

Health and Safety Department

Fire Design Strategy for Building Works and Refurbishments

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1. Summary

This document sets out the standards that apply to Loughborough University (hereby referred to as LU) Campus and its design requirement for Fire Safety. It will apply to newly constructed buildings and existing buildings that are being refurbished. In some cases, this standard exceeds the Building Regulation requirements as it represents good practice in the Higher Education sector. Building Regulations are a set of minimum standards which only apply to newly constructed buildings or work on buildings which come within the definition of a Material Change of Use or Material Alteration (as defined in the Building Regulations 2010) and the purpose of this guide will be to provide a standard policy specifying the standard that is required by the University. This document also seeks to a link between legislation such as the Building Regulations and Fire Safety Management to allow the Responsible person and any appointed employee or contractor to understand what is required by the University. A copy of this document will be kept with the University Fire Safety Manual.

2. Introduction

Designers and contractors working on behalf of the University must follow the standards set out in this policy. These refer to UK Acts, Orders, regulations, government guidance and British and European Standards. The Standard is not intended to be a comprehensive list of all relevant standards but it identifies those elements of building design where the University has specific requirements. It is essential to note that for some aspects of building design the University requires a higher standard than that set out in legislation.

3. Objective and Scope of this Document

3.1 Safety design standards

This document sets out the safety design standards with which any project is expected to comply. In the event that documents referred to within this document are superseded, the most recent versions are to be referred to.

3.2 If not covered by this document

If a fire safety aspect is not covered in this fire safety policy, the relevant codes of practices, British Standards and building regulations are to be applied and followed. For any specific queries advice can be obtained from the University Health & Safety Service (hereto referred to as UH&S Service). In the event that documents referred to within this document are superseded, the most recent versions are to be referred to. Any other doubts or concerns on Fire Safety must immediately be referred to the University Fire Safety Officer who will in turn consult with the local Fire Authority where they feel necessary.

3.3 What buildings it applies to

This document applies to all buildings managed or owned by the University. Any tenanted buildings shall not have building work, adaptations or change any building or part of a building which will affect the fire safety aspects of that or any other building without first receiving permission from Loughborough University Fire Officer (where the Responsible Person is The University Vice Chancellor).

3.4 Leased Buildings

Where a building within the Loughborough University campus does not fall under the responsibility of the Vice Chancellor then the occupier will be responsible for all fire safety measures for that building.

3.5 Questions

Any queries regarding this policy should be sent to The University Fire Officer.

4. Responsibilities

For other roles and responsibilities please consult the Regulatory reform (Fire Safety) Order 2005. Appendix A shows an organogram of duty holders within the University organisation and their responsibilities.

The Vice Chancellor is responsible for ensuring that:

- the University receives competent advice in relation to fire safety.
- adequate resources are available to ensure a good standard of fire safety is maintained.
- Adequate monitoring arrangements are in place to ensure that the agreed standard of fire safety is maintained.
- staff adequately discharge their duties relating to Fire Safety.

The Deputy Chief Operating Officer

The Deputy Chief Operating Officer is responsible for ensuring that:

- the fire design strategy is integrated into all new projects.
- any deviations from the fire design strategy are formally agreed.
- adequate resources are allocated to ensure that fire design elements are included in projects.
- monitoring and reporting arrangements are in place.

The Dean or Director/Head of Professional Service

The Dean or Director/Head of Professional Service is responsible for ensuring that:

- Any modifications to the facilities under their control are made in consultation with the Facilities team and that the fire design strategy elements are integrated into any modifications.
- fire safety elements are properly maintained.

The University Fire Safety Officer

The University Fire Safety Officer is responsible for ensuring that:

- the fire safety strategy is kept up to date.
- the fire safety strategy is communicated to all relevant stakeholders.
- any variations to the fire safety strategy are formally agreed.

5. Legislation and Standards

A variety of legislation and standards will be referred to in this document for a full bibliography consult Appendix B.

6. Approved Document B, BS 9999 & Fire Engineering

6.1 Three methods

When carrying out 'notifiable work' (that is building work which requires an application under the Building Regulations), the requirements of those regulations must be met. There are, however, 3 different methods of meeting these requirements for the purposes of fire safety; Approved Document B to the Building Regulations, BS 9999 2008 and BS 7479 (series) Fire Engineering.

6.2 Notifiable work

Notifiable work occurs when work under Regulation 5 of the Building Regulations is carried out, for example when a new building is erected or an existing one is adapted or refurbished and then that work must be "notified" to a building control body. In all cases the work must comply with the requirements of the Building Regulations 2010, however as mentioned in paragraph 4d there are 3 methods of meeting these requirements:

6.3 Approved Document B (AD B)

Approved Document B is the simplest method of showing compliance and should be the first approach used when designing a new or refurbished building. This method entails following the guidance in Approved Document B2 to the Building Regulations 2010. This involves following simple easy to use guidance and tables which show acceptable methods for planning early warning and means of escape, fire/smoke resistance and control, restricting fire spread and access for the fire service.

6.4 BS 9999

Some situations are more complicated and a more flexible design approach is required, so if design compliance cannot be achieved by using the method specified in Approved Document B then the approaches defined in BS 9999 2008 can be used. Using the approach defined in BS 9999 allows features such as high ceilings, detection and alarm systems and sprinklers to be used to increase acceptable travel distances or even decrease the size or numbers of exits or stairs.

6.5 Fire engineering

If the specified design can still not be achieved using the approaches defined in BS then a Fire Engineered approach can be used. For this there is a suite of documents under the BS 7974 series which must only be used by a competent person. These standards allow detailed professional knowledge to be used to arrive at a final design which will satisfy more complicated projects.

6.6 Warning on use of the above

However, application of these 3 methods **must** only be done by a **competent person** and although some parts of buildings can be fire engineered and others may appear to be done in accordance with Approved Document B guidance or BS 9999, the approaches must never be mixed and if an approach is applied to part of a building then the same approach must be applied to the whole building.

6.7 Which method to choose

It will be up to the University Fire Officer in conjunction with Building Control to decide which method should be followed on a case by case basis.

6.8 Extensions and refurbishments

Where an extension or refurbishment of a defined area is undertaken it must not be considered in isolation and all surrounding areas must be accounted for in the design so as not to create a material alteration for the purposes of the Building Regulations and potentially adversely affecting the fire protection arrangements in adjacent areas.

6.9 Cladding

Cladding. It has been decided that any buildings with a floor 18m or more in height will not be constructed using Aluminium Composite Material (ACM) or any kind of combustible insulation. Any buildings less than this in height will only be permitted with ACM or combustible insulation after receiving further consultation the Project Manager and the University Fire Safety Officer.

6.10 As Built Fire Strategy

As Built Fire Strategy. On completion of all projects which will affect the existing fire strategy in any way a new as built fire strategy must be issued to Building Control and The University Fire Safety Officer. This will also be subject to a consultation with the local fire authority where the RRO requires it.

7. Fire and smoke Warning Systems

7.1 Type of system to be installed

The University Fire Officer will advise on the type of fire alarm system to be installed as defined in BS 5839, Pt 1. This requirement will be included in the project brief. This will normally be L2/P2 installation.

7.2 Companies used

The University will accept fire alarm systems only from the following companies shown at Appendix E.

7.3 Note – control enable & plant override

NOTE – The Fire Alarm panel is to be provided with a ‘Control enable’ key switch (ref Lowe & Fletcher 007) and ‘Plant Over-ride’ key switch (ref Lowe & Fletcher 901), (both switches non-retractable in the on position). The University requires that the Fire Alarm installation to new buildings is connected to the University Gatehouse (Security Section) in order that in the event of an alarm an automatic notification is sent.

7.4 Hidden detectors

Hidden Detectors. All detectors sited in cupboards, voids, storerooms and infrequently used rooms shall be fitted with a remote indicator to assist in the locating of a fire or fault. The remote indicators shall be sited in main corridors or circulation areas.

7.5 Device numbering

Device Numbering. Every device shall be given a unique system reference number. The number will indicate the loop and device number e.g. L2/05 (see para 7e & d).

7.6 Panel programming

Panel programming. The panel shall be programmed so that all devices are given a text address that corresponds with the University’s room numbering scheme, not the room designations. The format will be Floor number/room number/loop number/device number. The University Fire Officer is to ensure full detailed layout drawings are displayed at the panel.

7.7 Cables for fire alarm installations

Cables for fire alarm installations. As a minimum all cables for fire systems will be fire resistant in accordance with BS 5839 - 1. Any higher standard must be confirmed with the University Fire Officer and University Project Manager.

7.8 Communications for hard of hearing

Fire alarm communications for hard of hearing persons (see also para 7.14). Vibrating pagers with an appropriate alpha-numeric display shall be connected to the relevant building fire alarm panel to provide an alert in the case an evacuation alert. A provider for these can be found at Appendix E.

