



**FireQual Award in Fire Detection and Alarm Design Theory
and Regulatory Requirements at SCQF Level 6**

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Version Control

The below table displays information relating to when changes were made to this document and what changes have been made.

Please continue to check back with the FireQual website to ensure you are accessing the most recent version.

Date of Update	Name	Description of Update
May 2021	Nic Preston	Creation of document
June 2021	Nic Preston	Update to hours allocation and additional unit guidance provided
June 2021	Nic Preston	Additional guidance as to the use of RPL provided and SCQF level and credit values

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About Us

FireQual was established in 2020 in response to a need to provide structure and rigour to qualifications that support the strengthening of the competencies of those involved in all aspects of fire safety and the wider building industry.

FireQual provide nationally and internationally recognised qualifications ensuring that wherever an individual achieves the qualification, they have met the same requirements providing confidence in the level of their knowledge and skills.

As a result, industry and employers can be confident in the knowledge and skills of those that work for them and the wider society can have confidence in those that provide services to them.

Qualification Summary

This qualification is intended to provide technicians with the knowledge and skills necessary to work on the design of FD&A systems.

Technicians will understand the specific requirements of current and relevant UK legislation, BS 5839 alongside other associated standards, the technologies available and their application, through to certificating the design and record keeping.

This qualification is not linked to any manufacturer of FD&A equipment and will not include specific requirements set by those manufacturers for making connections, programming and testing. It is strongly recommended that designers complete product specific training from their chosen manufacturer in addition to completing this qualification prior to working on any installed system.

Qualification Details

Title	FireQual Award in Fire Detection and Alarm Design Theory and Regulatory Requirements at SCQF Level 6
Regulator	SQA Accreditation
Qualification Reference Number	R686 04
Date for First Registrations	23 rd June 2021
Last Date for Registrations	31 st December 2022
Grading System	Pass/Fail
SCQF Credit Rating	12
Notional Time (hours)	120
Guided Learning (hours)	68
Directed Learning (hours)	46
Assessment Time (hours)	7
Age Ranges	16-18, 19+
Assessment Type	Multi-choice e-Assessment and RPL
Entry Requirements	<p>Candidates should be proficient in core skills literacy, numeracy, and communication.</p> <p>It is recommended that candidates entering this qualification have previously gained field experience either in FD&A and/or appropriate levels of education and/or experience in associated industries</p>

Qualification Structure

This qualification has the following structure:

Those undertaking this qualification must achieve the units listed within this specification

Unit Reference	Unit Title	Mandatory/Optional	SCQF Level	SCQF Credit
UP58 04	Foundation in Fire Detection and Alarm	Mandatory	6	4
UP59 04	Environmental for Field Service Technicians	Mandatory	6	1
UP60 04	Health and Safety for Field Service Technicians	Mandatory	6	1
UP61 04	Fire Detection and Alarm Advanced Designer	Mandatory	7	6

Regulatory Details

The Regulator

SQA Accreditation's functions are set out in the Education (Scotland) Act 1996 as amended by the Scottish Qualifications Act 2002.

The organisation has two main roles: accreditation, and awarding qualifications.

It accredits qualifications other than degrees and approves and quality assures Awarding Bodies that plan to enter people for these qualifications.

Further details regarding SQA Accreditation can be seen by visiting their website, <https://accreditation.sqa.org.uk/>.

The Scottish Credit and Qualifications Framework (SCQF)

The SCQF was launched in 2001 as a framework within Scotland to support those who undertake qualifications or otherwise engage with education understand how a qualification compares to another. Each qualification within the framework will hold a level.

By using two measures, the level of a qualification or learning programme and the number of credit points awarded, the Framework helps you understand and compare various Scottish qualifications.

The level of a qualification indicates the level of difficulty and the number of credit points indicates the length of time it takes to complete. One SCQF credit point represents an average of 10 hours of learning time.

Qualification Level

There are twelve levels of qualification within the SCQF with each qualification being allocated one level which will be represented within the title. The levels within the SCQF are as follows:

SCQF Level	Comparison
Level 1	National 1, Awards
Level 2	National 2, Award, National Certificate, National Progression Award
Level 3	National 3, Award, Skills for Work, National Certificate, National Progression Award
Level 4	National 4, Award, Skills for Work, National Certificate, National Progression Award, SVQ
Level 5	National 5, Awards, Skills for Work, National Certificate, National Progression Award, Modern Apprenticeship, SVQ
Level 6	Higher, Awards, Skills for Work, National Certificate, Professional Development Award, National Progression Award, Modern Apprenticeship, Foundation Apprenticeship, SVQ
Level 7	Advanced Higher, Awards, Scottish Baccalaureate, Higher National Certificate, Advanced Certificate, Professional Development Award, Certificate of Higher Education, Modern Apprenticeship, SVQ
Level 8	Higher National Diploma, Advanced Diploma, Professional Development Award, Diploma of Higher Education, Higher Apprenticeship, Technical Apprenticeship, SVQ
Level 9	Professional Development Award, Bachelors/Ordinary Degree, Graduate Diploma, Graduate Certificate, Graduate Apprenticeship, Technical Apprenticeship, SVQ
Level 10	Professional Development Award, Honours Degree, Graduate Diploma, Graduate Certificate, Graduate Apprenticeship, Professional Apprenticeship

Level 11	Professional Development Award, Masters Degree, Integrated Masters Degree, Post Graduate Diploma, Post Graduate Certificate, Graduate Apprenticeship, Professional Apprenticeship, SVQ
Level 12	Professional Development Award, Doctoral Degree, Professional Apprenticeship

Credit Rating

SCQF qualifications will be assigned a credit value to indicate how much learning is involved when undertaking the qualification. One credit is the equivalent of ten notional learning hours.

Guided Learning is activity that is undertaken by an individual that is taught, instructed by or under the direct supervision of a lecturer, supervisor, tutor or other appropriate provider of education or training whether face to face or through real time electronic means, e.g. video conferences.

Directed Learning is activity that is undertaken by an individual that is not under the direct supervision of a lecturer, supervisor, tutor or other appropriate provider of education including the accessing of pre-recorded training sessions where there is no real time interaction.

Assessment is activity that the learner undertakes to evidence their competency against the knowledge and/or skills requirements of the qualification in order to achieve the qualification.

Notional Learning is calculated by adding together the time that the 'average' candidate would take to complete the guided learning, directed learning and assessment activities to achieve the qualification.

Delivery Organisation Requirements

Pre-Approval

Prior to the promotion or delivery of this qualification an organisation is required to successfully apply to join the FireQual network and gain prior approval to deliver this qualification. Until this has been gained, an organisation will not be able to promote or recruit individuals to undertake this qualification.

Delivery of Training

FireQual do not deliver training or resources to aid the training and preparation of individuals in preparation for undertaking assessment of this qualification.

It is the responsibility of the organisation to design, develop and provide training resources to support individuals to develop the necessary knowledge and skills to enable them to demonstrate their competencies with relation to the requirements of this qualification.

FireQual do indicate areas for inclusion within the unit details held within this specification and can provide guidance to organisations as they develop their own materials.

Registration of Individuals

It is the responsibility of organisations to ensure that individuals they are supporting towards the achievement of the qualification are registered in a timely manner and, at the latest, by the last date for new starts as indicated within this specification.

If an individual has not been registered and entered for the relevant assessment by this date, we cannot guarantee that they will be accepted.

Certification of Individuals

It is the responsibility of organisations to ensure that certification claims are made in a timely manner to ensure that individuals are not delayed in receiving their certification.

Where a qualification has expired or withdrawn, there will be a published date for last certification and all certification claims should be submitted by this date as, if they are received late, we cannot guarantee that certification can be provided.

Delivery Staff Requirements

There are no formal fire systems qualification requirements for training to this qualification. However, trainers should hold experience either as a practicing technician in the field or as a contributor to relevant British and/or EU standards.

Although not mandatory, trainers would be demonstrating best practice if they held or were working towards a relevant teaching/training qualification, e.g. PTTLs or equivalent.

Candidate Information

Entry Requirements

Candidates should be proficient in core skills literacy, numeracy and communication and should have successfully completed the FireQual Award in Fundamentals of the Recommendations for Fire Detection and Fire Alarms Systems in Non-Domestic Buildings.

It is recommended that candidates undertaking this qualification have previously gained field experience either in FD&A and/or appropriate levels of education and/or experience in associated industries.

Assessment Method

This qualification is assessed through multiple choice e-Assessments using our online system. E-Assessments will contain a series of questions accompanied by a selection of answers of which only one will be correct, unless specifically stated by the question. You should clearly identify the correct answer in the stated manner. E-Assessments are marked to a specific marking template.

