on Percival Way, however the airport EWS tanks fill from this main and as they were being depleted by fireground activities and the flow rate from this main was too low to be used.[99]

At 05:20 a car drove over a length of hose used by the High-Volume pump causing it to burst. The Water Officer was tasked with getting this replaced by Group Commander B.[100]

The HVP Tac Ad notes that the 'HVP Crew worked really hard. However, they could have used some better input from Beds FRS. An officer should have been appointed as OiC of the 'HVP Sector' to provide them some direction and impart a greater sense of urgency.[101]

At the multi-agency debrief it was identified that 'there is a large water main (8 inch) included in the Luton Dart infrastructure which was unknown to responders.'[102] Whilst this was unknown during the incident Bedfordshire FRS did have an SSRI in place for the newly

[95] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3
[96] Document LLA Terminal Car Park Messages, page 6.
[97] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3
[98] Document LLA Terminal Car Park Messages, page 6.
[99] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3
[100] Document, *Incident Decision Log B Incident number GB040100* Pages 11 – 12.
[101] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3
[102] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 2

constructed Luton Dart and this captures that there is a wet riser along the length of the track with stored hydrant pressure, which can be increased by fire service appliances.[103]

Observation/Action

- Observation – Despite regular exercising with LLA Fire Service for airside incidents responding crews were unaware of the additional 8" water main within the newly constructed DART station, were not aware of the limitations in accessing the Airport Fire Station water tank nor were they familiar with which hydrants shared the same water mains.

- Action – Bedfordshire FRS should work with LLA Fire Service to review the availability of water supplies for firefighting purposes for both airside and non-airside incidents This information should then be included in the SSRI for the site with local firefighting crews briefed on any revisions.

- Observation – Bedfordshire FRS does not have its own HVP. The Service did not appoint a HVP 'Sector Commander' and the ways of working by the HVP Crew and Tac Ad that focus on flow rate rather than pressure was not fully appreciated by the Bedfordshire officers.

- Action – The Service should ensure that all supervisory managers and flexi-duty officers are familiar with the capabilities and limitations of HVP resources available to the Service from other fire and rescue services. Incident commanders should be trained to implement a 'HVP Sector' by assigning a Bedfordshire officer to oversee future HVP deployments.

4. Firefighting Media

Water was the only firefighting medium used by Bedfordshire FRS to tackle the fire both internally during the initial stages of the incident and externally following the withdrawal of crews from the car park. In addition, London Luton Airport Fire Service attacked the fire using Extensid-AFS FF 3/6 FX-5 Foam.

Water is 'deemed to be the most effective option for internal firefighting due to its cooling properties, latent heat of vaporisation (water's ability to absorb heat) and ability to adjust the branch to divide the water particles for optimum performance in mitigating fire development.'[104]

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[103] Employee A, *Email RE: Luton DART* 30/09/2024

[104] Merseyside Fire & Rescue Service *Significant Incident Report (Final) Incident: 033394 -31122017* Page 20.

'Firefighting foams have been developed primarily to deal with the hazards posed by liquid fuel fires.'[105] Foam attacks 'all three sides of the fire triangle simultaneously; the foam blankets the fuel, thereby reducing the fuel's capacity to seek out a source of oxygen and adheres to ceilings and walls, more readily aiding rapid reduction in heat. Also, the opaque surface of the foam, as it adheres to walls and ceilings, shields the fuel source from radiant energy.'[106] Due to the running fuel fires witness by Bedfordshire FRS crews, foam was an appropriate medium for the incident and LLA appliances are designed to rapidly deploy foam for aviation fuel fires. The disadvantage of foam is that it can have harmful effects on the environment. The quantity of foam used by LLA Fire Service was recorded and this information was made available to the Environment Agency and Thames Water. Efforts were made by Bedfordshire FRS on scene to stop the foam entering the drainage system.[107] In total 3,000 litres of foam concentrate was used to produce approximately 100,000 litres of finished foam.[108] It should also be noted that contaminated fire water can also have a detrimental effect on the environment.

'An Environmental Cell was set up working collaboratively to assess the impact of firefighting operations on the local environment, this function was passed from fire service management to environments agency at an early point.'[109] At the LRF debrief 'it was expressed that agencies worked well together with prompt information regarding fire service operations and from LLA being accurate and timely. Although there were issues understanding drainage routes on site these were able to be resolved.'[110]

Observation/Action

- Observation - Use of foam in some areas of the car park had a positive effect on the fire, in particular where the application could be targeted to specific areas. However, there were parts of the car park and vehicle fires where foam was not as effective due to the position of the vehicles on fire.

- Observation - The use of foam does provide an environmental risk and a large amount of finished foam gathered in drains and interceptors (requiring environment agency intervention) in addition to a large amount on the ground surface around the car parks, providing a slip hazard for personnel working in the vicinity.

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[105] National Fire Chiefs Council, *Control measure - Select appropriate firefighting media - NFCC* Accessed 10/04/2024
[106] National Fire Chiefs Council, *Control measure - Select appropriate firefighting media - NFCC* Accessed 10/04/2024
[107] Group Commander C *Email Re; Luton Airport Car Park 2* 10/04/2023
[108] Document, *Incident Decision Log B Incident number GB040100* Page 13.
[109] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 3
[110] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 3

- Observation - Deployment of two x HMA upon declaration of a major incident provided additional capacity for assisting with the environmental cell and as a liaison with external agencies who attended the scene. This left another HMA to liaise directly with the Incident Commander in the role as HMA/National Interagency Liaison Officer (NILO).

Figure 10

5. Firefighting Tactics

There were three key phases of tactics used to tackle the fire:

- Phase 1 - The initial attack with crews committed internally to the car park;
- Phase 2 - Defensive firefighting to contain the fire to the third floor; and,
- Phase 3 - Defensive firefighting with the aim of containing the fire within the car park and preventing it from spreading to nearby structures and aircraft.

On initial arrival (20:57:09) Bedfordshire FRS crews attempted to attack the fire from the northwest stairwell. However, it was not possible to open the door to this stairwell from the outside without a key. Crew Commander A was informed by Luton Airport staff that the LLA fire crews on the northwest stairwell had 'already secured a water source which was supplying an appliance which in turn was ready to supply the dry riser.'[111] Due to the need of implementing a rapid intervention Crew Commander A decided to change his tactical plan and use the northwest stairwell with crews briefed to move to the new location.[112] Crew Commander A decided to implement similar tactics to what would normally be implemented for a high rise tower block with 'multiple jets for fire attack and safe systems of work.'[113] BA Team Alpha 1 attacked via the fire floor (third floor) directly from the northwest stairwell to attack the fire. BA Team Alpha 2 entered the car park on the second floor with the intention of accessing the third floor via the vehicle access ramp. 'The intention of this was to attempt to suppress the fire in the northern section of the car park, whilst providing support and safety to the BA Team Alpha 1 (similar to the role of corridor protection team). Also, by committing crews via this route meant they would be working in less arduous conditions.'[114]

As they were making their way up the vehicle ramp from the second to the third floor BA Team Alpha 2 observed that the fire was spreading to the second floor due to running fuel and they retreated to extinguish this fire. Firefighter A states 'I was able to contain the fire using the jet which stopped the spread however [I] couldn't fully extinguish it as upon ceasing of water application the reignition was instant.'[115]

At about this time Watch Commander A stated via radio to Group Commander A that 'internally the incident was escalating and there were signs of internal structural damage within the stairwell and concrete floor.'[116] Based on this information Group Commander A took the decision to 'evacuate all crews from internal firefighting and to re assess our tactics'[117] An informative message was sent to Service Control at 21:26:46 that 'all crews now withdrawn from structure external FF now in place awaiting AP TMD'[118]

This initial attack was similar to the approach taken by Merseyside Fire and Rescue Service at the 2017 Kings Dock Multi storey Car Park Fire. The Kings Dock Car Park, similar to Terminal Car Park 2 at Luton Airport was built using the Approved Document B guidance document. This document bases its understanding of cars in a fire on studies in the post war era when cars were of a simpler construction. Research undertaken by Merseyside Fire and Rescue Service identifies that 'Today, vehicles are manufactured using plastics,

[111] Crew Commander A, *Fire Investigation Witness Record* 14/10/23 Page 3
[112] Crew Commander A *Fire Investigation Witness Record* 14/10/23 Page 3
[113] Crew Commander A *Fire Investigation Witness Record* 14/10/23 Page 3
[114] Crew Commander A *Fire Investigation Witness Record* 14/10/23 Page 3
[115] Firefighter A *Fire Investigation Witness Record* 14/10/23 Page 2
[116] Group Commander A, *Notes LLA* Page 2
[117] Group Commander A, *Notes LLA* Page 3
[118] Document *Incident Message Log* Page 1.

polycarbonates and composite materials. Systems include air conditioning, detonators in airbags and greater fuel capacity, combined with vehicles being generally larger, with the introduction of SUV's and 4x4s. Studies also confirm that vehicles aligned into rows will produce a greater heat output than singular vehicles. One vehicle will produce up to 5MW of energy but two vehicles close together may produce between 16-20MW due to reflected heat and lack of ventilation between vehicles.'[119]

Merseyside Fire and Rescue then stated that their 'main branches heat absorption capabilities range from 20.4 – 27.2 MJ/s (1 MJ = 1 MW), Initial crews reported up to 10 vehicles involved which would release well in excess of 100 MJ/s of energy. In this scenario, a minimum of five to six main branches would have been required.'[120]

Merseyside Fire and Rescue also states 'A standard dry riser has a diameter of 150mm with the capacity to supply three main jets. Therefore, the capacity of an individual riser was inadequate to attack a fire of this combined size and energy output along with radiated heat transfer to other vehicles and surrounding structure.'[121]

Similarly at Luton Airport at the stage of incident where the initial crews were still setting into the riser Crew Commander A briefed Group Commander A that there were already at least 6 vehicles involved in the fire.[122] As such by the time crews entered the fire floor it is likely that the number of vehicles involved had increased significantly and were highly unlikely to succeed in bringing the fire under control with the water supply of a single riser.

Following the withdrawal of crews from the structure the initial defensive firefighting tactic was to contain the fire on the third floor. At approximately 22:30 Group Commander A and Station Commander A conducted a 360° of the incident ground. As a result of the information gained from the 360° process the fireground tactics were changed from containment of the fire to the third floor, to defensively containing it within Terminal Car Park 2 to prevent it from spreading to other buildings such as the DART Station and Car Park 1 and to protect the two aircraft in sector 2.[123]

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[119] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 21
[120] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 21
[121] Merseyside Fire & Rescue Service, *Significant Incident Report (Final) Incident: 033394 -31122017* Page 22
[122] Group Commander A, *Notes LLA* Page 2
[123] Station Commander A, *Notes LLA* Page 5

The defensive firefighting tactics deployed in phases 2 and 3 were hampered by netting that was in place to prevent birds from getting into the car park. This netting dispersed the jets of water being deployed by crews making them less effective.[124]

Observation/Action

- Observation – Given the information identified by Merseyside Fire and Rescue Service in their report in relation to fire spread and water supplies the tactical decisions made by the incident commanders were appropriate and timely.

- Observation – The actions of the LLA fire crews in establishing the water supplies within the dry riser in the northwest stairwell assisted Bedfordshire FRS crews in attacking the fire internally as soon as possible.

- Observation – The early signs of structural collapse hampered both the Bedfordshire and LLA fire crews with their tactical plans for extinguishing the fire, as this required withdrawal from the entire internal structure.

- Observation – The early decision by the incident commanders to withdraw from the car park was correct, in that several areas of the car park collapsed at some stage of the incident.

