

20 Pump Fire Preliminary Report

New Providence Wharf
1 Fairmont Avenue
London E14 9PL
Borough of Tower Hamlets

Date of Incident: 7th May 2021
Date of report: 25th May 2021

LFB Incident Number: 053666-07052021

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Fire Investigation Team Report

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London Fire Brigade investigates the cause of fire in order to gather information to assist with fire prevention and protection of the public. This report records the findings of the fire investigation and is produced for internal use only. It may not therefore be suitable for use by other organisations or individuals.

Date completed 25th May 2021

Author: ALPHA
Fire Investigation Team

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ALPHA, Fire Investigator
New Providence Wharf
1 Fairmont Avenue, London E14 9PL
Date of fire: 07/05/2021

Criminal Justice Act 1967, Section 9; Criminal Procedure Rules 2015, Part 16.

This statement is true to the best of my knowledge and belief and I make it knowing that, if it is tendered in evidence, I shall be liable to prosecution if I have wilfully stated anything in it which I know to be false or do not believe to be true.

Signature.....

Date.....

1. I, ALPHA, am a Fire Investigator in the London Fire Brigade. I have been employed by the Fire Authority for years. I am currently attached to the Fire Investigation Team based at Dowgate Fire Station.
2. I have been working with the London Fire Brigade's Fire Investigation Team
3. My principle duties are to investigate fire scenes in order to determine their origin, possible cause and to observe and record the reasons for progression of the fire and how the people involved behave.
4. I reported for duty at 08:30 hours on 07/05/2021. At 09:01 hours, I was paged by the London Fire Brigade's London Operations Centre (LOC) to attend the scene of a '10 pump' fire at New Providence Wharf, 1 Fairmont Avenue, London E14 9PF.
5. This fire was allocated the London Fire Brigade's unique incident number 053666-07052021. The original call to the fire had been logged by Brigade Control at 08:54 hours. This was the first of 31 calls received by the Brigade to attend this incident. I arrived at 09:23 hours and began an investigation into the cause and reasons for progression of the fire. The investigation into this incident lasted a number of days and was conducted by a number of members of the London Fire brigade's Fire Investigation Team. Digital images taken while at the scene have been stored in the LFB photo library under reference number ALPHA01/01 and which I exhibit as ALPHA/01.
6. The fire investigation report for this incident is attached and exhibited as ALPHA/02.

Signature.....

Date completed 25th May 2021

Author: ALPHA
Fire Investigation Team

Fire Investigation Team Report

DISCLAIMER:

London Fire Brigade collects information for statistical and research purposes – this report is based upon information available at the time of its production and may be subject to change.

This preliminary report is being circulated due to the significant public interest arising from this fire being declared a major incident and involving the presence of ACM cladding. All findings must be considered as preliminary.

No part of this report is intended for use in making commercial, legal or other decisions.

1 Synopsis:

- | | | |
|-----|--|--|
| 1.1 | Brigade incident number: | 053666-07052021. |
| 1.2 | Address of incident: | New Providence Wharf.
1 Fairmont Avenue, London E14 9PL |
| 1.3 | Date and time of call: | 07/05/2021 at 08:54 hours |
| 1.4 | Date and time investigation commenced: | 07/05/2021 at 09:23 hours |
| 1.5 | First investigation lead officer: | ALPHA |
| 1.6 | Incident Commander: Initial
Final | Sub Officer BRAVO
Assistant Commissioner CHARLIE |
| 1.7 | Reason for Fire Investigation (FI) attendance: | 10 pump fire. |

2 Building description:

New Providence Wharf (NPW) is a residential development, designed by Skidmore, Owings and Merrill, and developed and run by the Ballymore Group. The complex consisted of a crescent-shaped, purpose-built high-rise block of residential dwellings of 19 floors, circa 2005, measuring approximately 180 metres long by 20 metres deep. The building comprised of five adjoining blocks, A-E. The fire started in block D, which measured approximately 40 metres by 20 metres and was partially clad in ACM cladding.

Due to the presence of ACM cladding, reports were commissioned by the Ballymore Group which resulted in a number of mitigation measures being introduced pending remediation work. These measures included a 24/7 'waking watch' consisting of six personnel within the complex and the building's previous 'stay put' strategy had been amended to 'simultaneous evacuation'.

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Block D has a communal entrance leading to two lifts and a staircase. The lifts and staircase opened on to communal lobbies on all floors, which in turn led to communal corridors, which served the flats. On the upper floors there are 10 flats per floor. The communal corridors had Automatic Opening Vent (AOV) systems leading to vertical smoke shafts that ran the height of the building and cross corridor fire doors, magnetically held open. These two systems should operate when smoke detectors within the corridors and lobby areas on each floor actuate; this actuation should also set off sounders on the basement, ground and top floors. The stairwell and lobbies form part of a firefighting shaft and one of the lifts is a Firefighting lift which should also operate on the actuation of the smoke detectors. The stairwell had a separate AOV system which could be operated by break glass call points at the base and head of the stairs. The control panel which operates the systems listed above was located in the old Fire Control Centre (FCC), situated on the ground floor of the complex between blocks A and B.

The flat where the fire originated was located on the eighth floor of block D and consisted of a kitchen, living room, bathroom and two bedrooms; one of which led to a balcony. The flat had a hard wired smoke detector within the hallway and a hard wired heat detector within the kitchen.



Image showing the South face of New Providence Wharf

3 Summary:

This fire started in a flat on the eighth floor. At the time of the fire a person in the flat discovered a fire in a small cupboard which contained the electrical consumer unit.

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Author: FI ALPHA
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Prior to the arrival of the London Fire Brigade (LFB), approximately 67 persons self evacuated the building assisted by members of the waking watch.

The incident escalated to a 20-pump fire, with the LFB declaring it a major incident with mass evacuation of the block taking place. Firefighters wearing breathing apparatus used six jets, one aerial monitor, one aerial as observation platform, thermal image cameras and the drone team to tackle the fire.

Multiple fire survival guidance calls were resolved and 22 smoke hoods were used to rescue residents. The LFB rescued 34 persons in total from the block. London Ambulance Service (LAS) Paramedics treated 37 residents on scene, of which 35 were discharged following an initial assessment. Two persons were taken to hospital, one with minor burns (occupant from the flat of origin) and one with minor smoke inhalation.

The flat of origin was approximately 80% damaged by fire. Fire spread externally up the building affecting balconies directly above on the 9th, 10th and 11th floors. The windows of the flat directly above on the 9th floor were also fire damaged. External ACM cladding on the 8th and 9th floors was also involved, but in this particular case, the cladding did not significantly add to the fire's development. All internal communal areas on the 8th floor were damaged by smoke, with fire and heat damage affecting the communal corridor around the entrance to the flat of origin. This was exacerbated due to the failure of the AOV

Based on the information available, the most probable cause of the fire has been determined as being an electrical fault potentially relating to a timer switch within the consumer unit ('fuse board') in the flat of origin. This is not currently thought to be a product defect/recall issue. Investigations are ongoing.