Results will be issued by the e-Assessment system, but they will be subject to any moderation actions that may be carried out by FireQual and may therefore be subject to change. Formal results will be confirmed no later than two weeks following completion of the assessment.

Where appropriate, and noted within the details of the individual unit, candidates may use equivalencies to evidence achievement of the unit in line with the published Recognised Prior Learning policy.

Where this is the case, evidence will be submitted to FireQual for verification prior to the authorisation of certification claims.

For the unit Health and Safety for Field Service Technicians, where equivalency cannot be evidenced, the candidate may use RPL and knowledge discussion as evidence. This will be submitted to FireQual for verification prior to the authorisation of certification claims.

Reasonable Adjustments and Special Considerations

A reasonable adjustment is any action that helps to reduce the effect of a disability or access issue that places the candidate at a distinct disadvantage during the completion of an assessment. They

are made to an assessment for a qualification to enable a candidate to demonstrate knowledge, skills and understanding of the levels of attainment required by the specification, for the qualification.

In their application a reasonable adjustment must not impact the integrity or validity of the qualification but may include:

1. Allowing extra time to complete assessment
2. Providing assessment materials in specific formats (e.g. Braille)
3. Providing assistance during assessment (e.g. sign language interpreter)
4. Reorganising the assessment room (removal of visual stimuli for autistic learners)
5. Changing assessment method (changing from written to spoken assessment)
6. Using assistive technology
7. Providing coloured transparencies to overlay and view assessment papers.

Reasonable adjustments may be applied to either paper-based or e-Assessment and, in the case of e-Assessment, may be made available through the user settings on the electronic device used for assessment at the time of exam.

In cases where paper-based assessment is carried out, reasonable adjustments are put in place, prior to assessment, through arrangements between the Centre and FireQual.

Reasonable adjustments constitute an arrangement to give the learner fair access to the qualification and must not be used to give any learner an unfair advantage over other learners sitting the same assessment. The use of reasonable adjustments will not be taken into account during the assessment of a candidate's work.

Special considerations may be applied after the assessment if there was a reason the candidate may have been disadvantaged during the assessment. For example, special considerations may be applied if the candidate experienced; illness, injury or another event, outside of their control and has had or is likely to have had, a material impact on the candidate's ability to take an assessment.

Requests for special considerations should be made to FireQual in accordance with the published policy on Reasonable Adjustments and Special Considerations.

Appeals

The organisation providing this qualification will have a published appeals policy detailing how a candidate should appeal any assessment decisions that they have made. If one has not been provided, it can be requested from a member of staff at the organisation who will provide one.

A candidate should follow the organisation's appeals process prior to escalating an appeal to FireQual.

Where a candidate wishes to appeal a decision made by FireQual rather than the delivery organisation, they will have four weeks from the date of notification of the assessment decision. They should submit as much detail to explain the reasons for the appeal and evidence to support the reasoning.

The FireQual appeals process contains multiple escalation stages culminating in an independent review. On completion of the FireQual appeals process, a further appeal can be escalated to SQA Accreditation and further details of their escalation and appeals process can be found on their site at <https://accreditation.sqa.org.uk/>.

Please note that there may be non-refundable charges made to support the costs of processing an appeal where an appeal is not upheld.

Complaints

The organisation providing this qualification will have a published complaints policy detailing how a candidate should submit a complaint if they feel they have not received a satisfactory service in the delivery of this qualification. If a copy has not been provided, it can be requested from a member of staff at the organisation who will provide one.

A candidate should follow the organisation's complaints process prior to escalating a complaint to FireQual.

Where a candidate wishes to complain about the service provided by FireQual rather than the delivery organisation, they should submit as much detail to explain the reasons for the complaint and evidence to support the reasoning.

We do understand that a candidate may wish to make a complaint anonymously and we will attempt to process these complaints in the normal manner. There may however be occasions where an anonymous submission can cause any subsequent investigation to be hindered and so it may not be possible to reach a comprehensive outcome.

If a candidate does not agree with the outcome of the FireQual complaints investigation process, they can access our appeals process to challenge this.

Due to the nature of complaints and the outcomes that these can lead to, we may be unable to provide full details of remedial actions taken as a result of a complaint being upheld, for example where an action relates to personnel.

In these instances, we will provide information as to whether the complaint has been upheld and, where the candidate has been adversely affected in the progress or achievement of this qualification, the actions that will be taken to remedy this.

Where the candidate may not be happy with the outcome of the complaints process, and all FireQual stages have been exhausted, they can submit their complaint to SQA Accreditation at The Optima Building, 58 Robertson Street, Glasgow, G2 8DQ.

SQA Accreditation will consider an escalated complaint with regards to:

- A failure to provide a service
- An inadequate quality of standard of service
- A request for a service or for information which has not been actioned or answered
- The expression of a view that a policy or process is inappropriate
- Wrong information about academic programmes
- The quality and availability of facilities and learning resources
- A decision regarding centre approval made by FireQual
- A decision regarding a specific award approval
- A decision to de-approve a specific award
- An external verification decision
- Assessment decisions

Once the SQA Accreditation complaints process has been exhausted, if the candidate remains dissatisfied, they can refer the complaint to the Scottish Public Services Ombudsman (SPSO).

The SPSO cannot normally look at:

- A complaint that has not completed all previous stages
- Events that happened, or that you became aware of, more than a year ago
- A matter that has been or is being considered in court

Please note that there may be non-refundable charges made to support the costs of processing a complaint and subsequent appeal where a complaint or subsequent appeal is not upheld.

Units

The following pages contain details of the unit(s) contained within this qualification and the relevant information that must be followed to support achievement of the qualification.

Foundation in Fire Detection and Alarm

Reference Number	UP58 04		
Unit Status	Mandatory		
Unit SCQF Level	6	Unit SCQF Credit	4
Guided Learning (hours)	16		
Directed Learning (hours)	24		
Assessment Time (hours)	1		
Grading System	Pass/Fail		
Assessment Method	Multi-choice e-Assessment		

Unit Overview

This unit provides foundation level knowledge and understanding of the legislative requirements, codes of practice and guidance for FD&A systems. Candidates will also gain knowledge and understanding of working in the FD&A sector common to all the advanced units including working with third parties, documentation, fire event, passive systems, FD&A technology, simple design principles, false alarms, and unwanted fire signals.

This unit does not provide a qualification for technicians/engineers to work in any associated specialised field and must be completed as part of a suite of units fulfilling the requirements of a published qualification.

Unit Detail

Subject Area	Assessment Criteria	
Legislation	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Current UK fire law <ol style="list-style-type: none"> a. UK fire law according to the relevant UK country in which they are working b. Variations to fire legislation across UK national boundaries c. Personal responsibilities, as prescribed by current legislation, relevant to their region 2. EU directives pertaining to fire law and fire safety products with specific reference to: <ol style="list-style-type: none"> a. Directive 2014/34/EU (ATEX) b. Directive 2014/35/EC (LVD) 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Explain current applicable UK fire law applicable to the UK country in which the candidate works within <ol style="list-style-type: none"> a. List key roles defined in current UK fire law and explain the responsibilities defined for each role b. State and explain variations in UK fire law between countries other than that in which the

	<ul style="list-style-type: none"> c. Directive 2014/30/EU (EMC) d. Directive 2011/65/EU (RoHS) <ul style="list-style-type: none"> e. Directive 2012/19/EU (WEEE) 3. The Construction Products Regulation (CPR) <ul style="list-style-type: none"> a. How CPR relates to products used in fire safety systems and their relationship to other EU regulations b. Recognised/approved CE markings c. The difference between CE markings and third-party approval, self-declaration d. Declarations of performance e. Use of non-CE marked equipment 	<p>candidate is based/employed</p> <ul style="list-style-type: none"> 2. Explain the relationship between EU directives and UK fire law <ul style="list-style-type: none"> a. Explain the purpose of specific directives, providing a brief explanation of the area covered and the intent of the directive 3. Explain the purpose of the Construction Products Regulation
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Explanatory Notes:

Compliance with fire law is mandatory and ignorance of requirements laid down does not serve as a defence in court.

Candidates will not only be required to have knowledge and understanding of fire law pertinent to their own country in which they will be working, but also of difference in fire law for other countries of the UK. Candidates will also be required to demonstrate awareness and understanding of the variations in building regulations between the UK countries.

