

# THE GRENFELL TOWER INQUIRY

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## EXHIBIT JDE/4

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This is the Exhibit marked “JDE/4”  
referred to in the witness statement  
of Jonathon David Earl

### Secondary power supplies - Method of Installation

#### Design Parameters:

##### Secondary power supplies into the building

Grenfell tower is to be provided with a new smoke detection and extract system designed by specialist subcontractor PSB UK.

Essential power to the existing smoke vent system is provided by a UPS battery system (located in the basement boiler room) which is now obsolete and incompatible with the new system.

Additionally there is a 20A TP&N standby power supply fed from the adjacent Testerton Walk premises which supplied a smoke suppression system. The system is now obsolete, but the secondary supply can be reused.

The new smoke vent system incorporates two main panel locations, one at ground floor level, the other located within the roof top plant area, both of which require primary and secondary power supplies.

PSB have now confirmed the system's operational electrical loads under full emergency conditions are within 20A per phase for each panel. Therefore the existing Testerton walk secondary supply is will be sufficient to support one of the new panels; it is intended that this supply is to feed the ground floor panel. This will mean that the second "roof top" panel will require an independent secondary power source, and the following options have been considered:

1. A UPS system serving either the single panel or the entire system
2. A hard wired secondary supply to supplement the existing Testerton Walk supply. This again would be fed from an adjacent building, in this case Grenfell Walk.

After consultation with Paul Hanson of Building Control and Matt Smith of Max Fordham, the Client's M&E Design Consultant, it has been agreed that a second supply from Grenfell Walk is the preferred option

##### Secondary power supplies to roof top panel.

As previously stated the design of the new smoke vent system requires a second control panel situated within the roof top plant room. In accordance with BS 9999 this panel requires primary and secondary power supplies which should be installed, taking separate routes from source to final destination. The cables should be either fire rated or installed within 2-hour fire rated enclosures, and the cable runs should take separate routes so as to avoid simultaneous mechanical or physical damage from a major event such as a gas explosion from one of the apartments.

In a new build scenario this would be achieved by designing separate paths or risers within the fabric of the building. However in the case of Grenfell Tower which is an existing building, the only service routes are formed around one central core, making it impossible to provide separate cable routes within the confines of the existing building.

## **GRENFELL TOWER: SMOKE EXTRACT SYSTEM POWER SUPPLY PHILOSOPHY**

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A proposal was put forward by the Design Team to install the secondary supply externally up the side of the building beneath the new cladding façade, but after proposing this to Paul Hanson of Building Control it was rejected on the following grounds:

1. A fire in an apartment close to the cable run would heat the aluminium cladding to such an extent it would irreparably damage the cable. He deemed this scenario highly likely to occur during the life of the building.
2. To install the cable within the fabric of the building would make it virtually impossible to replace if irreparable damage was sustained.

As a result of the meeting and consultation with Building Control it was agreed that both supplies could be installed within the central core, within separate risers either side of the main lift shafts. The rationale being that although installed within the same fire compartment, both cables are 2-hour fire rated and are separated by sufficient distance so as to avoid simultaneous mechanical / physical damage.

In summary after meeting and consultation with Building Control it was agreed that:

1. The additional secondary supply into Grenfell Tower could be run from the adjacent Grenfell Walk building.
2. The secondary supply to the roof could run in the central core along with the primary supply, providing sufficient separation could be achieved; to which either side of the lift shaft was deemed sufficient separation

### **Methods of Installation**

#### Main secondary supplies from adjacent buildings

##### New secondary supply from Grenfell Walk

The main secondary supply from Grenfell Walk is to be routed from the local Landlord's intake located at mezzanine level. The intake is situated directly opposite Grenfell tower, on the other side of the service road that dissects the two buildings.

The new supply is to be a 20A TP&N and is to emanate from spare capacity on the general Landlord's lighting and power distribution board. The new supply is to be clearly labelled to indicate its' "essential supply" status and the location of its' designated load.

