PART 3:
UNIT RISK ASSESSMENT METHODOLOGY

1.1 HAZARD IDENTIFICATION/RISK ASSESSMENT METHODOLOGY

The purpose of this Part 3 is to give an overview of how the risk assessments are completed whether on a word document or equivalent or are entered onto the Safety IT system PEMAC Care. If using PEMAC Care the nominated personnel in each Unit who will be entering this data will have access to additional guidance to assist them in entering and maintaining these risk assessments. This document gives an overview of the overall process and risk assessment requirements.

Section 20 of the Safety, Health and Welfare at Work Act 2005 requires that in preparing this Safety Statement the University, as the employer, bases it on an identification of the hazards and an assessment of the risks. Therefore, in order to consult with staff and use their existing knowledge and expertise, hazard identification and risk assessment needs to be organised by the Head of Unit and conducted by local Unit staff. Having prepared the Unit Safety Statement Policy, the primary responsibility rests with the Head of Unit in co-operation with the President and Údarás na hOllscoile of the University and/or other appropriate University authorities, to implement the required controls/arrangements (including securing the necessary resources where required).

The BS 18004:2008 Guide to Achieving Effective Occupational Health and Safety Performance provides definitions to the Risk Assessment terminology used in this Part 3 of the Safety Statement and extracts from this standard are included in the tables below.

The recommended risk assessment methodology to be used in NUI Galway is summarised as follows and it is important to ensure that all Units staff are consulted appropriately at all stages:

1.1.1. Identify the geographical area(s) and other activities of the Unit in question.

1.1.2 Identify all the equipment, physical agents, chemical agents, biological agents, operations, present or conducted within each room/work area.

1.1.3 Identify who is or may be at risk.

1.1.4 Hazard (s)

1. For each of the items of equipment, agents, operations etc, listed, identify all the potential hazards using the Safety Statement Form (see resources on Risk Assessments webpage).

E.4.5 Severity of harm

When seeking to establish the potential severity of harm, the following should be considered.

- How is the person likely to be affected?
- What harm will result?

Care should be taken to ensure harm category definitions reflect both (short term) health and safety consequences and (longer term) health effects, e.g. hearing loss. Procedural prompts and/or training might be necessary to reinforce to assessors the need to consider both these types of harm, as there can be a tendency to focus exclusively on short term risks.

A possible categorization of severity of harm levels based on a basic four-band categorization is shown in Table E.2.

Table E.2 Examples of harm categories

Harm category[A] (examples)	Slight harm	Moderate harm	Extreme harm
Health	Nuisance and irritation (e.g. headaches); temporary ill health leading to discomfort (e.g. diarrhoea).	Partial hearing loss; dermatitis; asthma; work-related upper limb disorders; ill health leading to permanent minor disability	Acute fatal diseases; severe life shortening diseases; permanent substantial disability.
Safety	Superficial injuries; minor cuts and bruises; eye irritation from dust.	Lacerations; burns; concussion; serious sprains; minor fractures.	Fatal injuries; amputations; multiple injuries; major fractures.

[A] The health and safety harm categories are effectively defined by quoting examples and these lists are not exhaustive.

An organization should adapt such a categorization to reflect its objectives. For example, the structure illustrated in Table E.2 could be expanded to four bands by separating the "extreme harm" category into two categories, such as "severe harm" (e.g. major fractures) and "extreme harm" (e.g. fatal).

AND

b. The likelihood/frequency of harm or contact with a hazard

2. This is divided into four categories very unlikely, unlikely, likely and very likely. Details are found in Section E.4.6 and Table E.3 in BS 18004: 2008 (below).