Legal requirements on fire systems are not restricted solely to specific fire law, but other forms of legislation will also apply, such as EU regulations requiring that equipment be fit for its designed purpose and having been tested as compliant. Knowledge and understanding of other regulations will raise awareness of legal requirements placed for FD&A systems and assist the candidate in their prevention of the use of either the wrong or inappropriate equipment and/or practices in the FD&A systems for which they hold a responsibility.

Candidates are to be aware that legislative requirements take precedence over published guidance and third-party requirements such as insurance.

Subject Area	Assessment Criteria	
Standards, Codes of Practice, Guidance and Technical Notes	<p>Candidates will have knowledge and understanding of:</p> <ul style="list-style-type: none"> 1. Standards, codes of practice, guidance documents and technical notes <ul style="list-style-type: none"> a. Definition of a standard and its purpose b. Definition of a code of practice and its purpose 	<p>Candidates will understand how to:</p> <ul style="list-style-type: none"> 1. Explain in general terms: <ul style="list-style-type: none"> a. The titles and aims of a range of standards, codes of practice and guidance documents related to the FD&A sector b. A general definition for standards, codes of practice and guidance

	<ul style="list-style-type: none"> c. Definition of a guidance document and its purpose d. Definition of a technical note and its purpose e. How a code of practice, guidance document and a technical note relate to fire law and their use in fire safety systems f. Awareness of different standards outside of the UK g. What standards, codes of practice, and guidance documents are currently available for FD&A systems and their purpose <ol style="list-style-type: none"> 2. British Standard 5839 <ul style="list-style-type: none"> a. The structure of BS 5839 and the function of the different sections within them, ie. normative, commentary b. The different parts to the standard and the specific fields covered, eg. for BS 5839 with reference to parts 1, 6, 8 and 9 3. Categories of system and the fundamental differences between them according to parts 1 and 6 4. Zoning requirements and of the zone plan according to parts 1 and 6 5. Defined roles, Premises Manager (PM) and Competent Person (CP), and their definitions 6. Requirements for and the need to certificate work carried out: design certificate, installation certificate, commissioning certificate, modification certificate, and maintenance certificate 7. End user documentation, ie logbook 	<p>documents and their aims</p> <ul style="list-style-type: none"> c. How standards, codes of practice and guidance documents related to UK fire law d. Awareness and understanding of different standards used outside of the UK <ol style="list-style-type: none"> 2. With specific reference to BS 5839 <ul style="list-style-type: none"> a. Provide an outline of the structure of standards and the purpose of each element b. Explain the parts included and state the area of system covered 3. Provide a brief explanation of system categories and outline the levels of coverage provided by each 4. State the purpose of zone planning and explain the main requirements for defining a zone 5. State the specific roles defined within the standards and the function carried out accordingly 6. State the certificates required, the purpose of the certificate at each stage and who should complete and issue them 7. State the requirements for and purpose of end user documentation 8. Explain the purpose, use and recording requirements for approved variations
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	8. The use, purpose and recording of agreed variations	
<p>Explanatory Notes:</p> <p>Standards, codes of practice, guidance and technical documents help to facilitate compliance with fire law. Candidates will understand where each publication sits in relation to fire law, along with their intended purpose and use.</p> <p>With knowledge and understanding of what standards, codes of practice, guidance documents, eg. healthcare technical memorandums, and technical notes are and how they are used, candidates will focus their knowledge and understanding on BS 5839, with specific reference to the structure of the standard, what each part specifically covers and the generally stated requirements, ie. general requirements not otherwise covered under technology or simply design principles.</p>		
Subject Area	Assessment Criteria	
Working with third parties	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Agreements/contracts between the client and service providers 2. Third-Party Certification Schemes <ol style="list-style-type: none"> a. The aims and purpose of Third-Party Certification Schemes b. How they apply to products and services c. Scheme providers and scheme names d. Key considerations required to gain approval for Third-Party Certification 3. Insurance requirements and their influence on the FD&A System 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Demonstrate awareness and understanding of the need for and use of an agreement or contract between a service provider and their client 2. Provide an explanation of Third-Party Certification Schemes and the scheme providers <ol style="list-style-type: none"> a. Provide a summary description of Third-Party Certification Schemes, their purpose and aims b. Explain how Third-Party Certification Schemes apply to products and services and be able to explain the stated aims and scope of a certificate c. List the main providers of Third-Party Certification Schemes for the FD&A sector and the scheme numbers d. Explain the difference between modular certification and all-inclusive and give examples of the relative benefits to each

		<ul style="list-style-type: none"> e. Explain key considerations to gain approval <p>3. Describe the potential effect that requirements set by insurers can have on an FD&A system</p>
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Explanatory Notes:

Throughout their lifetime, FD&A systems will not only involve the Premises Manager/Responsible Person, but also various other operators and specialist persons to ensure they are fit for purpose and functioning according to their specified roles.

It is important to be aware of the contractual obligations between all parties involved. Whether that be additional or specific requirements laid down for insurance purposes or enforcement bodies or ensuring that service providers have the necessary and relevant demonstrable competence to carry out the work.

Subject Area	Assessment Criteria	
Documentation	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Documentation required for an FD&A system <ul style="list-style-type: none"> a. Regulation 38 b. Fire strategy c. Evacuation strategy d. Fire risk assessment e. Zone plan f. System drawings (design plan, as fitted and as wired drawings) g. System certificates (design, installation, commissioning, inspection and servicing and Third-Party system certificates) h. Logbook(s) i. Manuals 2. Documentation for which the Premises Manager/Responsible Person is responsible <ul style="list-style-type: none"> a. The log books b. Fire risk assessment c. Zone plans d. Certificates e. System drawings, as fitted/as wired diagrams 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. List the documents required for the fire safety systems of a building <ul style="list-style-type: none"> a. Provide a brief overview of the purpose of each document b. State the person(s) responsible for producing and maintaining each document c. Provide an overview of the purpose of the fire risk assessment, who is responsible for its production and upkeep d. State and provide an outline description of the 5 steps to a fire risk assessment, as published in the government guides e. Provide a brief overview of the purpose of a Zone Plan, where its should be displayed and responsibility for its production and upkeep f. Provide a brief overview of the

		<p>purpose of and responsibility for system drawings and provide example drawings for each</p> <ul style="list-style-type: none"> g. Provide a brief overview of the purpose and the responsibility for system certificates h. Provide a brief overview of the purpose of Third-Party Certification for an FD&A system i. Provide an overview of the purpose of a logbook, the information that should be included within it and who is responsible for its upkeep j. Provide an overview of system manuals, their purpose and the responsibilities for their production and maintenance <p>2. Explain the responsibilities of the Premises Manager/Responsible Person for system documentation</p>
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Explanatory Notes:

Understanding the documentation required and the responsibilities for their retention and upkeep will help candidates to assist customers in complying with their legal requirements.

Awareness of all documents included as part of a fire safety file for the building will be supplemented with deeper levels of knowledge and understanding of documents most applicable to the FD&A technician. For candidates returning to complete the advanced specialist units, understanding the requirements and responsibilities for documentation will serve as a prerequisite in their preparation for final assessment.

Subject Area	Assessment Criteria	
Fire Event	<p>Candidates will have knowledge and understanding of:</p> <ul style="list-style-type: none"> 1. The basic scientific principles of fire including: <ul style="list-style-type: none"> a. The Fire Triangle and Pyrolysis b. Flammable materials and 	<p>Candidates will understand how to:</p> <ul style="list-style-type: none"> 1. Provide an explanation of the science of fire and extinguishing <ul style="list-style-type: none"> a. Explain the fire triangle and the process of pyrolysis b. List the different types of flammable material providing examples of each

	<p>sources of ignition</p> <ul style="list-style-type: none"> c. Extinguishing methodology d. Fire spread, flashover, and backdraught e. Fire stopping and compartmentation <p>2. Procedures to confirm a fire event</p> <ul style="list-style-type: none"> a. Alarm confirmation b. Coincidence, double knock automatic alarm c. Visual confirmation <p>3. Policies and procedures in the event of a fire</p> <ul style="list-style-type: none"> a. Pre-alarm b. Stay put policy c. Phased evacuation d. Disability and equalities legislation applicable according to the UK country where the candidate will be employed (evacuation of persons with mobility difficulties, refuges, assistive equipment) e. Fire marshals f. Fire safety and building security 	<ul style="list-style-type: none"> c. Explain the basic principles of extinguishing and how selected extinguishing media work (starvation, asphyxiation, cooling) d. Explain the stages of fire spread with an overview of conduction, convection, radiation, flashover, and backdraught e. Explain the importance of speed in detecting fire in relation to life and property f. Explain the principles of fire stopping and compartmentation <p>2. Explain why it may be necessary to carry out fire confirmation and the common processes used</p> <ul style="list-style-type: none"> a. Explain the relative benefits and pitfalls of automated confirmation of a fire versus manual confirmation, ie. confirmation through automated fire detection against human investigation/confirmation <p>3. Explain the purpose and principles of different fire strategies, giving basic examples of where they may be necessary and the limitations to use</p> <ul style="list-style-type: none"> a. Provide examples and a brief explanation of what measures may be necessary to aid the evacuation of persons with limited mobility b. Explain the purpose of a fire marshal c. Explain the implications and risks to both fire safety and to building security in the event of a fire
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Explanatory Notes:

Knowledge of fire science and strategies for handling a fire incident provides a comprehensive background understanding of the need for and influence of an FD&A System. Enabling the candidate to clearly explain how the installation of an FD&A system will assist and contribute to the overall fire safety of a building.

