Federation of Model Engineering Societies

"Risk Assessment Workshop"

This document was written by Paul Naylor and was originally published by FMES in the Newsletter of May 2025. It reports a workshop carried out at the March 25 AGM event day.

Risk Assessment: AGM event day Workshop March 2025

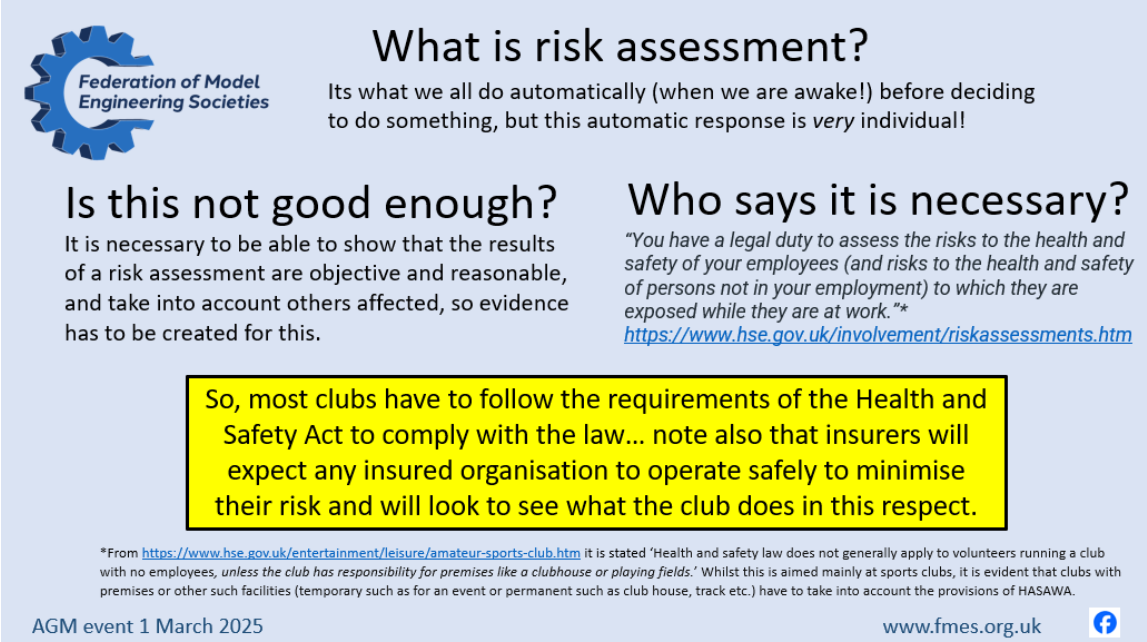
The workshop that we regularly hold at the AGM event day is still going and we are still finding topics to work on at it…if you have ideas for new topics, do please let us know! Apart from the entertainment of the attendees, the point of a workshop is to produce something that may be of interest to our members, or to ourselves by finding out member clubs views on topical issues. In the past this has informed our strategy development (including the no-longer-new website), priorities for supporting Young Engineers, gaining feedback on Insurance and of wider interest: getting and keeping new club members. This time we decided to focus on a very important aspect of modern club management: the requirement to demonstrate awareness and management of Health and Safety responsibilities by carrying out risk assessments.

Risk assessments are required as a key part of complying with the Health and Safety at Work Act, which, in spite of its main focus on employment in places of work, does apply to volunteer clubs and organisations that operate facilities (tracks, clubhouses, workshops etc). See 'Useful links' section below.

The workshop asked the participants (who were grouped on tables, each facilitated by someone who took notes of comments and findings) to carry out a risk assessment on one of three, brief, 'scenarios' that were presented and then rationed out to the tables so that all were discussed.

Although the workshop certainly did identify risks with the scenarios, the point was not to decide detailed responses to what, after all, were 'theoretical' situations (and no doubt differently pictured according to personal experience), but to carry out a process for risk assessment that could -and should - be carried out for most club situations.

The introduction included:



It is up to each club to decide what 'reasonable' is: and in any disputes, ultimately the judge/jury decide! Guidelines play a role in establishing at least reasonable courses of action.

This introduced the concept of 'what is reasonable' and how it is defined. The following is from the HSE and can be found at https://www.hse.gov.uk/enforce/expert/alarpglance.htm .

It is the cornerstone that drives decisions:

"ALARP" is short for "as low as reasonably practicable". "SFAIRP" is short for "so far as is reasonably practicable". The two terms mean essentially the same thing and at their core is the concept of "reasonably practicable"; this involves weighing a risk against the trouble, time and money needed to control it…but the risk needs to be identified still.