7.9 General contractor guidance

General. The Contractor shall employ one of the approved fire alarm specialists identified within the material schedule to design, supply, install, test and commission an automatic and manual analogue addressable fire alarm system to meet the requirements of BS 5839, Building Regulations, Clients Insurers, Fire Officer and Building Control requirements. The complete Fire Alarm System shall be designed, installed, tested and commissioned in accordance with Scheme SP201 (LPS10140).

7.10 BS 5839 EN 5423

BS 5839. Fire and smoke can be detected in many ways and LU has many different systems in place ranging from BS 5839 compliant systems to those over and above the basic requirement set out in that BS to specialist alarms such as aspirating systems. Any new systems must be designed, installed and commissioned by a competent person to BS 5839 Pt 1 to a minimum level of L2/M and any existing systems must be upgraded to this standard (where they do not already meet it) where refurbishment takes place in that area. The complete Fire Alarm System must be designed, installed, tested and commissioned in accordance with LPS1014. For clarity all systems will be of the double knock type linked to the gatehouse any variations from EN 5423 will be clarified with and approved by Building Control and Loughborough University before commencing works.

7.11 Who to notify when doing fire systems work?

In all cases any work carried out adapting, installing or any other work which may involve the current system being rendered inoperative must be carried out under a documented agreement through the relevant University Facilities Management section. The University Fire Officer must be included to give him/her adequate warning to make practical provisions and risk assess the area concerned in order to ensure the fire safety of people in that area.

7.12 Loop drawings

At the design stage the contractor will liaise with Facilities Management and acquire any relevant existing loop drawings. Any additions or modifications will then be added by the contractor in the exact same style as the existing drawings so that loop drawings are constantly up-to-date and any new installations will have new loop drawings provided by the contractor.

7.13 Deaf alerters/strobes

The strategy of the University is to move away from deaf alerters and use strobes, there will be a period where both co-exist, but the intention is to have strobes everywhere to a standard agreed with the University Fire Officer and Building Control as a variation to EN 5423 if necessary. Any new buildings will be constructed using a minimum of a L2/M alarm system and having strobe alerters in prominent positions to alert the hearing impaired (not necessarily in exact compliance with the BS, but in conjunction with Personal Emergency Evacuation Plans (PEEPS) to give sufficient warning of a fire to the hearing impaired). The exact siting of strobe units will be a matter for consideration between the designer and Building Control as a variation to EN 5423. Where deaf alerters are prescribed 2 pagers **will** be supplied with each system. The designer is to consider the occupancy and use of the space. i.e. Student 24/7 PC lab and incorporate such into the proposed design.

7.14 Refuge alerters

All refuge alerters will be linked to both of the gatehouses direct. The gatehouse staff are trained in use of evacuation chairs and will deal with this immediately on being contacted.

7.15 Cause and effect

The cause and effect of alarms and ancillary equipment connected is an important aspect of fire safety and even the best systems have to take into account “the human factor”. An example cause and effect matrix is at Appendix F. This will give all concerned an understanding of the likely effect of an alarm and what will occur with the alarms and related systems should they be activated. This is important information for the Fire Risk assessor as from this they will be able to estimate peoples’ actions when these systems are activated.

7.16 Manual call points

Manual call points shall be addressable and of the steady pressure break glass type manufactured to BS EN 54 Part 11 and installed to BS 5839 Part 1. Call points within the plantrooms, electrical LV switch rooms shall be provided with a hinged cover to prevent accidental operation. Call points to all student accessible areas shall be fitted with anti-tamper alarms (at final exits only) that shall operate a local sounder only at call points at final exits at ground floor locations. This is a variation which will be agreed in each individual case with Building Control and Loughborough University.

7.17 Heat detectors

All heat detectors **must** be of the analogue addressable type compatible with the control equipment and conform to BS EN 54 Part 5 as indicated on the drawings. The detector shall fit a common base. The common base shall be either of the pattress or flush fixing type as appropriate.

7.18 Smoke detectors

Smoke detectors **must** be optical type and of the analogue addressable type compatible with the control and indicating equipment and shall conform to BS EN 54 Part 7. The detector shall fit a common base. The common base shall be either of the pattress or flush fixing type as appropriate.

7.19 Combined heat and smoke detectors

Combined heat and smoke detectors **must** have the combined properties of both heat and smoke detectors and shall conform to BS EN54 Part 7, as described above. Combined detectors identity being either heat or smoke shall be determined to suit the areas installed and must be programmed as such by the named specialist. All detectors shall have an LED to indicate that it has operated and shall fit a common base.

7.20 Alarm Sounders

Alarm Sounders. Alarm sounders shall be electronic type voice chip sounders and shall be supplied in sufficient quantity and suitably located to achieve the audibility levels prescribed by BS 5839. In areas where the ambient noise levels are expected to be high the sounders shall be supplemented with Xenon beacons strategically located. A number of alarm sounders **must** also include a flashing beacon for visual indication as required by BS5839 and Equalities Act requirements. Sounders shall have an adjustable sound output. This will apply to all new builds and refurbishment projects. Existing situations must be dealt with under the fire risk assessment.

7.21 Sounder bases

Sounder Bases. All voice sounder bases shall be loop powered and have adjustable sound output. The Fire Alarm Contractor shall ensure correct loop cards are installed to accommodate sounder quantities

7.22 LED beacons

LED Beacons. At suitable / relevant locations LED beacons shall be incorporated into the heads of the detectors. Where beacons / sounders are to be installed within an area where detectors are not to be installed, the sounders / beacons **must** have the same appearance as the main areas. It shall be noted a 'plant room' style sounder beacon **shall not** be acceptable. Within plantroom areas combined sounder and flashing beacons shall be installed at 1800mm (to bottom of beacon) above finished floor level. Within plantroom areas, the sounder beacons **shall not** be incorporated into a detector. For the avoidance of doubt, at tender stage the contractor **shall** install beacons to all plantroom areas, roof plant areas and disabled bedroom and en-suite bathroom areas.

8. Fire alarm design and installation principals

8.1 Design stage

At the Design Stage the Fire Alarm Designer is to ensure that the sound levels will be attained as detailed in BS 5839. The recorded sound levels taken at commissioning stage are to be assessed against the existing ambient background of the operational building. Sounder Levels taken at commissioning stage must be recorded along with ambient background levels i.e. under normal operational conditions. All sounder level readings must be submitted to the University Fire Officer and recorded on the as fitted drawings. The University Fire Officer is to approve the aforementioned levels before the system can be deemed acceptable.

8.2 Acceptable audibility

The acceptable Fire Alarm audibility within shower cubicles is to comply with the British Standard of 60db. Designer must take into consideration the effect of a running shower in the design taking in to consideration noise created by running water and the shower enclosure itself. Additional suitably IP rated visual indication is to be allowed in the design if necessary to ensure compliance. Designer is to ensure visual Indication is clearly visible from within the shower cubicle.

8.3 Remote indication and labelling

Loughborough University require that remote indication devices are installed as specified by the British Standard. The University also have requirements that fall outside of the scope of the British Standard. Loughborough University requires Remote LED indicator plates to be fitted to any detection device installed within infrequently used rooms/areas, this may include (but is not limited to) – Storerooms, Riser Cupboards, Lift Shafts, Ceiling voids. Each remote LED indicator plate will be engraved with the location of the device to which it relates and labelled (self-adhesive tape) with the loop/address ref. of the same device. The remote LED plate shall be located so that it is easily accessible/visible from finished floor level. With regard to remote indication. Each building within the campus is unique and it is therefore a requirement of the Designer that they allow for the above in the design of the system insofar that areas of concern

can be incorporated into the Fire Alarm strategy/design of the building in question. Text for these or any other individual detectors will contain the following:

- The Zone
- The Loop
- The Floor
- The Room or specific location
- The Device ID

8.4 Methodology requirement from designer

The Fire Alarm Designer is to forward at design stage for approval the methodology showing the proposed addressing, numbering and proposed zone details. In particular, the zone chart must be legible, the size/layout a minimum A3 in size fitted in a frame. At design approval LU is to be offered the above for the wider consideration of location aesthetics. The device address is to be as straight forward as possible for the legibility of Fire Service officers attending the building. If abbreviations are used, these will be clearly marked on the fire panel as follows:

- GND = Ground
- FLR = Floor
- RM = Room
- HD = Heat Detector
- SD = Smoke Detector
- MCP = Manual Call Point
- LP = Loop

8.5 Deviation from BS

Where the British Standard will either be difficult to achieve or possibly unachievable due to the specific building types, a solution and deviations are to be submitted as soon as possible to the University. The University will require written records of all deviations from the British Standard irrespective of 22.3G/H note 7 that gives details on positioning of different types of detectors.