6. Aerial Appliances

The need for aerial appliances for this incident was identified at the very early stages with 12P1 which was part of the PDA requesting an Aerial Lader Platform (ALP) at 20:56 as they approached the incident.[125] At 20:58:14 the ALP from Bedford was mobilised and arrived at the incident at 21:32:41[126] At 21:16:13 an assistance message was sent to make up to 10 pumps and two aerial appliances.[127] A second aerial appliance was supplied by Hertfordshire Fire and Rescue Service from Stevenage arrived at 21:57:25.[128] At 22:09:55 a third aerial appliance was requested[129] this was supplied by Buckinghamshire Fire and Rescue Service

[124] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023* Version 0.1 2024 Page 20.
[125] Document, *Incident Message Log* page 1
[126] Document, *Appliance Times FOI*
[127] Document, *LLA Terminal Car Park Messages* page 1
[128] Document, *Appliance Times FOI*
[129] Document, *LLA Terminal Car Park Messages* page 1

from West Ashland and based on the logged in attendance time of its support pump (sent from the same station) is estimated to have arrived at 22:47.

Figure 11 – Aerial Appliance from Bedford

Bedfordshire FRS has an aerial platform that is primary crewed based at Luton Fire Station. This was not available on Tuesday 10 October 2023 because of maintenance. As a result, the first aerial appliance sent came from Bedford and took 36 minutes to arrive from the time it was requested. Bedford Fire Station is approximately 26 miles from LLA. Stevenage Fire Station where the second Aerial Appliance is based is approximately 15 miles from LLA. The delay in aerial appliances arriving was noted in the internal debrief.[130]

Observation/Action

[130] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 13.

- Observation - The closest Bedfordshire aerial appliance (Luton) was unavailable due to maintenance. Fire Control mobilised the next nearest BFRS aerial appliance (Bedford) rather than the next nearest aerial appliance from Herts.
- Action – Fire Control should review the PDAs proposed by the mobilising system to ensure the closest geographically available appliances are proposed irrespective of whether they are OTB or not.

7. Incident Command

Group Commander A was the first flexi-duty officer to arrive at the incident and acted as Officer in Charge (OiC) until command was handed over to Area Commander A. Group Commander A and Station Commander A quickly recognised the need to sectorise the incident following the withdrawal of BA crews and a change in tactics to defensive firefighting. The incident was split into four sectors, one for each side of the car park. Sectorisation of the incident was in place prior to Area Commander A booking in attendance at 21:59[131]

Area Commander A took charge of the incident at 23:04[132] although he was not the most senior officer at the incident at this time. The Deputy Chief Fire Officer had arrived at the incident at 22:22 but did not take charge of the incident at any stage. The DCFO acted as a critical friend to the Officer in Charge. This was identified as a positive during the debrief as something that was 'really helpful and aided situational awareness.'[133] It was also stated during the debrief that there was full confidence in the Area Commander and the orders they were giving the crews.[134] It was however also noted in the internal debrief that there were a large number of senior officers at the scene.[135] In addition to the DCFO the Deputy Assistant Chief Fire Officer (DACFO) was mobilised to the scene in the capacity of an additional HMA (as incidents 10 pumps or more attract an additional HMA) and the Chief Fire Officer attended Service Control and chaired the SCG meetings.[136] It was fed back by some at the debrief that at times there were 'conflicting commands from ranking officers.'[137] The internal debrief report

[131] Group Commander A, *Notes LLA* Page 4
[132] Document, *LLA Terminal Car Park Messages* page 4
[133] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 33.
[134] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 24.
[135] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 29.
[136] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 28
[137] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 17

recommends that consideration should be given to ensuring role discipline when an incident is running, as the 'blurring of roles and responsibilities can lead to vulnerabilities.'[138]

As the incident began to deescalate Area Commander A handed back command of the Incident to Group Commander A at 03:12. At 03:51 the role of Incident Commander passed to Group Commander B who remained in charge of the incident until 11:29 and declared that the incident was no longer a major incident at 09:59. From 11:29 the incident was managed at Station Commander level until its conclusion.[139]

Service Order V15 11/01 Officer Mobilising sets out the minimum level of incident commander to be mobilised based on the size the incident measured by the number of pumps. Group Commander A was mobilised as part of the PDA which under the policy is sufficient for up to 8 pumps.[140] Following the request to make pumps 10 Area Commander A (who is a Strategic Operational Commander) was mobilised to the incident, as nine or more pumps requires a minimum of a Strategic Operational Commander.[141] However, Area Commander A did not take Command of the Incident as soon as he arrived at 21:59:30. Area Commander A took charge of the incident at 23:04 This is consistent with the policy which only requires the Strategic Operational Commander to be mobilised, they do not have to take charge if they do not deem it necessary to do so. When command of the incident returned to Group Commander level at 03:12 the number of pumps was in excess of 8. However, by this stage of the incident sectorisation and defensive firefighting was well established and relief crews were arriving. There is no requirement for the Strategic Operation Commander to remain in charge and they can hand control to a Group Commander if they deem it appropriate to do so. The scale of the incident reduced and was down to 6 pumps by 05:28. Group Commanders are level 3 incident commanders. Service order V09 02/14 Competence in the Operational Provision of Incident Command defines a level 3 incident commander as an advanced incident commander who will undertake 'tactical command of the largest and most serious incidents operating as a cover commander responding by car.'[142]

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[138] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 6

[139] Document, *LLA Terminal Car Park Messages* pages 4 – 9.

[140] Bedfordshire Fire and Rescue *V15 11/01 Officer Mobilising* Page 3

[141] Bedfordshire Fire and Rescue *V15 11/01 Officer Mobilising* Page 3

[142] Bedfordshire Fire and Rescue *V09 02/14 Competence in the Operational Provision of Incident Command* Page 5

Observation / Action

- Observation – The level of command during the incident was in line with Service policy, however, the policy had not been fully aligned with the latest National Operational Guidance (NOG).

- Action – The Service should review its Incident Command Policy to ensure alignment with NOG and to provide clarity on command thresholds.

- Observation - Whilst several strategic officers were deployed to the incident, this was justified due to the nature of the incident, the location and the potential political implications of a major incident.

- Observation – Resilience for strategic command was provided by the Assistant Chief Fire Officer who did not attend the incident and was available for any other strategic roles.

8. Incident Ground Communication Strategy

During the incident Bedfordshire FRS used the Airwave radio system to communicate between the incident and fire control. On the fireground a system of handheld radios operating on analogue frequencies was used to enable communication with breathing apparatus (BA) teams, sector commanders, the Incident Command Unit and others. The default channel for these radios is channel 9 for general incident messages. Channel 11 is designated for BA teams enabling them to communicate with each other and the entry control point.

At the internal debrief there were a number of issues with fireground radio communications identified. It was identified that radio discipline was not good during the incident and this resulted in everyone migrating to the Command channel.

It was also identified that there were difficulties with communicating by radio with other agencies and fire services due to the use different radios and different channels from county fire service to airport fire service.[143] It is worth noting that LLA Fire Service leave radios at the Rendezvous Point (RVP) for airside incidents, these could have been retrieved and placed at the ICU. LLA Fire Service also lease three Airwave radios from Bedfordshire FRS for their crash tenders and it is unclear if they were utilised on the night.

[143] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 15.

It was suggested during the internal debrief that the Incident commander should stay on channel 9 and if a specific task requires radio traffic, those completing the task should be moved to another channel.[144] During the incident at some point between 22:10 and 22:57 the high levels of radio traffic were identified by the Officer in Charge, Group Commander A. In his contemporaneous notes he states that:

'Handheld radio traffic was heavy, sectors were communicating with each other and the ICU and allocating resources, meaning having a fuller brief from sector commanders was difficult. A discussion was held in relation to designating comms channels, however due to the multi-agency response and the potential confusion and risk of loss of comms with sectors, I decided to stick with the current set up.[145]

By contrast at the 2017 Kings Dock Car Park Fire in Liverpool the first responding Group Commander implemented a second command channel for senior officers and sector commanders. Merseyside Fire and Rescue Service Conclude that this 'improved communication across the incident ground.'[146]

It was stated in the internal debrief that there is 'the ability to set two different channels for comms on the radio and it picks up the active channel, but this isn't done and so Commanders end up with two radios.'[147]

The HVP Tac Ad stated in his questionnaire response that 'Having only one radio channel available on Beds Fireground radios meant that the opportunity for Comms between the various elements of the HVP crew had to rely on the HVP crews' own radios, this presented a problem when their batteries started running out meaning a descent to the use of mobile phones to maintain comms.'[148]

Since the incident at LLA, a planned switch to a new fireground radio has been completed with the Service now defaulting to the use of digital channels.

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[144] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 15.

[145] Group Commander A, *Notes LLA* Pages 4 - 5

[146] Merseyside Fire & Rescue Service Significant Incident Report (Final) Incident: 033394 -31122017 Page 28

[147] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 15.

[148] HVP Tac Ad *Questionnaire Response* 28/06/2024 Page 3

Observation/Action

- Observation - The volume of radio communication was high but the Incident Commander did not have sufficient confidence that the use of additional channels would be effective and was concerned that it could lead to a breakdown in communications. This was compounded by several other Services attending the incident. At the time Bedfordshire FRS was using analogue channels but some attending Services were using digital channels.

- Action – Bedfordshire Fire and Rescue Service should ensure that through training and exercising scenarios with high volumes of radio traffic that incident commanders have the confidence to utilise the full functionality of the new radios during a major incident, supported by a pre-agreed procedure.

9. Crew Welfare

The incident was a protracted one with proactive steps to support crew welfare taken. At 22:56:22 the Rapid Relief Team (RRT)[149] provided by the Plymouth Brethren Christian Church was mobilised to the incident to provide food and refreshments to the fire crews. An informative message sent by Area Commander A at 04:48 states that the RRT was in attendance and set up.[150] In the internal debrief it was identified that relief crews arrived and went 'straight for food rather than to get their tasking'[151] and as a result there was nothing for the crews that had been there the longest.[152] However, it should be noted that a firefighter was tasked with delivering food to airside sectors using a van shortly after the rapid relief teams arrival.

Toilet facilities were made available to crews in the airport terminal building. However, it was identified by one individual during the internal debrief that they thought the toilet facilities should have been available in a building away from the public and that they 'shouldn't have to face the public during an incident of this nature.'[153]

A relief strategy was also implemented (see section 13).

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[149] Document *LLA Terminal Car Park Messages*, page 4

[150] Document *Incident Message Log* page 4

[151] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 20

[152] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 20

[153] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 20

Observation/Action

- Observation - Measures were put in place to support crew welfare at the incident. However, some staff at the internal debrief felt that it could have been implemented better. This included providing crews with a private area to rest and recover.

- Observation – Toilet and welfare facilities in the terminal building required access via the main terminal building, which was occupied by a large number of members of the public. Several personnel had to face questioning about the incident and queries about retrieval of cars etc. This led to delays in them returning to the fire ground.

10. Safety

A total of four firefighters from Bedfordshire Fire and Rescue Service received injuries during the incident. These safety events have been investigated by the Service's Health and Safety Team who have produced three event reports.

Firefighter A from Stopsley was deployed prior to donning full breathing apparatus, 'to run hose out from the 2nd floor towards the ramp to the third floor to set up an attack jet. In the process of doing this the smoke was quickly spreading down from above and Firefighter A took in a minor amount of smoke while setting up firefighting equipment.

After withdrawing from the building Firefighter A had a slightly tight chest and as a precaution was checked over by paramedics at the scene. Firefighter A was given an all clear by the paramedics and advised to seek further medical treatment if the symptoms persisted or worsened. Firefighter A confirmed that within several hours the symptoms had cleared up. Firefighter A remained on duty.'[154]

The report concludes that as 'the fire developed and the wind pushed the smoke through the car park the environment within the second floor of the car park became heavily smoke logged.'[155]

Firefighter B from Stopsley breathed in a 'small amount of smoke'[156] whilst running out hose. Firefighter B's working area was initially free of smoke. 'Firefighter B was treated by a paramedic at the scene for smoke inhalation. On the advice of the paramedics the firefighter was then sent to hospital for further tests.'[157] The report concludes that 'as the fire developed

[154] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Stopsley Green 20029797* page 1

[155] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Stopsley Green 20029797* page 2

[156] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Stopsley Green 19990619* page 1

[157] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Stopsley Green 19990619* page 1

and the wind pushed the smoke through the car park the environment within the working area became increasingly contaminated with smoke.'[158]

Two Firefighters from Luton formed the Alpha Team 1 BA Crew. They were sent to tackle the fire on the third floor and went under air at approximately 21:10 hrs.

