

Bristol City Council

Summary report of investigations, findings, and actions – Barton House



February 2024

Introduction

On 14 November 2023, a decision was taken to ask residents of Barton House to vacate their properties and move into alternative accommodation. This decision was taken following receipt of findings of a peer review of an earlier surveyor's report regarding the structural robustness of the tower block. The findings, presented by the council's contractors, Arup, warned that due to the potential absence of some key safety measures in the block, the building would be more susceptible to progressive collapse of the structure in the event of an explosion, fire or high impact event including potentially a fire in a single flat. After consulting with fire officers at Avon Fire and Rescue Service, senior leaders took the decision to decant the building to protect the safety of its residents.

On the advice of structural engineers, further intrusive surveys of the building were ordered immediately with investigations beginning on Monday 20 November 2023. Ridge and Partners LLP were commissioned to undertake fresh investigations in six flats at key locations with a further two flats revisited which had been earlier inspected as part of the earlier report by Ridge which was peer reviewed by Arup.

During this time, the majority of residents were supported into hotel accommodation whilst some stayed with friends and family and a small number of households remained at Barton House against advice.

The further investigations undertaken by Ridge and Partners LLP produced findings which have informed council decision making following the initial evacuation of residents. These findings have been reviewed by Arup and shared with Avon Fire and Rescue Service for assurance. Interim and final results of these surveys are contained in letters and reports to the council, all of which have been published in full.

Recommendations made within these reports have been followed and works have been undertaken to install a central fire alarm system and undertake additional fireproof padding of existing steel supports in certain areas of the building.

The advice of both engineering firms is that subject to these remedial works being carried out at the block "it is suggested that the building is at relatively low risk of disproportionate collapse and therefore Barton House would behave adequately during an accidental event."

These remedial works are complete. Advice has been sought from Avon Fire and Rescue Service to ensure accurate conclusions are drawn on the safety of the building. The following response has been received. See Appendix 1 for the full statement from Avon Fire and Rescue Service:

“With these measures now in place, Avon Fire & Rescue Service support the decision to allow residents to reoccupy Barton House, as the risks previously identified have been addressed, in line with the recommendations of the Fire Engineers reports.”

The following sections summarise the investigations, findings and actions taken in relation to Barton House.

Investigations

Ridge and Partners LLP were commissioned by Bristol City Council in 2020 to undertake structural surveys of Barton House following earlier advice given by the government regarding tower blocks of a particular design. To carry out these surveys, the structural engineers had to wait for households to move out of flats in key locations within the block. Because of the type of intrusive work needed to undertake these surveys, engineers could only carry it out in an empty flat. During the following two years, three flats were surveyed.

The report produced, and shared with officers in 2022 (phase 1 report), indicated a risk of building collapse in the event of an explosion, the main threat being from a gas explosion – mains gas was not present in the flats, so the risk of this eventuality was assessed as minimal. The report did not recommend evacuation of the building.

A waking watch had already been introduced to Barton House in May 2022, prior to the receipt of the phase 1 report. A waking watch is a system where suitable trained officers patrol a building on a regular basis to ensure any incidents are identified and reported quickly.

This action was taken to speed up the detection of a potential hazardous event and was deemed a sufficient mitigation. This waking watch has remained in place to the time of writing and was increased in size following receipt of the Arup peer-review report (peer review 1) in November 2023.

Following receipt of the phase 1 report, work was undertaken to assess the long-term options for the building. This work led officers to commission Arup to undertake a further review of the phase 1 report to include consideration of any implications for fire safety. The Arup peer-review 1 report, received by officers in November 2023, warned that there was a risk of progressive collapse of the building in the event of an explosion, fire or high impact event including potentially a fire in a single flat. This led to the decision to ask residents to leave Barton House and the immediate commissioning of further detailed surveys to ascertain the full extent of any issues at the block.

When undertaking the second phase of investigations following the evacuation of the block, the council’s contractors were tasked with digging deeper into the building at more locations than were included in the phase 1 report in 2022. During the course of the initial survey activity, only three flats were investigated and within limited time periods due to the availability of sufficient empty units becoming available.