8.6 Strobes

Where the Deaf Alerter system is not installed in buildings, strobes are to be fitted in all areas unless otherwise instructed by the University Fire Officer (under an agreed variation with Building Control where necessary). The Designer is to consider the occupancy and use of the space. i.e. Student 24/7 PC lab and incorporate such into the proposed design.

8.7 Liaison between parties

The Fire Alarm Designer and University Project Manager will liaise with the Principal Contractor and Loughborough University to confirm and ensure that full compliance with the Buildings specific fire strategy is being adhered to.

8.8 Cause and effect example

The Fire Alarm Designer will be responsible for arranging the Demonstration of the cause and effects to the University Fire Officer's satisfaction. This will be inclusive of the provision of documentation and clear instruction for University personnel at practical completion. The University will provide a standard Cause and Effect template document to the Designer that will be adapted by the Designer for the building in question. Appendix F is an example of a cause and effect table, as an example of what is expected.

8.9 Description of system

Appendix F is a simple example of cause and effect and as well as this, contractors will be required to provide a detailed description of the operation i.e. a 1st/2nd knock set up which clearly details the full operation of the system.

8.10 Pagers

Where pagers are incorporated as part of the Fire Alarm system a signal range must be pre-determined and recorded. The signal from the pager(s) must sound and vibrate continuously until the message has been manually accepted. The pager(s) are to be capable of repeating the text on the panel, be capable of receiving other signals and storing them until they are also manually accepted. The Pager(s) must have a clear LCD readout and will be provided with precise operating instructions, exact details of battery life together with the manufacturer's recommendations for recharging and replacement. (The earliest consultation shall be made between designer, University Project Manager and University Fire Officer if for any reason this criterion cannot be met).

8.11 Hydraulic traction lifts

All Hydraulic and Traction Lifts capable of carrying persons are to be interfaced to the new or upgraded Fire Alarm system.

8.12 Mechanical plant

Due consideration should be given to all relevant mechanical plant associated to the building in question such as air handling so that it is interfaced to the Fire Alarm system. As a minimum the following list of items must be linked to the fire alarm system: Air Handling Units, Gas and any fuel intake, Fire Shutters, Magnetic Locks on building exits and internal means of escape, smoke extraction systems. The Designer is to submit for approval the above interface strategy to LU Fire Officer and Project Manager for approval. The designer is to assess the specific requirements for a critical load or a time delay device if the local area equipment requires this.

8.13 Plant shutdown isolation key

A plant shutdown isolation key shall be provided. This plant isolation key switch must be the Lowe/Fletcher LF901 type (retained in the test position) the purpose is to isolate plant during test and maintenance tasks.

8.14 Test cells and laboratories

In areas such as Test Cells and laboratories, the Fire Alarm Designer will incorporate timed switch over devices for sensitive bench tested equipment in environments where applicable to avoid false alarms.

- 0800 – 1700 hrs Mon – Fri = Heat detectors.
- 1700 – 0800 hrs Mon – Fri Dual unless otherwise stated.
- 1700 Fri – 0800 Mon Dual unless otherwise stated.

This clause would also apply to 230volt/400volt circuits that in certain circumstances would need to be instantly disabled when fuel supplies are shut down due to Fire Alarm activation.

8.15 Interface between interconnected buildings

The Fire Alarm Designer must take into due consideration the provision of interfacing buildings where the buildings interconnect and share common space but may operate separate Fire Alarm systems, subsequently the spread of fire, early warning / stage evacuation from either, will require incorporation. This is not to be confused with pre- alert warning.

8.16 Voice systems

Voice sounder systems are to be installed in all buildings with the standard Loughborough University set message recorded. Where Protec equipment is installed this is:

“Fire has been reported – All occupants evacuate the building and assemble at the assembly point.”

8.17 Difficult areas – deviations

In certain buildings it may be necessary to design separate loops for difficult to access areas, due to the nature of the layout or where the area(s) in question could be perceived as problematic. In these cases, the supplier must receive written confirmation from the Universities insurance company that deviations from specification are approved.

8.18 Manual call points – positioning

Where Manual call points are installed the BS provides recommended fixing heights. It is the Fire Alarm Designer and installers responsibility to ensure that Test keys can be inserted correctly and unobstructed to enable weekly testing procedures to be undertaken.

8.19 System designer – spare capacity

The system designer will be responsible at both the design and installation completion stage to ensure that all Fire Alarm Loops have a minimum of 30% spare capacity. (The earliest consultation shall be made between designer / consultant, LU Project Manager and LU Engineer if for any reason this criterion cannot be met). The Designer will also provide the LU Engineer and Project Manager with written confirmation of the actual loop loadings together with the full capacity of each loop.

8.20 System designer – adjustable output settings

The system Designer will be responsible for ensuring that all sounders have adjustable output settings, low, medium, high etc., each sounder is to be set at medium to achieve dB levels that comply with BS 5839. The system must be designed to allow the load of all sounders to be set at high level, irrespective of their final commissioning setting for future-proofing. (The earliest consultation shall be made between designer / consultant, LU Project manager and University Fire Officer if for any reason this criterion cannot be met). It will be the Fire Alarm designers and installers responsibility to locate sounders suitably in relation to noise levels, as verbal communication will need to take place from these locations in the event of a fire, weekly testing or a false activation and therefore excessive noise within a close proximity to these locations will be detrimental to their use and effectiveness.

8.21 Quarterly tests

During quarterly tests carried out by the designated University Fire Alarm maintenance company, either Smoke and Heat Detectors will be de-energised and MCPs will be energised or vice versa to enable the building in question under test to retain some form of protection in the event of a fire during the testing process. The Fire Alarm company in question must provide the University Fire Officer with suitably signed Risk assessments / Method Statements that clearly identify a safe system of work during this process. These documents must be approved by the University Fire Officer before any quarterly testing work can commence.

8.22 Building regulation 38

In accordance with Building Regulation 38 and British Standard 9999 Annexe H2. The Designer/Principal Contractor is required to provide the University Fire Officer with the Fire Safety Manual for the project. This information is to be separate and not to be confused with the documentation that is provided within the Operations and Maintenance (H+S) manual and / or CDM 2015. Clarification therefore should be sought from British Standard BS 9999 Annex H.

8.23 Locations of alarm panels and refuges

Locations of Fire Alarm panels and Fire Refuges: It is the Fire Alarm designers and installers responsibility to locate sounders appropriately in relation to dB levels, as verbal communication will need to take place from these locations in the event of a fire, weekly testing or a false activation and therefore excessive dB levels within a close proximity to these locations will be detrimental to their use and effectiveness. Hence any person required to operate any fire alarm panel is not subjected to excessively high sound levels, and also any person using the refuge communication system can be clearly heard via the intercom at the LU security gatehouse.

8.24 Action on above not being met

If any of the above criteria cannot be met, the earliest consultation shall be made between designer / consultant, LU Project Manager and University Fire Officer.

8.25 For larger projects

When larger projects are undertaken where work may go on for some years then the fire systems used must remain compatible throughout the build so that if for example a project takes

3 years over several phases the system installed on the first phase must interface fully with all others installed so that on completion all systems are compatible.

9. Dangerous substances and explosive atmospheres

9.1 Further website guidance

Loughborough University website has further guidance and details of this and any work in an area which would be subject to these regulations must seek advice from the Fire Safety Officer but the basics are: these regulations require employers to protect workers from the risks from explosive atmospheres. In order to ensure compliance, Departments and Support Services are required to:

9.2 Risk assessment

Carry out a risk assessment of any work activities involving dangerous substances.

9.3 Technical measures

Provide technical and organisational measures to eliminate or reduce as far as is reasonably practicable the identified risks.

9.4 Equipment and procedures

Provide equipment and procedures to deal with accidents and emergencies.

9.5 Information and training

Provide information and training to employees.

9.6 Classify zones

Classify places where explosive atmospheres may occur into zones and mark the zones where necessary.

9.7 Permit to work

Any work in hazardous areas as categorised in DSEAR will be carried out under a permit to work system and be signed off by the University Project Manager or Competent Person.

10. Means of escape strategy

10.1 General strategy

General strategy. In all cases Loughborough University will follow a simultaneous evacuation strategy and all design and construction work must be based on this. All means of escape shall be based on protected escape routes and not on escape windows. Generally, travel distances shall not exceed the following if the Building or part of building is designed in accordance with Approved Document B:

Use of premises	One direction	More than one direction
Residential	9m	18m
Office	18m	45m
Shops	18m	45m
Assembly & Recreation:		
Primarily for disabled people	9m	18m
Seating in rows	15m	32m
Elsewhere	18m	45m
Places of special fire hazard		
Storage:		
Normal Hazard	25m	45m
Higher Hazard	12m	25m
Plant room or rooftop plant:		
Within the room	9m	35m
Route not in open air	18m	45m
Route in open air	60m	100m

10.2 Example of 3 different standards

As an example of how the 3 different standards for fire design of new buildings can differ if BS 9999 was used and say for example a L2/M alarm system was designed under AD B in an office with a 2 directional escape (so 45m permissible travel distance) and a distance of 50m was actually required then BS 9999 could be used to design the building and a feature such as an upgraded alarm system, sprinklers and/or ceiling heights increased then under that BS the permissible travel distance could be increased by up to 15% to achieve the aim.