'The environment on the third floor was extremely hot intensified by an approximate wind speed of 10 mph, contributing to the rapid fire spread and increase in temperature. The simultaneous external application of water onto the third floor by LLA Fire Service HRET may have produced a large volume of steam raising the temperature further.'[159]

It should be noted that LLA Fire Service were aware of the establishment of the bridgehead and firefighters being committed to the fire under BA. When applying water from the HRET during this initial phase of the fire LLA Airport Fire Service directed their jet to the southern side of the fire (away from the bridgehead) and applied the water only at half the possible flow rate in a spray pattern.[160]

After approximately 15 minutes of firefighting Alpha Team 1 noticed that 'temperatures were rapidly increasing and that the application of water was not having an effect.'[161] As a result of the high temperatures Alpha Team 1 team leader reported that he 'started to feel 'cooked' was becoming physically exhausted and his arms and hands were starting to sting.'[162] Alpha Team 1 were withdrawn from firefighting and treated at the scene before being taken to hospital for further checks.

All three Safety Event reports identify the following Risk Assessment as being in place:

- OF 001 - Firefighting in Buildings (last reviewed 03.10.2022)
- OF 002 - Firefighting in High Rise Buildings (last reviewed 28.05.2022)
- OF 001D - Firefighting in Commercial and Industrial Buildings (last reviewed 02.02.2023)
- OF 011 - Firefighting Road Vehicles (last reviewed 18.10.2021)

The reports all state that 'All these Service risk assessments are suitable and sufficient and have been regularly reviewed by subject matter experts. Risk assessment issues did not contribute to this event.'[163]

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[158] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Stopsley Green 19990619* page 3

[159] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Luton Green* Page 4

[160] Author A, *Notes from Interview with LLA Fire Service Station Commander* 18/04/2024

[161] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Luton Green* Page 4

[162] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Luton Green* Page 1

[163] BFRS Health & Safety Team, *Safety event report LLR 18.10.2023 Luton Green* Page 4

Observation/ Action

- Observation – Consideration was given by LLA fire crews to the actions of Bedfordshire FRS crews who were fighting internally within the third and second floor and the possible impact that the application of water from the HRET could have. As a result, water was applied in an area away from the crews and with a spray pattern at half the possible flow rate.

- Observation – Due to the high fire loading within the car park which was open sided and subject to a wind of a minimum of 10 mph, the conditions that were faced by the Bedfordshire FRS crews escalated rapidly and required withdrawal.

11. Fire Control

The first 999 call reporting the fire to Bedfordshire Service Fire Control was made at 20:47. Service Control would receive a further three repeat calls. In addition, from the start of the incident through to the point at 05:28 that the number of appliances had been reduced to six pumps, one AP and one HART vehicle. Service Control continued to answer emergency calls for and mobilise responses to a range of incidents. There were five incidents where appliances were mobilised and one further call where advice was given but the fire service was not required, and the incident was left with the police. The five incidents that resulted in a response from the service were categorised as the following incident types:

- 1 x Assist Other Agency Emergency
- 1 x Fire in the Open – Small
- 1 x Vehicle Fire Small
- 1 x Building Fire Domestic
- 1 x Rescue Person in Lift

The Fire in the Open Small and the Building Fire Domestic were both closed as false alarm good intent. [164]

The volume of work associated with the incident and the continuation of other 999 emergencies created a significant workload for the watch on duty who were a crew of three control operators. As the incident developed the on-duty crew were supported by Control Officers who were recalled to duty. The Officers recalled were:

[164] Document *Incident Summary Spreadsheet 08:00 – 10/10/2023 to 08:00 11/10/2023*

- Control Station Manager,
- Two Control Watch Managers
- One Firefighter Control

A further two officers from Control were recalled and they attended the scene to crew the incident command unit.

At the multi-agency debrief, Service Control was praised for the prompt and accurate information sharing between responder agencies and co-ordination of the response and co-ordination of the response, despite the high volume of work. This in part was due to the early assistance given by operational officers attending the control room. The major incident room was set up promptly and led strategic operations.'[165]

The multi-agency debrief report also states that:

> *'Early intervention from attending Bedfordshire Fire and Rescue Service personnel and LLA Fire Service allowed for good information flow to control. An early notification of major incident and resource requirements allowed fire control to instigate their major incident protocols and organise mutual aid arrangements.'*[166]

However, it was identified in the internal debrief that when bringing people in on overtime that control didn't not have phone numbers or access to a recall list. It was also noted that the Major Incident Room didn't have a logistics manager.[167]

Observation/Action

- Observation - Service Control performed exceptionally well in dealing with the high volume of activity associated with the incident. A logistics manager in the Major Incident room working in conjunction with a logistics officer on the fire ground and access to a recall list with phone numbers would have made dealing with the incident easier for control staff.

- Action – The Service should ensure that control has access to a recall to duty list which is maintained with up-to-date phone numbers for staff.

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[165] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 1

[166] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 1

[167] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 14

- Action – The Service should consider if a logistics manager situated within the major incident room would be beneficial for future major incidents.

12. Multi-Agency Meetings

The Civil Contingencies Act 2004 (CCA), along with the supporting regulations and statutory guidance, sets out a framework for emergency preparedness in the UK.

The CCA requires Category 1 responders to fulfil a full set of duties around assessing risk and planning for civil emergencies. Category 1 organisations include the emergency services, local authorities, NHS bodies and the Environment Agency, which are likely to be involved in most emergencies. Category 2 responders are co-operating bodies such as utility companies and transport operators. Category 1 and 2 responders work together in a local resilience forum to assess risk, plan for and coordinate the response to major emergencies in a local police area. The Bedfordshire Local Resilience Forum (BLRF) is chaired by the Chief Fire Officer and hosted by the fire service.

In addition to other fire services, Bedfordshire FRS was supported by several partners including London Luton Airport, Bedfordshire Police, East of England Ambulance Service NHS Trust (EEAST) and Luton Borough Council.

The Joint Emergency Services Interoperability Programme (JESIP) and the HM Government document *Emergency Response and Recovery: Non statutory guidance accompanying the Civil Contingencies Act 2004* sets out how a multi-agency response should be coordinated through the creation of Tactical Co-ordinating Group (TCG) and a Strategic Co-ordinating Group (SCG).

In April 2023, the hosting of BLRF secretariat transferred to Bedfordshire FRS with Fire Control acting as the receiving point for any requests to activate a TCG or SCG to coordinate the response to a developing or declared major incident.

The Government guidance document *Emergency Response and Recovery* states that:

> Where formal co-ordination is required at the tactical level, then a Tactical Co-ordinating Group (TCG) may be convened. This will usually comprise the most senior officers of each agency committed within the area of operations and will undertake tactical co-ordination of the response to the event or situation. Working in co-ordination, the responder agencies' tactical commanders will:
>
> - determine priorities for allocating available resources.
> - plan and co-ordinate how and when tasks will be undertaken.
> - obtain additional resources if required.
> - assess significant risks and use this to inform tasking of operational commanders; and

- ensure the health and safety of the public and personnel.[168]

The formal TCG system is one which is rehearsed and exercised within the Local Resilience Forum. However, 'on the night of the incident there was confusion around whether there was a formal TCG set up on scene. On scene fire commanders expressed that multi-agency meetings were occurring on scene with multiple agencies, these worked well and were productive.'

This led to others communicating upwards to the SCG that there were formal TCG meetings occurring on scene and it was noted [during the multi-agency debrief] that the terminology in this case was bespoke to the fire service and led to confusion.[169]

The Government guidance document *Emergency Response and Recovery* states:

> 'In a rapid onset emergency when there is an identifiable scene and the emergency services are in the lead, then tactical co-ordination will usually be carried out from an incident control point (which may be termed a Forward Command Post) located nearby or directly adjacent to the scene. An alternative location should always be identified as a back-up. A Tactical Co-ordinating Group may, as a response progresses or circumstances dictate, be re-located to a point further removed from the incident site. However, in determining this, the responder bodies should ensure that the TCG is established at the most appropriate location to carry out the function required of it, including the convenient attendance of all appropriate responder representatives. In the event that co-location of tactical commanders is not possible appropriate communications or representation to ensure a co-ordinated response at the tactical level is essential.'[170]

Based on the guidance above, which was published in 2004, the multi-agency meetings held at the scene could have been considered a TCG even though they were not in the format exercised by the local resilience forum.

However, version 3.1 of the JESIP Joint Doctrine makes a distinction between TCG meetings and meetings occurring at the forward command point which it describes as being at the operational level.[171]

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[168] HM Government *Emergency Response and Recovery: Non statutory guidance accompanying the Civil Contingencies Act 2004* Page 56

[169] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 1

[170] HM Government *Emergency Response and Recovery: Non statutory guidance accompanying the Civil Contingencies Act 2004* Pages 56 – 57.

[171] JESIP, *Joint Doctrine: The Interoperability Framework Version 3.1* 2024, Page 13

The debrief identified that ‘there were conversations about a TCG but just didn’t appear to get set up, possibly due to lack of capacity’ and on scene tactical commanders did not relocate to ‘silver room’ (an on-scene command room), which is part of the preplanned procedures when attending fire incidents on the ‘airside’ area of the airport, potentially because the car park was located on the ‘landside’ of the airport. This would have facilitated a clearer distinction between the tactical and operational levels of command, akin to the TCG format exercised by the LRF.

During the internal debrief it was identified that Bedfordshire FRS was at capacity with all resources being utilised. Bedfordshire FRS is responsible for the secretariat of the LRF, this placed an additional burden due to the size of the incident.[172] As such, the Service approached other agencies for support from the early stages of the incident. It was noted at the LRF debrief that ‘other agencies were able and willing to contribute to this process during the incident which alleviated the stress on fire service resources.’[173]

The JESIP doctrine describes ‘The purpose of a Strategic Co-ordinating Group (SCG) is to take overall responsibility for the multi-agency management of an incident and establish a strategic framework, within which lower levels of command and coordinating groups will work.’[174]

JESIP also states that ‘It will normally be the role of the police to coordinate activity with other organisations and therefore to chair the SCG. The police will usually chair the group if:

- There is an immediate threat to human life
- There is a possibility that the emergency was a result of criminal or terrorist activity
- There are significant public order implications’

Following an early discussion between the duty chief officer at Bedfordshire Police and the Chief Fire Officer, a formal SCG chaired by the Chief Fire Officer, was instigated in the initial stages of the incident and held via Microsoft Teams. The role of fire strategic commander was undertaken by the Deputy Chief Fire Officer who attended the scene to support the fire incident commander. From this system a Multi-Agency Information Cell (MAIC) was set up to allow information to freely flow to multiple other groups. It was noted in the multi-agency debrief that ‘the early set up of these groups allowed for timely and accurate information to be provided to central government.’

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[172] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 27

[173] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 3

[174] JESIP, *JESIP Roles and Responsibilities: Supporting Document for Edition 3 of the Joint Doctrine (2021)* Page 7

Following the Manchester Arena attack on the 22 May 2017 a public inquiry was established and a report published detailing learning and recommendations from the incident.

In Volume 2 of the report recommendation 73 states that:

'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.'

Car Park 2 was declared a major incident at 21:37:21 and the first SCG was held at 23:15. This was less than two hours after the declaration of the major incident and was therefore in line with recommendation 73 from volume 2 of the Manchester Arena Inquiry Report. In addition to chairing the SCG, the Chief Fire Officer also fronted national media interviews the following morning. From the perspective of taking on the additional role of acting as media spokesperson, this was identified as difficult to do and that it would have been 'better as two separate functions.'[175]

The debrief report noted that '…a*lthough a communications cell was set up quickly to deal with the incident there was no strategic oversight for a prolonged period of time and no representation at an SCG in the early phases of the incident.' The internal BFRS debrief reported challenges in the level of media support as the '…person on call was inexperienced, needed to be able to call in for support for comms – too much to do.'*

The Chief Fire Officer opted to be the media spokesperson due to the limited availability of other officers.

