

BACKGROUND AND PURPOSE

Background

The Department for Business, Energy and Industrial Strategy (BEIS) has tasked Frazer-Nash Consultancy and its partners to deliver the Reactor Design: Safety & Security Research & Development Programme. This programme of work forms part of the Nuclear Innovation Programme that represents a significant commitment by the UK government to help the civil nuclear sector develop new techniques and capabilities to realise opportunities in both national and international markets.

The core programme includes 20 R&D projects focused on four key areas relating to safety and security:

- Advanced Safety Case Methodologies.
- Security Modelling and Simulation Assessment Methodologies.
- Reactor Design for Safety, Security and Safeguards.
- Control and Instrumentation Safety and Secure Design Capability.

This toolkit presents the consolidated output of the Advanced Safety Case Methodologies. This research topic has focused on developing a toolkit of safety case guidance that can reduce costs and support the adoption of novel nuclear technologies as a source of low carbon power.

Purpose

The toolkit is intended for use by both existing and prospective UK Nuclear site license holders. Its primary focus is the development of safety cases for nuclear reactors but it is equally relevant for non-reactor nuclear sites. While the content of the safety case will be dictated by the application, for example the safety case for an operating nuclear station will necessarily be very different to that of a decommissioning plant or process plant, some level of consistency in the structure would be beneficial.

This toolkit provides a single source repository of safety case guidance, the application of which will help improve standardisation across the civil nuclear industry. The guidance, techniques and tools presented in the toolkit are primarily for use by those directly involved in the production of safety cases, principally:

- **Authors:** those responsible for authoring safety case documentation, including the supporting analysis and substantiation.
- **Reviewers / Verifiers:** those responsible for the verification, review or independent assessment of safety case deliverables, including the ONR.
- **Approvers:** this includes anyone with the authority to sign-off safety case deliverables on behalf of the licensee. These individuals are not necessarily safety case practitioners themselves but require sufficient understanding of the processes and activities involved to enable them to satisfy themselves that due process has been applied appropriately by SQEP individuals.

The content of this toolkit will also be of benefit to a broad range other stakeholders who require only a high-level appreciation of nuclear safety case development.