Candidates will also be able to explain basic requirements for fire safety of persons covered by disability legislation pertaining to UK country in which they will be working. This will include any legal requirements for compliance with prevailing legislation the equipment available to assist in

raising alarm and for safe evacuation. Candidates will also demonstrate understanding on building security and provisions for enabling safe evacuation where security is of concern, eg. BS 7273-4

Subject Area	Assessment Criteria	
Passive Fire Protection	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Common structural materials, their reaction to fire and their fire-resistant properties 2. Processes and materials that may be used to increase fire resistance <ol style="list-style-type: none"> a. Covering materials b. Intumescent coatings and seals 3. The implications to fire safety/fire stopping when passive fire protection materials and coatings are damaged or breached <ol style="list-style-type: none"> a. Penetrations through fire compartmentation and fire rated materials b. Impact damage to fire resistant coatings c. Damage to fire resistant covering 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Provide a brief explanation of the term 'passive fire protection' and how they affect building structure and materials 2. Be able to state what additional materials/methods can be used to increase fire resistance 3. Explain how fire-resistant properties can be compromised and what should be done to mitigate this

Explanatory Notes:

Touching on passive fire protection, candidates will develop understanding of the materials used in a building and the implications of any damage that may result. They will develop an appreciation for and understanding of the implications of penetrations through fire compartmentation, along with an appreciation of the materials and measures available to reinstate fire stopping.

Subject Area	Assessment Criteria	
FD&A systems technology	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. The technologies available within the FD&A sector, including current, emerging, and legacy technology still found in the field. This will include but is not limited to: <ol style="list-style-type: none"> a. Self-contained/combined devices b. Detection technology <ol style="list-style-type: none"> i. Point type detectors 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Provide a brief explanation of: <ol style="list-style-type: none"> a. Different types of detection technology available and give a brief description of how they work b. Alarm technologies available and give a brined description of how they work, any restrictions on their usage, ie. sound pressure levels/strobe

	<ul style="list-style-type: none"> ii. Linear cable iii. Beam detectors iv. Aspirating detection v. Video smoke and flame detection c. Types of alarm technology <ul style="list-style-type: none"> i. Bells ii. Sounders iii. Voice alarm iv. Visual alarm v. Tactile devices d. System communications <ul style="list-style-type: none"> i. Hard wired ii. Wireless e. Communications with Alarm Receiving Centres (ARC) f. Analogue systems <ul style="list-style-type: none"> i. Open and closed protocol g. Conventional systems <ul style="list-style-type: none"> i. 2 and 4 wire <p>2. The relative advantages and disadvantages of each technology against its peers and considerations for best usage</p>	<p>effect, and the relative benefits of each</p> <ul style="list-style-type: none"> c. Communication technologies within the FD&A system for both hard wired and wireless systems d. Technologies for communication with the Alarm Receiving Centres (ARC) e. The practice of utilising the security system for communications with ARC and the relative risks and benefits f. Communications within the FD&A system <p>2. Provide a summary and brief explanation of the relative advantages and disadvantages to using any of the technologies, in comparison to its technological peers, eg. the beneficial difference between point and linear detectors or addressable and non-addressable</p>
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Explanatory Notes:

Understanding the technologies available will enable the candidate to identify which technologies suit any situation. They will be able to advise what technology will work in the space available and the relative benefits of each.

Subject Area	Assessment Criteria	
<p>System Design (requirements as per BS 5839 parts 1 and 6)</p>	<p>Candidates will have knowledge and understanding of:</p> <ul style="list-style-type: none"> 1. System categories and the requirements placed upon system design <ul style="list-style-type: none"> a. Life protection, categories L1 – L5, LD b. Property protection, categories P1 – P2, PD c. Manual protection, category M d. Multiple categories, eg. L3/P2 	<p>Candidates will understand how to:</p> <ul style="list-style-type: none"> 1. Provide an overview of system categories and their requirements for coverage <ul style="list-style-type: none"> a. Life, property and manual protection categories and considerations to be made when selecting the right category b. Protection grades for dwellings 2. Explain what is meant by the terms Detection Zone and Alarm Zone and how they apply to system design

	<ul style="list-style-type: none"> e. Dwellings protection, grades 2. Zones <ul style="list-style-type: none"> a. Detection zones b. Alarm zones 3. Positioning, including awareness of special considerations for voids, ducts, and pitched roofs as applicable <ul style="list-style-type: none"> a. Detection coverage for point, linear and beam detectors b. Manual Call Points, including a definition of final exit and travel distance c. Audibility and positioning of audible alarms d. Visibility and positioning of visual alarms e. Control and Indicating Equipment (CIE) 4. Cabling <ul style="list-style-type: none"> a. Grades of cable, standard or enhanced b. Cable paths c. Cable fixings d. Cable limitations 5. System cause and effect 6. Awareness of Construction Design Management (CDM) regulations and considerations to be made in system design 	<ul style="list-style-type: none"> 3. Explain the design considerations for <ul style="list-style-type: none"> a. Correct placement of devices <ul style="list-style-type: none"> i. Point and linear detectors ii. Audible and visual alarms iii. Manual Call Points b. The additional recommendations that would apply for <ul style="list-style-type: none"> i. Pitched roofs ii. Voids iii. Ducts 4. State the considerations for cable selection and the requirements for cable fixings, cable paths, type, size, and colour 5. State the principle of cause and effect in system design <ul style="list-style-type: none"> a. State the difference between cause and effect programming and cause and effect through hard wiring, giving relative benefits of each 6. State what considerations would be given for compliance with CDM regulations and how system design can help compliance 7. Set out very simple design plans against example rooms and/or zones provided
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Explanatory Notes:

Understanding simple design principles enables the candidate to recognise when a design plan or an installed system needs to be referred to the designer for review

It should be noted that the aim of this module is not to empower a candidate as a system designer but to recognise where design may need to be amended by a competent designer or where a fitted system may need changes made.

Subject Area	Assessment Criteria	
Explosive Environments	Candidates will have knowledge and understanding of: <ul style="list-style-type: none"> 1. Explosive environments <ul style="list-style-type: none"> a. The type of environment that 	Candidates will understand how to: <ul style="list-style-type: none"> 1. Recognise <ul style="list-style-type: none"> a. Classification, types, and nature of explosive environments

	<p>would be considered explosive</p> <p>b. Hazards leading to explosion</p> <p>2. The measures that should be taken to mitigate the risk of explosion</p> <p>a. Working in an explosive environment</p> <p>b. Equipment and system components available for explosive environments</p>	<p>b. Hazards when working in an explosive environment</p> <p>2. Provide a brief explanation of measures that may be made to reduce or mitigate risk</p> <p>a. Changes to the environment</p> <p>b. Provisions for equipment and system devices for explosive environments</p>
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Explanatory Notes:

Having an awareness of explosive environments and the risks associated with them is a key to life safety when progressing to more advanced units. Awareness of explosive environments at this stage adds an awareness of special considerations for FD&A systems at all stages of the system life.

This subject is not intended to develop competency to work in or design systems for explosive environments, further training will be required for technicians intending to do so.

