SAFETY ALERT

Electrical Short Circuit

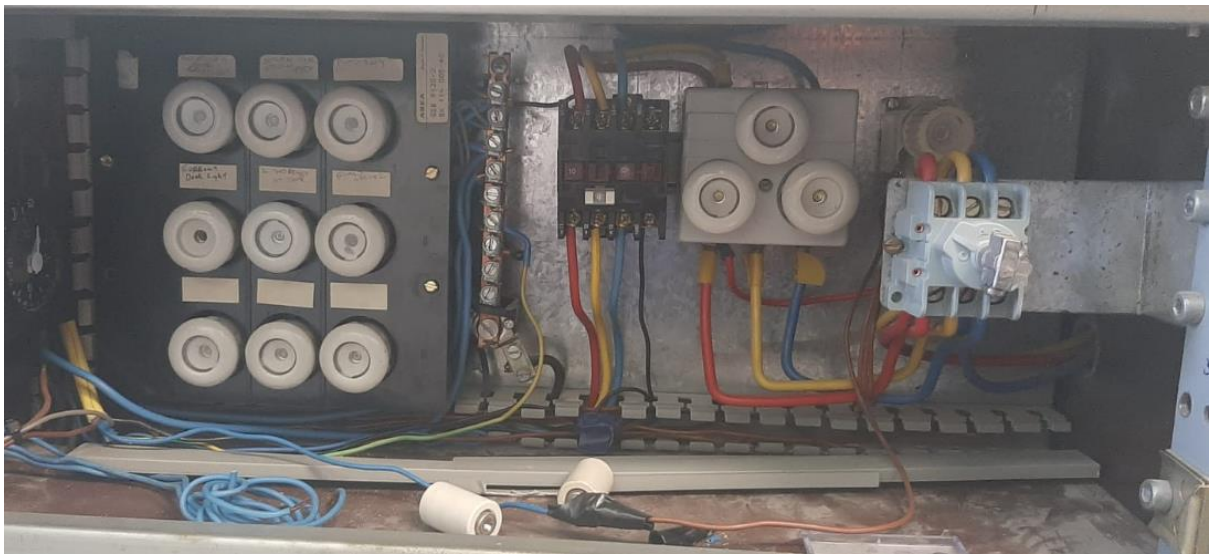
Revision: 2.00

Document No: **IW-HSQE-SA-49**

Approved By: James Cullen

1. What Happened?

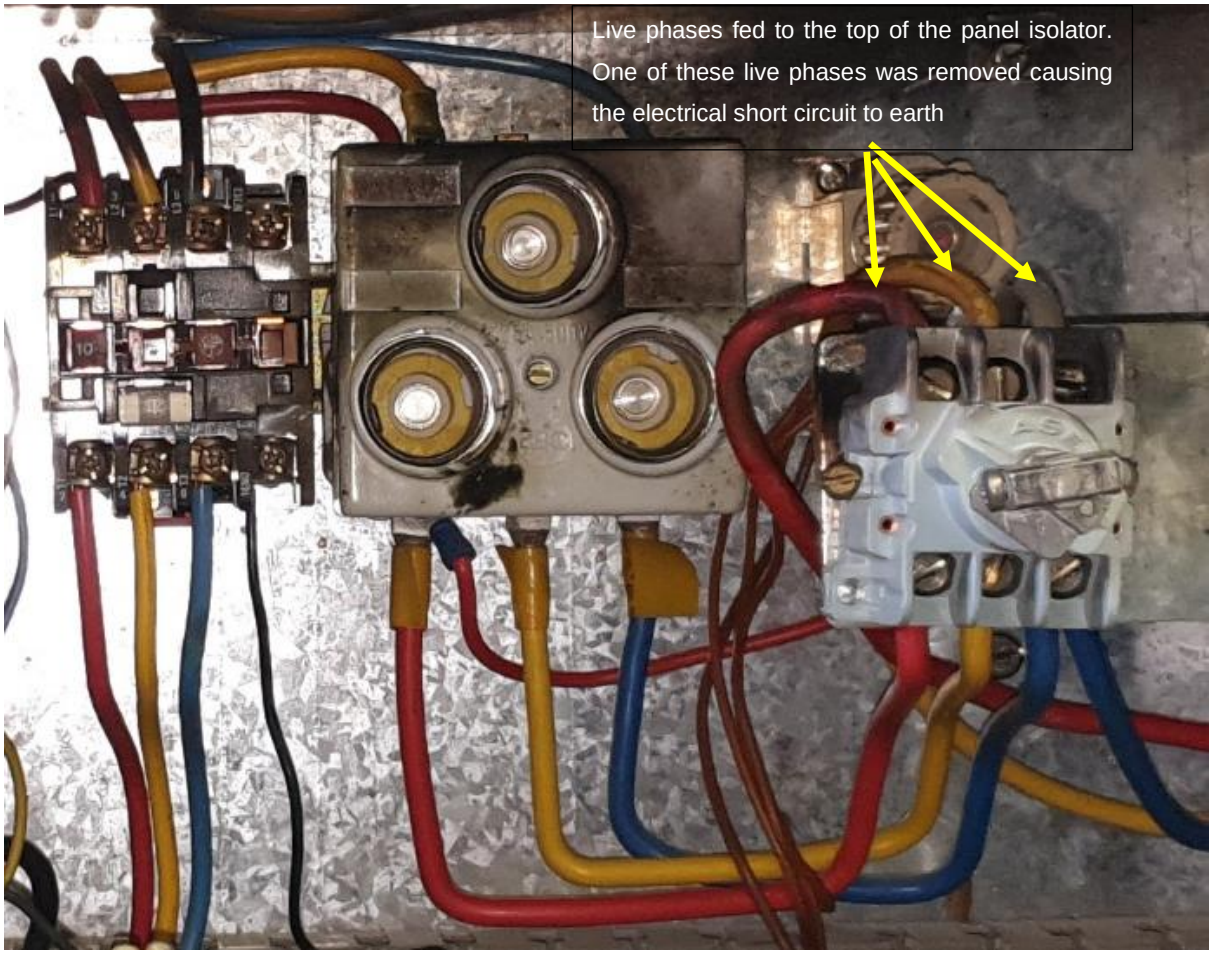
An electrical contractor was working in an electrical panel installing additional site lighting at an Irish Water Treatment facility when an electrical short occurred resulting in an eye injury to the electrician which required hospital treatment. The works entailed the replacement of existing fuses and installing new MCBs in their place for site lighting.



Picture 1: Panel Before works commenced

The panel section was initially isolated via the door isolator. The switched (de-energised) side upstream of the isolator was checked and found to be dead. The electrician subsequently went to disconnect a phase from what he assumed to be the de-energised side of the isolator, however, a live phase (one of three phases), was disconnected in error. It was at this stage that there was a short

circuit as the live phase came into contact with another part of the panel, resulting in a short circuit to earth. (A subsequent review of the panel showed the live feed coming in from the top of the switch, rather than the norm where the live is fed in from the bottom - see picture 2.)



Picture 2: Short circuit scorch marks

2. Immediate Actions

First aid was administered to the Electrician and was then brought to the hospital.

The contractor involved conducted a full and thorough investigation and implemented several improvement actions on foot of the incident.

3. Further Actions

- Invasive electrical work in live panels must be avoided.
- Relevant parties, operators and contractors must ensure full isolation, Lock and Tag Out is in place before working on panels. Good Lock and Tag Out practice must include the following steps:
  - Preparation for shutdown
  - Shutdown
  - Isolation
  - Lock out/Tag out and Try to verify the isolation
  - Release of any stored energy from any capacitators, accumulators etc.
  - Verification of effective isolation
- Method statements and risk assessments must be prepared by contractors in advance of the works.
- PPE requirements must be reviewed and in particular, the need for arc flash protective equipment where adjacent panels in a switch room may still be live.
- Electricians/engineers must highlight potentially dangerous panels, or where full isolation cannot be effectively implemented. In these

instances, electricians/ engineers must revert back to their supervisor/manager and the operator **must not proceed** to work on the panel until an alternative safe working plan can be developed.

Picture 3: Finished panel, all MCBs labelled & drawings updated.

4. Further Information

For further information on this safety alert please contact hsqe@water.ie

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5. Distribution list

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