Observation/Action

- Observation - An SCG was quickly established and multi- agency meetings were held on the fire ground. However, TCG was not set up in the exercised format and there was confusion regarding the status of the multi-agency meetings due to the terminology used. The early establishment of the SCG allowed for timely and accurate information to be provided to partners and central government.

[175] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 27

- Action – Bedfordshire FRS should work with LRF partners to ensure terminology is consistent between partners to effectively implement the agreed understanding for activation of a TCG and SCG as identified in the BLRF plan.

- Action – Bedfordshire FRS should ensure all tactical and strategic commanders of responding agencies are aware of the Response and Recovery and JESIP guidance on TCG meetings.

- Observation – Strategic communications and media advice was not available at the SCG until the morning after the fire occurred leading to the Chief Fire Officer taking on the additional role of media spokesperson in addition to chairing the SCG, which was difficult to do.

- Action – BLRF should review the arrangements for media support at major incidents to ensure on-call strategic comms advice is available to the SCG.

- Action - Bedfordshire FRS should review its on-call communications and media arrangements to ensure appropriate tactical & strategic media advice is available to the duty principal officer during major incidents.

13. Relief Strategy

Service Order V15 11/16 Relief Crews at Incidents and Standby Duties at Wholetime Stations states that 'It is recommended that relief crews are requested for incidents on the broad basis of a four-hour maximum working period unless the incident is nearing completion'[176] and they should be requested by the incident commander.'[177]

Once the major incident room was established the team started to plan for potential reliefs (AP crews on recall, rescue pumps from Hertfordshire and London Fire Brigade). Contact was made with neighbouring FRS and London Fire Brigade, so that resources could be provided should they be needed. These could not be booked until the fireground confirmed requirements. However, the team pre-planned to ensure that reliefs were implemented as swiftly as possible once requested. Travel times were estimated and these conveyed to the scene (incident commander/command support).[178]'

From the Major Incident Room, Area Commander B attempted to contact the Incident Commander (Group Commander A) to ask what the relief strategy was. Area Commander B

[176] Bedfordshire Fire and Rescue Service, *V15 11/16 Relief Crews at Incidents and Standby Duties at Wholetime Stations* page 1.
[177] Bedfordshire Fire and Rescue Service, *V15 11/16 Relief Crews at Incidents and Standby Duties at Wholetime Stations* page 1.
[178] Group Commander D *Email: Relief Strategy* 10/04/2024

States that ‘On the night I was unable to contact the incident commander by mobile phone (which is completely understandable given the complexity of the incident which he was dealing with), so I also tried the command support officer who was not able to give me a relief strategy requirement. I also then spoke to the Deputy Chief Fire Officer and ascertained that the team on the ground were unsure of their relief requirements because it was dependent on when the high-volume pump would be ready to operate.’[179]

The issues experienced in securing a water supply with the HVP are discussed in section 3 – Water Supplies of this report. These issues meant that it was not possible for the Incident Commander to easily confirm a relief strategy.

After approximately an hour and a half of not being able to get an answer from the fire ground as to what reliefs were required Area Manager B made the decision within the major incident room to start sending some staggered relief pumps to make sure that resources were available on the fire ground to allow crews rest as required.[180]

At 01.21 an assistance message was sent by Station Commander A requesting a five-pump relief at 03:00.[181] This was requested on the basis that the Incident Command team were expecting the HVP to be in place; allowing a reduction from 15 pumps to 10 pumps.[182] However, as discussed in section 3 the HVP did not establish an adequate water supply until 04:40.

Hertfordshire Fire and Rescue Service managed their own reliefs for their appliances and therefore their crews’ welfare was managed efficiently. Watch Commander Control B worked to organise relief crews for the ALP using recall to duty. However, they were reliant on looking through the control cell phone for historical phone numbers that had been stored for Strategic Reserve management. Watch Commander Control B did this as they didn’t have access to the iTrent people manager – where personal information is stored for employees - for everyone.[183]

The ICU crew was in attendance from Leighton Buzzard from 21:38. They did not return to their station until approximately 12:00 the following day.[184] It was suggested during the internal debrief that mutual aid could have been used to relieve the ICU.[185] This was considered during the incident in the major incident room and a conversation was had with the Incident Commander and the Command Support crew as to welfare arrangements,

[179] Area Commander B *Email: Relief Strategy* 8/04/2024
[180] Area Commander B *Email: Relief Strategy* 8/04/2024
[181] Document *Incident Message Log* Page 4
[182] Station Commander A, *Notes LLA* Page 9
[183] Watch Commander Control B *Email: Relief Strategy* 11/04/2024
[184] Crew Commander H, *Email LLA Carpark Fire ICU Times* 08/08/2024
[185] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 14.

timeframes to remain at scene and a decision was made to keep them in post and close the ICU and return them to station with a handover provided to a support rescue pump.[186]

There was a recall of flexi duty officers. This could have been better coordinated. Some officers who made themselves available for duty were not used and others who had already worked through the night in the major incident room were sent to the incident to relieve officers on the fireground.

Observation/Action

The following observation and actions are made within the internal debrief report.

- Observation – 'Consideration to ensuring the appropriate individuals have access to skills and contact number information. This is available in control but during an incident this needs to be available to others to coordinate and bring in the relevant resource – reserve staff and coordinate overtime.'[187]

- Action – 'Review of Beds Fire and Rescue Service resourcing model – including processes to recall staff, identify skills and ensure roles are filled appropriately.'[188]

14. Repatriation of equipment

During a large incident, equipment from several appliances will be used and there is a need at the end of the incident to ensure that all equipment is accounted for and that all attending appliances are restowed with a full inventory. To assist with this process and to ensure that Service assets are tracked and effectively maintained, Bedfordshire Fire and Rescue Service have been using an electronic asset tracking system since 2020.

Using QR labels, equipment can be scanned and identified, and asset records interrogated. Asset tracking inventories provide exceptions notifications when equipment is under or over its expected amount which then allows stations to produce missing or surplus equipment lists.

Recognising the significant amount of admin time taken up post large incidents with each station trying to repatriate equipment, the technical team worked proactively as a central hub for the collection and redistribution of surplus equipment.

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[186] Group Manager D *Email: Relief Strategy* 10/04/2024
[187] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 6.
[188] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 4.

However, there is a range of generic equipment that is not specific to a vehicle. Previously, because this equipment had paper test records, there was the need to ensure that the exact piece of equipment was returned to the correct vehicle. This is no longer the case because all the test records follow each asset in the cloud within the asset tracking software, allowing a more fluid exchange of certain items of equipment with no impact on organisational test records and reducing the amount of work post incident.

The Technical team also liaised with all the other FRSs who attended to arrange repatriation of any equipment taken out of service and to return items that were not the Service's. Again, the asset tracking labelling allowed Bedfordshire FRS equipment to be easily identified.

At the internal debrief it was identified that 'Technical support arranged the return of equipment to where it should be. Normally this takes months, but this is the first major incident where it all went back to technical, and they sorted it for us.'[189]

Observation

- The technical team utilised the new electronic asset tracking system to assist them in quickly repatriate equipment used during the incident.

15. Working with London Luton Airport Fire Service

To meet regulatory requirements of running the airport, LLA has its own fire service which is independent of Bedfordshire Fire and Rescue Service. LLA Fire Service supported Bedfordshire FRS by responding to the fire from the initial stages onwards. This meant there was a greater weight of attack due to the presence of additional resources than would normal be available at similar incidents away from the airport.

At the multi-agency debrief it was identified that early operations from both Bedfordshire FRS and LLA Fire Service worked well[190], with people noting that the initial interaction and joint response between the LLA Fire Service and Bedfordshire FRS was productive and assisted with gaining situational awareness. LLA Fire Service has a rolling training programme which involves the local fire stations at Stopsley and Luton, it was noted that this has developed a good level of familiarity between the two responder agencies.[191] However, it was noted in the Bedfordshire FRS internal debrief that historically joint exercises with LLA Fire Service have only ever been for aircraft incidents. The internal debrief report recommends that consideration is given 'to developing the joint training between London Luton Airport Fire and Bedfordshire Fire and Rescue Service to train land side as well as air side. This needs to

[189] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 24
[190] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 1
[191] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 2

include understanding tactics and agreeing tactics to prevent tactics that counter each other.'[192]

Since the Terminal Car Park 2 Fire, Bedfordshire FRS has started to conduct landside exercises with LLA Fire Service.

LLA Fire Service has several pre-existing resources to assist in dealing with airside incidents. When attending airside incidents there is a preplanned procedure where attending fire crews take control of the silver room (an on-scene command room), this early take over was missed due to the incident location being land side.[193] This room could have been utilised for multi-agency/ TCG meetings (see section 12 Multi-Agency Meetings).

The LLA Fire Service Station Commander spotted during the incident that Firefighter G was in attendance as part of a Bedfordshire FRS Crew. Firefighter G is also a LLA Firefighter and The LLA Fire Service Station Commander made a request which was granted to commandeer Firefighter G to drive a spare LLA Fire Appliance (Fire 5), bringing an additional resource on to the fire ground.[194]

Observation/Action

- Observation – Prior to the incident Bedfordshire FRS had not exercised working with LLA Airport Fire Service for landside scenarios. Since the incident such exercises have taken place.

- Action – Joint landside and airside exercises should continue to be scheduled on a regular basis between Bedfordshire FRS and LLA Fire Service.

- Observation – Neither Bedfordshire Fire and Rescue Service or LLA Fire Service were fully aligned with National Operational Guidance (NOG) at the time of the incident. NOG alignment for airside and landside incidents for both Services would ensure a common way of working.

- Action – Bedfordshire Fire and Rescue Service is in the process of adopting NOG; it should consider how it can support LLA Fire Service with NOG implementation. This is because adoption by the LLA Fire Service would be beneficial for all involved with

[192] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 6
[193] Document *Bedfordshire local resilience forum multi-agency debrief of LLA carpark fire* Page 2
[194] LLA Station Commander *Fire Report from Station Manager RFFS OiC on the evening 10-10-2023* Page 2

increased opportunity for shared training and improved systems of work and better interoperability.

Figure 12 – LLA Appliance

16. Media and External Communications

The Service has an out of hours duty communication rota, and Service Control or the duty group commander will alert the duty communications officer of incidents, based on a trigger list that has been agreed by the Service.

Communication support was provided first from home, and then from the major incident room in the early hours of the incident before the duty communications officer attended the incident at about 06:00 to provide a media liaison service, whilst further communication support was provided virtually by another member of the team. No official photographer attended the incident.

The duty communication officer didn't attend the first SCG, but attendance by a member of the communications team did happen at every SCG after this. The communication team was

also given remote access to the onsite multi-agency meeting from about 06:30, which provided valuable information on the latest operational update from the ground.

The first statement was released on social media at 00:15[195] and during the internal debrief it was identified that initial information about the incident could have been published sooner on Service channels.[196] It is acknowledged best practice was not followed and the lack of information published by the Service led to an influx of media enquiries.

Whilst conversations did happen between the communication teams of agencies involved in the incident at 01:30, a communication cell was not properly established and did not meet regularly until 08:00 the following morning. This was due to inexperience and a lack of training in the communications team.

It was acknowledged in a communication cell de-brief that the East of England Ambulance Service NHS Trust did not seek permission from the fire comms lead before publishing injury information.[197]

At the incident, a media holding point was established and interview requests were facilitated by the Chief Fire Officer who had been briefed. At a communication cell de-brief, it was noted that the RVP for journalists could have been communicated earlier and that more communication colleagues on site would have been beneficial – both earlier, and during the breakfast shows.[198]

Regular communication updates were published throughout the following day(s) to the public and information was shared with responding agencies. Fire service management of the communication cell handed it over to the local authority in the late afternoon the day after the incident. Engagement with the LLA Communication Team continued for weeks after the incident and as Bedfordshire FRS received more queries, and the positive working relationship between the two teams has been recognised at debriefs.