Here are the workshop activities and findings for readers interest, illustrating the risk assessment process. Later there is a brief discussion with some FMES comments and suggestions.

The three scenarios were:

1. A club open day with paying public passengers on a railway around a park, in good weather with steam and 'diesel' haulage and ground level trains with around 15 passengers on each.
2. A club working day in a public park including regular maintenance, digging, welding, painting, use of machine and hand tools.
3. A club visitors day at a track in a public park with members of other clubs attending with a barbecue and social get together (but no public rides etc).

These scenarios were allocated to tables in the room, so each had at least one table discussing it. Scenarios 1 and 2 had two tables participating.

There were four parts to this exercise, corresponding to the four stages necessary to consider an objective risk assessment. Each was presented in turn, in the appropriate logical order, and the participants were invited to consider the parts as follows:

Part 1.

This part is to carry out an open discussion to identify the risks that the participants perceive may be presented by the scenario allocated. In 'real life', the 'scenario' would clearly be known in some detail to the participants of the risk assessment and the activity would not be constrained by time (as was the case in the workshop), so the results would be a longer list, more detailed and more relevant. The participants were discouraged from discussing the risk identified except to explain it at this stage. This is key to making an objective list.

The results of the discussions for each scenario and the development of the 'risk list' for each are shown in the left most columns of figures 1, 2 and 3.

Part 2.

This part is now to analyse the 'risk list' created in Part 1, and identify the relative likelihood of each of the risks. This part of the process is, of course, usually a very subjective analysis and it is not really appropriate to consider categories of likelihood more extensive than of 'High', 'Medium' or 'Low' likelihood.

The results of this part of the analysis are shown in the middle columns in figures 1, 2 and 3 for each scenario respectively.

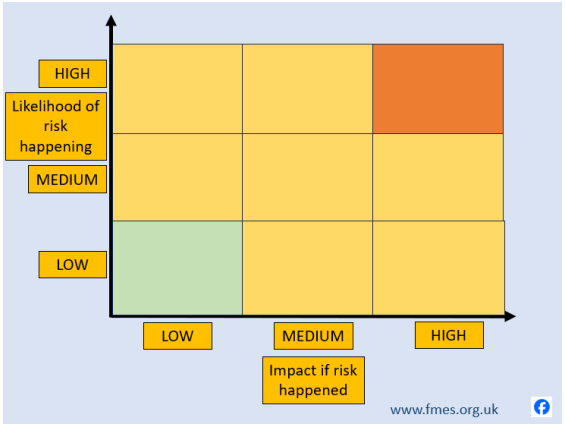
Part 3.

This part is to further analyse the 'risk list' by considering the gravity of each risk. In other words, if there was an incident caused by that risk, what would the consequences be (ie the 'impact'). As before, there is little point in most cases for considering a greater fineness of assessment that three broad categories of impact: 'High', 'Medium' and 'Low'.

The results of this part of the analysis are shown in the right most columns in figures 1, 2, and 3 for each scenario respectively.

Part 4.

The final part of the risk assessment (but not of management actions required, see later) is to assemble the data gained in a form that makes interpretation clear, allowing conclusions to be made and, if required, actions to be agreed. One way to achieve this is to present the findings graphically on a 'risk/consequences' graph. This is a standard presentational aid and comprises a two-dimensional graph with axes 'likelihood' and 'impact' of the form to the right. The colours will be discussed later.



The results of this part of the analysis are shown in figures 4, 5 and 6 for each scenario respectively.

Discussion:

a. About the process

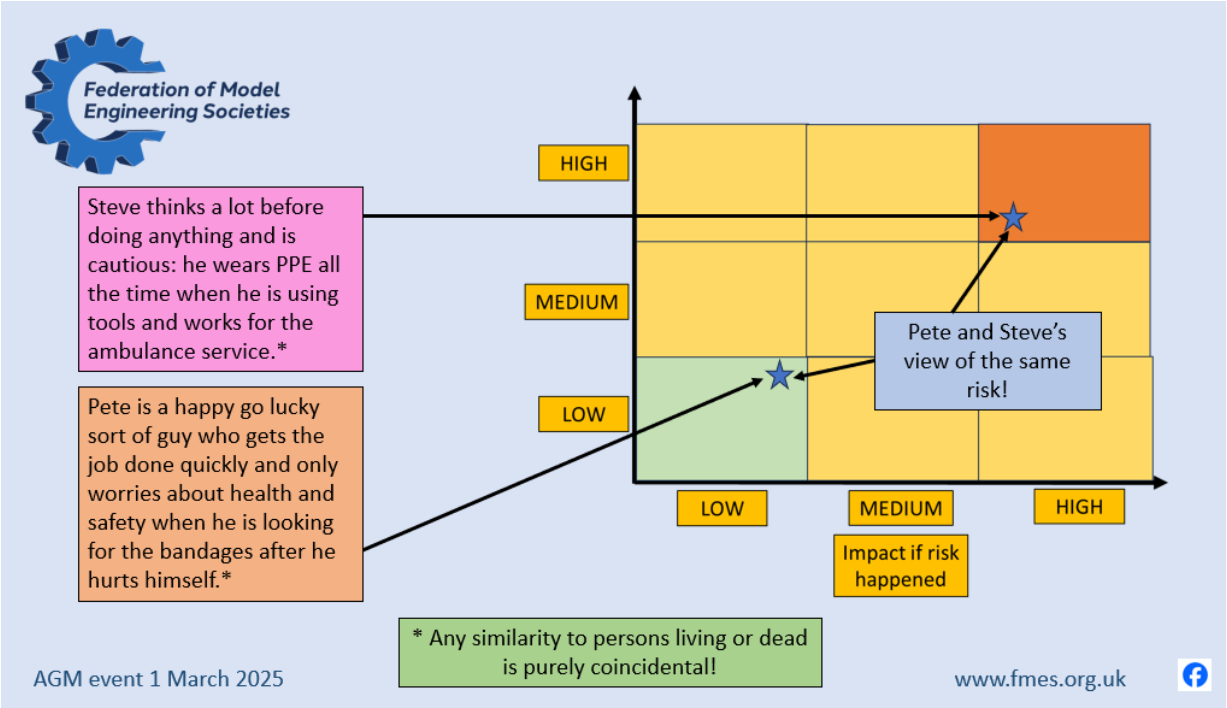
The first point to be made is that the exercise carried out in the workshop was theoretical in that the scenarios as presented were the only details available. No doubt participants used their own experience of the circumstances *suggested* by the scenario but because most came from different clubs and hence different experiences, no reliance should be placed on the content of the 'risk lists' created or, indeed, their analysis. The point of this exercise - and article - is to illustrate a standard *process* for carrying out a risk assessment as the Health and Safety Act requires. The process can, by all means, be used to generate risk assessments for specific situations but not the data used.

The colours used in the graph are illustrative and indicate suggested priorities for required intervention. The point of the graph is that data points in the top right of the graph (ie 'high/high' or red in the illustration) suggest greatest focus for management, to *possibly* low priority for action for those data points in the bottom left (ie 'low/low' ie green in the illustration). The meaning and priority for action should be agreed by the risk assessors before conducting the exercise, and there is no restriction for reconsidering the risk assessment especially if it identifies higher priorities than otherwise thought for action. Beware of deliberately lowering an impact and/or likelihood score without a reasoned and objective rationale if the previous result presented an unpalatable conclusion.

The aim of the risk assessment process is to identify or perceive risks (part 1), to analyse them (parts 2, 3 and 4) *and then to do something that is informed by the assessment.* What is done is a matter for the management of the process and the relevant club or organisation. Generally speaking, any risks identified as having high impact/high likelihood MUST be discussed and actions agreed to lessen the impact and/or likelihood. It is probable that any risks presenting medium or high impact at least should have some mitigation agreed with emphasis according to their nature and the opportunities for improvement (see 'ALARP/SFAIRP' above). The goal of improvement is to reduce the risk assessment to a lower and more acceptable level *because something is done – mitigating actions - to reduce it*.

Remembering the rather difficult definition of 'reasonable', scoring something with, for example, a 'high impact' score suggests that the risk might be to cause significant personal injury as this is the main basis for health and safety (H&S) activities. There are other risks to a club of course, and the same process could be used to assess these but with different emphasis. It is important though that H&S is not subjugated to other risks as a result of priorities. For example, a club may consider that a high impact/high likelihood risk might cause adverse publicity if an incident happened. Actions agreed to mitigate this risk should not compromise any activities to mitigate a H&S risk. To put it crudely, if the risk was a train derailed and caused injury, then actions should be in place to mitigate this risk as a priority and not how to deal with bad press!