4 Main characters:



- 4.1 FOXTROT, occupant of the flat of origin
- 4.2 ECHO, a New Providence Wharf (NPW) employee, Ballymore Group
- 4.3 ZULU, a NPW employee, Ballymore Group
- 4.4 HOTEL, a NPW employee, Ballymore Group
- 4.5 Inspector VICTOR, Metropolitan police Service (MPS)
- 4.6 WHISKEY and XRAY, Scientific Advisors (SA), Bureau Veritas (BV)

5 Sequence of events: *(Based on information available at the time of writing)*

- 5.1 On the morning of the 7th May 2021, FOXTROT smelt burning opened the door to the small cupboard containing the consumer unit and saw the consumer unit (commonly referred to as a 'fuse board') alight. The fire had also spread to other items within the cupboard. Some of the burning items fell out of the cupboard when the cupboard door was opened. FOXTROT attempted to call the concierge via the flat's internal telephone. At some point FOXTROT was aware that the smoke detector was going off, but was not exactly sure when this started. FOXTROT made their way to the balcony of the flat, where attempts were made to call to persons at ground floor level. Following this FOXTROT evacuated the flat. *(Source: Witness information FOXTROT)*

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- 5.2 FOXTROT believes that items may have inadvertently been knocked into the doorway preventing the front door to the flat from closing when escaping the fire. (Source: Witness information FOXTROT)
- 5.3 At approximately 08:47 hours, a New Providence Wharf (NPW) employee received the first report of smoke issuing from a balcony on the 8th floor.
- 5.4 At 08:48 hours, a second report of smoke issuing was received from a NPW employee. ECHO took the lift to the 8th floor with another employee. When the lift doors opened, there was thick black smoke in the lobby area; they could also hear a smoke detector actuating. They did not see if any doors were open or closed. The smoke was getting worse, so they exited the lobby onto the staircase. Smoke then entered the stairwell, but when the door closed it was still relatively clear. When ECHO exited the building, they were met by some of the waking watch personnel; ECHO directed them to the floors above and below the fire to evacuate the residents. (Source: Witness information ECHO) 
- 5.5 At 08:54 hours an operative within the Fire Control Centre (FCC) called the LFB. (Source: Witness information ECHO)
- 5.6 At 08:55 hours, the LFB's London Operations Centre (LOC) received the first of 31 calls to this incident. The call was made by NPW FCC. In line with current procedures for this building, five fire engines and one turntable ladder (TL) were ordered to attend: F221 Poplar's pump ladder (PL) fire engine, F231 Millwall's PL, F451 Plaistow's PL, F251 Shadwell's PL, F331 Whitechapel's PL and E353 Old Kent Road's TL. (Source: Browser of Operational System Status (BOSS))
- 5.7 At 08:58 hours, following the receipt of further calls to this incident, LOC ordered a further three fire engines, one Fire Rescue Unit (FRU) and two Command Units (CU's) to attend the incident. The Fire Investigation Team were also informed. (Source: BOSS)
- 5.8 Prior to the arrival of the LFB it is thought that in the region of 67 persons evacuated the building. (Source: to be confirmed)
- 5.9 At 08:59 hours and 4 minutes after the first call, F221 arrived at the incident; Temporary Sub Officer (T/SubO) BRAVO assumed the role of Incident Commander (IC). There was smoke emitting from an eighth floor balcony and a large number of residents evacuating the building. T/SubO BRAVO ordered crews to collect four lengths of 45mm hose, High Rise Bag, thermal image camera (TIC), breaking in gear and breathing apparatus entry control board. Following the receipt of this information, the large numbers of persons evacuating and T/SubO BRAVO's knowledge of the building from a previous 'Premises Risk Assessment'/familiarisation visit, BRAVO made the decision to send an assistance message 'Make Pumps 10, persons reported'. 
- 5.10 At 09:01 hours, LOC received this message and ordered further fire engines to attend. This ordering included the mobilising of Fire Investigation Unit (FIU) OK12, with Fire Investigators (FIs) ALPHA and INDIA (Source: Witness Information T/SubO BRAVO and BOSS)
- 5.11 Crews made their way to the 6th floor with the aforementioned equipment. At this point, two further fire engines arrived at the incident. T/SubO BRAVO briefed SubO ALPHA/ECHO from F231 who took over as IC, ordering T/SubO BRAVO to make their way to the Bridgehead and control firefighting operations. (Source: Witness information T/SubO BRAVO)
- 5.12 Crews set the Bridgehead up on the 6th floor and following a brief from T/SubO BRAVO, the first breathing apparatus (BA) crew from F221 were committed; Firefighters (FFs) JULIET and KILO. Originally this crew's brief was to follow the right-hand wall and commence firefighting and search and rescue operations. They took a length of 45mm hose and set in on the 7th floor and from here made their way to the 8th floor. On arriving at the 8th floor, they could see smoke under pressure being pushed through side gaps of the door leading to the lobby area. They made access to the lobby area; the neutral plain (smoke horizon) was at floor level and visibility was zero. (Source: Witness information FFs JULIET and KILO)

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- 5.13 At 09:06 hours, LFB received the first of multiple calls where Fire Survival Guidance (FSG) was given. Information stated there was smoke in the hallway.
- 5.14 At 09:07 hours a further FSG call was received from persons. F451 was designated as FSG pump with Leading Firefighter (LFF) LIMA given the role of FSG Commander. (Source: Witness information SubO ALPHA ECHO)
- 5.15 Information was passed to the 1st BA crew to change their brief and make their way to assist the persons who had made the FSG call. (Source: Witness information T/SubO BRAVO)
- 5.16 A second BA crew from F451 (FFs MIKE and NOVEMBER) was committed shortly after the first crew. This crew committed with a 45mm jet which was set in on the 8th floor. The crew was briefed to continue with following the right-hand wall to firefight and search & rescue. (Source: Witness information T/SubO BRAVO)
- 5.17 At this point the 1st BA crew heard cries for help and someone opened the door to one of the flats. Two persons were given smoke hoods by crews and told to remain in their flat. A further member of the public was located in the corridor and led to the relative safety of the stairwell, where they were assisted out of the building by Firefighters. (Source: Witness information T/SubO BRAVO)
- 5.18 The 1st and 2nd BA crews then dealt with a number of persons evacuating the flats on the 8th floor. (Source: Witness information from BA crews and T/SubO BRAVO)
- 5.19 At 09:14 hours Station Officer (StnO) ALPHAFOXTROT took over as IC and sent an assistance message "Make Pumps 15". (Source: BOSS)
- 5.20 At 09:22 hours, Station Commander (SC) WHISKEY took over as IC. (Source: BOSS).
- 5.21 E353 Turntable ladder (TL) arrived at the incident and were tasked by Station Commander (SC) WHISKEY with positioning the TL in front of the building and extinguishing the fire on the exterior face of the building. (Source: Witness Information Leading Firefighter (LFF) PAPA, E353)
- 5.22 Crews in BA undertook a number of rescues following standard and FSG calls received by the LFB. SubO OSCAR from F211 had been tasked with overseeing these actions from the bridgehead. (Source: Witness information SubO ALPHA ECHO)
- 5.23 The 3rd BA crew to access the 8th floor QUEBEC and ROMEO made their way through the lift lobby and initially assisted two members of the public wearing smoke hoods to safety. Assisted by a second crew they advanced down the right-hand corridor. After a few metres they came to the cross corridor door, which was in the closed position. They believed this was the door to the fire compartment due to the heat they could feel through the door. They cracked the door open slightly and felt immense heat. They were then able to see flames emitting from a doorway further down on the right-hand side. They described the heat as extremely intense making further access very difficult. They were aware that an TL was being 'got to work' and requested that the fire was partially extinguished by this appliance to assist their access. This information was relayed by T/SubO BRAVO. (Source: Witness Information T/SubO BRAVO)
- 5.24 Fire Investigation unit OK12 arrived at the incident at approximately 09:23 hours. Large amounts of members of the public were gathered around the base of NPW and a well developed fire could be seen on the 8th floor. FIs ALPHA and INDIA made their way to the base of NPW and recorded the fire's development and firefighting operations carried out by E353. FI's ALPHA and INDIA witnessed fire spread from the flat of origin and its timber floored balcony, igniting balconies on the 9th and 10th floors. (Source: Witness Information FI ALPHA)
- 5.25 At 09:27 hours, a second aerial appliance was ordered to attend. (Source: BOSS).