Like the phase 1 report investigations undertaken between 2020 and 2022, the second phase of investigations undertook a review of drawings of the building, historical information related to Barton House and physical inspection of the fabric of the structure. The three flats originally inspected as part of the phase 1 report were identified for investigation along with six additional flats in key locations. Permissions were received to carry out investigations in all but one flat, meaning only two of the originally inspected flats were accessed.

In all flats where investigations were undertaken, structural engineers scanned areas of interest to identify reinforcement locations and cover levels to the main reinforcement bars. These areas were then exposed by breaking out concrete to confirm the data recorded from their scans.

Second phase investigations were carried out throughout November and December 2023 and into January 2024. Interim results from these investigations were shared with the council in December 2023 with outline recommendations for further action shared in January 2024. On both occasions this information was shared with residents during meetings held at City Hall and in writing.

Findings

The concern raised by the phase 1 report and subsequent peer-review 1 report, received in November 2023, was that the limited investigations reported on, indicated that some key elements of the building's structure were unable to be located or could not be identified with sufficient confidence to provide adequate protection for the building. Specifically, the indication that metal bars that support the floors

of the block could not be clearly identified and that in some areas the level of concrete cover over the building's metal structure was too shallow.

The conclusion drawn from the phase 1 report was that the building was at risk of disproportionate collapse in the event of an explosion, with specific reference being made to a gas related explosion. This led structural engineers to recommend, amongst other things, the introduction of measures to prevent gas canisters and other highly flammable objects being brought into the block. A waking watch had already been commissioned in the building from May 2022. .

Upon reviewing the findings of the phase 1 report, Arup too advised, that based on Ridge and Partners LLP limited investigations and their own desktop research, that the building seemed to have been built differently to how it was designed. In addition to the risk identified related to a gas explosion, Arup's review also found a risk of progressive collapse in the event of a significant fire in a single flat. This conclusion was also drawn on the apparent lack of structural ties and shallow concrete cover identified in the phase 1 report.

Arup acknowledged the information on which their conclusions were drawn was limited and recommended that the council undertake further survey work immediately. The peer-review 1 report was received by officers in November 2023, reviewed and presented to senior leaders on 13 November 2023. The decision to ask residents to leave the building and to commission further surveys was taken on 14 November 2023 after discussions with Avon Fire and Rescue Service.

A second phase of detailed investigations at Barton House began on 20 November 2023 after plans had been drawn up on where and how to survey inside the building. Contractors began work immediately following receipt of the requisite permissions of the relevant households.

Initial findings from these surveys were shared with council officers by both Ridge and Partners LLP and Arup in December 2023. These findings indicated that following intrusive investigations, structural engineers had located the structural ties included in the building's designs and found these ties to almost match the design intent exactly. Likewise, the concrete cover in place was found to generally match that laid out in the designs. Where cover was thinner, either a further line of blockwork had been added or a cement-like slurry was placed on the wall to increase the cover to reinforcement.

The initial findings shared in December 2023 gave immediate rise to greater confidence in the building structure and a recognition that the decision to undertake more intrusive surveys was the correct approach to take. In addition to confirming the presence and suitability of the structural elements the building was designed with, additional structures were identified that were introduced as part of strengthening works carried out in the 1970s. These steel "goalposts" were found to exist in certain key locations and installed to provide additional support to the concrete slabs that make up the floors of Barton House.

Some commentary on additional measures the council could undertake was included in the December 2023 update, however more detailed recommendations were not shared until January 2024.

Following further advice from both contractors in January 2024, officers agreed actions for the council to undertake to maximise the safety measures at Barton House. These recommended works included the installation of a central fire alarm system in individual flats and communal areas to support a timely simultaneous evacuation strategy. Additionally, engineers recommended the installation of fire protection around the steel "goalposts" in 37 flats to provide sufficient fire protection to elements acting as part of the structural integrity of the building in the event of a fire.

Final, detailed results from the second phase of investigations were completed and presented to the Council in February 2024. Both reports detail the investigations undertaken, the methodology pursued, the findings from their surveys and final recommendations for future action. In addition to recommendations set out in interim letters to the council in December 2023 and January 2024, the final reports received also included additional measures the council should consider in the future. These include the ongoing management of the Expanded Polystyrene cladding on the external walls of the block, monitoring of ventilation in store room and basement areas and a campaign to inform residents of the critical need to not store gas canisters or other highly combustible material in the block.

