

# THE GRENFELL TOWER INQUIRY

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## EXHIBIT DPB/10

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This is the Exhibit marked “DPB/10”  
referred to in the witness statement  
of David Paul Bradbury

### Boiler Room Ventilation

The current ventilation system to the basement boiler room does not comply with the required standards and is to be upgraded by the installation of additional ventilation.

Provide a new supply fan located as indicated on the drawings.

The fan shall run continuously and shall have a differential pressure switch which prevents any of the boilers from firing until air flow has been established.

### Smoke Control Ventilation

The lift lobbies on the residential floors are all ventilated to provide smoke control in the event of fire.

#### Existing System:

The system comprises a fresh air shaft and a smoke extract shaft serving all of the lift lobbies on the residential levels of the building. The system is designed to work as a natural ventilation system, but supply and extract fans are also installed to enable the Fire Brigade to provide additional mechanical ventilation if they consider that to be advantageous in dispersing smoke.

Each lift lobby has a fresh air inlet at low level on one side of the lobby and a smoke exhaust vent on the opposite wall of the lobby at high level. The vents connect directly into the fresh air shaft and the smoke extract shaft respectively.

Each vent has a motorised damper which is normally closed.

There is a smoke detector in each lobby. In the event of a fire in any of the lobbies, the smoke vent dampers and the fresh air dampers serving that particular lobby open. The dampers on all other levels remain closed.

A fireman's switch at ground level gives the Fire Brigade the choice of using mechanical ventilation.

#### Proposed System:

The current system was designed and installed around 40 years ago and there are no compatible current standards. Building Control have been approached to agree how best to progress with the design of the system given the physical constraints of the building. Their response, along with that of the Fire Brigade, is expected during the tender period.

It is proposed to retain the principles of operation of the existing smoke venting system but replace the existing equipment with new, more reliable and serviceable components. The current system is old and over the years has had some of the original parts replaced with different components. The proposed system will provide new supply and extract fans as well as new consistent components on all floors and should prove significantly more reliable in operation and be easier to maintain than the current system. It will also make routine testing simpler and easier to carry out.

In addition to the fire safety function, it is proposed to use the existing smoke extract and fresh air supply shafts to provide some ventilation to reduce the possibility of the lobbies becoming uncomfortably warm due to heat emission from the heating pipes running through the lobbies. Overheating lobbies has proved to be a significant issue on other projects and as the lobbies at Grenfell Tower are 'landlocked', the riser shafts offer the only reasonably straightforward way of dealing with this problem.

Notwithstanding the desire to use the existing shafts for temperature control ventilation, the system will remain primarily for fire safety and smoke control.

Smoke Control:

It is not viable to adapt the existing system to comply with current standards. Given the physical constraints of the existing building, the design approach has therefore been to retain the existing system and replace all of the existing components with new, equivalent or better components.

There are no design records for the existing system and it has not been possible to establish the fan duties. As there are no directly applicable standards which can be referred to, it is considered that it would be preferable to have a mechanical ventilation system and that it would be reasonable to design the system to provide an air-change rate of 15 air-changes/hour.

The following new work shall be carried out as a minimum:

- The existing fresh air shafts and smoke extract shafts will be reused.
- The system shall be extended to serve the Walkway +1 floor.
- New motorised dampers shall be fitted to all fresh air and smoke extract vents in each lobby.
- New grilles shall be installed at all lift lobby levels.
- New 'run and stand-by' fresh air supply and smoke extract fans shall be provided.
- New central fresh air supply and smoke extract motorised dampers shall be fitted (see temperature control proposals below)
- New smoke detectors shall be fitted in the lobbies.
- A new fire panel shall be installed on the ground floor.

On detection of smoke within any lift lobby served by the smoke control system, the fresh air and smoke dampers serving that particular lobby will open fully, the central fresh air supply and smoke extract motorised dampers would open and the supply and extract fans would operate. The fresh air and smoke dampers on all other levels will be closed.

The fire panel will have a ventilation selector switch which will enable the Fire Brigade to control the supply and extract fans.

Dual power supplies will be provided to give normal/stand-by power from different sources to the fans and to the fire panel.

Indication will be provided on the fire alarm panel to indicate activation of any smoke detector, the location of the detector and the status of the fans.

Temperature Control:

As part of the refurbishment of the building, new heating mains serving the residential areas are being installed. These will rise through the building within the lift lobbies with branches to the flats at each level. These heating mains will be relatively large and even with a high standard of insulation, will emit a significant amount of heat into the lobbies.

This has caused considerable problems on other projects and it is considered essential for this project that provision is made to provide venting of the lobby areas.

Normally, comfort ventilation would be kept separate from smoke ventilation. However, for this project where the lobbies are land-locked, the only reasonably viable option is to use the smoke vent shafts.

As far as practicable, the temperature control ventilation system will be kept separate from the smoke control system, with the only common parts being the fresh air and smoke extract shafts. The proposed system is shown on drawing No. U(14)01\_200.

New, separate, fresh air and extract temperature control fans shall be provided. These shall connect to the fresh air and smoke extract shafts via motorised shut-off dampers. New, motorised shut-off dampers shall also be provided on the smoke extract and fresh air supply systems to avoid recirculation during normal operation. The fans shall be variable speed drive fans.



Under normal conditions the temperature control fans dampers will be open while the 'smoke' dampers remain closed. The fresh air and smoke dampers in each lobby area will also be open.

In the event of fire, the dampers connecting the temperature control fans to the smoke control shafts will close and the dampers connecting the smoke control fans to the shafts will open. The fresh air and smoke dampers in each lobby area will all close apart from those in the lobby area where fire has been detected where they will remain open.

Temperature sensors located within 5 'typical' lobbies will operate the temperature control fans if the temperature in any of these lobbies rise to an uncomfortable level. The controls will adjust the fan speeds in accordance with the temperature in the lobby.

The power and controls to the temperature control system will be completely separate from the smoke control system. The systems will be designed to be 'fail-safe' with priority always being given to the fire safety operation.

Notwithstanding that the above proposals are currently being considered by the relevant authorities, for the purposes of pricing, the Contractor shall assume that the proposals will be accepted and shall price the installation accordingly.

Prior to commencement of the contract, formal approval will have been obtained. It will then be the Contractor's responsibility to verify, adopt and implement the design to the satisfaction of the relevant authorities.

#### MATERIALS & WORKMANSHIP

Generally, new ductwork (apart from low-profile plastic ductwork) shall at least comply with the requirements of DW 144 & 151 low pressure/velocity classification and be of an equivalent or better standard than existing ductwork.

Supply all grilles and louvres required to form a complete installation. Allow for powder coating to a BS colour to be specified by the EA. Submit samples of typical size and finish for approval by the EA.

Install fans in accordance with the manufacturer's instructions and recommendations in HEVAC Fan Application Guide.

Install any proprietary ductwork systems strictly in accordance with manufacturer's recommendations.

#### TESTING & COMMISSIONING

Carry out commissioning in accordance with the procedures, checks and tolerances given in the CIBSE Commissioning Codes, BSRIA Application Guides and Appendix A of this specification. Commission fans in accordance with the manufacturer's instructions. Measure and balance system flow rates and keep a systematic record of commissioning results. Issue to EA and include in the O&M Manuals.

On completion of the installation, demonstrate correct operation to the EA, Building Control and the Fire Brigade as appropriate.