E.4.6 Likelihood of harm

When seeking to establish the likelihood of harm, the adequacy of existing controls should be taken into account. When carrying out risk assessment for new activities, the initial assessment should be based on the intended controls. In≈both cases, these measures should be clearly documented so that the basis of the assessment will be clear when the assessment is revisited at a later date. Legal requirements, codes of practice and guidance published by regulatory agencies indicate appropriate controls for specific hazards. The following issues should typically be considered in addition to the work activity information given in E.4.4:

- frequency and duration of an individual's exposure to the hazard;
- vulnerability of the individual or group (e.g. young or inexperienced personnel, pregnant mothers and those working alone);
- potential failure of services, e.g. electricity and water;
- potential failure of plant and machinery components and safety devices;
- exposure to the elements;
- protection afforded by personal protective equipment (PPE) and whether this is correctly worn when required;
- unsafe acts (unintended errors or intentional violations of procedures), either by the individual carrying out the activity or by others (e.g. adjacent personnel, visitors and contractors) who:
  a. might not know what the hazards are;
  b. might not have the knowledge, physical capacity, resources, skills or motivation to work safely;
  c. underestimate risks to which they are exposed; underestimate the practicality and utility of safe working methods;
  d. might be influenced in their behaviour by organizational culture (e.g. a perception that the organization tolerates risk-taking in the interests of productivity); and

  NOTE This includes considering people's behaviour during abnormal and emergency situations as well as during routine tasks.

- the potential for common-cause failures to increase the likelihood of harm occurring, e.g. via failures which could simultaneously disable a number of the controls in place for a given hazard. In assessing the likelihood of harm, an organization should not place sole reliance on historical data, as the data might not reflect current plant and equipment or current ways of working which were adopted after the period covered by the data. However, in the case of ill health data, an analysis can provide useful information on patterns of absence that could inform risk priorities.

NOTE Likelihood of harm is equivalent to the likelihood that a hazardous event actually results in harm. An approach which can also be taken here is to assess the likelihood of a hazardous event occurring and then assessing the likelihood that harm arises from that event. In practice this leads to an approach where a full assessment is made only where harm is reasonably foreseeable.

A simple categorization of likelihood of harm based on a four band structure is illustrated in Table E.3.

An organization should use categories for likelihood that suit its circumstances, ensuring that the range is appropriate both to one-off safety-related incidents and to health effects that might manifest themselves after prolonged exposure to the hazard or sometime after exposure to the hazard has occurred. Similarly, an organization can use different definitions for categories of likelihood. Some organizations might prefer to further subdivide the categories, but a system with too many bands could give a spurious impression of accuracy and make consistent assignment to the correct band more difficult. Whatever the structure, the examples in Table E.3 illustrate the need for organizations to define terms such as "frequent" and "unlikely", to enable assessments to be carried out consistently and with repeatability by different assessors and at different times.

Table E.3 Examples of categories for likelihood of harm

Categories for likelihood of harm	Very likely	Likely	Unlikely	Very unlikely
Typical occurrence	Typically experienced at least once every six months by an individual	Typically experienced at least once every five years by an individual	Typically experienced once during the working lifetime of an individual	Less than 1% chance of being experienced by an individual during their working lifetime

Care should be taken to ensure that the scheme is designed to ask questions that the workers and managers can reasonably be expected to answer. For example, most people find it far easier to judge the typical frequency of a hazardous event (e.g. once or twice a year) than judge the probability that an incident will occur during a particular operation (e.g. between one in a hundred and one in a thousand). Assessors also need to be aware of the limitations in the quality and accuracy of data used in risk assessments, and the possible effect these could have on the resulting true risk level. There are instances where sensitivity assessment is necessary to establish whether the overall conclusions of the risk assessment are robust in the light of data uncertainties. The greater the uncertainty, the greater the need for an adequate margin of safety. Where there is a range of possible ways in which a hazardous scenario might develop, it is appropriate to select a

representative sample for risk assessment. Care should be taken, however, to ensure that the selected sample is indeed representative and that controls which are suitable and sufficient for the sample cases are also suitable and sufficient in the other cases. For complex scenarios, modelling techniques such as Fault Tree Analysis or Event Tree Analysis can assist in building up a picture of the combinations of events, or failures in controls, that would be required for harm to occur. These can be quantified or used simply as qualitative tools. However, some expertise is needed to use these techniques correctly without which potentially misleading errors could arise.