Subject Area	Assessment Criteria	
<p>False Alarms and Unwanted Fire Signals</p>	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. False alarms and unwanted fire signals and their management <ol style="list-style-type: none"> a. Definition of and differences between a false alarm and an unwanted fire signal b. Recording of false alarms and unwanted fire signals c. Investigation 2. Causes of false alarm that may lead to an unwanted fire signal <ol style="list-style-type: none"> a. Equipment false alarms b. Unwanted alarms c. Malicious false alarms d. False alarms with good intent 3. Management of a system for the reduction of false alarms and unwanted fire signals <ol style="list-style-type: none"> a. Management/soft measures for the 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Provide an explanation of: <ol style="list-style-type: none"> a. False alarms and unwanted fire signals and the difference between them b. Reasons for recording false alarms and the information required c. Principles of investigation and points for consideration in identifying the causes of false alarms 2. Explain the causes of false alarms including: <ol style="list-style-type: none"> a. Equipment false alarms, their causes and prevention b. Examples of unwanted alarms c. Malicious false alarms d. False alarms with good intent 3. Explain the principles of false alarm management <ol style="list-style-type: none"> a. Management controls

	<p style="text-align: center;">reduction of false alarms</p> <p style="text-align: center;">b. Physical measures for the reduction of false alarms</p> <p>4. Steps that may be taken by the Fire and Rescue Service (FRS) to counter the effect of unwanted fire signals</p> <p>5. Steps that may be taken for the reduction and/or prevention of unwanted fire alarm signals</p>	<p style="text-align: center;">b. Technical controls</p> <p style="text-align: center;">c. Soak testing</p> <p>4. Explain the steps that FRS's may currently take to counter the effect of unwanted fire signals</p> <p>5. State suggested actions that reduce or prevent unwanted fire signals</p>
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Explanatory Notes:

Unwanted fire signals lead to significant cost in terms of lost production for the business, staff time wasted, and, in some cases, costs associated with the deployment of the Fire and Rescue Service. Understanding the causes of false alarms and unwanted fire signals and the measures that can be put in place may counter any negative impact to business through disruption or to staff and residents through complacency in the system.

Fire Detection and Alarm Advanced Designer

Reference Number	UP61 04		
Unit Status	Mandatory		
Unit SCQF Level	7	Unit SCQF Credit	6
Guided Learning (hours)	40		
Directed Learning (hours)	16		
Assessment Time (hours)	3		
Grading System	Pass/Fail		
Assessment Method	Multi-choice e-Assessment		

Unit Overview

This unit provides advanced knowledge and understanding of the legislative requirements, codes of practice and guidance for systems design in the FD&A sector of the fire industry. Candidates will also have gained best practice methodology, numerous standards applicable to FD&A systems and ancillary equipment, customer specifications, and system technology.

Candidates will have been assessed in their ability to apply the knowledge and understanding gained through achievement of this unit and will have demonstrable skills in designing FD&A systems, alongside the awareness and understanding gained in relation to other systems that may have an impact on their system design.

Unit Detail

Subject Area	Assessment Criteria	
Legislation	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Current legislation relevant to the areas in which the candidate works, including cross border legislation as appropriate 2. Construction Design Management (CDM) regulations 3. Building regulations <ol style="list-style-type: none"> a. National requirements b. Local authority requirements 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Name, understand and provide an outline description of applicable legislation with reference to each of the UK nations 2. Regarding the principles and objectives of the CDM regulations applicable to the design of FD&A systems <ol style="list-style-type: none"> a. Identify and apply design considerations according to the requirements of CDM b. Provide a summary explanation of the

	<ol style="list-style-type: none"> 4. Equality and disability discrimination legislation 5. European Directives 6. Construction Products Regulations (CPR) 	<p>considerations to the system design</p> <ol style="list-style-type: none"> 3. Name, understand and provide the scope and an outline description of building regulations as applicable to FD&A systems <ol style="list-style-type: none"> a. Identify and apply the relevant parts of the building regulations and the appropriate guidance documents b. Understand and provide a brief outline of the application of building regulations across UK nations, provide references to sources of further information 4. Identify and apply the requirements of equality and disability discrimination legislation applicable to the UK nation in which the design is to be implemented 5. Identify applicable European Directives and their impact on system design 6. Identify and apply the requirements of the Construction Products regulations (CPR) and the impact this may have on system design
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Explanatory Notes:

Designers need to have a demonstrable understanding of legislation that has an impact on fire alarm systems to ensure that designs can be made to comply with, or at least consider legislative requirements. Designers should be able to demonstrate their knowledge and understanding of legislation across the nations of the UK and how national differences may apply.

In addition to knowledge and understanding of legislation and regulations applicable to their work, candidates will also be required to demonstrate awareness of other related legislation and regulations and how to source further information where required.

Subject Area	Assessment Criteria	
BS 5839	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Applicable codes of practice to the FD&A sector and their application 2. System categories 3. Zones 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Identify, understand, and apply the relevant codes of practice 2. Understand and apply system categories <ol style="list-style-type: none"> a. Identify and apply the applicable protection of

	<ol style="list-style-type: none"> 4. System integrity 5. Manual Call Points 6. Detection selection, siting and spacing <ol style="list-style-type: none"> a. Flat ceilings b. Pitched roofs c. Obstructions and complex ceiling structures d. Ventilation e. Voids f. Vertical intrusions, ie. lift shafts, stairways, risers g. Avoiding false alarms/unwanted fire signals h. Detector technology i. Mounting heights 7. Alarm selection and siting <ol style="list-style-type: none"> a. Audible alarms b. Visual alarms c. Tactile alarms 8. Remote signalling 9. Documentation 	<ol style="list-style-type: none"> life category, including category M <ol style="list-style-type: none"> b. Identify and apply the applicable protection of property category 3. Identify and apply detection and/or alarm zones and how they can have an impact on the choice of system type and the effect they will have on overall system design 4. Provide an explanation of the term 'system integrity' <ol style="list-style-type: none"> a. Types of fault b. Effects on the system c. Reporting 5. Identify and provide an explanation of requirements for the siting and requirements for manual call points 6. Identify, apply, and describe the design requirements for: <ol style="list-style-type: none"> a. Flat ceilings b. Pitched roofs c. Obstructions and complex ceiling structures d. Ventilations e. Voids f. Vertical intrusions, ie. lift shafts, stairways, risers g. False alarm/unwanted fire signals h. Detector technology i. Mounting heights 7. Identify, apply, and describe the design requirements for: <ol style="list-style-type: none"> a. Audible alarms b. Visual alarms c. Tactile alarms 8. Identify and apply recommendations for remote signalling: <ol style="list-style-type: none"> a. The needs for automatic communications with the Fire and Rescue Service (FRS) b. The features required of both the CIE and communication device 9. Identify and provide an explanation of the documentation produced by the designer
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Explanatory Notes:

It is expected that the fire alarm designer would be familiar with the recommendations of the appropriate Codes of Practice, such that they should have a demonstrable working knowledge of the standard and of its application to system design. However, this is with recognition of the need to look up the standard to check and verify details (for the purpose of assessment, relevant and applicable references will be provided). The designer should be aware of the limits to their own knowledge and how to source further information and advice when required.

Subject Area	Assessment Criteria	
BS EN 54	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. EN 54-1 <ol style="list-style-type: none"> a. Intent, scope, and terminology b. Functional parts 2. EN 54-13 <ol style="list-style-type: none"> a. Intent and scope b. Type 1 and type 2 components 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. With reference to EN 54-1 provide a brief overview of intent and scope of EN 54 <ol style="list-style-type: none"> a. Explain the importance of compliance with EN 54 with respect to European fire alarm systems b. Identify the appropriate part for FD&A system devices 2. Provide an explanation of EN 54-13 and the benefits of this standard on a system design <ol style="list-style-type: none"> a. Identify type 1 components and provide an explanation of their application b. Identify type 1 components and provide an explanation of their application

Explanatory Notes:

EN 54 is the standard for fire alarm equipment in Europe. Compliance with this standard, wherever possible, is a recommendation of BS 5839, however where this is not possible, other routes are available. It is essential that the designer has appropriate knowledge of this standard.

The Designer should also understand what products are covered by this standard and ensure they know how to recognise those products that are compliant.

Subject Area	Assessment Criteria	
BS 7273	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. The parts of BS 7273 and their scope 2. Parts 1, 3 and 5 <ol style="list-style-type: none"> a. Coincidence detection b. Type of detector c. Spacing and siting d. CIE, controls, and indications 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Identify applicable parts of BS 7273 and provide an explanation of scope 2. Recognise and provide an outline description of the elements of parts 1, 3 and 5 that are applicable to, and the influence they have on FD&A system design

	<ul style="list-style-type: none"> e. 1st and 2nd stage 3. Part 4 <ul style="list-style-type: none"> a. Categories of actuation b. Methods of actuation c. FD&A design considerations 4. Part 6 <ul style="list-style-type: none"> a. Ancillary Systems and Equipment (ASE) b. Methods of actuation c. Status monitoring 	<ul style="list-style-type: none"> 3. Apply the recommendations of part 4 to system design for: <ul style="list-style-type: none"> a. Categories of actuation b. Methods of actuation c. FD&A design considerations 4. Understand and apply the recommendations of part 6 <ul style="list-style-type: none"> a. Recognise and identify Ancillary Systems and Equipment (ASE) b. Identify and apply methods of actuation as applicable to ASE c. Identify and apply status monitoring methods
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Explanatory Notes:

BS 7273 covers the control of specialist fire protection equipment and systems, which has an impact on the design and operation of the Control and Indicating Equipment and on the system design of the fire detection and alarm system. It is not the intent of this subject area to enable candidates to design systems according to the recommendations of BS 7273, instead to recognise, understand and apply recommendations to FD&A system design as appropriate and to recognise where further information and learning should be sought.