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- 5.26 E353 (TL) used the appliance's monitor to extinguish the fire on the exterior face of the building. PAPA cascaded water from the 11th floor, extinguishing the fire on the 10th, 9th and 8th floor balconies. Following this and checking that no persons were within the flat of origin and then extinguished the majority of the fire within this flat (approximately 09:30 hours). (Source: Witness information LFF PAPA)
- 5.27 Following the firefighting carried out by E353, the 3rd BA crew were able to access the flat of origin. When they got to the door of the flat of origin it was open. The majority of the fire had been put out by E353, however there was still a substantial fire within the kitchen area, which was quickly extinguished. (Source: FF's QUEBEC and ROMEO)
- 5.28 LFB LOC undertook a number of standard and FSG calls during this incident. A CU took over from the designated FSG pump and all calls were actioned and persons brought to safety by fire crews. It is believed that the number of persons brought to safety following FSG calls is 26. No persons rescued by the LFB sustained any critical injuries. (Source: Witness information from FI ALPHA)
- 5.29 At approximately 09:25 hours Senior Fire Safety Officer (SFSO) SIERRA made their way to the Bridgehead. SIERRA was informed that conditions were smoky in the stairwell and that there was severe smoke logging in the 8th floor communal corridors and lobbies. SIERRA returned to the ground floor and operated the break glass call point that actuates the AOV within the stairwell. Assisted by a member of staff from the Ballymore Group, SIERRA made their way to the Automatic Fire Detection (AFD) Control Panel which is located between blocks A and B in the old FCC. A member of staff told SIERRA that works were being carried out on the system and it appeared that a temporary Control Panel had been connected to the system. The system was difficult to understand, and no further action was carried out. SIERRA returned to the bridgehead and in conjunction with T/SubO BRAVO, a BA crew was briefed to go to the AOV doors on the 8th floor and force these open. As soon as this was actioned, conditions on the 8th floor quickly improved. (Source: Witness information SFSO SIERRA)
- 5.30 At 09:32 hours Deputy Assistant Commissioner (DAC) TANGO took over as IC and sent an assistance message 'Make Pumps 20, FRU's 4'.
- 5.31 At 09:33 hours, DAC TANGO sent the following message 'mass evacuation now in progress'.
- 5.32 At 09:43 hours Assistant Commissioner (AC) CHARLIE took over as IC and a message was sent stating: 'this is now been declared a major incident, mass evacuation in progress, all guidance given to FSG is now to evacuate'. (Source: BOSS)
- 5.33 At 10:12 hours, a 'Make FRUs 7' message was sent. (Source: BOSS)
- 5.34 In total 34 persons were rescued from block D by LFB crews, who led them to safety via the stairwell; 22 smoke hoods were used. London Ambulance Service (LAS) Paramedics treated 37 people, of which 35 were immediately discharged. Two persons were taken to Hospital. (Source: Witness Information LAS Paramedics)
- 5.35 At some point between 11:00 hours and 12:00 hours, SFSO SIERRA returned to the old FCC. (Source: Witness information SFSO SIERRA)
- 5.36 At 11:32 hours AC CHARLIE sent a message stating 'fire surrounded'. This indicated that the fire was fully under control and the incident would not be escalated further in terms of resources. (Source: BOSS)
- 5.37 At 12:17 hours, FI ALPHA requested the attendance of a further Fire Investigation Unit. OK15 was ordered to attend and arrived at the incident at 12:46 hours. (Source: BOSS)
- 5.38 At approximately 12:30 hours, Following agreement from the IC, Assistant Commissioner CHARLIE, DAC UNIFORM initiated a 'fire safety sector' which included both the LFB Fire Safety and Fire

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Investigation teams to ensure a collaborative approach into the various fire safety related strands of this incident and to undertake liaison with Ballymore and residents with regards to fire safety matters.

- 5.39 SFSO SIERRA discussed the issues they had observed with regards to the **AFD Control Panel** and it was agreed that the AFD Control Panel would be seized by under the Regulatory Reform (Fire Safety) Order 2005 as part of the investigative process. (Source: Witness information FI ALPHA) 
- 5.40 At approximately 14:00 hours, FI ALPHA held discussions with Inspector VICTOR from the MPS. It was agreed that the physical scene examination and excavation of the fire scene to determine the origin and cause of the fire, would commence on the morning of the 8th May 2021 at 09:00 hours. The team would be made up of FI's from the LFB and a Crime Scene Examiner (CSE) from the MPS in line with normal protocols for such fires. The MPS would secure the scene until this point. (Source: Witness Information FI ALPHA)
- 5.41 At 15:32 hours, a 'stop' message was sent stating 'A residential high rise of nineteen floors, one hundred and eighty metres by twenty metres, partially clad in Aluminium Composite Material cladding. High rise structure consists of five connected blocks, thirty metres by twenty metres. One hundred percent of a four roomed flat on the eighth floor damaged by fire. Ten percent of a four roomed flat on the ninth floor damaged by fire. Ten percent of four roomed flat on the tenth floor damaged by fire. Fire Survival Guidance calls resolved. Thirty four persons rescued by breathing apparatus crews and sixty seven persons self evacuated. Two adult xxxxxxx, treated by London Fire Brigade crews xxxxx. Both removed by London Ambulance Service. All other persons assessed for smoke inhalation and shock by London Ambulance Service and all discharged. One firefighter treated on scene by London Ambulance Service xxxxxx and discharged. One aerial as observation tower, one aerial as a monitor, six jets, breathing apparatus, thermal imaging camera, twenty two smoke hoods used, Drone Team, National Police Air Service. Emergency evacuation of building, high rise procedure and major incident procedures all implemented. Breathing apparatus. All persons accounted for'.
- 5.42 During the afternoon of the 7th May 2021, FI ALPHA had a number of discussions with Ballymore employee, ZULU. ZULU stated that the Ballymore Group were hoping to conclude all checks within blocks A, B, C, E by the evening ready to re-house the occupants from these blocks. Residents from block D were to be relocated to a local hotel and later that day the residents of 171 flats were given temporary accommodation at the hotel. (Source: Witness information FI ALPHA)
- 5.43 Fire Safety Inspecting Officers and Fire Engineers remained at the scene until approximately 21:30 hours to systematically audit and check all fire safety facilities in blocks A, B, C and E, to ensure that from a fire safety perspective, they were safe to reoccupy. Representatives from Ballymore worked with LB fire safety officers to remediate issues as they were found (e.g. sticking AOV doors).  Crews from local fire stations remained on the scene to assist residents with recovering urgent personal items such as medication, and then maintained a presence throughout the night.
- 5.44 At 09:00 hours on the 8th May 2021, FI ALPHA returned to NPW and a multi-agency investigation team commenced work, which consisted of LFB FI officers, fire safety and fire engineering officers, the LFB's consultant scientific adviser, the Metropolitan Police Crime Scene Examiner. The main scene examination continued through to the 10th May 2021. Various samples relating to the electrical system and exemplar items were seized for further laboratory analysis as part of the fire investigation process. The scene was also attended by Building Research Establishment and a forensic scientist appointed by insurers.