Within a few hours of the start of the incident, Bedfordshire FRS received numerous requests for information; these were received via phone call, emails and via the online portal of the Service's website. To date, Bedfordshire FRS has received over 50 requests for information. Most of the requests were dealt with under the Freedom of Information Act 2000, with a statement jointly agreed between Bedfordshire FRS and Bedfordshire Police being provided with limited information that was already in the public domain and advising further information would be released when the investigation had been concluded. Responses were provided in

[195] Document *Comms cell de-brief*
[196] Document *Comms Hot -Debrief*
[197] Document *Comms cell de-brief*
[198] Document *Comms cell de-brief*

accordance with GDPR and Data Protection legislation and in liaison with the Deputy Assistant Chief Fire Officer, the Monitoring Officer and Data Protection Officer.

Observations/Action

- Observation – all media needs were met throughout the course of the morning following the incident and all interviews were facilitated.

- Observation – Bedfordshire FRS arranged an onsite press briefing without communicating with LLA communication team owing to a lack of regular communication cell, and a preferred action would have been an agreement for a multi-agency briefing at an agreed time.

- Action – Review 'communicating in major incident training' of those on duty communication rota and request training through official provider if needed. All new staff joining the team to undertake training.

- Action – change process to ensure Head of Communications is contacted if major incident declared.

- Action – social media training review with all fire station Facebook page admins.

- Action - Engage with BLRF strategic comms leaders regarding use of WhatsApp group, including updating/removing/developing of contacts as needed.

17. Record Keeping

The authors of this report have found that for some aspects of the incident there was a lack of information within the incident decision logs, logs of messages to control and the debrief reports. These include details on the individual who worked at the airport who entered the car park after it had been evacuated and subsequently required rescuing, the issues with establishing a water supply from the HVP, and the narrative around the two aircraft that required protecting in sector 4.

The contemporaneous notes written by Group Commander A and Station Commander A were valuable sources of information in producing this report and filled many of the information gaps when constructing the narrative of the fire. However, these were the only contemporaneous notes written. As a result, a number of requests had to be made to individuals' months after the event to be able to complete this report to the required standard.

It was identified during the internal debrief that firefighters tasked with acting as scribes for the decision logs at the incident did not necessarily have any prior training or experience of this task. The debrief report recommends that consideration is given 'to training sufficient staff across Bedfordshire Fire and Rescue Service to perform the role of loggist/scribe. This skill needs to be available 24/7 and not to the detriment of core skills.'[199]

The tasking of firefighters to act as scribes who are not accustomed to taking notes in a challenging environment, at a time of evening when most people would be asleep is likely to result in poor record keeping. It is estimated up to one in every 10 people in the UK has some degree of dyslexia[200] and it is possible that the rates of dyslexia amongst firefighters may be higher. The nature of acting as a scribe using paper and pen on the fireground denies dyslexic firefighters the opportunity of having their needs met by reasonable adjustments that are normally in place to assist them with their work.

Observations/Action

- Observation – The record keeping of the incident was not as accurate and as comprehensive as it could have been.

- Action – The Service should make it a requirement for all officers attending an incident that has been declared a major incident to write contemporaneous notes.

- Action – The Service should evaluate training support staff who are already skilled at note taking to be able to act as scribes at major incidents.

- Action – The Service should evaluate the possibility of using Dictaphones and or body worn cameras to capture operational decisions at incidents.

- Action – The Service workplace adjustment working group should consider the relevant comments above regarding dyslexia and how this can impact firefighters undertaking the role of loggist.

[199] Document *Bedfordshire Fire Debrief: Structured Debrief Report – December 2023 Version 0.1* 2024 Page 24

[200] NHS *Dyslexia - NHS (www.nhs.uk)* Accessed 07/05/2024

Protection

18. Building Construction and Fire Design Requirements

18.1 Planning

Bedfordshire FRS are not a statutory consultee for planning but may make comment through an invitation or own volition. FRS comments made during the planning phase are limited to access and water supplies for firefighting and are not bound with legislative power. The local planning authority has the responsibility for approving or denying planning applications

18.2 Design Specification

Bedfordshire FRS received a building regulations consultation from the approved inspector in March 2019. The design construction submission for LLA Terminal Car Park 2 submitted was a five-storey structure with a minimum of 15-minute fire resistance for structural elements and 120 minutes to the walls that enclose the escape staircases. The building was submitted as an 'open sided' car park.

18.3 Building Regulations

The Building Regulations apply to any building work defined in Regulation 3 or to any building work in relation to a material change of use as defined in Regulation 5 of the Regulations. Fire safety requirements are given in Part B of Schedule 1 to the Building Regulations. These cover means of escape, means of early warning, fire spread, and access and facilities for the fire and rescue service. Guidance on some ways of meeting the requirements is given in Approved Document B (Fire safety), which is split into two volumes: Volume 1 – Dwellings (England); Dwellinghouses (Wales), and Volume 2 – Buildings other than dwellings (England); Buildings other than Dwellinghouses (Wales).[201]

The Regulatory Reform (Fire Safety) Order 2055 as amended (FSO)

There are general duties on the "responsible person" under Article 8 of the FSO to take such fire precautions as may be required to ensure that premises are safe for the occupants and those in the immediate vicinity. There is also a general duty on the "responsible person" to carry out a fire risk assessment. The FSO applies to all non-domestic premises including car parks. Article 45 of the FSO places a duty on local authorities to consult with the enforcing authority (Bedfordshire FRS) where it is proposed to erect, extend, or structurally alter a building or where there is a change of use that would bring the FSO into force on the building (or any part of the building to which the order applies).

[201] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 5

The division of responsibility

There are two main bodies with which designers, developers and occupiers of buildings may have dealings concerning fire safety: the building control body and the fire safety enforcing authority. Building control bodies are responsible for checking for compliance with the requirements of the Building Regulations. The Building Regulations are concerned with building work and with material changes of use (which may give rise to requirements for building work) and the requirements for fire safety will apply to most buildings. These requirements are intended to ensure that the necessary measures for the safe use of the building are incorporated into the design and construction of the building. [202]

'The fire safety enforcing authority is responsible for the enforcement of the FSO, which concerns the safety of people in relation to the operation, management and use of certain buildings once occupied.'[203]

Building work that complies with the Building Regulations' requirements for fire safety will normally be satisfactory when the building is occupied. However, where alterations to an existing building are involved, compliance with the Building Regulations will not always result in the fire precautions to parts of that building being upgraded. The Building Regulations do not require improvements to be made in areas where, before the work starts, a relevant requirement does not comply with the Building Regulations and after completion that area will not be any more unsatisfactory. However, there may be hazards and risks associated with the specific operations of the occupier that would not be covered by the Building Regulations and would need to be taken into account to meet the requirements of the FSO.[204]

There is obvious practical value in taking these other fire safety matters into account, where possible, in the design and construction phases, although the legislation only becomes applicable on occupation of the building. The FSO encompasses the concept of continuous improvement and in order to reduce the risk in an existing building, where work is proposed, responsible persons should review their fire safety precautions to take account of changes in guidance and technology.[205]

During the design and construction phases of a project, the building control body will check on compliance with the requirements of the Building Regulations. In order to facilitate the consultation process it should take a co-ordinating role with the fire safety enforcing authority and, where appropriate, other regulatory bodies. Any recommendations and advice given must be channelled through the building control body to the applicant.[206]

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[202] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 6

[203] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 6

[204] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 6

[205] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 6

[206] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 6

Once a building is occupied and in use, the fire safety enforcing authority takes on the co-ordinating role as it has the enforcement role for the FSO. [207]

A fire strategy report was included with the consultation and established that BS9999 was used to evaluate the fire safety measures within the building design (an alternative guidance document that meets the functional requirements of the Building Regulations). The approved inspector deemed the application compliant with the regulations.

Bedfordshire FRS responded to the approved inspector within agreed timescales and found no conflicts with the regulations and FSO.

18.4 Building Risk Profiles

BS9999 uses a system called Risk Profiles which is different to Approved Document B purpose groups. The Risk profile of a premises then drives how the rest of the guidance document is interpreted, and fire safety requirements are designed. Two tables are used to create that risk profile: Occupancy characteristics (Table 2) & Fire Growth Rates (Table 3).

Table 2 **Occupancy characteristics**

Occupancy characteristic	Description	Examples
A	Occupants who are awake and familiar with the building	Office and industrial premises
B	Occupants who are awake and unfamiliar with the building	Shops, exhibitions, museums, leisure centres, other assembly buildings, etc.

Figure 1 – part of Table 2 from BS9999:2017

Table 3 **Fire growth rates**

Category	Fire growth rate [A)]	Fire growth parameter [B)] kJ/s³	Description	Typical examples [C)]
1	Slow	0.003	Evenly distributed low level fire load, small discrete packets of fuel or material of limited combustibility [D)]	Reception areas, concourses (without concession outlets) and halls with limited fire load such as sports stadia and foyers
2	Medium	0.012	Evenly distributed low to mid-level fire load comprising a mix of combustible materials	Offices, lounges, classrooms, auditoria, seating areas, galleries and car parks [E)]

Figure 2 - part of Table 3 from BS9999:2017

[207] LABC *Building Regulations and Fire Safety Procedural Guidance* 2020 Page 6

Approved Document B Volume 2 (buildings other than dwelling houses) 2010 (ADB), is a Statutory guidance document that describes a flexible method to meet the functional requirements of the Building Regulations. It divides types of buildings into seven categories which it calls purpose groups; car parks fall into group 7b.

Title	Group	Purpose for which the building or compartment of a building is intended to be used
Storage and other non-residential[4]	7(a)	Either of the following: • place (other than described under 7(b)) for the storage or deposit of goods or materials • any building not within purpose groups 1 to 6.
	7(b)	Car parks designed to admit and accommodate only cars, motorcycles and passenger or light goods vehicles that weigh a maximum of 2500kg gross.

Figure 13 - ADB Vol. 2, Table 0.1 Classification of purpose groups

Risk profiles (BS9999) and purpose groups (ADB) drive how each guidance document is further interpreted to meet Building Regulations.

18.5 ADB Car parks

Section 11.1 (Special provisions for car parks) gives the following general principles for buildings used for parking cars.

Car parks call for different measures to restrict fire spread within buildings for the following reasons.

a. *The fire load is well defined; and*
b. *Where the car park is well ventilated, there is low probability of spread from one floor to another.*[208]

In the following section (11.2), ADB details the requirements regarding a car park as being open sided. These are that;

a. *There are no basement storeys.*
b. *Each storey is naturally ventilated by permanent openings at each car parking level. The aggregate vent area is a minimum of 1/20 of that level's floor area, at least half of*

[208] HM Government *The Building Regulations 2010 Fire Safety Approved Document B Volume 2: Buildings other than dwellings 2019 edition incorporating 2020 and 2022 amendments – for use in England* 2022 Page 89.

which is provided equally by two opposite walls (1/80 on each side). The remaining free area can be distributed wherever possible.

c. *Where one element of structure supports, carries or stabilises another, the fire resistance of the supporting element at least matches the minimum period of fire resistance for the other element.*
d. *In mixed use buildings, the fire resistance of any element that supports, carries or stabilises an element in the other part of the building should at least match the minimum period of fire resistance for the other element.*
e. *All materials used in the construction should be class A1 rated, except for the following.*
    I. *Any surface finish applied to a floor or roof of the car park (or within any building, compartment or separated part adjoining the structure enclosing it), if the finish meets requirements B2 and B4.*
    II. *Any fire doorset.*
    III. *Any attendant's kiosk not exceeding 15m2 in area.*
    IV. *Any shop mobility facility.*[209]

Observation

ADB states that 'the fire load is well defined.' It was identified by Merseyside Fire and Rescue Service in their protection report into the 2018 Kings Dock Fire that the fire load is based on outdated research on old vehicles and requires further consideration. This aspect of ADB still requires review.

