Health and Safety by Design

Guidance for Inspectors

Positive and Negative Indicators for Health and Safety by Design

The table below is not intended to be exhaustive, or that every measure applies in every project, but it is intended that by considering a project against these measures a qualitative impression can be obtained about how health and safety by design might be being delivered.

Where the table below use the term ‘works’ this is to capture infrastructure, products, rolling stock, equipment, systems, etc. It can extend to considering the materials used in projects or methods of construction and manufacture.

These principles apply as much to temporary works as to permanent works.

Duty holders are subject to the Management of Health and Safety at Work Regulations and the duties there to undertake risk assessment and apply the hierarchy of risk control in the schedule to the regulations – that means designing out risks as the most preferred option and relying on instruction and training as the last resort. This is a key regulatory tool to delivering health and safety by design so seeing that duty holders and their designers understand this duty and can document that they have applied it will be an important measure.

Positive	Negative
Duty holders monitor safety incidents and trends, consider from that what additional controls might be needed, apply those controls and update their standards and guidance for the future.	Dutyholders don’t monitor incidents and trends to discover root cause; that lessons are not taken forward into updating standards and guidance.
Dutyholders look to other projects and companies, in the UK and abroad for good practice, particularly when undertaking new works that they have not conducted before.	Dutyholders design works in-house with no reference to other projects and no effort to look for good practice elsewhere.
Dutyholders consider the railway as a system and consider the effect of their works on other duty holders.	Duty holders design, construct and operate their systems in a silo and don’t consider the effect from and to other adjacent undertakings.
Duty holders and their designers take advice from constructors, operators and maintainers when planning and designing new works.	Designs are prepared in isolation from those who will have to construct, operate and maintain the works.
Dutyholders have a documented process for risk assessment that is scaled to the nature of change. For mainline duty holders we expect to see the use of the Common Safety Method for Risk Assessment and involvement of an Assessment Body.	Duty holders have ad-hoc or simplistic processes for risk assessment. No planned use of CSM-RA, late appointment of AsBo.

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Positive	Negative
Duty holders consider health and safety from the earliest stages of planning of works and that health and safety is one of criteria used to judge a project as it progresses though development stages	Duty holders fail to assess health and safety impact until design work, or even construction, is complete and then remedial work has to be done to correct designs or to modify completed works.
Duty holders look to maximise the potential for improvement when making changes. For example a project to upgrade a station to LED lighting looks at where all the lights are to ensure adequate coverage.	Duty holders set strict limits to projects and do not look for potential for wider improvement. For example a project to upgrade a station to LED lighting considers only retrofitting at existing light positions.
Duty holders make specific consideration of the needs of people with impairments or disabilities when undertaking works. This extends not just to passengers but to employees as well.	Duty holders do not take a wide enough view of the potential disabilities of their employees or passengers and as a result exclude people from employment or safe use of the railway. NB this may also place them in conflict with legislation on disability such as the PRM TSI, RVAR and the Equalities Act.
Duty holders choose equipment with intrinsic safety features and equipment that is configured to fail safe. Consideration is made not just of operating conditions but also of how equipment will need to be inspected, cleaned and maintained.	Duty holders choose equipment without fully considering operational safety, relying on training and instruction of staff rather then choosing equipment that has designed out hazards. There is little or poor consideration of how equipment can be inspected, cleaned and how safe equipment is when needing to be maintained, and also whether staff are exposed to other risks when undertaking maintenance. (For example placing an equipment box so close to the railway that staff are exposed to high noise levels and risk of being struck, when it is reasonable to place the equipment at a distance from the line.)
Duty holders make efforts to design out risks but where this is not possible that the risks are mitigated and the residual issues are documented and that information passed forward to those who will manage the issue in the future.	Duty holders make minimal efforts to design out risks and fail to properly document residual risks. Information on residual risks and characteristics of infrastructure and systems are not passed on to managers and maintainers.