However, the whole building would need to be designed as per BS 9999 not just a part. If the travel distance was still unsatisfactory then a fire engineered solution could be sought from a competent fire engineer. BS 9999 and fire engineering could also be used to decrease the numbers of required exits, size of exits, numbers and sizes of stairs. These **must** always be done by competent people.

10.3 Fire and smoke control doors

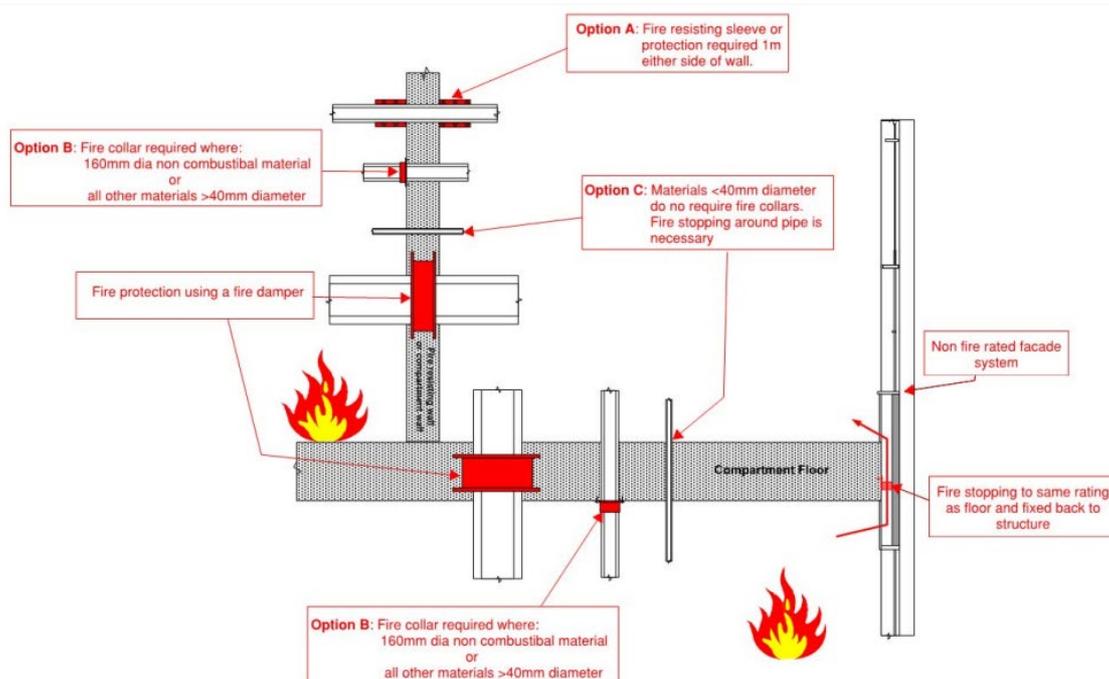
All fire doors will be numbered and a register of those numbers and positions kept by facilities management and they should be consulted on this. The specific method for numbering will be allocated by Facilities Management. All new designs involving new fire doors must be submitted to Facilities Management before being signed off. All new fire doors **shall** carry an appropriate fire safety test certificate for the period it is required for and be correctly fitted as per the manufacturer's instructions and in the case of newly fitted doors or doors where new furniture is to be fitted the furniture fitted to it **shall** be appropriate as per the manufacturers test certificate as per the Loughborough University standard ironmongery specification (see University Fire Officer for details). Any cold smoke seals fitted to doors will be of the brush type and not blades. Any new doors fitted into existing frame during refurbishment would be deemed satisfactory if the fire and smoke resistance of the existing structure is not made any worse by doing this and is therefore improved to achieve the desired aim. All new fire doors must have their test certification checked to clarify it is appropriate for the position it occupies. In some cases, Fire Doors are only tested on one side and if fire resistance is needed from both sides this would be inappropriate. This is the case with most composite Fire Doors, so the University preference is for timber fire doors, however each certificate will be submitted by the contractor to FM to be checked to ensure it is appropriate. At the end of works the installer's must sign a Building Regulation 38 Certificate Appendix D to state the doors have been fitted correctly and the users know how and when they need maintaining. Fire doors **will never** be wedged open and should only be held open by an appropriate holding open device linked to the local fire alarm system. All final exits and exits to rooms such as lecture theatres must have single release mechanisms and no locks or thumb turns to be used.

10.4 Fire and acoustic stopping

Fire stopping and acoustic stopping. A distinction must be made between Fire rated and Acoustic rated stopping and when fitted they must be labelled and recorded correctly to avoid mistaking acoustic rated stopping for fire stopping and visa versa and needlessly classifying walls as fire rated possibly causing unnecessary expense.

10.5 Fire dampers, fire collars and penetrations to walls and floors in general

Fire dampers, fire collars and penetrations to walls and floors in general. A clear distinction must be made as part of the fire strategy for each building between the requirements of the type or method of fire stopping in various situations. The size and material of pipe, ductwork or other service and the type and construction of the wall or floor it passes through must be correctly dealt with. All penetrations through walls and floors must be specifically designed along with its appropriate fire and smoke stopping. A general guide is shown here but all fire stopping works must be carried out by competent persons after obtaining permission from the project manager and be properly documented and each item of fire stopping, damper or fire collar be labelled clearly with the date, company name and a reference number that cross references in a register held by FM.



If in any doubt exists on the level or type of fire or smoke stopping, then advice must be sought immediately from a competent fire stopping specialist such as someone with a fire stopping inspection or installation diploma or similar accreditation with relevant indemnity insurance.

10.6 General Fire Compartmentation

General Fire Compartmentation. General rules and required fire resistance periods are shown in Table A1 and A2 of AD B Vol 2 2019. This should be applied within all University buildings, this includes where multi occupancy buildings exist such as tenanted buildings, an example is the Holywell Building. The general guidance given in Paragraphs 2.17, 2.24 & 8.30 of AD B Vol 2 2019 must also be followed.

10.7 Openings in compartment walls separating buildings or different occupancies

Openings in compartment walls separating buildings or different occupancies. Openings in a compartment wall common to two or more buildings, or between different occupancies in the same building, must be limited to one of the following:

- A Fire door set providing means of escape, which has the same fire resistance as the wall and is fitted in accordance with the provisions of Appendix C to AD B Vol 2 2019.
- The passage of a pipe, duct or service that complies with the diagram at Paragraph 9e.

10.8 Openings in other compartment walls or compartment floors

Openings in walls should again be limited to those as shown in Paragraph 9g. Openings in compartment floors must be limited to the following:

- Refuse chutes – to be of class A1 construction as stated in AD B Vol 1 2019.
- Atria designed in accordance with Annexes B and C of BS 9999.
- Protected shafts that conform to Paragraph 9i.

10.9 Construction of compartment walls and floors

Construction of compartment walls and floors. All compartment walls and floors must achieve the following:

- Form a complete fire and smoke barrier between the compartments they separate. This includes correct sealing of any penetrations or openings through said wall or floor (as per Paragraph 9h) and in the case of a wall be full height from floor to floor passing through any suspended ceiling or floors to be sealed against the next compartment floor or run full height to the underside of the roof.

10.10 Protected Shafts

Protected Shafts. Any stair or other shaft passing from one compartment to another must be enclosed in a protected shaft. Protected shafts must be used for the following regardless of what type of building room or construction they pass through:

- Stairs
- Lifts
- Escalators
- Chutes (such as refuse)
- Ducts and pipes
- Additional provisions can also apply to protected stairways and firefighting stairs and when dealing with these directions must be sought from the unit fire safety officer and building control.

10.11 The construction enclosing a protected shaft

The construction enclosing a protected shaft must do all of the following:

- Form a complete barrier to fire and smoke between compartments connected by the shaft or between the inside and outside of the shaft itself.
- Have the appropriate fire resistance given in AD B Vol 2 2019 Appendix B Table B 3.
- Satisfy the provisions for ventilation and the treatment of openings in AD B Vol 2 2019 Paragraphs 8.38 and 8.39.