One other aspect that might be considered is that assessment of risk (even with HSE comments on 'reasonable') is the subjective nature of judgement of individuals (see illustration below). The impact on this could be either overly optimistic or overly pessimistic judgements may be made. Awareness of this is a practical step and maybe club management could set up a mechanism to agree such differences (eg a team approach?).



One other aspect to bear in mind when performing a risk assessment is the nature of the people that the assessment is focussed on. For example, if your club offers rides to disabled people, then what may be a low risk for an able bodied person could be a high risk for someone who is disabled.

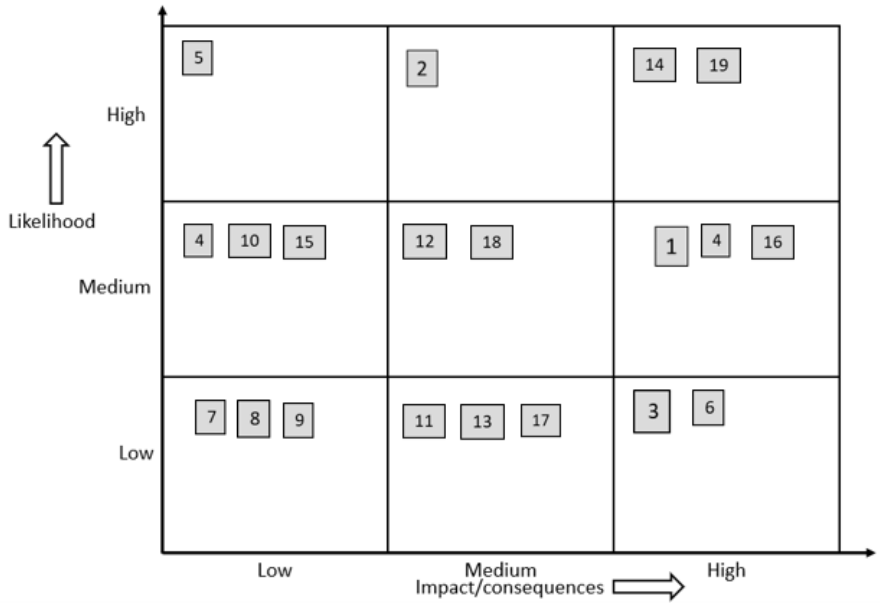
Figure 1, Scenario 1 Public open day

RISK	LIKELY			IMPACT		
	LOW	MEDIUM	HIGH	LOW	MEDIUM	HIGH
1. Derailment		X0			0	X
2. Visitors on the track			X		X	
3. Trains colliding	X					X
4. Cinder burns		X0		X		0
5. Excessive speed			X	X		
6. Passengers misbehaving on train	X0					X0
7. Signal malfunctions	X			X		
8. Train malfunction	X			X		
9. Passenger illness	X0			X0		
10. Dogs/animals on site		X		X		
11. Debris on track	X				X	
12. Hot surfaces		X			X	

13. Tripping/falls	**0**				**0**	
14. Level crossing			**0**			**0**
15. Overweight people		**0**		**0**		
16. Poor or untrained supervisors		**0**				**0**
17. Vulnerable people supervision	**0**				**0**	
18. Overcrowding		**0**			**0**	
19. Food hygiene			**0**			**0**

Key: X and 0 are scores from different tables.

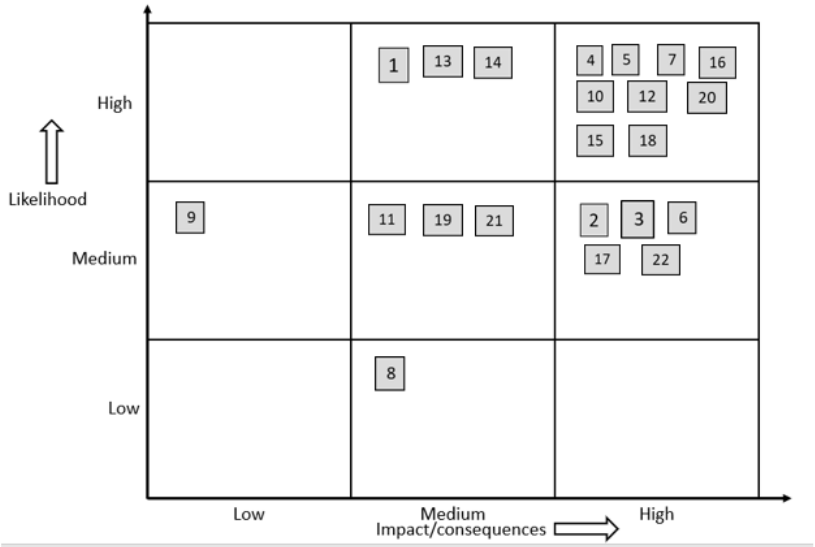
Figure 4, Graph for scenario 1



If a number appears twice, it is owing to the same risk attracting different assessment from more than one table (eg here number 4).

