

## **Grenfell Tower**

### **Flat Sub-Main Rising and Lateral Supplies Report, 29<sup>th</sup> May 2013.**

The tenants above floor ten were reporting smoke issues, lights and power failing intermittently. On testing the incoming supplies sub-main cable voltages were shown as unusually high as indicated below: -

- 400v across Live and neutral terminals of supply
- 210v recorded across earth and neutral with main earth disconnected from met bar.
- 213v across all earths and extraneous conductive parts.

We isolated various flat consumer units whilst further testing and investigatory works were carried out. On testing the Ryfield Sub-Main distribution fuse board serving various flats located on the 15<sup>th</sup> floor to show additional test results as indicated below: -

- L1 to Neutral            399V
- Neutral to Earth       236V
- L2 to Neutral           400V
- Neutral to Earth       334V
- L3 to Neutral           399V
- Neutral to Earth       234V

We approached UK Power Networks to establish and confirm there supplies and cables had not been damaged as there are significant building works ongoing all around the perimeter of the block. On there arrival we assisted in locating the correct sub-main service heads which serve the flats, there's 2no.

The UK power network engineer carried out tests and confirmed that both service heads were intact and no abnormal voltages were recorded.

We then reviewed the data which was recorded on a power logger installed to main service head the previous day at the request of the client. Which confirmed abnormal voltages recorded during peak time electrical use? IE: In the mornings and evenings (dinner times)

We then carried out a more in depth investigation a test on all sub-main boards which serve the flats 10 No. in total. We found service head No.1 served all floors up to the tenth and service head No. 2 served all floors from the eleventh to 20<sup>th</sup>. As well as noting the general condition of these sub-mains

- Paxolin bus bar covers have been damaged or were missing and live parts exposed on all Ryfield boards to floors 11, 12, 13, 14, 15, 16,17,18,19,20. Remedial works are urgently required.
- As ongoing building works may be creating excessive vibration we recommend re-tightening of all sub-main connections to all boards and connection enclosures.

Abnormal voltages were recorded on sub-main Db's on floors 11,12,13,14,15,16,17,18,19,20. Which consistent with service head 2?

Further investigation found badly damaged enclosure and service cable in the lower ground floor riser cupboard where there is evidence of severe burn and arcing damage

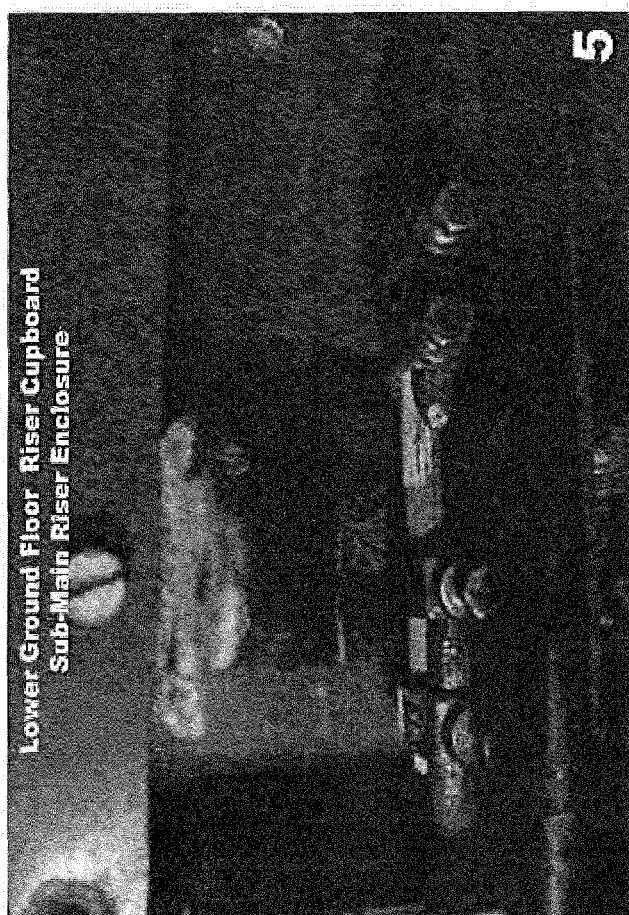
This is concurrent with a Damaged/Broken cable on the sub-main supply side neutral. Connected to incoming service mains for Flats.

On inspection we found loose connections and the neutral cable had melted away from the clamp connections and could have caused a fire within the riser, please see attached photos on the following sheets.

The Client was informed and witnessed the damage. It was agreed to make a temporary connection in order to restore electrical safety and regain power to all flats above the 10<sup>th</sup> floor. See photos 5 and 6.

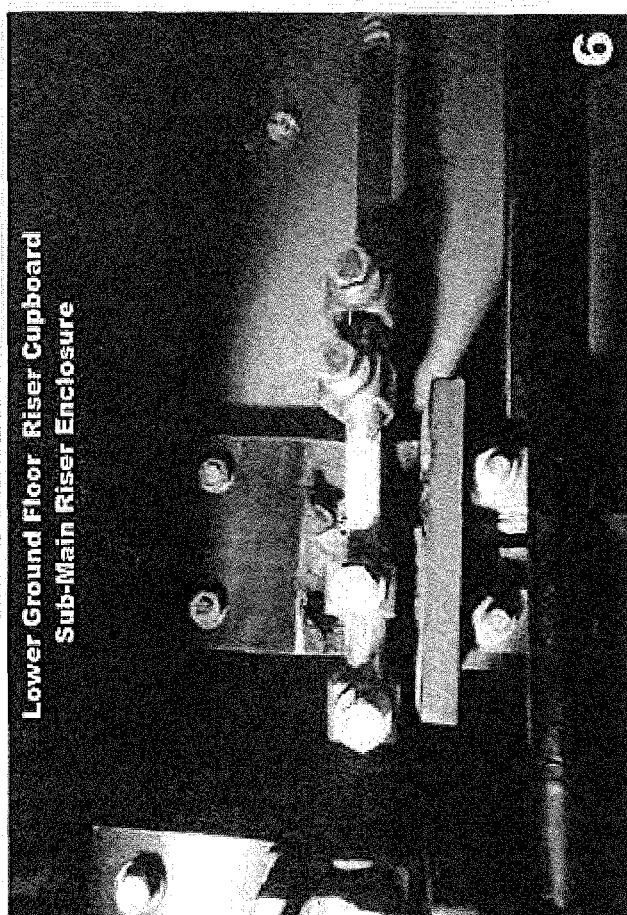
As a result of our findings we recommend a overhaul of the existing equipment and replacing missing and faulty items. A new rising main supply will be required from the main service head and new terminations.

We are now sourcing the materials to replace all damaged equipment to sub-mains for permanent connections and to maintain the integrity of the supply.



Lower Ground Floor Riser Cupboard  
Sub-Main Riser Enclosure

5



Lower Ground Floor Riser Cupboard  
Sub-Main Riser Enclosure

6