10.12 Voids and cavities in buildings

In general voids such as roof spaces and voids between floors should be separated by fire and smoke resistant construction so that a maximum dimension of 20m is not exceeded in any direction. In single stair buildings the stair enclosure must be full height and appropriately sealed around any construction such as roof trusses and ceiling members all the way to the roof. In multi occupancy buildings the compartment lines must extend up to roof lines or compartment floors in order to provide full fire and smoke separation following the guidance in paragraph 9f. Service risers are also critical to fire and smoke separate from the occupied part of buildings as are stairs in accordance with the individual buildings fire strategy. In the case of an office block with a single staircase and a simultaneous evacuation strategy it may be

acceptable to fire separate the staircase only, dependent on travel distances and alarm system however in the case of an accommodation block with a stay put policy all individual living areas must fully fire and smoke separated from each other, corridors, communal areas, stairs, service risers and all compartment walls follow straight up into roof spaces being properly constructed around trusses and other items in the roof or void. In all cases though multi occupancy buildings with separate tenants in must be fully fire and smoke separated. Everything must be constructed in accordance with the guidance in the preceding Paragraphs 9e to 9k. In all cases if the compartmentation is not in place then a stay put policy is not possible and a simultaneous evacuation policy must be adopted. However, in order to allow this the stairs must be a place of relative safety and must be full height compartmented to the roof.

10.13 All new final escape doors

All new final escape doors shall open in the direction of escape. Any fire exits shall not have any locking mechanism fitted which would alter its operation as this would constitute a material alteration and directly affect means of escape. Any plan for this would be the subject of a building regulations application but must first be consulted with the University Fire Safety Officer.

10.14 Security of external doors

All external doors fitted with electrically operated door release mechanisms shall fail to secure in the event of a power failure or on fire alarm, however they must be suited on the master key so that a key holder such as security staff can re-open to check the fire panel, this may not be possible on double doors. All final fire exits will be fitted with green break glass release mechanisms in accordance with BS7273-4: 2015 or by a mechanical means of opening compliant with Part M of the Building regulations 2010 and the Equalities Act 2010 such as a push bar or pad, but not a thumb turn also following the Loughborough University ironmongery specification guide.

10.15 Security of Internal Doors

All doors which are fitted with electrically operated door security systems shall, on alarm, (and when power is lost) release by means of:

- Door furniture, where the door is an external final escape door and internal escape doors such as lecture theatre exits, compliant with Part M of the Building Regulations 2010 and the Equalities Act 2010 such as a push bar or pad, but not a thumb turn, or
- An alternative, appropriately signed break-out door where the exit is external and revolving or sliding, so cannot be used as means of escape. These will be agreed between the designers, university fire officer and Building Control. (Both of these alternatives should take building security matters into consideration but means of escape must always take priority).

10.16 Door Guard

Door guard (door holding open devices) are not acceptable in any new build or refurbishment projects. All intumescent and cold smoke seals shall be fitted correctly **without** compromising the fire safety test certificate. All final exit fire escapes and **single** direction escape routes shall be kept clear at all times and not have items stored within them such as photocopiers or filing cabinets or any other such items that could hinder the passage of people whilst escaping from

fire of smoke. The minimum width of any new or refurbished escape route **shall** be designed appropriately to accommodate the number of people calculated to use it. This work will be subject to a Building Regulations Application which will be the backstop check. Rooms occupancies can be calculated by competent persons only based on widths of escape routes and exits taken from Approved Document B:

Maximum number of persons	Minimum width in mm
60	750mm
110	850mm
220	1050mm (min for AD M – wheelchairs)
>220	5mm/person (i.e. 221 people = 1105mm)

10.17 Fire escape stairs

Fire escape stairs. All stairs **shall** be kept clear at all times and no items whatsoever should be stored on stairs or landings. They shall be equipped with adequate handrails and lit appropriately. Any new stairs **shall** be designed to an appropriate width to accommodate the number of people calculated to use it. This work will be subject to a Building Regulations Application which will be the backstop check. Generally, the minimum stair width should not be less than 1000mm between handrails, any new stairs **shall** be a minimum of 1100mm between handrails.

10.18 Smoke control systems

These can include fire doors smoke screens or channels, raised ceilings and vents (natural and extract). Any work on such systems should be designed and carried out by competent persons. Any new systems shall be designed to an appropriate standard to cope with the smoke calculated to be produced in this area. This work will be subject to a Building Regulations Application which will be the backstop check.

10.19 Dual function vents

Dual function vents should close when activated by an alarm unless there is a fire engineered strategy in place which requires a different arrangement. Any such vent must have a fireman's override switch which should be coloured yellow and clearly marked and signed in situ and on fire safety drawings and maps.

10.20 Means of escape for disabled or vulnerable people

Means of escape for disabled or vulnerable people. The Fire Risk Assessment shall have appropriate provision for vulnerable people and those who use wheelchairs. In new builds (and refurbishments where space permits) wheelchair refuges of a minimum dimension of 1.4m x 0.9m shall be provided on escape stairs in a place of relative safety (within the protected stairway). Appropriate communication devices shall be provided at these points so as to lessen isolation, inform and reassure individuals.



Refuge alerters will be used for this purpose and will be fitted to all new build and refurbishment projects where refuges exist. Evacuation chairs are **not** to be used by untrained personnel. The gatehouse staff are trained in their use and will attend any alarms and be responsible for the safe evacuation of any personnel requiring assisted evacuation.

10.21 Evacuation Lifts

Where possible any lifts installed in new build or refurbishment projects will be full evacuation lifts, this will be decided by the University Fire Officer in conjunction with Building Control. These will be fully compliant lifts for non-assisted evacuation to comply with the Equality Act 2010 and designed as per BS 9999 2008 Section 16.7, 46.9 & Annex G of that document and the dimensions shall be in accordance with BS 5810 & 5655. Evacuation lifts can also be utilised as regular passenger lifts. Any lift being replaced during refurbishment where site restraints mean it is not practical to facilitate a fully compliant evacuation lift will have as many features as possible upgraded and consultation with Building Control undertaken at the design stage.

11. Emergency lighting

11.1 General guidance

All new, replacement or refurbished Emergency Escape lighting shall be designed, installed and commissioned by a competent person to BS 5266 – 1: 2011. Photo luminescent escape signage shall be used on escape routes as specified in paragraph 11, elsewhere ordinary signage shall be used (both in accordance with BS5266).

11.2 Lux levels

The lux levels achieved for each area to comply with the minimum standards contained within BS 5266-7. An escape lighting luminaire shall generally be sited to provide appropriate illuminance near each exit door and at positions where it is necessary to emphasize potential danger or safety equipment (note: 'near' is considered to be within 2m measured horizontally).

11.3 Positioning of emergency lighting

The positions to be emphasized shall include:

- At each exit door intended to be used in an emergency or within the distance to any photo luminescent signs prescribed by the manufacturer's instructions (normally within 2m)
- Near to stairs so that each flight of stairs receives direct light
- Near any other change in level of the escape route
- Mandatory emergency exits and safety signs
- At each change of direction
- At each intersection of corridors
- Outside and near to each final exit
- Near each first aid post
- Near to firefighting equipment and fire alarm manual call points
- Toilets, showers and bathrooms
- Plant rooms
- All lifts cars

- All seminar rooms for more than 4 persons
- Large offices with more than 4 persons
- Windowless rooms
- Lobbies
- Motor generator, control and plant rooms

11.4 Windowless areas

In windowless areas (where there is no borrowed natural light) forming part of escape routes or washrooms over 8m² the emergency lighting is to be specified as ‘maintained’ or ‘combined’ light fittings.

11.5 New lighting requirements

All new emergency lighting systems in new buildings or major refurbishments will be fully addressable and self-testing with a 3- hour battery backup supply. All test facilities will be local and obvious to the light fittings they relate to and all test facilities include key switch/neon indicators as detailed on LU standard drawing No 6.

11.6 Low energy requirement

Low energy consumption, such as mains powered LED, are to be specified for all units installed.

11.7 High risk areas

High risk areas, such as workshops with heavy machinery, are to be provided with emergency lighting levels of 10% of normal lighting levels or a minimum of 15 lux level.

12. Emergency fire signage

12.1 Requirement

In all cases all new fire signs will be fitted in accordance with BS 5499-4:2013 & BS 5499-10:2014 and The Health and Safety (Safety Signs and Signals) Regulations 1996. Any new ones on escape routes **will** be of the **photo luminescent type** (see Appendix E for providers). **When renovation occurs to more than 50% of any building** then the entire fire signage will be considered for replacement with photo luminescent type (on escape routes) unless it is known that the building in question is part of a phase project of upgrades to fire signage. Guidance on deciding on this shall be sought from the University Fire Officer. Appendix C shows a list of signs to be used and how they **must** be fitted. All fire doors **must** be fitted with “fire door keep shut” signs on both sides, with the exception of some cupboards which will be marked “fire doors keep locked”.



12.2 Fire action notices

Fire action notices will be located adjacent to manual call points detailing the exact location and the nearest assembly point. (Note: Jalite type pictured).