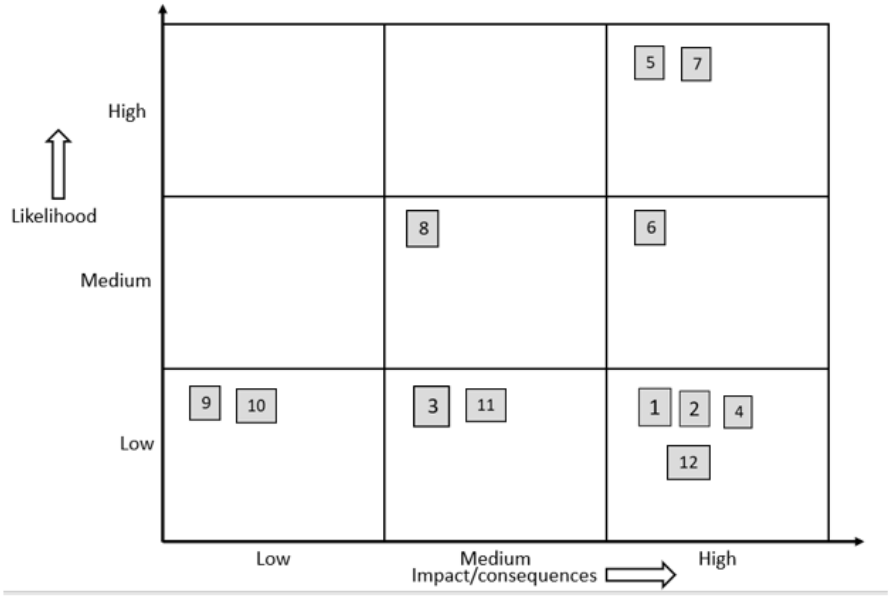
For this analysis, risk numbers 14 and 19 (Level crossing and food hygiene) evidently gave the most concern to the teams at these tables. Managing these risks should entail deciding actions to reduce either or both the likelihood and impact were these to happen. Note that a level crossing is possibly a large and complex circumstance and fundamental change would be expensive (if possible anyway): so getting rid of the level crossing and eliminating the risk might not be a 'reasonable' thing to do, however the high position of it remains a serious risk and so other mitigating activities need to be considered (eg signalling, gates, TV cameras, trains whistling etc.). Thought maybe should be given also to risks 2, 12, 18, 1, 4 and 16 to identify ways to reduce these too.

Figure 5, Graph for scenario 2



For this scenario, the tables considered a significant number of possible high likelihood/impact risks. Perhaps this is not surprising given the potentially risky nature of the tools used by club members (and, remember, risks to passers by too, such as 'arc eye' from welding) and the 'traditional' approach that members 'know what they are doing'! The actions to eliminate or at least mitigate these risks probably lie in the normal workshop defensive measures found on commercial factory floors: but it is for each club to decide, in its circumstances, the approach that they will adopt.

Figure 6, graph for scenario 3



One table considered this scenario and generated a spread of results across much of the graph. As before, action should be taken over risks 5 and 7 as a priority, and probably something about risks 6 and 8 as well.