3. Risk Assessment: The product of the likelihood/frequency with the consequence of the exposure/severity determines whether the risk is Very Low (1, 2), Low (3, 4), Medium (4, 6), High (8, 9) or Very High (12, 16). (5. Categories) This risk rating is shown in the table below.

	Severity of Harm			
Likelihood of Harm	Slight (1)	Moderate (2)	Severe (3)	Extreme (4)
Very Unlikely (1)	Very low (1)	Very low (2)	Low (3)	Medium (4)
Unlikely (2)	Very low (2)	Low (4)	Medium (6)	High (8)
Likely (3)	Low (3)	Medium (6)	High (9)	Very high (12)
Very Likely (4)	Medium (4)	High (8)	Very high (12)	Very high (16)

The estimates of risk, split into 5 categories, form the basis for deciding if improved controls are needed and the timescale for action. A risk-based control plan is then devised for each category. In the event of a query the assessment can be discussed with the Health and Safety Office (Table E 6 of BS 18004: 2008 below).

Table E.6 Risk Levels and Action Priority

Table E.6 A simple risk-based control plan

Risk level	Acceptability: Guidance on necessary action and timescale
Very low	These risks are considered acceptable. No further action is necessary other than to ensure that the controls are maintained.
Low	No additional controls are required unless they can be implemented at very low cost (in terms of time, money and effort). Actions to further reduce these risks are assigned low priority. Arrangements should be made to ensure that the controls are maintained.
Medium	Consideration should be given as to whether the risks can be lowered, but the costs of additional risk reduction measures should be taken into account. The risk reduction measures should be implemented within a defined time period Arrangements should be made to ensure that the controls are maintained, particularly if the risk levels are associated with harmful consequences.
High	Substantial efforts should be made to reduce the risk. Risk reduction measures should be implemented urgently within a defined time period and it might be necessary to consider suspending or restricting the activity, or to apply interim risk controls, until this has been completed. Considerable resources might have to be allocated to additional controls. Arrangements should be made to ensure that the controls are maintained, particularly if the risk levels are associated with extremely harmful consequences and very harmful consequences.
Very high	These risks are unacceptable. Substantial improvements in risk controls are necessary, so that the risk is reduced to an acceptable level. The work activity should be halted until risk controls are implemented that reduce the risk so that it is no longer very high. If it is not possible to reduce risk the work should remain prohibited.

NOTE Where the risk is associated with extremely harmful consequences, further assessment is necessary to increase confidence in the actual likelihood of harm.

4. Controls/Arrangements: Identify and list the means to eliminate or reduce each hazard (to as low a level as is reasonably practicable) including both measures currently in place and other required control options (See Part 3.2 below).
5. Persons Responsible: Identify and list the persons responsible for the controls/ arrangements (Refer to Part 3.3 of this Safety Statement).
6. Resources: List the resources required to secure the safety of the equipment/ operation, including staff, documentary and time resources (see Part 3.4 below).

1.2 CONTROL MEASURES/ARRANGEMENTS

Having identified the hazard(s) and assessed the risk(s), appropriate control measures will need to be identified. The priority of the control measures will be determined by:

1. the magnitude of the risk(s);
2. the availability/feasibility of control options;
3. the controls currently in existence;
4. the cost considerations.

In selecting the control(s) the following hierarchy will be adopted based on the General Principles of Prevention (Schedule 3 of the Safety, Health and Welfare at Work Act 2005) (Appendix 6). and see also this HSA guidance on Safety and Health Management.

1. The avoidance of risks.
2. The evaluation of unavoidable risks.
3. The combating of risks at source.
4. The adaptation of work to the individual, especially as regards the design of places of work, the choice of work equipment and the choice of systems of work, with a view, in particular, to alleviating monotonous work and work at a predetermined work rate and to reducing the effect of this work on health.
5. The adaptation of the place of work to technical progress.
6. The replacement of dangerous articles, substances or systems of work by safe or less dangerous or less dangerous articles, substances or systems of work.
7. The giving of priority to collective protective measures over individual protective measures.
8. The development of an adequate prevention policy in relation to safety, health and welfare at work, which takes account of technology, organisation of work, working conditions, social factors and the influence of factors related to the working environment.
9. The giving of appropriate training and instructions to employees.

