

Please note the contents of these documents contain detailed descriptions and diagrams of Grenfell Tower. This could be upsetting for some.

This version of the document has therefore been created with any photographs of fire damage or the interior of the Tower removed to minimise the amount of potentially upsetting or distressing information within it. A copy of the original documents with photographs can be provided on request.

Please take care when reading or circulating these documents.

The [Grenfell Health & Wellbeing Service](#) is a free and confidential local NHS service for children and adults affected by Grenfell. To talk to someone, you can get in touch by phone on 020 8637 6279 or by e-mail Grenfell.wellbeingservice@nhs.net.

This document and its contents have been prepared for the Ministry of Housing, Communities, and Local Government. For further information, please contact GrenfellTowerSite@communities.gov.uk



Executive Summary
of
Independent Peer Review
of
Engineering Advice - Grenfell Tower
for
MHCLG

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24th May 2021

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- 1 This Executive Summary is a summary of the conclusions I have reached following an independent peer review of the *engineering advice* provided to MHCLG in the aftermath of the fire at Grenfell Tower in June 2017. My full report is issued separately¹(the “**Review Report**”). The issued brief for the peer review is at Appendix A of the Review Report.
- 2 The peer review has been carried out (and the report has been written) by me, Dr John M Roberts. I am a Fellow of the Royal Academy of Engineering; a chartered civil engineer and a chartered structural engineer; a visiting Professor of structural design at Manchester University; and a Senior Director of Structural Engineering at Jacobs UK Limited; a copy of my CV is at Appendix B of the Review Report.
- 3 I have read through the entirety of the documents listed in the brief and I have provided a detailed commentary on each of those which I consider to

¹ “*Independent Peer Review of Engineering Advice - Grenfell Tower for MHCLG*” dated 5th May 2021

be relevant in Section C of the Review Report. I inspected Grenfell Tower on 17th May 2021.

- 4 The *engineering advice* which is peer reviewed comprises the *engineering advice* provided – principally by Atkins – to MHCLG in respect of the current structural condition of the fire-damaged building (taking account of the significant propping and other temporary works either already carried out or proposed to be carried out), and also the *engineering advice* in respect of demolition of the structure in the future.
- 5 In my opinion it is inevitable that a conservative approach will have to be taken in any assessment of the residual strength (post the fire-damage) of the original reinforced concrete structure. This is because neither the original structural drawings, nor the original structural design calculations, are available, and therefore the embedded reinforcement (a critical part of a reinforced concrete structure) cannot be fully evaluated without breaking apart all the existing concrete sections – which is an impracticable option.
- 6 In my opinion the key structural issues in respect of the safety of the fire-damaged building (whilst it remains in place) are (i) resistance to storm wind loading, and (ii) deterioration due to corrosion of the now exposed reinforcement. In my opinion issue (i) has been satisfactorily demonstrated in the documents I have reviewed. In respect of corrosion of the reinforcement, in my opinion this will inevitably cause the structure to become progressively weaker over time. This is a principal reason for the advice (see later in this summary) that demolition of the building should be carried out “sooner rather than later”.
- 7 The building is currently classified as being a Dangerous Structure under statutory legislation. The appointed Surveyor² has expressly recommended that the structure should be demolished “*at the earliest opportunity*” and is unlikely to withdraw the Dangerous Structure classification unless the building is either demolished or completely re-constructed. I am in agreement with this recommendation.
- 8 The appointed Surveyor is being advised by a firm of consulting structural engineers (MBP) who have provided a logical and reasoned analysis to explain the appointed Surveyor’s recommendation. I have reviewed this analysis and, in my opinion, it is a correct assessment of the situation.
- 9 MHCLG’s principal engineering advisor is Atkins. I have reviewed all the engineering advice that Atkins have provided to MHCLG and I am content that it is soundly based and appropriate.
- 10 In particular, I note the following specific advice by Atkins which is set out in their *Summary Note* dated 21st February 2021. Here they advise that

² The District Surveyor, London Borough of Harrow (acting on behalf of Royal Borough of Kensington and Chelsea).

“Stage 3”³ propping is installed in the building from Level 4⁴ to the underside of the roof, and that as soon as that is completed (anticipated to be in early summer 2022) the building is then progressively demolished from the top-down by an approved method. I note that the Stage 3 propping design (which is an extremely complex piece of engineering) takes into account the requirement for demolition loadings to be supported by a combination of the propping and the (fire-damaged) residual structure. I support this advice – in my opinion the existing building is already too badly damaged to sensibly contemplate its retention and it can only deteriorate further with continuing corrosion of the exposed (and close to the surface) reinforcement.

11 Atkins also advise, as a contingency, that if the demolition does not proceed coincidentally with the completion of the first phase of the Stage 3 propping, then the second phase of the Stage 3 propping needs to proceed instead. This will extend the propping down from Level 4 into the Basement and is required if the structure is to remain undemolished for a period of time. I agree with this advice. Propping within the basement, if required for the reason noted above, will involve considerable difficulty in manual handling and (in some instances) work in confined spaces. This is undesirable from the perspective of the safety of the operatives undertaking the work, and would also involve additional cost and time. In my opinion, demolition of the entire building is inevitable if a decision is taken on any safety/engineering basis. Atkins also express this view, stating that their advice is *“to carry out deconstruction at the earliest opportunity”*.

12 In case there is a view that the building can be easily and safely remediated to remain standing, all the analysis and study leads to the conclusion that this is simply not possible. Atkins state that *“Given the levels of damage to the primary structure it is not seen as practicable to remediate all or part of the damaged structure to bring it back in to use. As such it is expected that the superstructure, i.e. that part of the building above ground floor, will have to be deconstructed”*. I agree with this advice.



Dr J M Roberts

24th May 2021

³ Stage 1 propping and Stage 2 propping have already been installed in the building, to provide short term safe access.

⁴ The fire started in Level 4 and progressed upwards through the building.