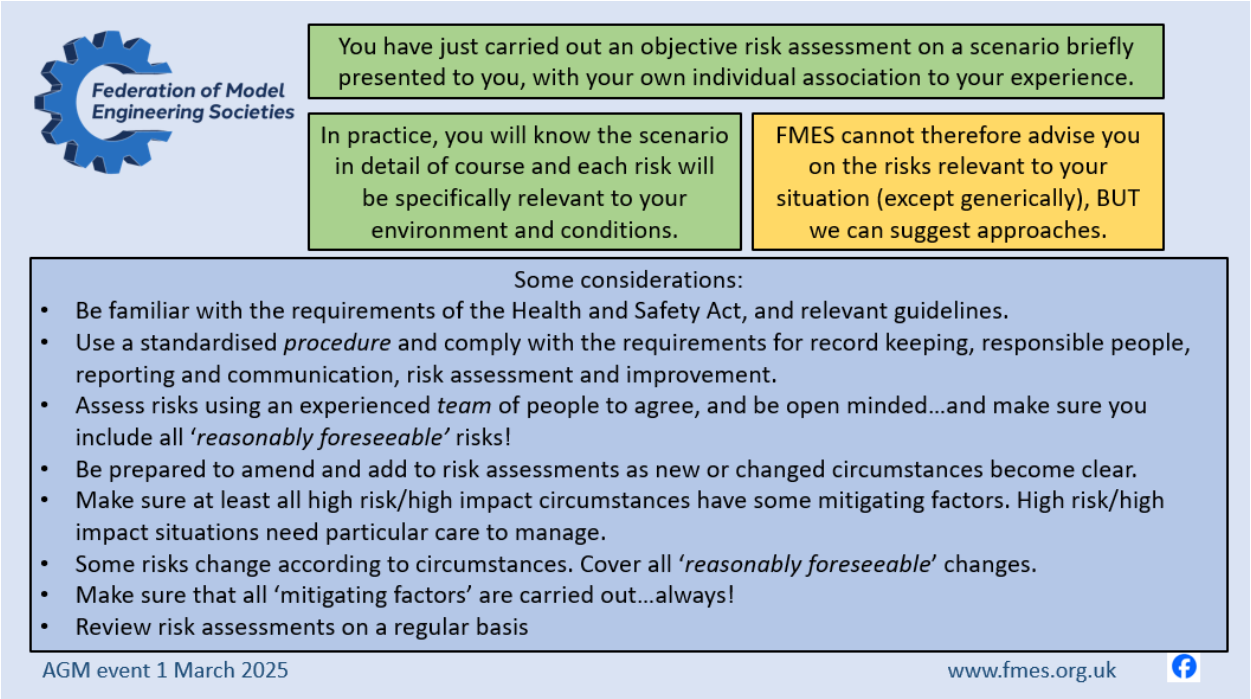
b. About the results

The results generated by this hypothetical risk assessment are, as you may expect, lacking in explanation and detail. It is also unlikely that every reader will have the same opinion of the status of a given risk, or the completeness of the list in the first place. That is not the point of the exercise of course: it is simply a demonstration of the use of the process. It is not, therefore, constructive to consider whether the risks and their assessment are appropriate: they are only, here, illustrating an objective and clear way to carry out a risk assessment.

The process demonstrated then shows the first two stages of managing risk: identifying that a risk exists, and using an objective means to decide how important it is to be dealt with in an appropriate manner (ie analysis).

The third stage involves the *management* of the risks. The use of the graphs (and the agreed definitions of what constitutes high/medium and low values) provides evidence that the risks have been assessed: for this to have been a valuable exercise, the high priority risks now need to have actions agreed and implemented to eliminate, or more likely *mitigate* the risks to reduce their profile (ie what is the likelihood and impact AFTER remedial activities have been done). The aim of the risk assessment and management is to reduce all risks to a low enough level for it to be a *reasonably* safe environment for all involved.

FMES recommendations:



a. Some useful information and links:

An introduction to the Health and Safety at Work Act (HASAWA) can be found at https://www.hse.gov.uk/legislation/hswa.htm . There have been clarifying additions since such as the Management of Health and Safety at Work Regulations 1999.

From https://www.hse.gov.uk/entertainment/leisure/amateur-sports-club.htm it is stated 'Health and safety law does not generally apply to volunteers running a club with no employees*, unless the club has responsibility for premises like a clubhouse or playing fields*.' Whilst this is aimed mainly at sports clubs, it is evident that clubs with premises or other such facilities have to take into account the provisions of HASAWA. Note that when HSE has been involved in incidents at clubs, it is clear that they regard that clubs (at least with facilities) fall within their interpretation of HASAWA. In addition, when an H&S incident has caused claims upon insurance, it is evident that the insurers expect compliance with HASAWA to mitigate *their* risks.

An explanation of what HASAWA covers is found at https://www.hse-network.com/health-and-safety-at-work-act-1974-explained/ .

Re risk assessments and actions arising as a result. More can be found on this at:

https://www.hse-network.com/how-to-perform-a-risk-assessment/

Regarding the interpretation of 'reasonable' in the H&S context, HSE have guidelines for their staff that have to assess if an organization has applied appropriate standards in this respect:

https://www.hse.gov.uk/enforce/expert/alarp1.htm

Paul Naylor/FMES 7 March 2025