Where a hazard persists and its elimination depends on a specific control measure, the work activity will be routinely monitored by the responsible person or other competent personnel and be reviewed to:

1. ensure that the control measure is being implemented and is effective;
2. take account of new changes in technology which may offer better control options.

1.3 ASSIGNMENT OF RESPONSIBILITIES

The ultimate responsibility for health and safety management and procedures rests with the President and Údarás na hOllscoile of the University, as the employer. This management responsibility cannot be totally delegated, but the practical

implementation of safety requirements must be delegated and assigned to relevant members of staff, along the line management structure.

The organisational structure (outlined in Part 2/Appendix 1), identifies the groups and personnel responsible for the overall management and implementation of matters relating to safety, health and welfare at work within the University. The following groups and system are key to the process.

1.3.1 Heads of Units

Heads of Units (including those in an acting capacity) are responsible (as set out in Part 2.2.2) for the implementation of relevant statutory legislation in their areas of activity and the implementation and enforcement of University Safety Policy within their areas of authority, activity or responsibility.

1.3.2 All University Employees

All University employees, while at work have responsibilities as set out in Part 2.5.1. In practice NUI employees have safety management responsibilities by virtue of their employment role as a Head of Unit, Principal Investigator, Supervisor, Manager, Team leader etc. and as an employee.

As of November 2019 the following stipulation is included in all employee's contracts of employment, to reiterate their legal and personal health and safety responsibilities in the workplace: *"Employees are reminded that they have a statutory duty to observe all Health and Safety rules and take all reasonable care to promote the Health and Safety at work of themselves, and their fellow employees. Willful breaches of the Health and Safety policy will be dealt with through the disciplinary procedure"*.

1.3.3 Identifying Persons Responsible

An adequate Safety Statement requires that the University clearly identifies the persons responsible for all safety arrangements and properly allocate these functions to them. The Act requires that the Safety Statement specifies "*the names, and where applicable, the job title or positions held of each person responsible for performing tasks assigned to him*". The allocation of safety responsibilities to University staff members is therefore based on their existing duties, job descriptions (where applicable), areas of competence, that they are suitably trained for, and the extent to which they have control over specific areas/issues, as appropriate. As specifically set out in the Act, in assigning an employee to a specific task the employer must take account of the employee's capabilities in relation to safety, health and welfare. Employees must not be put at risk by being given work that they do not have the competence to undertake (HSA Guide to the 2005 Safety, Health and Welfare at Work Act) *(Section 2 (2) of the Act)*.

The Safety Statement reiterates the major responsibilities for implementing health and safety arrangements, at two levels:

1. The person responsible at University Senior Management level is the Director of Safety (Part 2 of this Safety Statement).

2. This Safety Statement allocates the responsibility for each identified hazard and its associated controls/arrangements, to a named individual in Part 4 of this document. In this way responsibility is delegated to specified individual(s) and their area of responsibility has been identified in Part 4 of this document. These responsibilities should be set out clearly and as comprehensively as possible to all Unit employees. However, many of these safety responsibilities will be expected parts of such employee's work.

Having identified the persons responsible, it is necessary that they be fully supported in the implementation of the Safety Statement within their respective Units. Means by which the responsible person will require assistance in fulfilling their role include the allocation of necessary resources and the co-operation of relevant persons or parties.

It should be noted that the naming of "persons responsible" does not extend an individual's personal liability, on the basis that the Safety Statement exists to document responsibility that they will already have as employees under the Act (*Section 13*).

1.4 RESOURCES

The term resources refers to the range of measures and mechanisms needed to implement the prioritised safety controls and arrangements in the workplace by the "Persons in Charge" see (Safety Policy (QA116)). Within NUI Galway these are addressed under the following headings:

1.4.1 Time Resources

University management recognises that developing and implementing health and safety procedures within individual Units and throughout the University generally, will place extra challenges on staff time. As far as reasonably practical the Health and Safety Officer will advise Heads of Units and Safety coordinators on health and safety issues to ensure that staff understand the procedures to enable the efficient use of their time.