13. Living accommodation

13.1 Requirement

All previous paragraphs to this document apply also to all living accommodation on campus. All means of escape strategy will be based on a protected escape route and **not** means of escape windows. Any work carried out must take this into account and not deviate from this policy.

14. Access and facilities for the fire and rescue service

14.1 General

Any new buildings shall be designed so as to comply with Requirement B5 of the Building Regulations 2010 and allow proper access to the building for fire-fighting purposes and provide reasonable facilities to assist fire-fighters in the protection of life. Any new buildings shall also be designed and built having appropriate facilities such as fire-fighting stairs, lifts, dry and wet risers where necessary and be within 90m of a fire hydrant for any building not fitted with a fire main. This should be considered when renovations or rearrangements are being made such as outbuildings or stores which may change the existing access to an existing building.

14.2 Access routes

All access routes for fire and rescue vehicles **shall** be of a minimum width of 3.1m between any solid barriers such as gateways and 3.7m between kerbs and be capable of carrying a minimum of 12.5 tonnes. There **must** also be a minimum height clearance of 3.7m.

14.3 Means of alerting

Means of alerting the Fire and Rescue Service (FRS). The FRS shall be alerted as soon as possible by the fastest means possible. This is normally by the person or persons discovering the fire once they are safe and done by operating the nearest alarm call point if inside a building or calling the gatehouse from a mobile on 0800 526966 (all contractors and sub-contractors should put this number in their mobile phones) or 888 from any university landline.

14.4 PEEPs & GEEPs – disability requirements

Every individual who has a disability which may affect their ability to recognise that an emergency is taking place or to evacuate a building unaided will have a personal emergency evacuation plan (PEEP) drawn up. The University Counselling and disability services will consult with these individuals and the University Fire Officer, and where necessary prepare a plan, tailored specifically for that individual in relation to the building they use if anything over and above the General emergency evacuation plan (GEEP) is required.

14.5 Action on alarm by gatehouse

If an alarm is activated and the gatehouse is alerted of this, they will challenge the alarm in all cases to ensure it is a real incident and not a false alarm before they call the Fire Service.

14.6 Fire hydrants

A clear campus map of all fire hydrants **will** be held at each gatehouse (both east and west gate) and provided to the FRS for use in an emergency as they come through the gate.

14.7 Dry risers

Any building fitted with a dry riser and any new ones designed with one or more shall have access within 18m to that riser inlet with the inlet being visible from the appliance. All dry risers will have a Yale lock fitted with key type 9A 986.

14.8 Firefighting shafts and lifts

Buildings with a floor more than 18m in height **shall** be provided with fire-fighting shafts which shall provide access to all floors through fire protected routes. Any fire-fighting lifts **shall** be designed and installed in accordance with BS EN 81-72:2003.

15. Fixed fire-fighting installations (sprinklers)

15.1 Sprinklers

Sprinkler systems can reduce the risk to life and reduce the damage caused in a fire. They **shall always** be designed and installed by approved competent persons and only used as a compensatory feature under the guidance of a fire engineer or similar through consultation with the local FRS. New sprinkler systems **shall** be designed in accordance with BS5306-2:1990 or BS EN 12845:2004. The decision on whether to install sprinklers in new buildings will be the decision of the designers in conjunction with the University Fire Officer.

15.2 Ansell systems

Ansell systems (localised suppression). These systems **shall be** used on any deep fryers in cooking range areas, server rooms and test cells. Fume cupboards will also have their own built in suppression systems.

16. University teaching and leisure facilities

16.1 Teaching rooms

All teaching rooms shall be provided with adequate means of escape with those having only 1 single door escape containing no more than 60 personnel. Note – just because a room has 2 exits doesn't mean they can be classed as separate fire exits; if they are close together or within 45 degrees of each other from any point in the room this may still classify them as just 1 exit. This is the case in some lecture rooms and theatres. If in doubt advice should be sought from the University Fire Officer.

16.2 Laboratories

Paragraph 14) a & b applies to laboratories also and any experiments or equipment for experiments **shall** be properly guarded as appropriate to their type and **shall** always be staged remote from that exit.

16.3 Other learning facilities

Other learning facilities such as study rooms/areas and libraries. These areas shall also have paragraph 14) a & b applied to them and **shall not** allow isles or escape routes to be blocked with books, trolleys, photocopiers or other such items which will prejudice escape from that room in the event of a fire.

16.4 Leisure facilities

Leisure Facilities (Bars, Cafes etc.) are generally in open areas and have multiple escape routes, but this is not an excuse for poor housekeeping and rubbish **shall** be kept to a minimum in bins and they **shall** be emptied as soon as they fill or at the end of each day and not be left overnight. Each establishment **will** have its own suitable and sufficient fire risk assessment with a relevant fire strategy to ensure the safe evacuation of all occupants in the event of a fire.

16.5 Assembly halls, corridors and stairs

Assembly halls, corridors and stairs. All such places may at some time be places personnel use as escape routes from fire of smoke and as such **must** be kept clear or in the case of assembly halls have clearly marked routes out to the nearest exit to a place of safety.

17. Risk assessments

17.1 H&SAW risk assessment

The University shall ensure suitable and sufficient Health and Safety risk assessment **shall** be in place with the policy displayed for all areas on the LU campus in accordance with Regulation 3 of the Management of Health and Safety at Work Regulations 1999.

17.2 Fire risk assessment

The Responsible person (Vice Chancellor) **shall** ensure a suitable and sufficient Fire Risk Assessment shall be in place in accordance with Article 9 of the Regulatory Reform (Fire Safety) Order 2005 and all Duty holders and university staff are made aware of its contents on induction and after any review. It is also the duty of the responsible person to ensure this is reviewed at appropriate times.

17.3 Contractor – competent person's duty

During any phase of construction or refurbishment it is the **competent person's duty (e.g. the contractor)** to provide the Responsible person with a Fire Risk Assessment which is suitable and sufficient and covers all parts of their work and any areas which may be affected by their work.

17.4 Fire risk assessment requirement

The Fire risk assessment **shall** take into account the chance of arson and offset that with any possible countermeasures. One of the best countermeasures possible is good housekeeping and applying the principles of prevention given in Part 3 of Schedule 1 of the Regulatory Reform (Fire Safety) Order 2005. These are:

- Avoiding risks
- Evaluating the risks which cannot be avoided
- Combating the risks at source
- Adapting to technical progress
- Replacing the dangerous by the non-dangerous or less dangerous
- Developing a coherent overall prevention policy which covers technology, organisation of work and the influence of factors relating to the working environment
- Giving collective protective measures priority over individual protective measures; and
- Giving appropriate instructions to employees.

18. Provision of fire information

18.1 Relevant fire safety information

All relevant fire safety information shall be provided by the competent person/contractor who is responsible for installing any Fire Safety equipment or measures, be they passive or active to the Fire Safety Officer who will notify the Responsible person (Vice Chancellor) it has been correctly provided and filed. The attached form at Appendix D shall be used and filled in and signed by the competent person and passed onto the Responsible person on handover. The purpose of this form is to ensure the relevant person (that is the person or persons who may have to operate or maintain the equipment).

18.2 Handover and possible payment reservations

Hand over will not be completed and payment may be reserved if the appropriate documentation is not provided.

19. Fire safety manual

19.1 General

Each individual building shall have its own fire safety manual. The fire safety manual should contain design information and operational records. The design information forms the basis of an ongoing history document to which additional material is added when the building is occupied and at regular intervals thereafter. The designer is largely responsible for those parts of the fire safety manual that contain design information; further information is given in H.4.1 of BS 9999 2008. The Fire Safety Officer is responsible for those parts of the fire safety manual that contain operational records, the fire safety policy statement and the fire safety documentation. Annex H to BS 9999 shall be referred to as a guide for the fire safety manual. All contractors shall provide their own fire safety manual to the Responsible person prior to their project commencing.

19.2 Manual contents

The fire safety manual **shall**:

- provide a full description of the assumptions and philosophies that led to the fire safety design, including explicit assumptions regarding the management of the building, housekeeping and other management functions
- explain the nature of the fire safety planning, construction and systems designed into the building, and their relationship to overall safety and evacuation management
- draw on the documentation produced at the design stage to describe the use of the various protection systems in each type of potential incident
- set out the responsibilities of management and staff with regard to fire safety
- provide a continuously updated record of all aspects of the building and the building users that affect its fire safety.
- The contents of the fire safety manual shall be as per the list given in Paragraph H.4.1 of BS 9999. This will include drawings and site maps.

