



MAY 2024

# Risk management guidance for EV, battery and charging infrastructure



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## About CIRIA

CIRIA is the Construction Industry Research and Information Association, a neutral, independent and not-for-profit member organisation.

Our vision is to be the leading enabler and preferred partner for performance improvement, to drive collaboration across the built environment and construction sectors to research, develop and transfer knowledge.

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## CIRIA Products

CIRIA delivers robust, authoritative and independent good practice guidance applicable across sectors and designed for a range of users, from policy makers to practitioners.

Our guidance is developed collaboratively with industry and academic experts. Our methods ensure consensus, quality and the latest thinking underpin everything we do. Our work contains case studies to share knowledge and illustrate practice through examples.

We raise awareness of our good practice guidance through training, events, communities of practice, social media, blogs and press releases. Key messages from our projects are widely disseminated to help embed good practice into industry.

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## CIRIA Research Ambitions

CIRIA's 60+ year history and future purpose are aligned to our ambitions, designed to make a tangible difference to the sectors in which we work. We take a holistic, systems-based approach to critical industry challenges within our 5 core research ambitions.



Embedding  
Sustainability



Achieving Net  
Zero Carbon



Increasing  
Resilience



Improving  
Delivery



Harnessing  
Innovation

# EV, Battery and Infrastructure Risks

## Justification

Electric vehicles, their associated charging infrastructure and battery storage present a range of risks which are less well understood in terms of both likelihood and impact in comparison with internal combustion engines. Well publicised incidents of EV fires have highlighted the speed, intensity, characteristics and consequences of fires as well as the need to consider mitigation approaches before, during and after an event. Many column inches have been dedicated to EV fires - but separating fact from fiction, and more importantly working out what to do about understanding and mitigating the risks has not yet been actively consolidated into independent guidance to aid asset owners.

CIRIA intend to produce guidance to manage risks associated with EV, batteries and associated infrastructure aimed at consolidating good practice from research and practical case studies for a range of asset owners.

## CIRIA Approach

CIRIA has already been commissioned by Transport for London to undertake a desk based review of available literature and practical experience as part of a Phase 1 for this project. This will identify what is known, where there are knowledge gaps and produce a short report which we aim to publish in the Autumn of 2024. The Phase 1 work will also begin to scope Phase 2 of the project which will develop robust independent good practice guidance to manage the risks associated with EV infrastructure.

For the guidance production we are seeking further collaborative funding partners, who own, use, manage or deal with EV related risks to take an active role in steering delivery to ensure the guide reflects a consensus viewpoint of what good practice looks like. We hope that Phase 2 will mobilise on conclusion of Phase 1 in the Autumn 2024 and take ca 12-18 months to deliver.

## Product Description

This project will deliver a good practice guidance document for the proactive management and mitigation of risks from EV and ancillary equipment. The guide is aimed at designers, asset managers, operators and those involved responding to EV related risks. The guide will draw upon literature identified in Phase 1 report, case studies and lessons from a range of international contexts.

## Scope

- To synthesise published lessons on large scale vehicle fires that have additionally included EV, hybrid vehicle and personal mobility device thermal runaway events in the UK and internationally including batteries, battery energy storage systems and ancillary charging equipment.
- To provide guidance on existing risk mitigation methods, including whether current fire suppression systems, emergency response protocols, environmental protection considerations, public safety management guidance and regulations are appropriate for the fire risks associated with the new safety challenges the clean energy transition brings.
- To provide guidance on the environmental impact of EV fires including heat, smoke, gas, pollutants from vehicles, batteries and fire suppressants and how sustainable mitigation can be implemented that adhere to regulation. This will cross reference existing CIRIA good practice on Containment Systems for Pollution Control.
- To provide guidance upon emerging technologies, and exploration of new materials and technologies for enhancing EV fire safety in the following areas:
  1. Building design, construction and retrofit: including safe and clear means of escape, and separation between EV Charging and other building uses, fire resistant and retardant material, fire suppression systems and methods specifically tailored for EV battery fires, guidance on safe EV parking areas at surface and subsurface levels, multi-level structures and structures that may be prone to more significant risks posed by thermal runaway or vehicle fires such as tunnels.
  2. Charging infrastructure; installation and operation, storage, handling, disposal and recycling of batteries for environmental and safety risks
  3. Battery technology - materials and designs that are less prone to thermal runaway, lithium-ion batteries, thermal management systems (within buildings and vehicles),
  4. Emergency response procedures for EV-related incidents, including fires, to ensure the safety of first responders and passengers, training available on EV safety

## Indicative Timeline



# Why invest in a CIRIA project?

The benefits to your company from contributing to our projects

## Our reputation

Our reputation in the industry is long established and widely recognised. The principles of quality, sustainability and collaboration have been a foundation for what we do for many years.

## Our downloads

Our Guidance is downloaded over 50,000 times per year



## Our reach

Our members and downloads span over 50 countries worldwide



The benefits of being involved in a CIRIA project are various:

- Deliver significant corporate value for modest levels of investment.
- Raise awareness of your corporate brand through logo on outputs and submission of case studies and content.
- Network with peers, clients and thought leaders in the sector.
- Get your message heard and influence industry direction.
- Demonstrate tangible leading contribution to improvement in the sector, fulfilling ESG goals
- Provide CPD for your staff, aiding routes to chartership and personal career growth
- Assist future work winning through involvement with industry leading good practice

# Want to know more?

## CIRIA Research



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## CIRIA Membership



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