The designer must be aware of this impact and what appropriate steps can be taken to ensure that the resultant system is compliant.

Subject Area	Assessment Criteria	
BS 6266	<p>Candidates will have knowledge and understanding of:</p> <ul style="list-style-type: none"> 1. Scope and design 2. Detection <ul style="list-style-type: none"> a. Selection b. Positioning and siting c. Sensitivity 3. Alarms and indicators 4. Interaction with other systems 	<p>Candidates will understand how to:</p> <ul style="list-style-type: none"> 1. Provide an explanation of the scope of the standard <ul style="list-style-type: none"> a. Systems requiring design according to BS 6266 b. Understanding risk categories c. Fire strategies 2. Identify recommendations for detection and the effect they will have on detection design for FD&A systems <ul style="list-style-type: none"> a. Selecting the appropriate detection b. Positioning and siting c. Setting sensitivity 3. Identify recommendations for alarms and indicators and the effect they will have on the FD&A system design <ul style="list-style-type: none"> a. Illuminated mimics b. Remote indicators c. Addressable systems

		<ul style="list-style-type: none"> d. Alarm locations e. Alarm stages f. Remote signalling <p>4. Identify recommendations for interaction with and interface between systems</p> <ul style="list-style-type: none"> a. Connections to premises FD&A system b. Interface with other devices/equipment
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Explanatory Notes:

Candidates should have awareness and appropriate level of understanding of BS 6266 and its application to the design of FD&A systems in electronic equipment installations. In completing this unit candidates will be able to recognise and apply recommendations from this standard to their FD&A system design and, where applicable, be able to refer back to the standard for further information and understanding.

It is not the intent of this subject area to enable candidates to design systems according to the recommendations of BS 6266, instead to recognise, understand and apply recommendations to FD&A system design as appropriate and to recognise where further information and learning should be sought.

Subject Area	Assessment Criteria	
BS 7671	<p>Candidates will have knowledge and understanding of:</p> <ul style="list-style-type: none"> 1. Scope and intent of BS 7671 2. Relationship between codes of practice for FD&A systems and the wiring regulations BS 7671 3. Safe electrical design 4. Protection and integrity <ul style="list-style-type: none"> a. Mechanical protection b. Signal integrity 	<p>Candidates will understand how to:</p> <ul style="list-style-type: none"> 1. Provide a brief overview of the scope and intent of BS 7671 2. Provide an explanation of the relationship between the wiring regulations and the codes of practice for the fire alarm systems, including examples where applicable 3. Identify and apply basic principles of safe electrical design to FD&A system design <ul style="list-style-type: none"> a. Within the FD&A system b. Interfacing FD&A systems to ancillary equipment 4. Identify and select appropriate methods for the protection and integrity of cables during system design <ul style="list-style-type: none"> a. Mechanical protection b. Signal integrity and EMC

Explanatory Notes:

All electrical installations will be required to comply with appropriate wiring regulations. In designing a Fire Detection and Alarm (FD&A) System candidates will be required to recognise and apply appropriate recommendations to their system design and those of other applicable standards.

Subject Area	Assessment Criteria	
Emergency Lighting	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Emergency lighting and FD&A systems 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Explain how FD&A requirements could determine emergency lighting <ol style="list-style-type: none"> a. Requirements for emergency lighting levels b. Requirements for interlinking to dynamic signage
<p>Explanatory Notes:</p> <p>Fire alarm designers should have an understanding of emergency lighting, as applicable to FD&A systems.</p> <p>Candidates will be able to demonstrate understanding and comprehension of the requirements for emergency lighting with specific reference to FD&A systems and be able to refer to appropriate standards and regulations for further information if required.</p>		
Subject Area	Assessment Criteria	
BS 9999/ BS 9991	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Content and principles relating to FD&A 2. Fire safety principles 3. Escape routes 4. Compartmentation 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Identify and provide an explanation of the content and principles relating to FD&A systems and how they apply 2. Identify and provide an explanation of the principles of fire safety in building, e.g. warning and escape, controlling spread of smoke and flame 3. Identify and describe the principles used to design escape routes, make recommendations for actions necessary to provide applicable levels of FD&A coverage, eg. size of escape route with respect to the occupancy of the building, the length of corridors between fire doors, refuges 4. Describe what is meant by compartmentation and the implications compartmentation of a building will have on FD&A design
<p>Explanatory Notes:</p> <p>Buildings are designed to reduce the risk of rapid spread of fire. Fire detection and alarm systems are designed to give the earliest possible warning of fire to give the maximum time for building occupants to escape to a safer place. There is always a compromise with respect to the use of the</p>		

building, the size of the escape routes, the compartmentation designed into the building and the time provided by the fire detection and alarm system. Therefore, a fire alarm designer should be aware of the other techniques that are used to reduce risk so that other effective and compliant solutions may be proposed.

Subject Area	Assessment Criteria	
BS EN 12845	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Types of automatic sprinkler systems 2. Interfacing with FD&A systems <ol style="list-style-type: none"> a. Types of interface b. Cause and effect c. Monitoring and indication 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Identify and provide a brief explanation of types of automatic sprinkler systems and applicable elements of sprinkler systems that will influence FD&A design 2. Identify and provide a description of interfaces, including the requirements for interfacing between FD&A and sprinkler systems <ol style="list-style-type: none"> a. Types of interface b. Describe and apply appropriate cause and effect c. Identify and provide an explanation of requirements for monitoring and indication

Explanatory Notes:

The standards describe separate systems for FD&A and sprinklers. It is therefore essential that the fire alarm designer is aware of and understands the need for, and provision of interfaces between sprinkler and FD&A systems. It is also important that the system designer can recognise the requirements for, provisions of and to tailor their system design accordingly.

Subject Area	Assessment Criteria	
BS 7974	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. The aims and scope applicable to FD&A 2. Relationship with BS 5839 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Provide an overview of the framework as applicable to FD&A 2. Provide an explanation of the relationship between this and BS 5839

Explanatory Notes:

Prescriptive standards and fire safety engineering are two alternative approaches to fire safety that can be used either in isolation or together to reduce risk and provide a cost-effective solution. Candidates will require an awareness of alternative approaches so that they are appropriately prepared for such alternative approaches and can recognise where further education/research is required.

Subject Area	Assessment Criteria	
Interpreting Specifications	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Scope of contract/specification <ol style="list-style-type: none"> a. Detection b. Alarm c. Extinguishing d. Passive protection e. Communication with Fire and Rescue Services (FRS) f. Drawings 2. Fire strategy 3. Interpreting fire risk assessment 4. Confirming system category 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Understand, extract, and apply appropriate information from the scope of contracts and/or system specification 2. Understand, extract, and apply appropriate information from the fire strategy 3. Understand, extract, and apply appropriate information from a fire risk assessment 4. From the documents supplied, identify, and confirm system category according to: <ol style="list-style-type: none"> a. Protection of life and/or protection of property b. Appropriate level of coverage according to risk
<p>Explanatory Notes:</p> <p>The starting point of any fire detection and alarm system design is establishing the needs of the customer. The customer is often unaware of all of the issues, risks and solutions that can be used, the designer may need to interpret the requirements from various sources to provide a proposal that shows how the system meets the objectives of the customer.</p>		
Subject Area	Assessment Criteria	
Selecting System Type/System Design	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Wired, radio, or hybrid systems 2. Non-addressable or addressable <ol style="list-style-type: none"> a. Analogue/digital b. Conventional/two wire c. Open/closed protocol 3. Central or distributed CIE 4. Remote services <ol style="list-style-type: none"> a. Fire and Rescue Service b. Other remote services 5. Multiple entrances 6. Cable <ol style="list-style-type: none"> a. Cable type b. Electrical characteristics 7. Secondary power supply calculation 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Recognise and apply solutions, with advantages and disadvantages, for wired, radio and/or hybrid systems according to: <ol style="list-style-type: none"> a. Customer needs b. Building characteristics 2. Recognise and apply solutions, with advantages and disadvantages, for non-addressable or addressable systems according to: <ol style="list-style-type: none"> a. Customer needs b. System characteristics c. BS 5839 recommendations 3. Identify and apply solutions using central or distributed CIE 4. Identify and apply solutions for remote services according to: <ol style="list-style-type: none"> a. Communication requirements <ol style="list-style-type: none"> i. Fire and Rescue service