20. Fire safety documentation required on completion

20.1 Requirements

On completion prior to being signed off the contractor **will** provide the following documentation to the Responsible person:

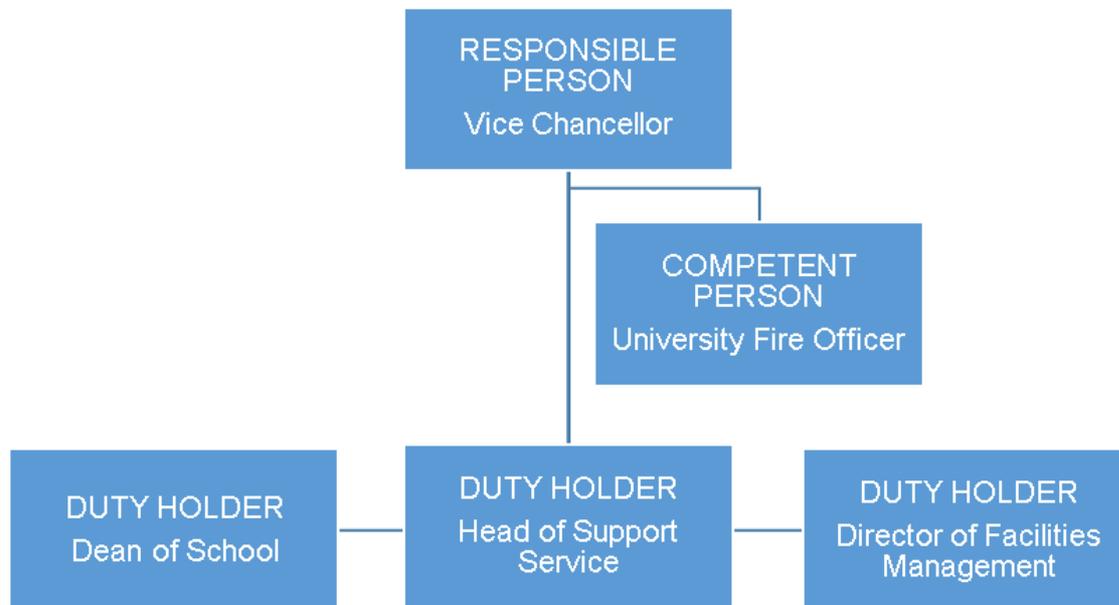
- Any BS 5839 Commissioning Certificates relevant.
- Any BS5266 Completion certificates relevant.
- Any relevant documentation required for the University to operate, maintain and repair (or know how to contact the correct contractors to do so) any systems, plant or machinery installed.
- A University Regulation 38 declarations signed (Appendix D).
- Commissioning certificate for any suppression systems (including all sprinklers and other systems).

20.2 Format

All of the above paperwork and any other completion paperwork will only be accepted if typed (preferably in black Arial 12-point font) and **must not** be handwritten, other than signatures which must be in indelible black ink.

Appendix A Organogram of Duty Holders

LOUGHBOROUGH UNIVERSITY FIRE SAFETY ORGANISATION



DUTIES UNDER THE REGULATORY REFORM (FIRE SAFETY) ORDER 2005

The Vice Chancellor (Responsible Person).

The Vice Chancellor is the most senior member of the University body and as such is designated as the RESPONSIBLE PERSON under the RR(FS)O.

The post holder is responsible for ensuring that fire safety matters are delegated to appropriate members of staff and are planned and resourced appropriately.

The University Fire Safety Officer (Competent Person).

The University Fire Safety Officer has the technical and practical knowledge to assess, investigate and report on fire hazards associated with the infrastructure of university property. The University Fire Officer is designated as the COMPETENT PERSON and he/she acts on behalf of the Vice Chancellor in discharging these duties.

Dean of School & Head of Support Service (Duty Holders).

Dean of School or Head of Support Service have responsibility for the day to day running of their departments and therefore are designated as DUTY HOLDERS for fire safety matters under their control. In particular, Duty Holders must ensure that fire hazards are managed

appropriately and that activity within the department, particularly the use or storage of dangerous substances, does not create or exacerbate a fire risk.

Where premises are occupied jointly, Duty Holders are responsible for cooperating with fellow duty holders insofar as this affects areas under their joint control.

Duty Holders receive reports and risk assessments from the University Fire Safety Officer and are responsible for implementing action plans to remedy any deficiencies and ensure special/specific procedures required for the Fire Emergency Plan, are drawn up.

In discharging their duties, Duty Holders may appoint members of staff, such as Departmental Safety Officers (DSO) to assist with carrying out fire safety tasks.

The Director of Facilities Management (Duty Holder).

The Director of Facilities Management is a DUTY HOLDER under the RR (FS) O. 2005.

The Duty Holder is responsible for ensuring that University buildings are designed, built and maintained to be protected, so far as is reasonably practicable, from the effects of fire. The Director of Facilities Management may receive advice and information from the University Fire Safety Officer to assist him/her in discharging this duty effectively.

Appendix B Bibliography of Standards Referred to and Other Useful References

- **The Building Regulations 2010 (And approved Documents)**
<https://www.gov.uk/government/collections/approved-documents>
- **The Regulatory Reform (Fire Safety) Order 2005**
- **BS 5499-4:2013** Safety signs, including fire safety signs - Part 4: Code of practice for escape route signing.
- **BS 5499-10:2014** Safety signs, including fire safety signs - Part 10: Guidance for the selection and use of safety signs and fire safety notices.
- **The Health and Safety (Safety Signs and Signals) Regulations 1996**
- **Fire Safety Risk Assessments: Educational Establishments**
<https://www.gov.uk/government/publications/fire-safety-risk-assessment-educational-premises>
- **Fire Safety Risk Assessments; Large Places of Assembly**
<https://www.gov.uk/government/publications/fire-safety-risk-assessment-large-places-of-assembly>
- **BS 5839 Parts 1, 3 & 8** Fire detection and fire alarm systems for buildings
- **BS EN 15004-1** Fixed Firefighting systems – Gas extinguishing systems
- **BS ISO 7010:2011** Graphical symbols. Safety colours and safety signs. Registered safety signs
- **BRE report (BR187)** External fire spread: Building separation and boundary distances 1991
- **British Compressed Gas Association (BCGA)** Codes of Practice
- **Construction (Design & Management) Regulations 2015**
- **Fire Prevention on Construction Sites** Joint Code of Practice on the Protection from Fire of Construction Sites and Buildings Undergoing Renovation. Produced by the Fire Protection Association.
- **Fire Safety in Construction** HSG168, produced by the Health and Safety Executive
- **Health and Safety at Work** etc. Act 1974
- **The Building Act 1984**
- **The Equality Act 2010**
- **Workplace (Health, Safety and Welfare) Regulations 1992** (as amended)



- **Dangerous Substances and Explosive Atmospheres**

Dangerous Atmospheres Regulations 2002. Approved Code of Practice and Guidance. L138
HSE Books 2003 ISBN 0 7176 2203 7

- **Link to Competent Persons Scheme List**

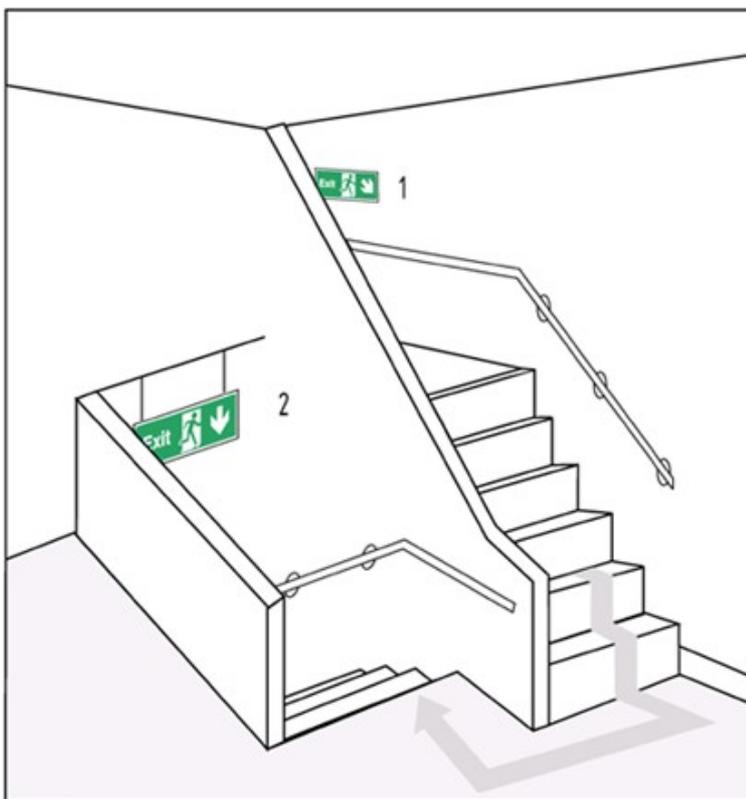
<https://www.gov.uk/guidance/competent-person-scheme-current-schemes-and-how-schemes-are-authorised>