ADB also states that 'Where the car park is well ventilated, there is a low probability of fire spread from one floor to another.' Merseyside Fire and Rescue Service state in their Kings Dock Protection report that this 'clearly wasn't the case at this incident and requires revision.' This observation can also be applied to LLA Terminal Car Park 2.

18.6 Sprinklers

Section 8.14 of ADB details which building types require sprinklers. The LLA MSCP2 does not meet this criterion.

Buildings within the 'office', 'shop and commercial', 'assembly and recreation', 'industrial' and 'storage and other non-residential' (except car parks for light vehicles) purpose groups

[209] HM Government *The Building Regulations 2010 Fire Safety Approved Document B Volume 2: Buildings other than dwellings 2019 edition incorporating 2020 and 2022 amendments – for use in England* 2022 Page 89.

(purpose groups 3to 7(a)) require sprinklers where there is a top storey above 30m. The sprinkler system should be provided in accordance with Appendix E.[210]

In 2006, the department for Communities and Local Government commissioned BRE to carry out a three-year project titled Fire Spread in Car Parks.[211] In the report's findings and analysis, it states that 'The effectiveness of sprinklers in limiting a fire to a single car has been demonstrated. This supports findings reported verbally by the fire and rescue service.'[212] They also state that 'Sprinklers clearly assist in the reduction of structural damage.'[213]

The Independent Review of Buildings Regulations and Fire Safety led by Dame Judith Hackitt in 2018 found the regulatory system for buildings in England is not fit for purpose. There have been numerous major fires where the rate and scale of fire spread appears to have been linked to the construction of the building which has highlighted the need for strengthened fire safety requirements in buildings in England.

The National Fire Chiefs Council (NFCC) subsequently updated its position statement and associated guidance on Automatic Water Suppression Systems (AWSS) in December 2020 [214] and most recently in May 2024[215] as well as calling for more research to be undertaken, particularly given the recent increase in vehicles powered by emerging technologies. It also continues to lobby for legislative change to make the provision of Automatic Fire Suppression Systems in certain high-risk buildings a mandatory requirement. Research shows that for non-dwelling buildings sprinkler systems have contained/controlled or extinguished the fire in 95% of cases.[216]

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[210] HM Government *The Building Regulations 2010 Fire Safety Approved Document B Volume 2: Buildings other than dwellings 2019 edition incorporating 2020 and 2022 amendments – for use in England* 2022 Page 69.

[211] Department for Communities and Local Government, *Fire Spread in car parks BD2552*, December 2010 Page 3

[212] Department for Communities and Local Government, *Fire Spread in car parks BD2552*, December 2010 Page 97

[213] Department for Communities and Local Government, *Fire Spread in car parks BD2552*, December 2010 Page 97

[214] NFCC *NFCC AFSS Position Statement - November 2020 .pdf* 2020

[215] NFCC *Automatic Water Suppression Systems Policy Statement - NFCC* Accessed 06/10/2024

[216] Optimal Economics *Efficiency and Effectiveness of Sprinkler Systems in the United Kingdom: An Analysis from Fire Service Data* 2017, Page 57

Observation/Action

- Observation – Terminal Car Park 2 at London Luton Airport did not have a sprinkler system installed.

- Observation - Bedfordshire FRS has routinely promoted the installation of sprinkler systems into all buildings through the planning process since January 2019. However, Bedfordshire FRS responded to an initial planning application for Terminal Car Park 2 in September 2017[217] and an amended application in July 2018.[218] Since 2022 Bedfordshire FRS also recommends Sprinklers during the building regulations consultation.

- Observation - During the planning and building regulation consultation processes Bedfordshire FRS can only recommend sprinklers. It is not possible for the Service to mandate Sprinklers in new multi storey carparks until there is a change in national legislation/ government guidance.

- Observation – Since the incident, the Service has liaised closely with the airport and planning authorities to reinforce the importance of sprinklers should the airport rebuild the car park.

- Action – The Service should continue to work with partners to advocate changes in legislation and government guidance to empower the Service to be able to mandate sprinklers in new build multi-storey car parks.

18.7 Fire resistance BS9999

NOTE 1 Elements of structure that might not need fire resistance for life safety purposes include:

a) roof structure and structure that only supports a roof, except if the stability of the building depends on it, or unless the roof serves as a floor, e.g. a rooftop car park or the roof is used as an escape route;

[217] Bedfordshire Fire and Rescue Service, *Letter Re Application Number: 17/00004/GPDOPD* 25 September 2017

[218] Bedfordshire Fire and Rescue Service, *Letter Re Application Number:* 18/00994/AMEND - 12/01400/FUL 6 July 2018

b & c have been omitted because they do not reference car parks.

d) structure in an open-sided car park, which needs only nominal fire resistance because the low fire load and ventilation restrict the temperature of any fire;

Table 23 **Fire resistance periods for elements of structure (independent of ventilation conditions)**

Risk profile	Minimum periods of fire resistance, in minutes					
	Depth below access level of lowest basement		Height [A] of top occupied storey above access level			
	More than 10 m	Not more than 10 m	Not more than 5 m	Not more than 18 m	Not more than 30 m	More than 30 m
B2	90 [C]	60	30	60	90	120

NOTE 15 min fire resistance may be used for open-sided car parks above ground level and with a top occupied storey not more than 18 m above access level (increased to 30 min protecting vertical means of escape).

Using table 23 above the Stroma building regulations consultation correctly identified that 15 minutes fire resistance is acceptable for an open-sided car park (with 30 minutes for the escape routes). Section **34.1.5** entitled Non-combustible materials outlines that open-sided car parks should be constructed of non-combustible materials.

Access around Terminal Car Park 2 was provided with multiple lane road for all sides. Appendix E covers shopping complexes but includes considerations for multi storey car parks.

18.8 Fire resistance ADB Vol. 2

The table below from ADB (B4) is a continuation of the minimum periods of fire resistance for different purpose groups. Car parks are in group 7b (only the relevant notes to car parks have been included from that table). The height of the top floor in the table below is the height to the floor level of the upper most storey (not including areas that only include plant rooms).

Table B4 Continued

Purpose group of building	Minimum periods of fire resistance[1] (minutes) in a:						
	Basement storey* including floor over		Ground or upper storey				
	Depth (m) of the lowest basement		Height (m) of top floor above ground, in a building or separated part of a building				
	More than 10	Up to 10	Up to 5	Up to 11	Up to 18	Up to 30	More than 30
b. car park for light vehicles:							
i. open sided car park[7]	Not applicable	Not applicable	15 min†#	15 min†#[8]	15 min†#[8]	15 min†#[8]	60 min
ii. any other car park	90 min	60 min	30 min†	60 min	60 min	90 min	120 min‡

NOTES:

† For compartment walls that separate buildings, the period is increased to a minimum of 60 minutes.

For elements that protect the means of escape, the period is increased to 30 minutes.

‡ For elements that do not form part of the structural frame, the period is reduced to 90 minutes.

7. The car park should comply with the relevant provisions in the guidance on requirement B3, Section 11.
8. For the purposes of meeting the Building Regulations, the following types of steel elements are deemed to have satisfied the minimum period of fire resistance of 15 minutes when tested to the European test method.
   i. Beams supporting concrete floors, maximum $Hp/A=230m^{-1}$ operating under full design load.
   ii. Free-standing columns, maximum $Hp/A=180m^{-1}$ operating under full design load.
   iii. Wind bracing and struts, maximum $Hp/A=210m^{-1}$ operating under full design load.

   Guidance is also available in **BS EN 1993-1-2**.

Fire Protection and Management of the Building

19. Fire Strategy

Bedfordshire FRS was unable to undertake a post-fire protection inspection due to the loss of the building. As such, an assumption has been made within this report as that the lowest required standard of management would have been in place at the time of the fire. This would have been the fire safety measures for the car parks (BS9999). This errs on the side of safety, requiring designed passive features that require less management.

Travel distance within BS9999 has some flexibility where a clear benefit is shown by passive and active fire safety measures. In this car park's case, a fire alarm detection and warning system provides an early warning, and the report recommends extending the distance of 50m (where two directions are available) from Table 11. Approved document B does not allow the same flexibility with the travel distances defined by the purpose group (45m where two directions are available).

Table 11 **Maximum travel distance when minimum fire protection measures are provided** [A)]

Risk profile	Travel distance, in metres (m)			
	Two-way travel [B)]		One-way travel	
	Direct	Actual	Direct	Actual
A1	44	65	17	26
A2	37	55	15	22
A3	30	45	12	18
A4 [C)]	Not applicable [C)]	Not applicable [C)]	Not applicable [C)]	Not applicable [C)]
B1	40	60	16	24
B2	33	50	13	20

Figure 14 - BS9999, part of Table 11 Maximum travel distances

The report makes the case that 75m is reasonable to accept due to the fire alarm system and the open sided nature of the car park.

Fire Progression

The fire originated in a red 2014, Range Rover Sport with a 2993cc diesel engine.[219] It is the expert opinion of the Fire Investigator that when taking into consideration all available facts at the time of the Fire Scene Investigation that the fire was the 'result of accidental ignition.'[220] This was due to an 'electrical fault or component failure. The developing fire has spread to other components including plastics within the engine compartment and its oil and fuel[221].'

The driver stopped the 'vehicle on the roadway of the third floor of Terminal Car Park 2 due to seeing flames on the passenger side of the vehicle. Vehicle positioning was offset to the centre of the roadway with the nearside (passengers' side) being closer to adjacent vehicles in parking bays.'[222] 'Subsequent radiant heat (In the region of 2.5 - 5 megawatts for a vehicle fire) was sufficient for the ignition of adjacent vehicles.'[223]

'Wind on the night was approximately 10 mph in a south westly direction. The open sided construction of Terminal Car Park 2 enabled flames to be fanned and directed towards adjacent vehicles increasing the speed of fire development.'[224] Imagery captured by a London Luton Airport car park employee 'evidences the flames being forced towards the adjacent vehicles. This is common with fire development and is generically understood as "wind driven fires".'[225] The fire investigation evidenced 'damage to Terminal Car Park 2 to be greater on the north and east sides confirming the wind effects have assisted and driven the flames through Terminal Car Park 2.'[226]

'Initial crews from Bedfordshire FRS have indicated they witnessed "running fuel fires". This is where fuels such as petrol and diesel have escaped from fuel tanks. Most modern vehicles are manufactured with plastic fuel tanks, these are more susceptible to failure in the initial stages of a developing fire. It was confirmed that the Range Rover involved was fitted with a plastic fuel tank. Heat of the developing fire will have been sufficient to ignite some of these fuels as they followed the sloping gradient of the roadway surface, spreading ignitable fuel

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[219] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 11
[220] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 12
[221] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 12
[222] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 12
[223] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 12
[224] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 13
[225] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 13
[226] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 13

beneath vehicles and into the drainage system thus spreading to other floors beneath the point of origin.

The design of Terminal Car Park 2 by its very nature would have had an impact on the fire spread. On average a car parking bay is approximately 4.8-5m in length x 2.4 -2.6m in width. The average car is approximately 1.8m wide, this allows for around 290mm-300mm gap between parked vehicles, which facilitates the chain reaction of fire spread from vehicle to vehicle due to the radiated heat and direct flame impingement.'[227]

Approximately two hours from the point of ignition, structural collapse of the car park started to occur resulting in increased fire development between all floor levels as additional voids were created.[228]

Observation/Action

- Observation – It was reported in crews witness statements that there were running fuel fires on floor 2 (the floor below where the fire started). On investigation looking through images taken by crews inside the car park it is evident that drainage pipes within the car park are of plastic construction. The heat from the fire and the running fuel fires entering the drainage system would have caused the pipes to fail leading to fire spread.

- Action – The possibility of running fuel fires should be a consideration during the design of car park drainage systems.