6 Precip of scene examination: A selection of images are included in Appendix 1. Plans have also been included in Appendix 2.

- 6.1 Visual examination of the relative common parts of block D and flats directly above the flat of origin.

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- 6.1.1 A visual examination was conducted from the ground floor entrance to the roof level of the block. Communal areas on the 6th and 9th floors were examined in detail, as exemplars to the 8th floor, to identify the fire safety measures installed. There was no evidence of smoke damage on the 6th floor, although there was soot evident in the area from firefighters who had marshalled in this area. The doors to the smoke shafts from each 6th floor corridor were closed. On the ninth floor there was no evidence of smoke damage in the communal areas, but the doors to both ventilation shafts were found to be open.
- 6.1.2 The 8th floor was accessed via the fire door between the stairs and the lift lobby. This door was heavily smoke stained across its top third on the side of the lift lobby, but the side facing the stairs remained relatively clean. The edge of the door was also relatively clean, indicating that it had held back smoke on the eighth floor and had only been compromised as people escaped the floor and once firefighters gained access.
- 6.1.3 The lift lobby had a heavy coating of soot across its surfaces, with a distinct smoke horizon evident around mid-height. The illuminated fire exit sign over the door to the escape stairs was covered in soot, but did not appear to have been subject to excessive heat. The smoke detector in the lobby between the lifts was also covered in soot, but did not appear heat damaged. The lift lobby on each floor had been fitted with two emergency light fittings. On the eighth floor, both these emergency fittings had been extensively damaged by heat.
- 6.1.4 Moving along the corridor towards the eastern end of the building, there was a fire door between the lift lobby and the corridor serving the flats. This fire door was held open against its electromagnetic holder and there were cables from the temporary lighting passing through the doorway. The walls in this corridor were covered in a heavy layer of soot to floor level and the fire door was also covered in a heavy layer of soot across its top surface, including round the edge of the door. The illuminated exit sign over the door, on the side of the flats, had been heat damaged, causing the hanging sign to soften and fall to the floor.
- 6.1.5 When viewed from this fire door, the corridor in the eastern side of the block provided access to flats on the left hand wall, a flat at the end of the corridor and flats along the right hand wall. On the left hand wall, between flats on the left hand wall was an open doorway into the smoke shaft from that corridor; consistent with fire crews accounts that this door had been forced open. Toward the end of the corridor were two fire doors held open on electromagnetic holders.
- 6.1.6 Along the corridor were three emergency light fittings and three smoke detectors. The emergency light and smoke detector nearest the lift lobby had been damaged by heat and smoke. The devices further along the corridor were damaged by smoke only, with the damage progressively less as the end of the corridor was approached.
- 6.1.7 The fire doors at the end of the corridor were smoke damaged on all surfaces. The doors closing mechanism was tested and both doors closed fully when tested.
- 6.1.8 The corridor serving flats along the western side of the building was accessed via a fire door across the corridor. On other floors this door was held open on an electromagnetic door holder, but post-fire, this door was wedged open. Its magnetic door holder had been damaged and fallen to the floor. The top of the door had been damaged by heat and the whole door and wall surfaces adjacent to it were covered in a heavy layer of soot. The intumescent strip in the frame of this doorway was found to be expanded and charred, particularly around the top half of the door. The illuminated exit sign that had been mounted over this door in the corridor had been fire damaged and the plastic hanging sign was missing.

- 6.1.9 This corridor provided access to flats including the flat of origin. The 8th floor corridor was extensively damaged, with fire and heat damage to the ceiling and top surfaces of the walls, particularly outside the flat of origin.
- 6.1.10 This corridor was fitted with three smoke detectors and two emergency light fittings along its length. All these devices had been consumed by fire. The door to the smoke shaft along this corridor was open, consistent with information that this door had been forced by fire crews. 
- 6.1.11 The flat located directly over the fire flat was examined. The fire had attacked the windows to the living room area and the doors to the balcony from the living room and second bedroom. Glass to both sets of doors to the balcony had broken, whilst the glazing to the living room windows was fractured but remained largely in place. The flat sustained only minor smoke damage internally, adjacent to the balcony doors.
- 6.1.12 The flat located two floors above the fire flat was examined. The exterior of the windows to the living room had been damaged by fire, but the glazing had not failed. The door between the living room and balcony had been fire damaged externally and the outer pane of its glazing had broken, but the inner pane remained intact, although fractured. The exterior of the door from the second bedroom to the balcony had sustained similar damage. There was no damage by fire, heat or smoke into the flat.
- 6.1.13 The flat located three floors above the fire flat was examined. The flat had sustained light smoke damage to the exterior of its windows and both doors to the balcony.

6.2 Examination of the flat of the fire's origin

- 6.2.1 The front door to the flat had been removed or fallen from its original position and had been placed in the communal corridor. The top half of this door had been consumed by fire. The inside face of the remainder of the door had an even charring. The outside face of the door was heat and smoke damaged to its top section. The self closing device for the door was found on the floor on the left hand side of the door frame. The upper sections of the door frame and timber boxed sections had been consumed by fire.
- 6.2.2 The front door led to a hallway, where the suspended ceiling plasterboard was missing, however the metal strut work was still in place. All cables within this void had been fire damaged. Towards the end of the hallway the concrete ceiling had spalled. On the right hand side of the hallway was the stud wall separating the kitchen. Apart from one small section at low level the majority of the plasterboard was missing. On the left hand side, initially there was a built in cupboard. The timber doors to this cupboard were charred on their exterior face and partially consumed on the top edge. The lower contents of this cupboard were mainly undamaged and consisted of a hot water cylinder and a washing machine. All cables that had been in the suspended ceiling above the cupboard were fire damaged.
- 6.2.3 The living room to the flat had been 100% damaged by fire. The plasterboard ceiling was missing and some of the ceiling strut work had collapsed. Most items of furniture had been consumed, although the remains of a timber constructed sofa was still visible on the right hand side wall. All glass had failed in the windows and the doorway that led to the balcony and the frames of the windows and door, were severely charred.
- 6.2.4 The balcony had been extensively fire damaged.
- 6.2.5 Both the kitchen and the main bathroom of the flat had been extensively fire damaged.

