

Health and safety by design

5. Appendix

Useful sources of information

- Network Rail Safety Central: Prevention through engineering and design
- HSE: The Construction (Design and Management) Regulations 2015
- HSE: Managing construction health risks
- HSE: Costs to Great Britain of workplace injuries and new cases of work-related ill health – 2023 to 2024
- CITB: Strengthening construction through collaboration
- RSSB: The cost benefits of health and wellbeing
- RSSB: Better practice in health by design
- RSSB: Taking safe decisions
- RSSB: Human factors guidance
- ORR: Safety verification guidance
- National Protective Security Authority
- Secured by Design
- The National Cyber Security Centre
- ANSI/ASSP Z590.3-2021: Prevention through Design Guidelines for Addressing Occupational Hazards and Risks in Design and Redesign Processes
- Safe Work Australia: Safe design
- Crossrail Learning Legacy: Healthy by design
- London 2012 Olympics Learning Legacy
- HS2 Learning Legacy
- The RIBA Plan of Work includes a definition of 'change control procedures': RIBA Plan of Work core project strategies

The law

Health and Safety at Work etc. Act 1974 (HSWA)

The general duties that arise under sections 2, 3 and 4 of the Act to do what is reasonably practicable to secure the health, safety and wellbeing of employees and others can be interpreted as requiring reasonable consideration of health and safety by design matters and acting on the findings.

Section 6 of the Act has a specific requirement to ensure through design and manufacture that 'articles used at work' do not present safety or health risks during set up, operation or maintenance. This is a relatively narrow duty compared to the generality of 'safety by design' however as 'article' is itself a specific term under the Act and does not encompass the entirety of railway systems, merely some of the items of machinery or equipment that exist within the railway system. For those items in scope however it is very relevant to health and safety by design considerations.

The Act sets out the general duties but perhaps more importantly it creates the power to set up a framework of subsidiary regulations. The following three statutory instruments made under the Act expand on the general principles and deal more particularly with topics relevant to health and safety by design.

Management of Health and Safety at Work Regulations, 1999 (MHSW)

The MHSW Regulations create a very explicit duty to carry out a suitable and sufficient risk assessment and then undertake prevention of the risks identified. The two key regulations are:

- Regulation 3, which set out the requirements on dutyholders to conduct a suitable and sufficient risk assessment; and
- Regulation 4, which asserts the general principles of prevention, which are then set out in detail in schedule 1 of Regulations – see below. This is commonly referred to as the hierarchy of risk control.

Construction (Design Management) Regulations 2015 (CDM)

The Construction (Design and Management) Regulations 2015 apply to all railway building and construction projects, regardless of their size, duration, and nature.

These regulations place responsibility for the previous 'CDM coordinator' functions in the 2007 regulations on the new 'principal designer' role, including crucially the pre-construction phase responsibilities. This entails taking account of the general principles of risk prevention to eliminate, so far as are reasonably practicable, risks to people using or maintaining a structure, which includes a railway. Where it is not possible to eliminate these risks the designer must, so far as is reasonably practicable, take steps to reduce or control the risks through the subsequent design process. The designer's duties start as soon as designs are prepared which may be used in construction work. This includes the concept design stage and work carried out for feasibility studies. The emphasis is on addressing health and safety issues from the earliest point in a project to eliminate foreseeable risks and avoid costly changes or adaptations later on.

Railways and Other Guided Transport Systems Regulations 2006 (ROGS)

The original 2006 version of ROGS has been amended by several later statutory instruments. The ORR website⁶ summarises these and provides an unofficial consolidated version of ROGS for guidance; you should always check actual legislation for the authoritative version of the law.

For all dutyholders, mainline and non-mainline, responsibilities around risk assessment are set in regulation 19 of ROGS.

ROGS Regulation 5(1)(b) requires that a mainline duty holder's Safety Management System applies the relevant parts of Common Safety Method on risk assessment and evaluation (CSM-RA). The CSM-RA requires that mainline railway dutyholders proposing any significant safety-related technical, operational, or organisational change use a common approach to assess and evaluate the risk posed by the change.

Before any significant proposed change, which is likely to be associated with an opportunity to re-design a product, equipment, process, or organisation, they must demonstrate that the 'risk assessment' principles have been correctly applied, including coordinating and managing the demonstration that the safety requirements are met. This may include assessments made by other organisations as part of larger projects.

The CSM-RA approach covers hazard identification, then risk analysis and evaluation via three main routes: the use of codes of practice or standards, using comparable reference systems, or undertaking explicit risk estimation. This approach also requires the use of an independent Assessment Body (AsBo) to input to and monitor the process.

ROGS Regulation 22 requires all transport operators to cooperate with one another. This can at times be central to the health and safety by design approach when dealing with shared risks or across interfaces between adjacent dutyholders. It covers both basic design compatibility, such as between train and platforms, as well as operational issues, for example ensuring stations are designed with ventilation to ensure operators staff are not exposed to DEEE.

Regulations 3 and 4 of ROGS only require mainline railway dutyholders to have a SMS once train services are operating. For new build mainline railways not associated with an existing infrastructure manager there is therefore no need to have a ROGS compliant SMS in place and the requirement under ROGS to follow CSM-RA is not in place either. In practice this should have minor effect since for a scheme to be Authorised under Interoperability it will have had to follow the CSM-RA process anyway.

For non-mainline railways and other types of transport system, such as metros and tramways, there is a requirement under regulation 6(6) of ROGS that if there is no 'transport operator' in place while a system or project is being developed then a responsible person takes on some of their duties. Those duties are the ones in paragraph 6(4) of ROGS to undertake Safety Verification (SV).

SV is a requirement under ROGS that when non-mainline transport operators (transport undertakings or infrastructure managers) introduce new or altered rolling stock or infrastructure, they need to ensure that health and safety considerations are incorporated into their design processes. SV is therefore entirely compatible with and a part of good health and safety by design practice. The Competent Person required under SV is there to advise and comment on the application of standards and good practice and to help decide on the assessment and acceptance criteria for projects.

SV does not apply to all non-mainline projects, there is a risk and difference test built into the system, but nevertheless whether formal SV is used with a Competent Person, or whether there is advice taken from an Independent Safety Advisor, the function of having some external advice can be a valuable role to help guide a project toward good practice and ensure that this is implemented properly.

There is further guidance on SV and the role of Competent Persons on ORR's website and the broader issues around 'change management' are addressed in ORR's separate Strategic Risk chapter on this topic.

- ← Previous 4. Continuous improvement