	<ul style="list-style-type: none"> 8. Environmental considerations <ul style="list-style-type: none"> a. Electro Magnetic Interference b. IP ratings c. Hazard mitigation 9. System integrity 10. Speed of response, eg. 3 seconds to an MCP 11. Detection <ul style="list-style-type: none"> a. Technology b. Detection types, eg. point, beam, aspirating detection c. Speed of response d. Avoiding unwanted alarms 12. Ancillary Systems and Equipment (ASE) 13. Cause and effect 14. Coincidence detection 15. Life of the system 	<ul style="list-style-type: none"> ii. Other remote services b. Equipment selection 5. Identify and apply solutions using Control and Indicating Equipment (CIE) when buildings have more than one entrance that could be used by the fire and rescue service 6. Identify and apply the appropriate cables for the fire alarm system <ul style="list-style-type: none"> a. Select with the relative advantages and disadvantages cable type <ul style="list-style-type: none"> i. Fire resistance ii. Mechanical protection iii. Application b. Calculate and assess the cable characteristics of an FD&A system to allow correct operation according to: <ul style="list-style-type: none"> i. Circuit type ii. Circuit loading iii. Volt drop iv. Manufacturer's specification 7. Identify and apply requirements for secondary power supplies <ul style="list-style-type: none"> a. Identify and apply appropriate standby periods b. Identify and apply appropriate alarm time period c. Demonstrate the use of the formula that should be used for calculating the power supply requirements for a fire alarm system and make recommendations for power supply 8. Identify environmental factors effective system design and make re recommendations to limit or mitigate their effects 9. Understand what is meant by system integrity, identify potential issues arising and apply measures that should be considered during the fire alarm design
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		<ol style="list-style-type: none"> 10. Understand the speed of response from an activation to evacuation, where recommendations can be relaxed and apply appropriate measures to allow or mitigate factors effecting 11. Identify and apply requirements for detection according to: <ol style="list-style-type: none"> a. Fire risk/objective b. Physical space c. Environment d. Processes e. Maintenance f. Management 12. Identify ancillary equipment requiring interfacing to FD&A systems and apply appropriate methods for activation and feedback 13. Identify requirements for cause and effect and apply recommendations to achieve: <ol style="list-style-type: none"> a. Evacuation strategies b. Shut down of ancillary services c. Specifying/detailing d. Cause and effect 14. Identify the need for different types of coincidence detection and apply appropriate methods in system design 15. Apply considerations to system design for the whole life of the system to facilitate safe installation, commissioning, maintenance, and removal
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Explanatory Notes:

The fire alarm designer is the link between the requirements of the customer and the fire alarm system. Selection of equipment, interfacing, integration, reliability, maintenance and ease of use will all be affected by the system design, so it is essential that the designer has a broad and a detailed knowledge of the standards and the equipment specified.

Subject Area	Assessment Criteria	
Communication, Liaising with Third Parties and Documentation	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Roles <ol style="list-style-type: none"> a. Customer b. Installer c. Specifier/Architect d. Fire Risk Assessor e. Supplier f. Insurer 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Recognise and understand the toles of stakeholders that may influence or be affected by system design 2. Produce a design specification in accordance with details provided

	<ul style="list-style-type: none"> g. Fire and Rescue Service/Legislator h. Project Manager <ul style="list-style-type: none"> 2. Design specification 3. Design certificate 4. System calculations 5. Annex E 6. Variations 	<ul style="list-style-type: none"> 3. Produce a design certificate in accordance with details and specification provided 4. Provide system calculations for power consumption, PSU ratings, cable type 5. Provide an appropriate detector selection document 6. Provide appropriate documentation for agreed variations
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Explanatory Notes:

Effective communication is essential for the system designer if the provision of the fire alarm system is to proceed smoothly. The designer is responsible for documentation.

Subject Area	Assessment Criteria	
Advanced System Design Principles	Candidates will have knowledge and understanding of: <ul style="list-style-type: none"> 1. Complex applications <ul style="list-style-type: none"> a. Types of premises, eg. shopping centres, transport hubs, hospitals b. Multi-building sites 2. Hazardous areas (explosive atmospheres) 	Candidates will understand how to: <ul style="list-style-type: none"> 1. Understand and apply any special considerations when designing fire alarm systems for complex applications 2. Identify and demonstrate understanding of special considerations for hazardous areas

Explanatory Notes:

Fire alarm system designers need to be aware of potential reliability and hazardous situations that could be experienced in the provision of a fire alarm system and how these risks can be reduced or avoided by specifying the appropriate equipment and system design.

This subject will include and require application of design principles that are fundamental to complex premises and sites. However, it is not intended to demonstrate competency in the design of systems for all complex premises and candidates should be aware of the need for additional education and qualification, reference to other persons, regulation and guidance as required.

Environmental for Field Service Technicians

Reference Number	UP59 04		
Unit Status	Mandatory		
Unit SCQF Level	6	Unit SCQF Credit	1
Guided Learning (hours)	4		
Directed Learning (hours)	4		
Assessment Time (hours)	1		
Grading System	Pass/Fail		
Assessment Method	Multi-choice e-Assessment or RPL		

Unit Overview

This unit provides knowledge and understanding of environmental law and specific requirements relating to the candidate's role as a technician within the FD&A sector of the fire industry. In particular, candidates will develop foundation level knowledge and understanding of environmental law, waste electrical and electronic equipment (WEEE), energy consumption, F-Gas and Ozone Depleting Substances (ODS).

Equivalency has been recognised for the following qualifications meaning that holders of the units/qualifications listed will not be required to complete this unit. Centres should refer to the Recognised Prior Learning policy for details on how to evidence prior learning against this unit.

- NEBOSH Certificate in Environmental Management Plus
- FIA F-Gas Certification for Service Technicians
- FIA Critical Use of Halon

For those candidates that do not hold one of the qualifications listed above, they may complete the multi-choice e-Assessment to evidence their meeting of the unit requirements.

Unit Detail

Subject Area	Assessment Criteria	
Environmental Law	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Definition of what is covered under the term 'environment' in the UK <ol style="list-style-type: none"> a. Air b. Water c. Land 2. Who is responsible for legislation and enforcement 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Explain what is meant by the term 'environment' and the overarching legislation for the protection of the environment <ol style="list-style-type: none"> a. Air b. Water c. Land 2. Name the agencies responsible for

	<p>for the protection of the environment in the UK:</p> <ol style="list-style-type: none"> a. EU b. Department for Environment, Farming and Rural Affairs (DEFRA) c. Environment Agency (EA) d. Natural resources Wales (NRW) e. Scottish Environmental Protection Agency (SEPA) f. Department of Agriculture, Environment and Rural Affairs (DAERA – Northern Ireland) g. Local Authorities <p>3. Environmental Management Systems for compliance with environmental legislation</p>	<p>regulating/enforcing environmental law and provide a brief overview of their areas of responsibility</p> <p>3. Provide an outline description of Environmental Management Systems, their benefits and how they apply to an organisation's compliance with environmental legislation</p>
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Explanatory Notes:

This unit is not only intended to provide awareness of environmental law, which will serve to maintain regulatory compliance for both the fire business (the employer) and their clients, but will also provide a general understanding of the scale of regulations that are covered by the term 'environmental law'.

Further sections in this unit will highlight regulations that are specific application and interest to FD&A technicians/ this section is intended to provide a broad awareness and understanding of the legislation and the regulatory bodies that enforce environmental law.