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- 6.2.6 Both bedrooms and the en-suite bathroom of the main bedroom had been protected from any severe damage, as the doors to these rooms had been closed during the fire's development.
- 6.2.7 The floor area around the base of the small cupboard was excavated. This area had approximately 10cms of debris, which mainly consisted of the remains of plasterboard, timber and spalled concrete. The timber bottom rails of both the cupboard door and the door leading from the hallway into the living room were found within the debris. The remains of three lithium-ion batteries were also found in this area. These batteries were passed to Scientific Advisor (SA) WHISKEY for further examination.
- 6.2.8 The contents of the base of the cupboard were excavated. Visible within the top of the debris was the remains of the consumer units bus bar and parts of the breakers that been attached to the bar. Also, within the cupboard there was the remains of further lithium ion batteries and electrical components. These items were also passed to SA WHISKEY for further examination.
- 6.2.9 SA WHISKEY reported that the other electrical remains, aside from the consumer unit parts, were from the remains of a cordless vacuum cleaner. Although one of the lithium ion batteries had failed expelling its contents, SA WHISKEY stated that the evidence did not show that the fire started within this appliance.
- 6.2.10 Investigators removed the remains of the consumer unit. Conductors were cut just below ceiling level and the consumer unit and attached electrical sockets were passed to SA WHISKEY for further examination.
- 6.3 Examination of the consumer unit from the flat of origin
- 6.3.1 The remains of the consumer unit were examined by SA WHISKEY on the 8th May 2021 and by SA XRAY on the 10th May 2021. The plastic casing and plastic parts within the consumer unit, had been consumed by fire. Both Scientific Advisors and LFB fire investigators agreed that all evidence from the remains of the consumer unit was conclusive with the fire starting within the unit. Both also agreed that it appeared that the evidence was consistent with the fire starting on the left hand side of the unit. Evidence of arcing was found on four live conductors and two neutral conductors within the unit. There was also internal melting to the area below where the timer switch for the hot water system would have been positioned. All connections were tight and in good order. Investigators were tasked with sampling the consumer unit. SA XRAY, who was in attendance removed the sample to Bureau Veritas' laboratory for further examination.
- 6.4 Examination of fixed mains wiring between hot water cylinders and consumer units
- 6.4.1 The hot water cylinder within the flat of origin had a 210 litre capacity and was fitted with two immersion heaters which are rated at 3kW @ 240v. Conductors supplying these heaters were routed through individual isolation switches back to the consumer unit via the false ceiling. There was no visible damage to either immersion heater or the switches. Wiring was of the correct specification: 2.5mm and only sustained fire damage within the false ceiling. One of the immersion heaters is used as a boost unit. This immersion heater runs straight off of an MCB and is used to boost the hot water supply. The other immersion heater will run off of the timer located within the consumer unit.
- 6.4.2 A visual examination was carried out of the kitchen sockets and the associated ring main. All evidence showed that this circuit, the attached sockets and associated spurs were fire attacked only.
- 6.5 Examination of the electrical supply and socket for the dishwasher in the flat of origin


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6.5.1 The reason for this examination pertained to the fact that following the flooding that affected the flat in January 2021 this socket had stopped working. The supply to this socket was from the kitchen socket ring main. Insulation on the wiring was still intact and although the plastic terminal block was heat damaged it was still intact. The conductors led from this terminal block behind the dishwasher to a surface mounted double socket. The front face of the double socket and its mounting box showed signs of external fire/heat damage. The face plate was removed and there was no evidence of any internal electrical activity, with all conductors still insulated and tight connections. Nothing was plugged into this socket.

6.6 Examination of the flat front door's and frames

6.6.1 The front doors to two flats on the 8th floor were examined and found to have evidence of smoke penetration from the corridor into the flat around the frame of the doorway. 

6.6.2 An exemplar door was examined. The door appeared to have a thirty minute fire rating and had been modified by the addition of hardwood panels, nailed in place, across the exterior surface of the door (it is not thought that this was a resident modification). The Building Research Establishment (BRE) plan to test this modification to establish whether it affects the doors fire rating.

6.6.3 The frame was mounted within an opening in the fabric of the building and was fixed in place with screws. Plastic packers had been used to level the frame, but there was no other material between the frame and the building fabric. This left a gap around the door frame. The size of this gap varied between a number of doors examined. This would have allowed smoke penetration around all sides of the frame. The frame of the door was recessed back from the hallway by approximately 150mm to 200mm. This recess had been clad in MDF to obtain a cosmetic finish. The MDF created a box around the recess and was held in place by nails. To the left and right sides, two further lengths of MDF were used to pack out the void to enable fixing of the final faces. The top panel had no packing leaving an empty void measuring between 35mm to 45mm across the three flats examined. 

6.7 Examination of consumer units on floors 8/9

6.7.1 Consumer units were examined in 34 accessible flats on the 6th, 7th, 8th and 9th floors, excluding the fire flat. Of those flats examined, twenty-four had the same type of consumer unit. Only one of these twenty-four consumer units had a date recorded on its installation sticker.

6.7.2 Given that the consumer units were so commonly found and all had the same configuration, these units appeared to have been the devices installed when the building was constructed.

6.7.3 Despite the lack of available record keeping in relation to testing of these units, there did appear to have been some updating on a number of consumer units observed. The consumer units were fitted with miniature circuit breakers (MCB). It was noted that in some flats, the MCBs had been updated. It was also noted that a number of timer switches had been changed on the consumer units inspected.

6.7.4 Of the flats fitted with alternative consumer units, a variety of different types were found. Nine were in metal clad enclosures, whilst one was an updated plastic enclosure. Of these updated consumer units, the earliest recorded date on the installation sticker was April 2019 whilst the most recent was installed in February 2021.

6.7.5 The most common version of this switch was identified as a branded Daily Timer Switch. This switch had a rated capacity of 16 Amps. The live feed from one of the 16 Amp Water Heater circuits was connected via the switch terminals of the device.

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- 6.7.6 Consumer units across the 8th and 9th floors were examined again to identify how many timer switches had been replaced since initial installation. On the 9th floor, original switches were found in six flats out of ten. Of these, flats five still had their original consumer units. One of the original timer switches was fitted to an updated, metal consumer unit in one flat. Four timer switches had been changed from the original type and three of these were fitted to the original consumer units, whilst the fourth was in a newer metal consumer unit.
- 6.7.7 On the 8th floor the original switches were found in five of the flats. Of these, four were in the original consumer units, whilst one had been installed into an updated metal consumer unit. Two more modern switches were fitted to updated consumer units in two flats. A further two updated timer switches were installed on the 8th floor, one into an original consumer unit and the other into a new metal consumer unit.
- 6.7.8 Of nineteen flats examined across the two floors, eleven were found to still have what appeared to be the original timer switch whilst eight of these switches had been changed.
- 6.7.9 The original timer switches found on the 8th and 9th floors were then examined. In one flat where an original timer switch was found installed in a modern metal consumer unit, the timer switch was removed and a small burn was found on its side, adjacent to terminal 4. The red PVC insulation on the cable into terminal 4 was also blackened. This device was sampled for further examination by the Scientific Advisors, Bureau Veritas.
- 6.7.10 An undamaged exemplar was identified in a flat and this device was also sampled for further examination by the Brigade's Scientific Advisors.
- 6.7.11 Three more of the original timer switches were found in flats which exhibited the same damage seen on the device referred to previously. The main switches of their respective consumer units were isolated and a warning label was attached to the equipment to prevent it being turned back on.
- 6.7.12 In a flat on the 9th floor a 5th timer switch was identified with heat damage adjacent to terminal 4. The damage was less than observed on the previous devices, and amounted only to some yellowing of the plastic adjacent to the terminal. There was no evidence of heat damage to the cable. Again, this consumer unit was isolated and a warning label attached.

