

# MEMORANDUM

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To: John Allen  
cc:

From: Paul Hanson  
Dated: 06/12/2013

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## **B1 - MEANS OF ESCAPE OBSERVATIONS**

**PREMISES:** Grenfell Tower, Grenfell Road

**APP No:** Preliminary

**SUBMISSION No:** Preliminary (P2)

**DRAWING No:**

Please also refer to marked up plan P2.

I make the following comments using Approved Document B and, where appropriate, **BS 9991**.

### **1. Upper storey powered ventilation system**

#### **Objective discussed at preliminary meeting**

The existing building appears to have an early push pull powered ventilation system providing powered extract and powered inlet via enclosed riser shafts.

At a preliminary meeting it was proposed to replace the existing powered ventilation system with a new system using the existing riser ducts and therefore the performance of the system would be determined by the constraints of the size of the existing riser shafts.

It is understood that it was not proposed to redesign the system to a modern standard of performance as this is likely to require larger riser shafts, the incorporation of which falls outside the intended scope of the works.

RBKC indicated that in the case of any existing building; provided that the performance of the existing system is not made any worse, the building regulations would not require the system to be upgraded. Details of the performance of the existing and proposed systems was requested to be submitted to enable RBKC to be satisfied that the system would not be adversely affected by the intended works.

#### **Details submitted**

Details have not yet been submitted of the performance of the existing system.

If data on the existing system is available, a way forward might be to measure the flow rates of the present situation and provide information about the proposed system.

Therefore in order to consider your proposal details should be submitted of the following:-

- Existing extract rate in m<sup>3</sup>/s
- Existing 'inlet air' Supply rate in m<sup>3</sup>/s
- Proposed extract rate in m<sup>3</sup>/s
- Proposed 'inlet air' Supply rate in m<sup>3</sup>/s
- Confirmation of design of existing system. Is it natural ventilation or mechanical or a combination
- Method of activation of natural/powered system and fire brigade controls
- Size of natural/powered vent shafts

*The proposal for the new system indicates the intention to provide 10 air changes as a design objective. This appears to be using an approach for redesigning the system without a consideration of adverse affect. If you wish to consider redesigning the system to achieve a performance objective rather than match the performance of the existing system, justification for the proposed extract rate needs to be submitted, including performance modelling.*

*However I would suggest without the need for modelling; that 10 air changes will not provide adequate ventilation to a lobby. An air change rate is a relative figure and is normally used to determine an adhoc ventilation rate for large spaces such as car parks. Air change rates have no relationship with fire size, height of rise of the smoke plume and apartment door leakage rates. The current method used to determine appropriate ventilation rates in residential lobby powered extract systems is to use fire modelling. You may be able to achieve a reasonable approximation of ventilation rates using CFD or a simpler zone model, if you wish to adopt this approach.*

If you are concerned about the possible performance of the existing system, you may wish to consider the original strategy (discussed at the preliminary meeting) which was to **demonstrate that you are matching the performance of the existing system**. Then if the existing riser shaft sizes permit, you could consider **increasing the performance of the existing system** by using an increased extract rate (more powerful fan(s)), and hence increase the performance of the system within acceptable design limits (noise/vibration etc).

Adopting this approach may also assist your case to the fire authority mentioned in 2 below.

## 2. Consultation **with Fire Authority** regarding the lobby ventilation system

You have requested RBKC consult the Fire authority for the purpose of assuring your client regarding responsibilities under the Regulatory Reform (Fire safety) Order. I note the information submitted by Max Fordham, including the email dated 8/11/13 further explaining the original strategy. However as outlined in my email of 11/11/13 from John Allen of this office, I would recommend the following approach.

The question that needs to be proposed to the Brigade is whether the replacement smoke extract system to the residential parts will be acceptable for the purpose of satisfying a risk assessment under the above-mentioned legislation.

A letter needs to be written that can be forwarded to the Fire Authority that presents information on the existing smoke extract system (Design and performance) and the proposed replacement system.

This should include the following:

- Confirmation of design of existing system. Is it natural ventilation or mechanical or a combination.
- Method of activation of natural/powered system and fire brigade controls
- Size of natural/powered vent shafts
- Powered ventilation extract rate in m<sup>3</sup>/s
- Inlet air provision (Size if natural in m<sup>2</sup> or m<sup>3</sup>/s if powered)
- Confirmation of proposed system, same responses as above.
- Any differences to the existing system i.e. that it is being used for the normal ventilation system should be indicated.
- The case to justify the proposal.

Upon receipt I will pass your question and information to the Fire Authority.

## 3. Connection **with different** uses

No objection is raised in principle to the lobby connection with the non-residential uses via a 0.4m<sup>2</sup> natural ventilated lobby.

In the case of the meeting room connecting with the horizontal escape from the residential units. It is recommended that consideration be given to the provision of an unvented lobby rather than ventilation of the room itself. The latter is unlikely to give protection equivalent to a lobby (it is assumed the room is not sprinklered).

**4. Service risers opening in to stairway**

Due to the reconfiguration of the stair and lobbies, some riser shafts open directly in to the stairway. This arrangement should be avoided. Is access to the risers necessary at this level (see marked up plans with symbol 'A' for these areas). Access to lobbies is acceptable as identified by symbol 'B'.

**5. Refuse chutes**

Please clarify the existing level of protection to the refuse chutes and confirm whether they will serve the altered levels.

**6. Marked up plans**

For further comments see marked up plans.

**Please note that I have not consulted the Fire Authority at this stage.**