1.4.2 Staffing Resources

It is essential that Unit staff are actively involved, consulted and kept informed of the preparation and review of the Safety Statement and all other local safety procedures in order to improve awareness, to use their experience and knowledge of local working conditions, and also to comply with the requirements of the Act. A number of University staff have a specific role in securing the safety, health and welfare at work of University personnel (outlined in Part 2.2.5).

However, all staff have a duty to take reasonable care of their own safety and health and also have responsibility for the safety of those who may be affected by their acts or omissions while at work (Part 2.5)

1.4.3 Financial Resources

The financial resources required are addressed here at two levels.

1.4.3.1 University Responsibility

NUI Galway is committed within the parameters of the HEA financial subventions for safety projects and the competing demands on overall University finances, to providing the necessary resources to:

- implement current health and safety legislation and fire safety legislation, and
- ensure, so far as is reasonably practicable, the safety, health and welfare of all University employees, students and authorised visitors.

This includes:

1. Responding to current legislation by way of a legislative compliance programme.
2. A prioritised maintenance programme and a phased safety improvement programme - commensurate with the level of risk and the resources available.
3. Designing all physical developments and buildings adaptations and expansions to comply with the relevant fire, health and safety requirements from the outset, and that the costs of same are contained in any budgets established for this purpose.
4. Requiring that any contracts executed in/on the University precincts by third parties, are conducted in a safe manner and without risk to safety, health and welfare.
5. Providing a Safety Committee, specialist Sub-Committees and experienced safety specialist personnel (with the necessary supports and multi-disciplinary inputs), to advise the University and its constituent Units, in all matters of health and safety.

1.4.3.2 Units Responsibilities

As set out in the Safety Policy (QA116) "Unit Heads are responsible for ensuring, through their unit management structure and procedures, that each of the activities carried out in their unit has a person in charge, and that the person concerned is competent to safely take charge". Individual Units must organise themselves so that they meet their legal requirements. This includes an allocation of the Units budget to be used *inter alia*;

- prioritised safety measures as identified and assessed in the Safety Statement;
- safety administration specific to that Unit;
- purchasing safety equipment specific to the Unit;
- specialised waste disposal procedures;
- additional expenditure entailed in buying Unit equipment, in compliance with the required safety standards;
- safety training.

In addition, where a Unit receives financial allocations/grants from external sources they must determine what proportion is appropriate for health and safety requirements.

1.4.4 Documentary Resources

In addition to the use of this Safety Statement as a documentary resource, other relevant documents include:

- Health and Safety Authority publications - codes of practice, guidelines, reports. Check HSA web page for an up-to-date listing of HSA publications.
- IS (Irish Standards), CEN (European Norms), BS (British Standards) specifications;
- Health and Safety Authority reports relevant to Universities, Colleges, and other educational establishments;
- Applicable legal standards;
- Reports/guidance from relevant specialists specific to the University *inter alia* audit reports from safety consultants, University insurers, EPA (Environmental Protection Agency) reports, etc.
- Safety information from suppliers e.g. technical data, safety data sheets (SDSs), etc. Designers, manufacturers, importers, suppliers, etc. of articles or substances for use at work are legally obliged to provide adequate information for the safe use, disposal, etc. of such materials. This is required by *Section 16 of the 2005 Act*.
- UK health and safety guidance; including guidance specific to universities (see Appendix 7).

Documentary resources will include general guidelines and rules as referred to or included in Part 5 and the Appendices of this Safety Statement and on the Health and Safety Office website. In the case of specific guidelines or standards, these must be obtained and held by the relevant Unit for ease of reference. (For further information on where such information can be obtained contact the University Health and Safety Office).

As appropriate all such specific resources will be indentified in D.5 of the Units Safety Statement Policy) or in Column 6 of the Safety Statement/risk assessment sheets for each Unit (Part 4).