The new supply cable is to be installed using Pirelli FP600 2-hour fire rated steel wire armoured (SWA) cable. The cable is to exit at high level to the rear of the Grenfell Walk intake room, and then either utilise existing high level containment infrastructures or clip direct using fire rated cleats to the high level soffit across the service road which adjoins the high level soffit of the main entrance canopy to Grenfell Tower.

From the Grenfell Tower entrance canopy soffit the new supply is to enter Grenfell Tower building via the existing cable way through the fresh air duct down into the basement boiler house.

Once entering the basement area the supply cable is to be terminated into a 20A TP&N fire rated isolator, labelled to indicate Essential supply, origin of supply and supply destination. The isolator is to be made ready to accept the outgoing cable which is to serve the roof top smoke extract control panel.

### Existing secondary supply from Testerton Walk

The existing 20A TP&N MICC secondary supply cable from the adjacent Testerton Walk is to be reused to supply the new ground floor smoke vent panel.

The existing cable, which currently feeds an obsolete smoke suppression system is to be disconnected from within the main intake and rerouted into the basement boiler plant area.

In the basement, the cable is to be terminated into a 20A TP&N fire rated isolator labelled to indicate its' "essential supply" status and the location of its' designated load. The isolator is to be made ready to accept the outgoing cable which is to serve the roof top smoke extract control panel.

### Internal supplies to smoke vent panels

As previously stated the new smoke extract system serving Grenfell Tower is controlled via 2 main service panels, one located at ground floor level within the new hub room, the other located within the main roof top plant area.

### Primary / secondary supplies to roof top panel

The secondary power supply to the roof top panel is to emanate from the new Grenfell Walk isolator located in the basement. The supply is to be installed using FP600 SWA cable, routed up through the main service riser to the left hand side of the main lift shaft to the main roof top plant area. The cable is to be clipped direct to the building fabric using fire rated cable cleats. Once in the roof top plant room the cable is to terminate at an automatic changeover unit located adjacent to the main roof top panel.

The primary power supply to the roof top panel is to emanate from a 20A TP&N switch fuse unit fed from the main Grenfell Tower Landlords power supply; the switch fuse unit is located within the main electrical intake room.

From the switch fuse Pirelli FP600 fire rated SWA cable is to be installed and is to travel a short distance through the basement telecom hub room across to the main service riser on the right hand side of the main lift shaft. From here the cable is to run vertically up the main service riser into the main roof top plant area. Once in the roof top plant room the cable is to terminate along with the secondary supply into the aforementioned automatic changeover unit located adjacent to the main roof top panel.

In the roof plant area both cables will as far as is practicable take separate routes from the service riser entry points to the final location of the roof top panel.



### Primary and secondary supplies to ground floor hub room

The secondary power supply to the ground floor hub room panel is to emanate from the Testerton Walk isolator located in the basement. The supply is to be installed using FP600 SWA cable, routed from the isolator directly up into the hub room above. The cable is to be clipped direct to the building fabric using fire rated cable cleats. On entering the hub room the cable is to terminate at a second automatic changeover unit located adjacent to the main ground floor panel.

The primary power supply to the roof top panel is to emanate from a separate 20A TP&N switch fuse unit fed from the main Grenfell Tower Landlords power supply; the switch fuse unit is located within the main electrical intake room.

From the switch fuse Pirelli FP600 fire rated SWA cable is to be installed and is to travel a short distance through the basement telecom hub room across to the main service riser on the left hand side of the main lift shaft. From here the cable is to raise 1 storey and enter the ground floor main hub room. On entering the hub room the cable is to terminate along with the secondary supply into the aforementioned automatic changeover unit located adjacent to the main ground floor panel.

### Power Supply Status Monitoring

In accordance with the guidance set out in BS5999: 2008 - Code of Practice for Fire Safety in the Design, Management and Use of Buildings as there is no designated fire control room there is no requirement for a central status panel to monitor the system primary and secondary power supplies.

Each of the two system automatic changeover units will have their own supply indicators incorporated within the unit. These will indicate that a power supply is present and whether the unit is currently running on either the primary or secondary supply.

Is required a centralised supply status panel can be added to the system, but this will incur additional cost.