[227] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 13
[228] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 13

Figure 15 Example of plastic drainage pipe

Impact of Electric Vehicles on the Spread of Fire

In the immediate aftermath of the incident there was considerable speculation within the press and across social media platforms about the fire originating from an electric vehicle (EV). This was despite statements at the time from Bedfordshire FRS stating that the Service believed the vehicle to a be a diesel vehicle.[229] Subsequently it has been confirmed by the fire investigation report that the fire originated in a diesel vehicle[230] and the cause was accidental.[231]

The fire investigation in to a similar fire in at the Kings Dock multi storey car park in Liverpool in 2017 where the fire originated in a petrol engine car[232] concluded that it is 'more than likely that the fire started accidentally, either due to an electrical fault or a component failure.'[233]

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[229] Lowson, J. *Luton Airport: EV not believed to be cause of massive car park blaze, says fire chief (lutontoday.co.uk)11/10/2023* Accessed 05/09/2024

[230] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 11.

[231] Group Commander FI, *Final Fire Investigation Report of Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 12.

[232] Merseyside Fire and Rescue Service, *Fire Investigation Report 382-18, Kings Dock Car Park, Monarch Quay, Liverpool* Page 7

[233] Merseyside Fire and Rescue Service, *Fire Investigation Report 382-18, Kings Dock Car Park, Monarch Quay, Liverpool* Page 12

There has also been speculation about the impact of electric vehicles on fire spread even if the fire did not originate in one.

In January 2020 there was a similar fire at a multi storey car park at Stavanger Airport in Sola Norway which led to the collapse of the car park. As with the London Luton Airport Fire there was extensive speculation in the media about role of electric vehicles in the fire. The Norwegian Directorate for Civil Protection and the Norwegian Building Authority commissioned the project group at RISE Fire Research to produce a report on the fire with a specific consideration of the impact of Electric Vehicles.

'The Norwegian car fleet has a significant share of electric vehicles per inhabitant with a market share of new car sales of up to 50% as of March 2020.'[234] By contrast 'throughout 2022, electric cars represented almost 17% of sales'[235] in the UK. As such, it is reasonable to conclude that the proportion of electric cars involved in the fire at Stavanger airport is likely to be higher than the proportion at Luton. It should also be noted that there were no Electrical Car Charging points in Terminal Car Park 2, these are located in Car Park 1 at LLA.

The Stavanger report refers to observations made by Rogland Fire and Rescue (RBR) and water analysis and states:

'Observations made by the RBR regarding the intensity and duration of car fires during the incident indicate that electric car batteries were not involved in the fire. If the battery is not involved, the course of fire in an electric vehicle is expected to be approximately the same as in a conventional petrol or diesel vehicle.

When it comes to the fire's environmental impact, analyses of water samples in nearby water bodies provide indications on the contribution of electric vehicle batteries (analyses carried out by COWI,). The analyses included lithium and cobalt, main components of an electric car battery. Lithium was not found in any of the water samples, and the analyses showed low concentrations of cobalt. This indicates that batteries from burnt out electric vehicles have not contributed to the pollution of nearby water bodies.

Observations made during the fire, as well as water analyses in retrospect, thus imply that electric car batteries were not involved in the fire. However, technical investigations of the

[234] Storesund K et al, *Evaluation of fire in Stavanger airport car park 7 January 2020* Page 75
[235] Partridge J, Electric car sales reach record high in UK despite supply chain disruption | Automotive industry | The Guardian Published 5 January 2023, Accessed 17/01/2024

actual batteries of the burnt-out or partially burnt-out electric and hybrid vehicles are necessary to substantiate this point and provide a definite answer.'[236]

Two of the conclusions of the Stavanger report are that:

- 'Strong wind helped accelerate the spread of fire
- The leakage of fuel from burning vehicles contributed to the fire spreading'[237]

Similarly, the fire investigation report for Luton airport identifies running fuel fires and an approximately 10 mph wind along with the design of the car park with narrow gaps between the parked cars as being the factors contributing to the spread of the fire.[238] The 10mph wind is based on a reading taken in Luton at a lower level, it should be noted that London Luton Airport is located at the top of a hill and fire was on the third floor.

There are further similarities from the investigation into the Kings Dock Car Park fire in Liverpool which stated that 'Running fuel fires were witnessed by BA crews and this undoubtedly led to fire spread through the drainage system, down ramps and along the rib slab floor.'[239] The Merseyside report also states that 'Rapid spread of fire, once two or more vehicles are fully involved will occur'[240] and that 'In the Kings Dock car park incident crews reported that additional vehicles became involved "every 30 seconds". The rate increased exponentially up to rapid fire development on level 4, just after the crews withdrew.'[241]

Observation/Action

- Observation - The fires at Kings Dock Liverpool, Stavanger Airport and Luton Airport were all significant fires in multi storey car parks that originated in petrol or diesel powered cars.

  Regardless of the type of engine the fire load of a car is significant. As such, if a car catches fire there is a strong possibility of the fire spreading to adjacent vehicles. The open sided design of most multi storey car parks means that wind can become a

[236] Storesund K et al, *Evaluation of fire in Stavanger airport car park 7 January 2020* Pages 75 - 76
[237] Storesund K et al, *Evaluation of fire in Stavanger airport car park 7 January 2020* Page 77
[238] Group Commander FI, *Final Fire Investigation Report of Group Commander Group Commander FI for incident GB-040100 – Terminal Car Park 2 Luton Airport, Easy Way Luton* Page 11
[239] Merseyside Fire and Rescue Service, *Kings Dock Car Park Fire Protection Report,* April 2018, Page 26
[240] Merseyside Fire and Rescue Service, *Kings Dock Car Park Fire Protection Report,* April 2018, Page 19
[241] Merseyside Fire and Rescue Service, *Kings Dock Car Park Fire Protection Report,* April 2018, Page 19

contributing factor in the fire spread. The issue of running fuel fires does not occur with electric vehicles.

Human Behaviour

'Human Behaviour in Fire is the study of human response when exposed to fire in buildings. It includes an understanding of people's awareness, beliefs, attitudes, motivations, decisions, behaviours and coping strategies and the factors that influence them.'[242]

Only four 999 calls were made reporting the fire in Terminal Car Park 2. These can be summarised as:

- A call by the driver of the vehicle
- A call from a member of the public in the car park
- A call from the Air Traffic Control Tower
- A call from a member of the public who saw smoke at the airport from Wigmore Park

Similarly, only five 999 calls were received by Merseyside Fire and Rescue Service prior to their first attendance at the Kings Dock Car Park Fire in 2017.[243]

It should be noted that from the time of the initial 999 call it took less than 10 minutes for the first fire engines to arrive and once people see a blue light vehicle in attendance they will no longer see (and there will no longer be) a need for them to call 999.

The low number of calls in both cases may seem surprising given the busy nature of both car parks and associated infrastructure. One possible explanation for this is the bystander effect. 'The bystander effect refers to the phenomenon that an individual's likelihood of offering help in a critical situation decreases when passive bystanders are present.'[244]

The bystander effect is a social psychological theory that was first identified in the 1960's but the literature on the subject is 'a bit ambiguous with regard to its causes. However, it appears to boil down to three psychological processes: diffusion of responsibility, evaluation apprehension, and pluralistic ignorance.'[245]One individual who worked in the airport terminal building (but was not an LLA employee) decided to enter the car park to retrieve their car at

[242] Merseyside Fire and Rescue Service, *Kings Dock Car Park Fire Protection Report*, April 2018 Page 47
[243] Merseyside Fire and Rescue Service, *Kings Dock Car Park Fire Protection Report*, April 2018 Page 48
[244] de Vries, G. *How the bystander effect can explain inaction towards global warming | LSE Business Review* accessed 30/07/24
[245] de Vries, G. *How the bystander effect can explain inaction towards global warming | LSE Business Review* accessed 30/07/24

a point where the fire was already well developed. Firefighters had been withdrawn from the building due to the risk of structural collapse when this individual entered the structure. Fortunately, this individual was spotted and a rescue was successfully executed. The individual was able to use their status as an airport worker to gain access to the car park[246] even though a cordon had been established.

'Fire related human behaviour is affected by characteristics of the individual in a variety of ways. These characteristics are comprised of physiological factors, including physical limitations, cognitive comprehension limitations, and knowledge of the physical setting. Each of these characteristics affect either an individual's ability to recognize and accurately assess the hazards presented by a fire or explosion incident or an individual's ability to respond appropriately to those hazards.'[247] . It is not possible for the authors of this report to assess each of these factors in relation to the individual who entered the car park. As such, it can only be assumed that either the individual concerned did not understand the risks and dangers they faced or they were reckless in their decision-making processes.

The Health and Safety Executive recognises this behaviour. They state in relation to human contributions to accidents that 'People can make disastrous decisions even when they are aware of the risks. We can also misinterpret a situation and act inappropriately as a result. Both of these can lead to the escalation of an incident.'[248]

The driver of the vehicle that started the fire had driven for approximately two hours without any significant issues to get to Terminal Car Park 2.[249] CCTV footage shows that when the car stopped at the ticket barrier a puff of smoke issued from under the bonnet[250]. By the time the vehicle was on the third floor of the building, flames became visible and the driver pulled over to the side of the roadway.[251] The individual vacated the vehicle and located two fire extinguishers and attempted to extinguish the fire.[252] The driver then called 999 and was able to calmly convey the nature of the incident and the location of the incident to the control operator.[253] This behaviour is broadly in line with a typically expected response by a member of the public to such a situation.

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[246] Watch Commander A *Email: RE: Luton Airport* 07/02/2024

[247] National Fire Protection Association *NFPA 921 Guide for Fire and Explosion Investigations 2021* page 158

[248] Health and Safety Executive, *Reducing error and influencing behaviour: HSG48 (Second edition),* 1999 Page 11

[249] Document *Driver Witness Statement* 10/10/2023 Page 1

[250] London Luton Airport Operations Limited *CCTV Footage from Car Park 2*

[251] Document *Driver Witness Statement* 10/10/2023 Page 1

[252] Document *Driver Witness Statement* 10/10/2023 Page 1

[253] Bedfordshire Fire and Rescue Service *Recording of Initial 999 Call* 10/10/2023

Toilet and welfare facilities were made available to attending crews in the terminal building. This was occupied by a large number of members of the public. Several personnel had to face questioning about the incident and queries about retrieval of cars etc. which led to delays in them returning to the fire ground. Given the impact and disruption of the incident on thousands of passengers this is not surprising. Whilst some passengers may have had journeys delayed, for many the fire and subsequent closure of the airport will have resulted in them not travelling at all. Research undertaken by the airport shows that almost 'two-thirds (64 per cent) of holidaymakers maximise cheap off-peak travel to minimise time off with a 24-hour round trip abroad.'[254]

Observation/Action

- Observation - Members of the public may not always understand the risks presented by a large fire or may act recklessly even if they are present at a site in a professional capacity.

- Action – When establishing cordons at large buildings and structures incident commanders should consider the possibility of employees attempting to gain access to the building as well as members of the public.

Conclusion

The scale of the fire in Terminal Car Park 2 at London Luton Airport presented a significant challenge to the responding fire crews. The fire spread quickly to several vehicles and a combination of the wind spreading the fire through the open sided car park and the impact that running fuel had on the spread of the fire resulted in the loss of the car park.

The fire in Terminal Car Park 2 is not the first major fire in a multi storey car park. In addition to the local authority fire service response the fire was also tackled by London Luton Airport Fire Service. This meant there was a greater weight of attack during the initial response as LLA Fire Service assets were quickly in attendance. The attending crews were also able to access large tanks of water situated on the adjacent airfield. This allowed them to overcome water supply issues prior to the establishment of the water supply from the HVP. If another multi storey car park were to be involved in a significant fire it would be unlikely to have these factors in its favour.

