



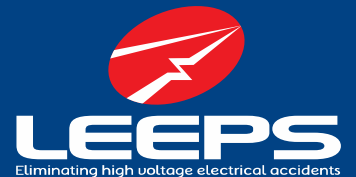
1st December 2020 25 KV Overhead Line Safety Update

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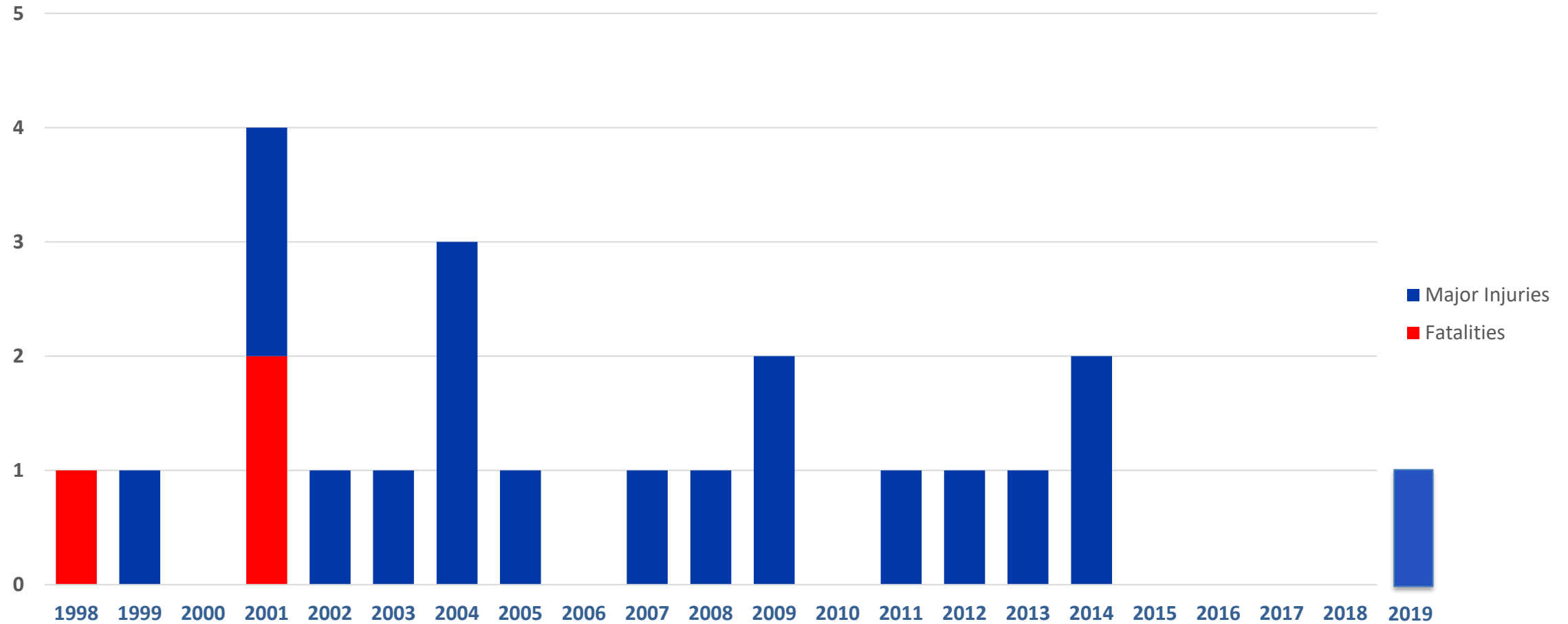
Eliminating high voltage electrical accidents



Key Topics

- Lessons from the past
- The Hazard we are dealing with
- The future processes
- The key messages