6.8 Examination of external cladding

- 6.8.1 Exterior ACM panels were examined using an LFB aerial ladder platform. ACM panels were clipped in to a fixing at the bottom of the panel. The top of panels were fixed using pot rivets. Rivet heads were cut off and two panels were removed and brought to ground level for examination. A further section of fire damaged ACM cladding was removed from the right hand side of the balcony.
- 6.8.2 Digital photography and notes were taken to record the construction of the external wall. The cladding was clipped onto an aluminium bracket at the bottom and pot riveted to an aluminium bracket at the top of the panel. The fixing brackets for the cladding were screwed into an aluminium upright. The upright measured 40 mm in width and its depth was 70 mm. The upright was riveted to a 90 degree metal fixing plate. This plate was screwed onto a cement board. The cement board had a rubber membrane glued to the cement board (possibly Polyethylene). The window reveal was aluminium and ran the length of the window. It was 250mm in depth and had a rubber strip that sealed at the cement board, providing a barrier. There was 75 mm Rockwall insulation fixed to the cement board using screws and insulation disks. The void from the front of the insulation to the outer face of the cladding was measured at 85 mm. The cement board was fixed to the internal metal stud wall. This was a 100 mm metal stud. A layer of plasterboard was screwed to these studs and then a second layer of plasterboard was "dot and dabbed" to the first. There was no insulation within this cavity.

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- 6.8.3 Representatives from a private forensics company working on behalf of the Ballymore Group retained the aforementioned panels, with agreement from LFB.

7 Examination of possible causes:

7.1 Deliberate Act

There is no evidence to support any third party involvement or deliberate/criminal act in the cause of this fire, therefore a deliberate act as a potential cause has been discounted.

7.2 Naked flame

No naked flame sources were located within the cupboard, therefore a naked flame as a potential cause has been discounted.

7.3 Smoking Materials


No evidence whatsoever smoking or of smoking materials were noted, therefore smoking materials as a potential cause has been discounted.

7.4 Electrical

- 7.4.1 All possible hypothesis for the cause of this fire are related to a fire cause of electrical origin. The fire was first seen in the small cupboard located in the hallway of the flat and more specifically flames were seen in the early stages emitting from the consumer unit. Further to this, the examinations carried out by Forensic Scientists WHISKEY and XRAY, have highlighted that the evidence within the consumer unit indicates that the fire started in this piece of equipment.
- 7.4.2 Within the cupboard there was also a cordless vacuum cleaner and electrical sockets. Remains of the vacuum cleaner were found including the remains of lithium-ion batteries, one of which had failed. The sockets within the cupboard were also extensively fire damaged. However, as stated above, the evidence from the flat's consumer unit clearly discount these items as the cause of the fire.
- 7.4.3 The consumer unit suffered 100% fire damage and had evidence of arcing damage to six of the circuits. There was also internal melting to the lower braid arm below the area where the timer switch for the hot water system would have been positioned.
- 7.4.4 No works have been carried out on the consumer unit by the current owner. Evidence would appear consistent with the consumer unit being of the type that was installed throughout the development when it was constructed. The consumer unit incorporated a 'Daily Timer Switch' which operates one of the immersion heaters for the flat's hot water cylinder. Evidence would appear to highlight that the consumer units within the complex, would have been originally installed with timer switches. There was no remains of the timer switch found within the debris in the small cupboard of the flat of origin, although this may be due to the significant fire damage to the consumer unit. The devices installed here can be switching @ 3Kw under live load (repeatedly) when the water requires heating. Therefore, the 'arc-current' drawn between the contacts as they separate or close, depending on the time and duration of the heating of the water, will be considerable.
- 7.4.5 Although the cable sizes measured in the consumer unit are 'within the limits' for the current carrying capacity of the circuits and load, these timers are not protective devices or isolators, have no ceramic-lined arc-chamber or arc-dividers. Therefore, any arcing-energy would appear to 'quench' directly against the plastic side-wall.

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- 7.4.6 A survey of original consumer units installed in other flats within the block provided evidence that some of these timer switches were generating an internal heating fault, which was pyrolysing (heating) the plastic case of the switch 
- 7.4.7 The kitchen socket ring main apparently failed before the fire and was reported. The kitchen socket supplying the dishwasher was checked by investigators on the 10th May 2021; there was no signs of any unusual electrical activity on this part of the circuit.

8 Conclusion:

Origin and cause of the fire

- 8.1 Based on the information available, including witness information and the detailed scene examination conducted by LFB, the LFB's consultant scientific advisor and the Police Crime Scene Examiner, the point of origin for the fire has been determined as being the consumer unit (commonly known as a fuse board). Following the multi-agency scene examination, the fire will be recorded as being an accident, with no evidence whatsoever to indicate a deliberate act being found. The most probable cause of the fire has been determined as being an event within the consumer unit, which then resulted in its plastic enclosure/casing catching on fire and then in turn spreading to other combustible materials.
- 8.2 Evidence from other flats within block D have highlighted an area for further investigation with the use of timing switches within the original configuration of the consumer unit. The timing switches were used to supply an immersion heater within the hot water cylinder and work is underway to confirm the timer switch's suitability to be connected to such a load. Exemplar time switches from other flats were examined, with some showing signs of pyrolysis (heat damage). This point will be subject to further investigation.
- 8.3 However, due to the extensive damage to the consumer unit (including a lack of identifiable remains of a timer switch) in the flat of origin, and with the ongoing investigation work including the further examination of exemplars, the exact cause beyond the fire starting within the consumer unit, cannot be confirmed at this time.

Fire development

- 8.4 Once ignited, the plastic case of the consumer unit would lead to burning droplets igniting other combustible items within the cupboard. A number of burning items fell out from the cupboard containing the consumer unit when it was opened and the fire was discovered, preventing the cupboard door from closing. Due to the balcony door being open and the likelihood of items being inadvertently knocked in front of the flat door preventing it from closing, the additional airflow would have support the fire's development.
- 8.5 The smoke detectors within block D's common parts should have operated the Automatic Opening Vent (AOV) and cross corridor doors on the 8th floor. However, it is known that none of these systems actuated. This allowed smoke and the products of combustion to flow through the common parts of the 8th floor (and subsequently beyond) making it difficult/impossible for persons on this floor to escape safely, while increasing the challenges and risks for firefighting and search and rescue operations within the building. 
- 8.6 Fire was also able to travel externally from the 8th to the 11th floors after spreading through the open balcony door of the flat of origin. The timber decking of the balcony supported the external flame spread up the outer face of the building. Although some ACM panels were involved, in this particular instance they did not significantly contribute to the external spread of the fire. 