Appendix C Emergency Fire Signage Guidance

SIGN	MEANING AS VIEWED FROM FRONT	EXAMPLE LOCATION
	<p>Progress down to the right, indicating change of level.</p>	<p>On wall or suspended at head of stairs or ramp. On half landing wall or stairs suspended at change of level.</p>
	<p>Progress up to the right, indicating change of level.</p>	<p>On half landing wall or stairs. Suspended at change of level or suspended in open areas.</p>
	<p>Progress down to the left, indicating change in level.</p>	<p>On wall suspended at head of stairs or ramp. On half landing wall or stairs or suspended at change of level.</p>
	<p>Progress up to the left, indicating change of level.</p>	<p>On wall suspended at foot of stairs or ramp. On half landing wall or stairs or suspended at change of level or in open areas.</p>
	<p>Progress forward from here indicating direction of travel. Progress through door here when suspended or fitted above a door. Can also be used to indicate forward and up from here, indicating a change in level.</p>	<p>Suspended in corridor leading to a door or suspended in open areas or above a door. Can also be suspended at foot of stairs or ramp.</p>
	<p>Progress to the right from here, indicating direction of travel.</p>	<p>On corridor walls. Suspended adjacent and left of the exit. Suspended at the change of direction.</p>

	<p>Progress to the left from here, indicating direction of travel.</p>	<p>On corridor walls. Suspended adjacent and right of the exit. Suspended at the change of direction.</p>
	<p>Progress down from here, indicating direction of travel.</p>	<p>Suspended at the head of stairs or ramp. Suspended at change of level.</p>

Practical examples.



Sign 1 means progress down to the right as viewed from the front of the sign, sign sited on wall of half landing.

Sign 2 means progress down from here as viewed from in front of the sign. Suspended from the ceiling but can be mounted on the wall above the stair head.

Sign 1 means progress forward and through from here as viewed from in front of the sign positioned above the door.

Sign 2 means progress down and to the left from here as viewed from in front of the sign positioned on the landing.



Appendix D REG 38 – Provision of Fire Safety Information

Fire Safety Declaration

By signing this document the competent person (The Contractor carrying out the work) is stating that they have provided the Responsible person (or their appointed representative) the relevant information and documentation necessary to know how to work and maintain the system involved.

Copies of any documentation shall be kept on the fire manual not with this document.

1	Contractor's company name and full address: Postcode: Tel: Email:
2	Building name and specific area being worked on:
3	Fire Safety Declaration. In accordance with The Building Regulations (2010) Regulation 38 we hereby confirm that all information relating to fire safety has been provided to the Responsible Person. Appendix G of Approved Document B lists the requirements. (Details on rear)
4	Details of work:
5	Signature and print name of competent person who carried out work:



1. Regulation 38 requires that, where building work involves the erection or extension of a relevant building, or a relevant change of use of a building, fire safety information shall be given to the responsible person at the completion of the project or when the building or extension is first occupied.

- “fire safety information” means information relating to the design and construction of the building or extension, and the services, fittings and equipment provided in or in connection with the building or extension which will assist the responsible person to operate and maintain the building or extension with reasonable safety;
- a “relevant building” is a building to which the Regulatory Reform (Fire Safety) Order 2005 applies¹, or will apply after the completion of building work;
- a “relevant change of use” is a material change of use where, after the change of use takes place, the Regulatory Reform (Fire Safety) Order 2005 will apply, or continue to apply, to the building; and
- “responsible person” has the meaning given in article 3 of the Regulatory Reform (Fire Safety) Order 2005.

This Appendix is only intended as a guide as to the kind of information that should be provided. For clarity the guidance is given in terms of simple and complex buildings, however the level of detail required will vary from building to building and should be considered on a case by case basis.

Simple buildings

2. For most buildings basic information on the location of fire protection measures may be all that is necessary. An as-built plan of the building should be provided showing:

- a. escape routes;
- b. compartmentation and separation (i.e. location of fire separating elements, including cavity barriers in walk-in spaces);
- c. fire doors, self-closing fire doors and other doors equipped with relevant hardware (e.g. panic locks);
- d. locations of fire and/or smoke detector heads, alarm call-points, detection/alarm control boxes, alarm sounders, fire safety signage, emergency lighting, fire extinguishers, dry or wet risers and other fire fighting equipment and location of hydrants outside the building;
- e. any sprinkler system(s), including isolating valves and control equipment;

- f. any smoke-control system(s) (or ventilation system with a smoke-control function), including mode of operation and control systems;
- g. any high-risk areas (e.g. heating machinery);
- h. specifications of any fire safety equipment provided, in particular any routine maintenance schedules; and
- i. any assumptions in the design of the fire safety arrangements regarding the management of the building.
- j. Any provision incorporated into the building to facilitate the evacuation of Disabled people. This information can then be used when designing suitable Personal Emergency Escape Plans.

Complex buildings

3. For more complex buildings a more detailed record of the fire safety strategy and procedures for operating and maintaining any fire protection measures of the building will be necessary. Further guidance is available in BS5588-12:2004 *Fire precautions in the design, construction and use of buildings: Managing fire safety* (Annex A Fire Safety Manual.)

These records should include:

- a. The fire safety strategy, including all assumptions in the design of the fire safety systems (such as fire load). Any risk assessments or risk analysis.
- b. All assumptions in the design of the fire safety arrangements regarding the management of the building.
- c. Escape routes, escape strategy (e.g. simultaneous or phased) and muster points.
- d. Details of all passive fire safety measures, including compartmentation (i.e. location of fire separating elements), cavity barriers, fire doors, self-closing fire doors and other doors equipped with relevant hardware (e.g. electronic security locks), duct dampers and fire shutters.
- e. Fire detector heads, smoke detector heads, alarm call-points, detection/alarm control boxes, alarm sounders, emergency communications systems, CCTV, fire safety signage, emergency lighting, fire extinguishers, dry or wet risers and other fire fighting equipment, other interior facilities for the fire and rescue service, emergency control rooms, location of hydrants outside the building, other exterior facilities for the fire and rescue service.

- f. Details of all active fire safety measures, including:
 - Sprinkler system(s) design, including isolating valves and control equipment; and
 - Smoke-control system(s) (or HVAC system with a smoke-control function) design, including mode of operation and control systems.
- g. Any high-risk areas (e.g. heating machinery) and particular hazards,
- h. As-built plans of the building showing the locations of the above.
- i. Specifications of any fire safety equipment provided, including operational details, operators manuals, software, system zoning and routine inspection, testing and maintenance schedules. Records of any acceptance or commissioning tests.
- j. Any provision incorporated into the building to facilitate the evacuation of disabled people.
- k. Any other details appropriate for the specific building.

Appendix E Approved Contractors List

List of approved contractors to be used on Fire Safety Systems.

When employing personnel or purchasing equipment for fire safety purposes it must be from the following providers:

Deaf Alerter systems:

Deaf Alerter PLC
Enfield House
303 Burton Road
Derby DE23 6AG
T: 01332 363981 F: 01332 293267

Fire alarms and other fire systems:

Clymac Ltd
Cloudway Court

Belton Road
Loughborough
LE11 1LW
01509 232651

Protec
9-10 Morston Court
Blakeney Way
Kingswood Lakeside
Cannock
Staffordshire
WS11 8JB
Tel. 0845 456 5398

Door furniture and ironmongery:

Loughborough University Standard Ironmongery specification (Assa
Abloy) (See LU Fire Officer for details).

Photo luminescent Fire Safety Signage:

JALITE PLC
Wins House
Bentalls
Pipps Hill Ind Estate
Basildon
Essex SS14 3BS
01268 242300

Anything required which is not available from any of the above must be brought to the notice of the LU Fire Officer for clearance before proceeding.



Appendix F Example of a Cause and Effect Table

CAUSE	EFFECT																						
	Basement Sounders	Ground Floor Sounders	First Floor Sounders	Second Floor Sounders	3no Lifts to Ground Floor	Door Access System	Dust Extraction System	Air Make-up Units	Mechanical Control Panels	Gas Valves	Signal to Deaf Alerter	Signal to LU Security	Vent Stack Extract Fans	Vent Stack Fire Dampers	Atrium Window Vents	Air Compressor	Fume Cupboards	Spray Booths	Bottled Gas Systems				
Zone 1 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 2 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 3 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 4 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 5 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 6 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 7 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 8 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 9 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 10 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 11 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 12 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 13 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 14 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 15 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 16 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 17 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 18 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 19 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 20 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 21 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 22 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Zone 23 (Manual or Automatic Activation)	C	C	C	C	X	X	X	X	X	X	X	X	X	X	O	X			X				
Activation of Zone 1 to 23 During Weekly Test	C	C	C	C	X	X					X	X											

APPROVED BY

NAME (BLOCK CAPITALS):

ON BEHALF OF:

SIGNATURE:

DATE:

Any questions on the layout or format of this document should be directed to Facilities Management.