AC Major Electrical Incidents 1998 - 2019

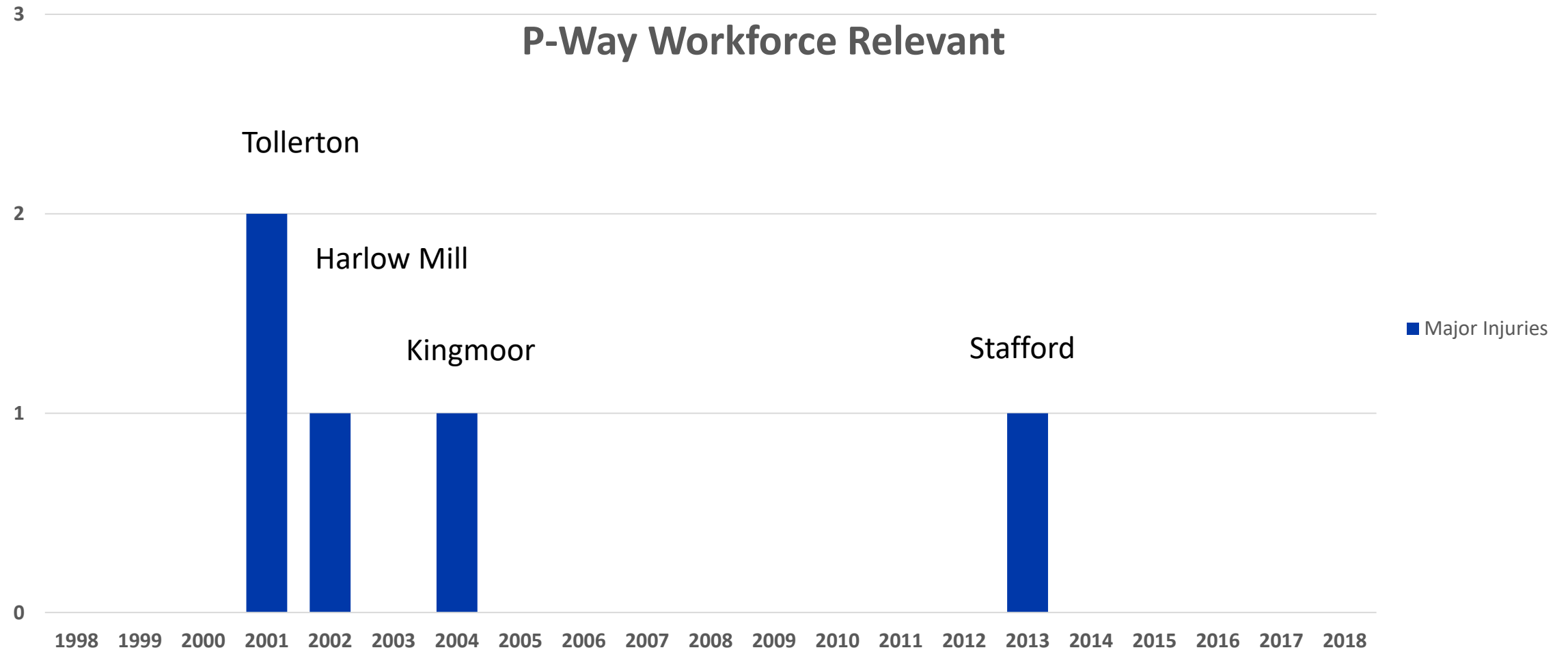


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Lessons from the Electrical Accidents

- Residual electrical hazards catch us out – very occasionally someone comes into contact with a live 25kV conductor
- Late changes to the plan increases the likelihood of coming into contact with live conductors
- Those that are working on conductors, the OLE teams, are disproportionately at risk
- The next most likely group to be involved in contact with live conductors are those working in rolling stock depots and sidings

