



Health and Safety Bulletin No. 8

Mobile cranes contacting live overhead power lines

Date: 18 May 2023

Background

WorkSafe has recently investigated a number of incidents that involved mobile cranes making contact with live overhead power lines, especially on rural and agricultural properties.

These incidents highlight the importance of ensuring that mobile crane operators and other workers are aware of the location of overhead power lines before machinery is operated. This is also relevant for operators of other mobile plant, such as vehicle-loading cranes, concrete placing booms and elevating work platforms.

Summary of hazard

In many of the reported incidents, it was not possible for the person conducting the business or undertaking (PCBU) or crane operator to identify the presence and positioning of overhead power lines prior to attending site due to the remote locations. This exposed workers and others to the risks involved with mobile plant contacting overhead power lines, including the potential for electric shock.

Contributory factors

- Inadequate hazard identification and risk assessments, including identifying and assessing the location and height of overhead power lines before starting work.
- Inadequate communication and support between site owners or hiring customers and workers on site regarding the location of overhead power lines, safe working zone requirements, and options for de-energising overhead power lines.
- Reliance on satellite-mapping apps and platforms to prepare a lifting plan, which may not identify the correct location of live overhead power lines.
- Crane operators travelling long distances to access the workplace, resulting in reduced attention during operation due to fatigue.
- Lack of familiarity with topography of workplace.
- Poor lighting conditions due to time of day or weather conditions affecting the ability of the mobile crane operator to sight power lines safely.
- Inadequate or absence of separation zones and misjudging crane boom location increasing the chance of collision with overhead power lines.
- Lack of adequate signalling and spatial awareness from spotter due to inexperience of working around overhead power lines.

Requirements under WHS laws

Work Health and Safety Act 2020

The PCBU must ensure that the [regulator is notified](#) of any dangerous incident at a workplace that exposes a worker or any other person to a serious risk to their health or safety from exposure to electric shock.

Work Health and Safety (General) Regulations 2022

The PCBU or person with management or control of a workplace must ensure that a worker, or any plant or material used or controlled by a worker, does not enter the danger zone of an overhead electric line or aerial bundled conductor line.

The danger zone is anywhere within:

- 0.5 metres of a live insulated overhead electric line or aerial bundled conductor line of a voltage of not more than 1,000 volts
- 1.0 metre of a live uninsulated overhead electric of a voltage of not more than 1,000 volts
- 3.0 metres of a live overhead electric line, whether insulated or not, of a voltage exceeding 1,000 volts but not more than 33,000 volts
- 6.0 metres of a live overhead electric line, whether insulated or not, of a voltage exceeding 33,000 volts.

Recommendations

A detailed site survey, which can reduce the risk of a collision with overhead power lines, should be conducted before preparing the lifting plan, completing a risk assessment and operating the crane.

Spatial knowledge from online tools, such as Western Power's geospatial map viewer – [Network capacity mapping tool](#) (NCMT), can support PCBUs and crane operators to identify and assess the location of overhead high voltage transmission lines in rural and remote locations. However, online tools such as the NCMT are not necessarily complete and should not be relied upon as a substitute for independent research and professional advice.

Information from satellite-mapping apps or platforms should not be used as a replacement for risk assessments and lifting plans conducted on site prior to work being undertaken.

Actions required

When working near overhead power lines PCBUs, operators and other duty holders, such as site supervisors, should ensure that:

- regulatory requirements for working near live overhead power lines are followed
- adequate hazard identification and risk assessments are conducted prior to work starting
- safe working zones are established, depending on the voltage and type of crane – Western Power's [Overhead Network Safety](#) webpage contains further information
- spotters are properly trained and assist to ensure the crane boom is a safe distance away from power lines
- utility companies are contacted to de-energise overhead power lines in situations where there is a potential for contact, based on a risk assessment and before work is started
- the location, height and minimum safe clearance of overhead power lines are identified and noted on the lifting plan, and the crane boom is adjusted as required when approaching an overhead power line.

References and further information

Safe Work Australia

- [Guide for operating cranes and mobile plant near overhead electric lines](#)

Western Power

- Industry safety – [Overhead network safety](#)
- [Network capacity mapping tool](#)

Standards Australia

- AS 2550.5 – *Cranes, hoists and winches-Safe Use Part 5: Mobile Cranes*
- AS 2550.11 – *Cranes, hoists and winches-Safe Use Part 11: Vehicle-loading Cranes*