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9 Community Safety considerations:

- 9.1 The flat of origin had a mains/hard wired smoke detector within the hallway and a mains/hard wired heat detector within the kitchen. The detector in the hallway appeared to operate as expected. However as the fire started in a cupboard containing the consumer unit, the fire had the opportunity to develop undetected.
- 9.2 On the day of the fire, local fire crews worked with representatives of Ballymore to assist residents to help recover important personal effects and items such as medication, pending their return to their homes.
- 9.3 During the two days immediately following the fire (8th & 9th May 2021), local firefighters and officers joined by the LFB's Community Engagement Manager distributed over 2000 leaflets to provide advice on fire safety matters and carried out some meaningful engagement with not just the affected block at NPW, but also all of the surrounding high rise residential blocks. Additionally, two online events were held to listen to residents of block D New Providence Wharf concerns and additional advice and fire safety messages was provided by the LFB Borough Commander. Residents were also signposted to LFB's online home fire safety checker and offered home fire safety visits. Further engagement activities are planned with the Tenants Residents Association for New Providence Wharf..
- 9.4 Matters relating to concerns about the consumer unit and timer switch and advice on potential mitigating measures were passed to Ballymore as the 'Responsible Person' so that this could be acted upon and communicated accordingly. Checks were made of both the consumer unit and timer switch to ensure that neither were subject to a product safety recall notice. The use of plastic enclosures/cases for consumer units of such an age is very common. LFB in partnership with stakeholders have previously highlighted their concern about the flammability of such enclosures and this led to a new regulation (BS7671) requiring consumer units and similar switchgear assemblies in domestic premises to have a non-combustible (e.g. metal) enclosure which was implemented on 1st January 2016 (but was not retrospective).

10 Fire safety regulation considerations:

- 10.1 Fire safety regulation considerations at time of fire:

During the incident, fire safety systems that should have supported both the safety of residents and firefighting operations did not perform as expected. This included the Automatic Opening Vents, cross corridor door holders, the Automatic Fire Detection (AFD) system (including panel) and the Firefighters lift.

With the agreement of the Incident Commander, a coordinated on-site fire safety response was instigated which included LFB Fire Investigators, Senior Fire Safety Officers, Inspecting Officers and Fire Engineers. One AFD panel was seized under the Regulatory Reform (Fire Safety) Order (RRO) as evidence. Once the fire was brought under control, teams of LFB Fire Safety Inspecting Officers and Fire Engineers commenced an audit and inspection of the unaffected blocks - A, B, C and E - in order to provide reassurance to residents that the fire safety features were fully functional. A number of issues were identified by LFB officers and subsequently rectified by Ballymore contractors prior to the reoccupation of the blocks by residents on the evening of the 7th May 2021. Evidence was gathered during the day in order to feed in to the post-fire investigation conducted under the RRO.

- 10.2 Fire safety regulation considerations after the fire.


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The detailed investigation under the Regulatory Reform (Fire Safety) Order (RRO) is extensive and is expected to be protracted, taking a number of months to complete.

LFB Inspecting Officers and Fire Engineers attended New Providence Wharf on Monday 17th May 2021 following the remediation of block D and carried out a thorough audit and inspection in conjunction with Ballymore representatives. A Notice of Deficiencies (NOD) will be issued due to some minor general issues that are not considered to be significant. The 8th floor remained off limits due to extensive renovations but the rest of the block is fit for reoccupation from a fire safety perspective and this was communicated to Ballymore on the day.

10.3 Indicative timeline for the ongoing investigation

- 1) May 2021: Review the extensive evidence already gathered, including witness information from residents. The audit for Block D to be vetted and a NOD to be issued. An article 27 information request letter to be sent out.
- 2) June - July 2021: Analyse the data from the Automatic Fire Detection panel  on the day of the fire, subject to the successful download of data from the panel. Identify other individuals of interest, obtain contact details and start making contact where applicable. Identify, capture and review information from LFB operational staff who attended on the day. Obtain witness statements from all appropriate interested parties including residents.
- 3) August 2021: Hold a case conference to determine if any offences appear to have been committed under the RRO. If so, formal investigation processes into the potential offences will proceed.

The data held on the Information Management System has been checked and is consistent with this report at the time of writing.

Report prepared by: ALPHA Fire Investigation

Signature:

Report edit and review by: DAC C PUGSLEY Fire Safety

Signature:

Date completed 25th May 2021

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Appendix 1.
Photographs of Scene:



Image showing the fire in progress on the North face of NPW

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Images showing the damage to the exterior North face of NPW



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Images showing the external and internal view of the door at the head of the 8th floor stairwell



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Images showing the 8th floor corridor looking towards the flat of origin



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*Images showing the front entrance (looking from outside) and hallway (looking from inside) of flat.
Note the remains of the door to the left of the doorway*



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Images showing the remains of the consumer unit in position



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Image showing the remains of the top half of the consumer unit

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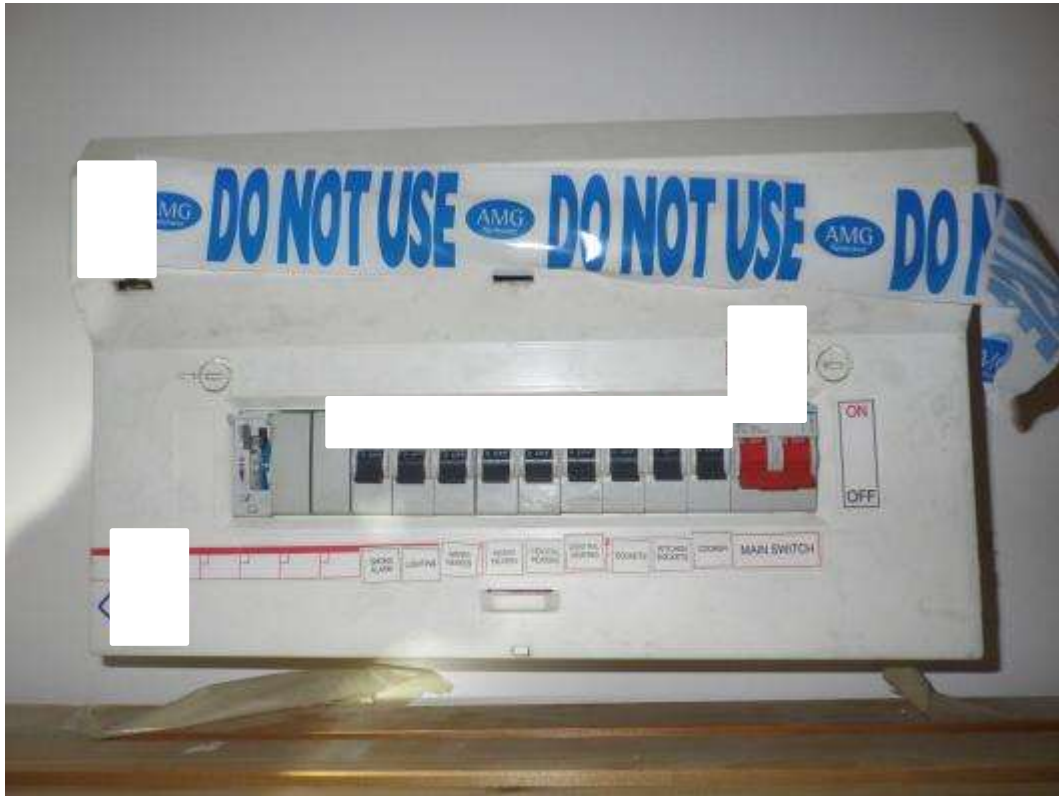