The car park was designed and built to meet a relevant standard and performed in the fire in a manner consistent with its design. Terminal Car Park 2 did not have a sprinkler system or other automatic fire suppression system installed. If a suitable sprinkler system had been

[254] London Luton Airport | *LLA highlights top 10 travel trends for 2024 (london-luton.co.uk)* Accessed 30/07/2024

installed, it may have changed and delayed the pattern of fire spread increasing the chances of a successful outcome once firefighting operations had begun. Bedfordshire FRS has routinely promoted the installation of sprinkler systems into all buildings through the planning process since 2019 and during building regulation consultations since 2022. However, the Service cannot mandate sprinklers in open sided multi storey car parks similar to Terminal Car Park 2. A change in guidance and legislation at a national level should be considered to make automatic fire suppression systems (such as sprinklers) mandatory in all new open sided multi storey car parks.

It is clear from the Fire Investigation report that a standard diesel vehicle was the origin of the fire. There is no evidence to demonstrate that the presence of electric vehicles parked in the car park had a detrimental impact on the outcome of the fire.

As with any major incident there were several areas of learning which are outlined in the report above. None of these areas had a material impact on the outcome of the fire.

Crews from Bedfordshire Fire and Rescue Service, Hertfordshire Fire and Rescue Service, London Fire Brigade, Buckinghamshire Fire and Rescue Service, Cambridgeshire Fire and Rescue Service, Northamptonshire Fire and Rescue Service and London Luton Airport Fire Service worked hard to tackle the fire. The initial attending crews from Bedfordshire FRS quickly recognised the warning signs of building collapse leading to a successful evacuation of the building. Given the significant structural collapse witnessed by crews the early recognition of the risk of collapse almost certainly saved lives. Crews succeed in containing the fire to Car Park 2 and thus protecting neighbouring infrastructure such as the DART and Car Park 1.

Historical Cark Park Fire Incident Data

Vehicle fires in multi storey car park facilities have been reported in local, national and international media. A summary of these incidents is shown below:

Multi Storey Car Park, King Edward Court, Windsor 22/09/2024

Royal Berkshire Fire and Rescue Service crews from Ascot, Bracknell, Whitley Wood, Slough and Langley fire stations were sent to the scene alongside an Aerial Ladder Platform, an Incident Command Unit and an Officer. Upon arrival, crews discovered multiple cars on fire in a multi storey car park. Firefighters equipped with breathing apparatus used two hose reels and two main jets to extinguish the fire. Crews were on the scene for around two hours and 47 minutes.[255]

Old Orchard Road Car Park, Poole 24/08/2024

On Saturday, August 24, Dorset and Wiltshire Fire and Rescue Service received a call at 4.30am to reports of a vehicle fire. On arrival crews found two vehicles, one of which was still alight. They were 100% damaged by fire. One vehicle was located on the first floor and one on the second floor of the multi story car park.[256]

Meole Brace Retail Park, Strewsbury 24/09/24

At 17:56 on Tuesday, 24 September, 2024, SFRS Fire Control received a call reporting a fire classified as Car Fire in Shrewsbury. Fire involving one privately owned diesel car with 50% of engine compartment damaged by fire.[257]

Car Park Near Lisbon Humberto Delgado Airport, Portugal 16/08/2024

More than 200 vehicles were destroyed. 140 Firefighters and 48 appliances attended the incident.[258]

[255] Royal Berkshire Fire and Rescue Service *Vehicle fire in Windsor | Royal Berkshire Fire and Rescue Service (rbfrs.co.uk)* accessed 4/10/24

[256] Rhodes, E. Two cars destroyed in fires at Old Orchard road car park | Bournemouth Echo 24/08/24 accessed 04/10/2024

[257] Shropshire Fire and Rescue Service *128922 | Shropshire Fire and Rescue Service* accessed 04/10/24

[258] FPA Media *Car park fire near Lisbon airport destroys over 200 vehicles | Fire Protection Association (thefpa.co.uk)* 08/09/24, accessed 04/10/2024

Litmus Building, Nottingham 29/04/2024

Fire crews have tackled a fire in the underground car park of a block of flats in Nottingham. The fire involved two vehicles. A man was jailed for four and a half years after pleading guilty to committing arson while being reckless as to whether life was endangered.[259]

Gatwick Airport North Terminal Long Stay Car Park 13/03/2024

Fire Services responded to a vehicle fire in the North Terminal long-stay car park. The fire was extinguished and there were no injuries. It was not treated as suspicious.[260]

Silver Zone Car Park, Bristol Airport 10/12/2023

A parked vehicle had caught fire in an open-air car park. 11 cars were on fire - with four or five vehicles completely destroyed.[261]

Car Park 2 Drop Off Area, Glasgow Airport 21/09/2023

Scottish Fire and Rescue Service responded to a taxi on fire within car park two which was contained and quickly extinguished.[262]

Arcadian (Multi storey) Car Park, Bromsgrove Street, Birmingham 19/07/2023

A vehicle on fire on the ground floor of the car park. Two other cars were damaged in the fire.[263]

Carlett Road, Haverfordwest, Dyfred-Powys 13/07/2022

A multi storey car park. The car park was not in use at the time and the fire was treated as suspicious.[264]

Stavanger airport car park, Norway 07/01/2020

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[259] Nottinghamshire Police, *Arsonist jailed after city tower block fire | Nottinghamshire Police* 06/09/2024 Accessed 04/10/2024
[260] Morton S, *Fire in Gatwick Airport car park 'not being treated as suspicious' (sussexexpress.co.uk)* 13/03/2024 Accessed 12/08/2024
[261] Sky News, *Fire at Bristol Airport car park destroys vehicles | UK News | Sky News* 10/12/2023 Accessed 12/08/2024
[262] STV News *Glasgow Airport drop-off area closed after taxi bursts into flames | STV News* 22/09/2023 Accessed 12/08/2024
[263] Horner, N Car park blaze in Birmingham city centre leads to road being blocked off - Birmingham Live (birminghammail.co.uk) 19/07/2023 Accessed 12/08/2024
[264] Sinclare, T *Police confirm fire at multi-storey car park being treated as suspicious - Herald.Wales* 13/07/2022 Accessed 22/03/2024

A multi storey car park. ‘The car park partly collapsed, several hundred vehicles were damaged, and the airport was shut down.’[265]

‘Fleming Way, Wiltshire, 29/01/18

Multi storey car park, attached to local shopping centre, three crews dispatched to tackle a vehicle fire on the third floor, suspected to have been deliberately ignited.

Topp Way, Bolton, 20/01/18

Multi storey car park, single vehicle fire within the multi storey car park. Firefighters using one main jet on scene for one hour, recorded as an accidental fire.

Paris, France, 10/01/18

Fire in underground car park, one Firefighter fatality (heart attack), 120 Firefighters attended.’[266]

Kings Dock Car Park, Liverpool, 31/12/17

‘The car park comprised of eight storeys consisting of a ground floor with seven levels above. The fire started in a car which was parked on the third level of the car park. The vehicle was parked shortly before the fire started. The fire spread to involve other vehicles on level three and to the levels above and below. The fire developed to cause significant damage to the building and 1,309 vehicles’[267]

‘Jecheon, South Korea, 20/12/17

Fire in a ground floor car park spread to the floors above in an eight-storey building. 29 people were killed.

Boomtown Festival Fire, Hampshire, 12/8/16

Open car park on a straw stubble field. 92 vehicles involved in fire.

Southwater, Telford, Shropshire, 20/6/16

Multi storey car park, fire involving several vehicles causing damage to wiring, electrical fittings and surrounding structures on the third floor. three appliances dispatched, using BA and one main jet brought the fire under control within two hours.

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[265] Storesund K et al, *Evaluation of fire in Stavanger airport car park 7 January 2020* Page 7
[266] Merseyside Fire & Rescue Service Significant Incident Report (Final) Incident: 033394 -31122017 Page 43
[267] Merseyside Fire and Rescue Service, *Fire Investigation Report 382-18, Kings Dock Car Park, Monarch Quay, Liverpool* Page 3.

Cheltenham Rd, Harrogate, 4/12/15

Multi storey car park, vehicle fire on 5th floor, four appliances dispatched and one aerial ladder platform due to the position of the fire. Crews used one dry powder and one carbon dioxide extinguisher to resolve the incident.

Isle of Wight, Newport town centre, 17/7/15

Multi storey car park, one car involved, crews hauled up a hose reel to extinguish the vehicle, fire investigation concluded as accidental ignition.

Willow Place Shopping Centre, Corby, Teeside, 30/12/14

Multi storey car park building, several vehicles involved, damage to the car park structure and several retail outlets. Six appliances attended; 30 firefighters worked for four hours to extinguish the fire. four youths aged between 14 and 20 charged with arson in connection with the incident.

Place Vendome, Paris, 2012

Underground car park, 40 high performance and luxury vehicles lost in fire, declared as accidental ignition due to electrical fault.

Ivry-sur-Seine, France, 2009

Multi storey car park, 200 vehicles involved in fire, 15 appliances engaged, use of aerial appliances as water towers.

Foregate Shopping Centre, Kilmarnock 26/12/08

Multi storey car park, fire on the third level with heat and smoke travel up to the fourth and fifth levels. two BA teams deployed, a total of 11 vehicles damaged, fire investigators found the cause to be accidental.

Monica Wills House, Bristol, England, 2006

Multi storey car park, fire involving 22 vehicles, one fatality due to smoke inhalation from occupancy above the parking facility.

Gretchenbach, Switzerland, 2004

Underground multi storey car park, fire involving up to 100 vehicles, seven firefighters killed during firefighting operations'[268]

[268] Merseyside Fire & Rescue Service Significant Incident Report (Final) Incident: 033394 -31122017 Pages 43 - 44

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Glossary of Terms and Abbreviations

ADB	Approved Document B
AP	Aerial Platform
AVLs	Automatic Vehicle Locators
BA	Breathing Apparatus
BFRS	Bedfordshire Fire and Rescue
BLRF	Bedfordshire Local Resilience Forum
CAT0	Runway closed
CFO	Chief Fire Officer
Contemporaneous Notes	Notes made at the time of the event or as soon as it is possible to do so after.
COWI	Name of an international consultancy within engineering, architecture, energy and environment.
CPL	Combined Pump Ladder
DACFO	Deputy Assistant Chief Fire Officer
DART Station	Direct Air-Rail Transit Station
DCFO	Deputy Chief Fire Officer
DGC	Duty Group Commander
EA	Environment Agency
EEAST	East of England Ambulance Service Trust
ESICTRL	Emergency Services Inter Control

EV	Electric Vehicle
FF	Firefighter or firefighting
FRS	Fire and Rescue Service
HAZMAT	Hazardous Materials
HMEPA [HMA]	Hazardous Materials Environment Protection Advisor (Hazardous Materials Advisor)
HRET	High Reach Extendable Turret
HVP	High-Volume Pump
ITrent People Manager	HR System used by Bedfordshire FRS
JESIP	Joint Emergency Services Interoperability Programme
LLA	London Luton Airport
LLA ATC	London Luton Airport Air Traffic Control
LLAOL	London Luton Airport Operations Limited
lmp	Liters per minute
MAIC	Multi Agency Information Cell
METHANE	Acronym to alert others about a major incident: **M**ajor Incident Declared, **E**xact location, **T**ype of incident, **H**azards, **A**ccess, **N**umber and type of casualties, **E**mergency services present and required
NFCC	National Fire Chiefs Council

NHS	National Health Service
NILO	National inter-agency Liaison Officer
NR	National Resilience
NRAT	National Resilience Assurance Team
NRFC	National Resilience Fire Control
OiC	Officer in Charge
OPS	Operations
OTB	Over the boarder
PDA	Pre-Determined Attendance
PTRI	Premises Type Risk Information
Responsible Person	As defined by Article 3 of the Regulatory Reform (Fire Safety) Order 2005
RFR	Rogland Fire and Rescue
RRT	Rapid Relief Team
RVP	Rendezvous Point
SA	Same Address
SCG	Strategic Coordinating Group
SSRI	Site Specific Risk Information
SSRP	Site Specific Risk Plan
Tac Ad	Tactical Adviser
TCG	Tactical Coordinating Group
TMD	Tactical Mode Delta (Defensive Firefighting)
TMO	Tactical Mode Oscar (Offensive Firefighting)
TTL	Turn Table Ladder