AC Major Electrical Incidents 1998 - 2018

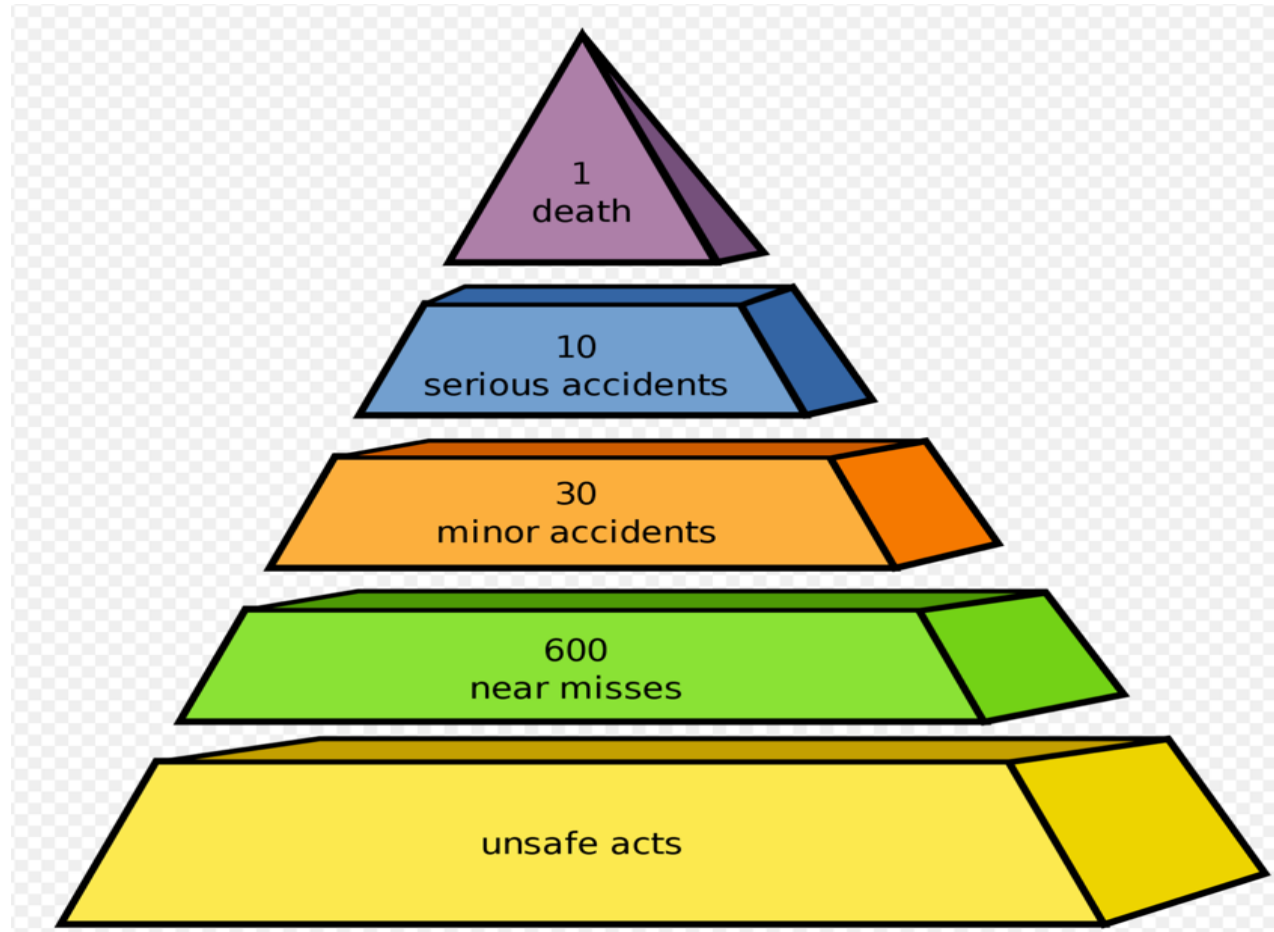


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Key Causes of P-way Accidents

- Late changes to the plan are nearly always a contributing factor to the historical accidents
- Lack of understanding of the electrical hazard and failure to properly risk assess
- Staff working at height on engineering trains
- Causes are similar for those accidents taking place in depots and sidings

Heinrich/Bird's Accident Triangle



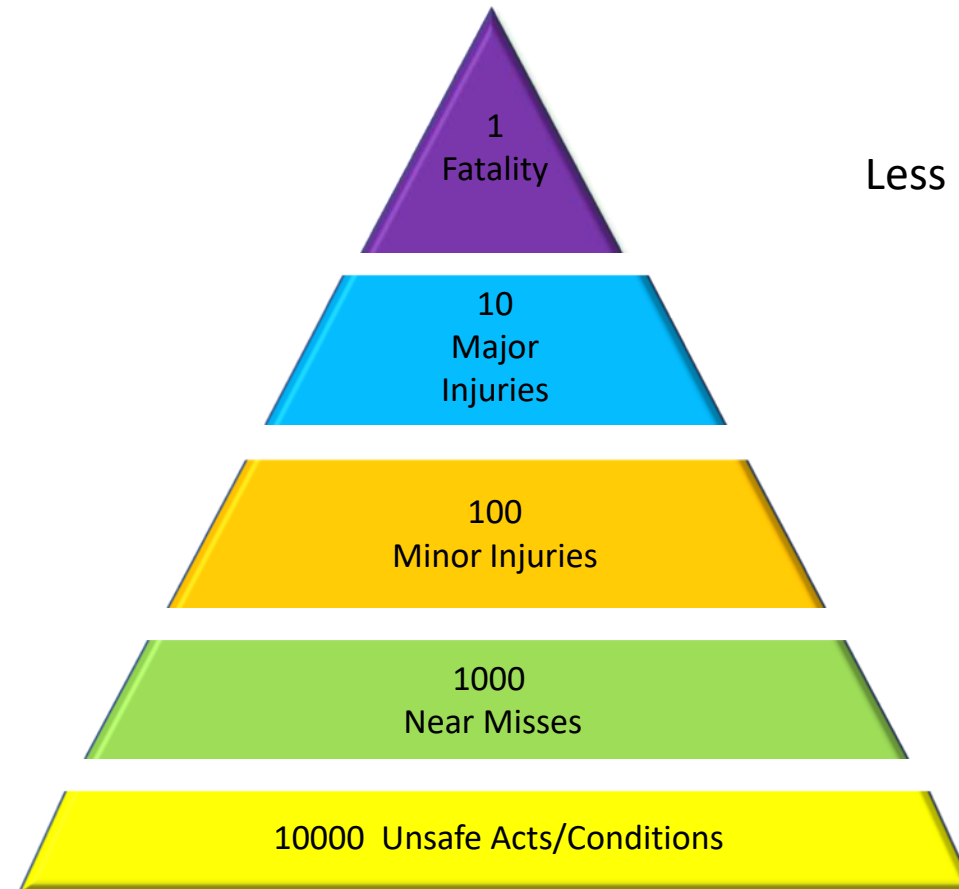
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Example - Falling down a set of steps