Image showing an exemplar consumer unit found in flat on 9th floor

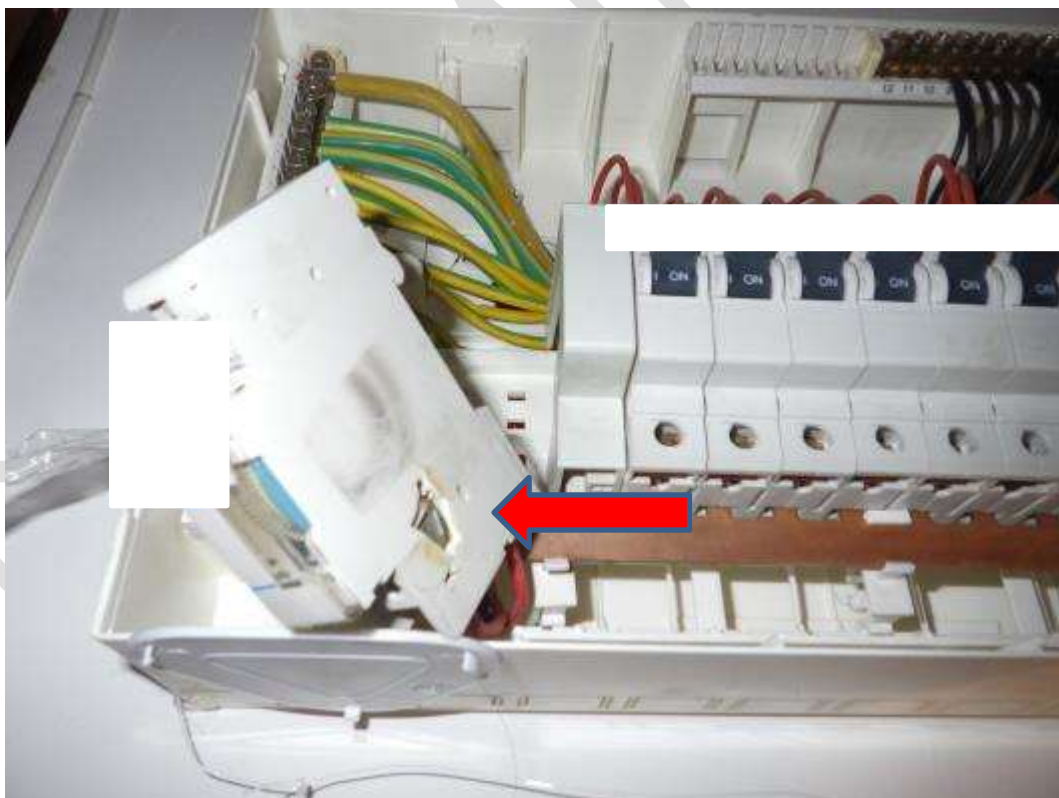


Image showing an internal heating fault on the Timer Switch in exemplar flat

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Image showing the external fire damage on the 9th and 10th floors

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Image showing the damage to the ACM cladding between the 8th and 9th floor windows



Image showing the internal construction of the ACM cladding between the 9th and 10th floors

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Image showing a close up of the construction of the cladding

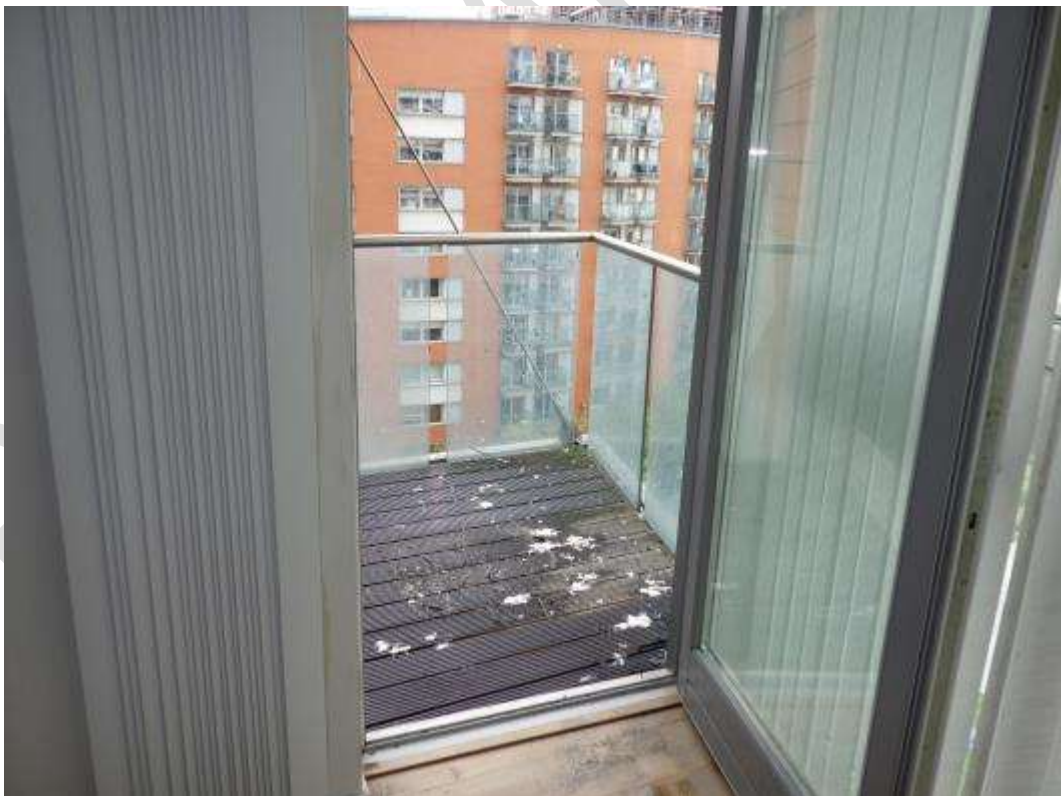


Image showing the construction of an undamaged balcony

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Image showing the charring to the underside of the 9th floor balcony timber decking



Image showing the cross corridor door on the 9th floor

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Image showing the cross corridor door on the 8th floor

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Image showing the magnetic holder for the cross corridor door on the 9th floor



Image showing the magnetic holder for the cross corridor door on the 8th floor

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Image showing the AOV door on the 9th floor



Image showing the AOV door on the 8th floor

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Image showing the AOV shaft



Image showing the timber boxing around the front door frame of flat next to flat of origin

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Image showing the void between the top of the door frame and the fabric of the building

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Image showing the roof of NPW with AOV vents

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