Both final reports reach the same conclusion, that the recommended measures, when delivered, would appropriately mitigate the risk of disproportionate collapse. These conclusions, and the agreement of fire officers at Avon Fire and Rescue Service, have provided the council with sufficient confidence to begin the process of supporting residents back home safely.

Actions

Following receipt of interim recommendations in December 2023, officers began the process of detailing, designing and sourcing contractors to deliver the measures identified as required by structural engineers to make Barton House safe for residents to return.

Capable contractors were identified and contracted in January 2024 to install a central alarm system that aligns to National Fire Chiefs Council guidance. Plans were drawn up to install heat sensors and alarm systems in all flats and communal areas throughout Barton House. Work to begin installing this system began in January 2024 following efforts by officers to gain permissions from all households to gain entry for contractors. Most permissions were gained quickly, and despite some negotiations with a small number of flats and the theft of some communal fire alarms by a resident and police intervention to resolve that issue, work to install the alarm system was completed on 16 February 2024.

Works to install fireproofing around the steel “goalpost” structures began in January 2024. A total of 37 flats were identified as requiring this work and permissions for access were sought and obtained before contractors carried out the installations. All fireproofing works have been successfully completed to an approved specification.

Flats unoccupied since the evacuation of residents in November 2023 were also subject to a legionella testing regime following advice from health and safety officers. Due to the length of time flats had been unoccupied, it was necessary to undertake a testing and remedy process

during January and February 2024 to ensure the individual water supplies of flats could be deemed safe for residents to return. Flats occupied since the beginning of December 2023 did not require testing for legionella in line with relevant guidance. Testing has taken place throughout January and February with housing officers notifying residents when tests are completed for their properties.

Additional works have been undertaken at Barton House to ensure flats impacted directly by investigations and the installation of necessary measures are returned to a satisfactory condition for residents to return to. General repairs and maintenance, decorative works and deep cleaning activities were carried out in time for residents to return by 23 February 2024.

In addition to the works and maintenance at Barton House, the council have also provided a range of support for residents throughout the period of the evacuation. This support included the provision of free hotel accommodation for those requiring it along with three meals a day and school lunches for children. Free transport was arranged by taxi for those needing to travel to key locations, and free bus passes were provided to those who requested them. Enhanced cleaning services were commissioned, additional security put in place at the hotel and Barton House, and housing and community development officers provided daily support for residents at both sites.

Residents of Barton House were offered opportunities to meet with housing support officers to update HomeChoice Bristol (HCB) applications for social housing allocations. Any resident whose review indicated a change in banding would have those changes reflected on

their application for social housing. Any additional priority given to residents of Barton House would be due to an assessment of their individual circumstances, and in line with the HCB protocol that applies to all 20,000 households on the waiting list.

Emotional and mental health support was put in place with thanks to local community organisations. Support sessions were made available at the hotel and at local community centres. Play and activities for families and children were put in place, with additional support made available during school holidays. Many local organisations, including Bristol sports teams, arts and culture venues and local hospitality, have consistently provided free activities and experiences for residents throughout this period.

A more detailed description of the actions taken and commissioned can be found in the [report](#) noted by the Mayor and Cabinet Members in January 2024. This report sets out the emergency officer decision taken to secure the necessary funding to cover the costs of the ongoing support and works required at the block. Cabinet noted the total anticipated cost of all associated actions as being £5.3 million at the point of meeting in January 2024.

Appendix 1

Statement from Avon Fire and Rescue Service

Ben Thompson, Group Manager, Avon Fire and Rescue Service:

“Avon Fire & Rescue Service acknowledge and appreciate that the recent temporary evacuation of Barton House has been a stressful and challenging time for residents and the community. Throughout this time, Bristol City Council have continually updated us on their actions to address the issues identified by the surveys that were conducted on the building. The Service supports Bristol City Councils’ decision to install a full alarm system throughout the building, with smoke detection in every flat, and their decision to complete structural works, which have now improved fire resistance of key elements in the construction of the building. With these measures now in place, Avon Fire & Rescue Service support the decision to allow residents to reoccupy Barton House, as the risks previously identified have been addressed, in line with the recommendations of the Fire Engineers reports.”