Photo: Courtesy of Tripadvisor Wembley Park page - Things to do in Wembley

Respond, Review and Prevent



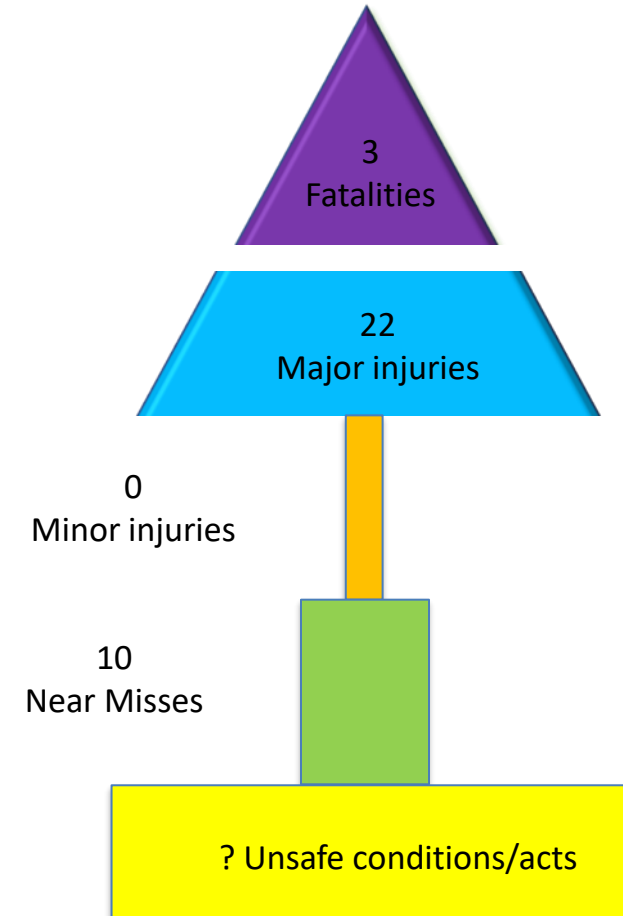
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The 25kV Hazard Outcomes



Photo: Courtesy of Network Rail West Coast

Respond, Review and Prevent ???



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Electrical Safety Management

- Key initiatives for this type of accident severity distribution
 - The development of the testing culture through the lifesaving rules: It takes 5 to 10 years to embed a lasting culture change
 - Improve electrical risk assessments sufficiency: Develop skills, identify residual hazards, record control measures and ensure that it is implemented on the night
 - Modify the safety standards to support modern electrification and the lifesaving rules
 - Keep talking about the hazard and the severity distribution: the major accidents

New Processes

- Single Approach to Isolations (SAI)
 - Strong compliance to the Electricity at Work Regulations 1989
 - Builds in the lessons of the historical accidents
 - Common process for the OLE, con-rail and substations
- Standard 25000 replaces the 'Green Book'
- Improved focus on electrical risk assessment, communication and demarcation of residual electrical hazards.

Key Messages

- The electrical life saving rules offer an additional layer of protection from coming into contact with 25kV live conductors
- Beware of late changes to the plan and avoid contact with the electrification assets
- The single approach to isolation focuses on electrical risk assessments and matches control measures to risk
- There will not be near misses and minor accidents to warn you of impending disaster!