Positive	Negative
Duty holders make efforts to measure safety by design performance. For example tracking how many issues have been flagged in design reviews and what proportion of these are closed out in re-design and not passed on. What proportion of designers have received training on slips, trips and falls.	Duty holders do not make efforts to look at or measure the quality of the design work that is being done for them; they just measure progress toward completion.
Duty holders look not only at how things are expected to be used, but also consider potential misuse when undertaking design work and efforts are made to design out potential problems.	Duty holders consider only how things are in an ideal world and do not consider lapses or violations. Reliance is put on operational controls by others in the future rather than designing out potential problems.
Duty holders look at a range of options and solutions when starting the planning of works to seek out the most reasonably practicable option. That this process is documented and based on clear selection criteria.	Duty holders have a specific plan and do not consider other options. If optioneering is done the process is manipulated to make the favoured outcome look the best. Selection criteria are not clear or are modified during the process.
Duty holders look at the whole life-cycle when selecting design options and make explicit consideration of the benefits / disbenfits of a design in different stages of its life such as construction, operation, maintenance and disposal.	Duty holders focus only on specific phases of the life of a project, i.e. will it be easy to build, will it operate properly, or what is the cheapest way to do it. There is no effort to consider all phases and make a balanced view of the overall impact.
All the parties have a good and clear common understanding of the roles that they have under the CDM 2015 regulations.	There is lack of understanding of the latest 2015 version of CDM, or that there is a lack of clarity on who occupies what roles and the duties that come with those roles.
Duty holders look at both health and safety as part of their considerations.	Duty holders may look at safety of their proposals but fail to consider occupational health during construction, operation or maintenance.

Positive	Negative
Duty holders make specific consideration of human factors when looking at equipment that needs to be operated by people, particularly any form of controls, users are consulted, formal standards are applied where appropriate.	Duty holders make little or no consideration of human factors, users are not consulted or their views not taken on board. No use of formal standards such as those for ergonomics.
Duty holders hold documented HAZID/HAZOP or other relevant workshops early in the development process and act on the outcomes.	Workshops to consider potential hazards are either not held, are limited in their scope or not well documented. There is no clear trail to show how issues from such meetings are closed out.
Documents produced, particularly drawings for use on site contain health and safety advice where appropriate. For example a drawing related to platform reconstruction may contain a warning that the block section specified has a certain weight and will need appropriate handling equipment.	Documents and drawings fail to flag up health and safety issues, particularly for construction. For example if a process will use isocyanate paint not flagging up a need to consider providing respiratory PPE etc.
Projects have access to occupational health advisors, during design and in construction. Occupational health advisors are proactive in the construction phase, going out onto sites looking at working practices and offering advice.	Projects do not use occupational health advice during design. Where it is provided on site it is reactive and not proactive.
Duty holders regard standards and guidance as the minimum level for compliance and seek to exceed those levels. They look for innovation and improvement.	Duty holders build ‘more of the same’, rely on working to the standards as the norm, don’t look for or apply new products or processes.
Where a project is using Building Information Modelling (BIM) that health and safety information is being included in the system and being shared among the project parties. (If you need to know what BIM is: http://www.rics.org/uk/knowledge/glossary/bim-intro/ or http://www.bimtaskgroup.org/bim-faqs/)	Projects using BIM are not exploiting the capabilities to share health and safety data in the system.

Positive	Negative
That there is an assurance process to certify that what was specified and designed is what is actually built and delivered.	That ad-hoc modification of design is done on site to suit conditions and not fed back to designers and the change properly logged an incorporated into as-built information. Equipment that is delivered and installed is not that specified and as a result operating and maintenance methods are not correct.
Projects subject to legislation such as Interoperability, Level Crossings Act, private Acts of parliament or Transport and Works Act Orders requiring consents to be given have been discussed with ORR at an early stage to plan their route to Authorisation / Approval and design information is being shared with ORR.	Projects deliver information to ORR at a late stage to seek Authorisation / Approval with little or no prior discussion. ORR has to accept fait accompli on less than optimal works.
Procurement decisions take health and safety into account. For example purchasing a hazardous chemical in smaller containers has both a manual handling benefit and reduces the impact of accidental spills.	Procurements decisions are made on narrow value criteria rather than considering wider long term costs.

Other negative indicators could include for example:

Finding site work where specified products include large weight objects (25kg+ concrete slabs etc.) which could have been specified as smaller items, or where no planned handling equipment has been specified. This shows a lack of H&S knowledge on the part of the designer, and a lack of construction advice in the design planning stage.

Finding work which, while it is to standards, has introduced a secondary problem. For example introducing overhead electrification to a line, where the OHLE itself is perfectly satisfactory, but no account has been taken of over bridges, so parapet heights are unaltered and then there is a sub-standard clearance from OHLE to the public. These situations show a lack of holistic thinking on the part of the designer.