Subject Area	Assessment Criteria	
<p>Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS)</p>	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. UK law (UK 2012 No. 3032) 2. The scope of coverage by the regulations 3. Compliance <ol style="list-style-type: none"> a. Self-declaration b. 3rd party declaration 4. Exempted applications 5. Enforcement authority 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Name current UK legislation and provide a brief overview of its intent, with reference to the overarching European directive 2. Identify and list the substances covered by the legislation 3. Explain the role of the manufacturers, importers, and distributors to ensure compliance and the options available to the technician for ensuring use of compliant equipment and materials 4. Identify and list examples of exempted applications for

		substances restricted by the regulations 5. Name the enforcement authority
<p>Explanatory Notes:</p> <p>It is not generally the responsibility of the technician to ensure compliance with the RoHS regulations within components, as that will be covered by the manufacturer. However, awareness of the regulations and understanding of the necessity for compliance will help to ensure that compliant equipment is sourced and used. Candidates will also have understanding of circumstance in which non-compliant equipment is identified, and the appropriate steps to be taken, either for its replacement with compliant components or if necessary, for continued legitimate use.</p>		
Subject Area	Assessment Criteria	
Waste electrical and Electronic Equipment (WEEE)	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. The WEEE regulations and their intent 2. Outline requirements of the regulators <ol style="list-style-type: none"> a. Producer b. Distributor 3. Required markings on electrical and electronic equipment (EEE) 4. The scope of coverage by the regulations 5. Enforcement bodies 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Name and provide a brief overview of the WEEE regulations 2. Provide a summary of the distinction between producers and distributors and the requirements placed on them for compliance 3. Identify and describe the markings on electrical and electronic equipment (EEE) 4. Provide, with examples, a brief explanation of EEE covered by the regulations and where appropriate, any exemptions 5. Name/identify the enforcement authorities for each of the UK countries, and a brief overview of their powers
<p>Explanatory Notes:</p> <p>It is not generally the responsibility of the technician to ensure that a company is compliant with WEEE, however they may be required to facilitate the return of Electrical and Electronic Equipment (EEE), to ensure that a producer or distributor fulfil their regulatory requirement. Understanding the regulations and a general awareness of the requirements they place on producers and distributors will ensure their part in maintaining compliance.</p>		
Subject Area	Assessment Criteria	
Waste Framework Directive and Applicable UK Legislation	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Applicable UK legislation <ol style="list-style-type: none"> a. England and Wales b. Northern Ireland c. Scotland 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Name and provide a brief overview of the scope of UK legislation applicable to the Waste Framework Directive 2. Define what is meant by the term 'producer' and provide

	<ol style="list-style-type: none"> 2. The producer and requirements placed upon them for the disposal of waste 3. The Waste Hierarchy 4. Waste licencing and documentation (controlled, hazardous, and non-hazardous) 	<p>a summary of the requirements placed upon them</p> <ol style="list-style-type: none"> 3. Provide an explanation of the waste hierarchy and the processes for appropriate handling and treatment of waste 4. Provide, with examples, an explanation of the licensing and documentation required for the compliant handling, storage, and processing of waste materials by organisations and persons working in the fire safety technical services sector
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Explanatory Notes:

The technician will understand the requirements for effective and compliant waste management, disposal, and recovery so that their own activities and waste management ensures regulatory compliance for both the employer and the client

Subject Area	Assessment Criteria	
Energy Consumption	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Energy consumption and energy demand reduction 2. Benefits of energy reduction <ol style="list-style-type: none"> a. Financial b. Environmental 3. Measures currently available that will enable organisations to reduce energy demand <ol style="list-style-type: none"> a. Low energy equipment b. Renewable energy generation c. Energy efficient buildings d. Energy efficiency schemes e. logistics 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Provide an outline overview of the terms 'energy consumption' and 'energy demand reduction' 2. Explain the benefits to the company for energy usage reduction <ol style="list-style-type: none"> a. Financial b. Environmental 3. List measures that may be implemented and how they can be used to reduce energy consumption

Explanatory Notes:

While not specifically covered by legislation, there are several EU and UK Government requirements for the reduction of energy use. To that end, there are also a range of measures and technologies available that are intended to aid businesses and the consumer in energy reduction measures.

Subject Area	Assessment Criteria	
Ionising Radiation	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. The title and main principles regulations pertaining to ionising radiation within the fire safety sector 2. The responsible authorities for enforcement of the ionising radiation regulations pertaining to the fire safety sector 3. Application and impact to fire safety systems 4. Handling, transportation, storage, and disposal of equipment containing ionising radiation materials 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Name and provide a brief overview of applicable regulations 2. Name the UK authorities for enforcement 3. Recognise and provide an outline summary of the sources of ionising radiation used within fire safety systems 4. Provide an explanation of requirements for handling, transportation, and safe disposal
Explanatory Notes: The use of ionising radiation within the fire safety sector is limited however candidates should have an understanding of its use and the applicable controls regarding its use, handling, transportation, storage, and disposal.		
Subject Area	Assessment Criteria	
F-Gas (Fluorinated Gas)	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. The Kyoto Protocol and its intent 2. Legislation and its application and use across the EU 3. Regulating authorities 4. Available guidance and standards 5. What F-Gases are and their use in fire protection 6. Individual responsibilities under the regulation 7. Record keeping, labelling and certification 8. Alternative agents to F-Gases 9. Treatment of F-Gases 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Explain the intent of the Kyoto Protocol 2. Name and provide a brief overview of the EU regulation 3. Identify the enforcement bodies across the UK <ol style="list-style-type: none"> a. Explain the penalties that may be imposed for non-compliance within the UK 4. Name the guidance documents available for F-Gas systems 5. Explain what F-Gases are and list the F-Gases used for the fire protection sector 6. Explain the individual responsibilities defined in the regulation 7. Explain the requirements for record keeping and certification of the system 8. Name and provide a brief description of the alternative agents to F-Gases 9. Provide an explanation of the terms:

		<ul style="list-style-type: none"> a. Recovery b. Recycling c. Reclamation
<p>Explanatory Notes:</p> <p>F-Gas is an effective and commonly used extinguishing agent used in both total flood and local applications. Technicians from both the FD&A and Portables sectors of the fire industry may be called upon to test and service systems containing F-Gases and are required by law to hold the appropriate qualification to carry out installation, servicing and decommissioning while preventing leakage.</p>		
Subject Area	Assessment Criteria	
Ozone Depleting Substances (ODS) (Halon)	<p>Candidates will have knowledge and understanding of:</p> <ul style="list-style-type: none"> 1. The Montreal Protocol and its intent 2. Legislation and its application and use across the EU 3. Regulating authorities 4. Ozone Depleting Substances (ODS) and their use 5. Treatment of halon gases 	<p>Candidates will understand how to:</p> <ul style="list-style-type: none"> 1. Name and provide a brief overview of the Montreal Protocol 2. Name the title of the current legislation and provide a brief overview 3. Name and provide a brief overview of the regulating authorities and penalties that may be imposed 4. Provide a brief explanation of ODS and their provisions for critical use 5. Provide an explanation of the terms: <ul style="list-style-type: none"> a. Recovery b. Recycling c. Reclamation d. Destruction
<p>Explanatory Notes:</p> <p>Halon gas is still used, all be it under very strict controls. Technicians are required, by legislation, to ensure that halon is only used where it is approved for critical users and that all measures are taken to prevent unnecessary leakage. It is also important that recovered halon gases are treated accordingly to prevent unnecessary leakage to atmosphere of these Ozone Depleting Substances (ODS).</p>		

Health and Safety for Field Service Technicians

Reference Number	UP60 04		
Unit Status	Mandatory		
Unit SCQF Level	6	Unit SCQF Credit	1
Guided Learning (hours)	8		
Directed Learning (hours)	2		
Assessment Time (hours)	2		
Grading System	Pass/Fail		
Assessment Method	RPL or knowledge discussion		

Unit Overview

This unit provides knowledge and understanding of the responsibilities and duties placed on the employer and on themselves by the Health and Safety at work Act 1974 or by the Health and Safety at Work Order 1978 (Northern Ireland) with specific focus on those regulations likely to affect them as technicians working the FD&A sector.

In particular, candidates will gain basic knowledge and understanding of health and safety legislation, manual handling, working at heights, lone working, Provision and Use of Work Equipment Regulations (PUWER), personal protection equipment (PPE), asbestos and control of substances hazardous to health (COSHH).

This unit is not intended to establish the candidate as a health and safety advisor or health and safety representative but instead to ensure that the candidate understands the requirements and duties of the act and how to work in a safe manner.

Equivalency has been recognised for the following qualifications meaning that holders of the qualifications listed will not be required to complete this unit. Centres should refer to the Recognised Prior Learning policy for details on how to evidence prior learning against this unit.

- NEBOSH National General Certificate in Occupational Health and Safety
- NEBOSH National Certificate in Construction Health and Safety
- City and Guilds Level 3 Diplomas in Electrotechnical Technology (2357)
- NEBOSH National Certificate in Construction Health and Safety
- NEBOSH International Certificate in Construction Health and Safety

The following qualification has also been recognised as providing equivalency. Unlike those listed above, this qualification has a 2-year expiry date and so candidates wishing to use this qualification to prove equivalency must ensure that their ECS Health and Safety assessment is current by the time that the claim is made for the final FireQual qualification certification.

- ECS Health and Safety assessment issued either by JIB or SJIB

For those candidates who are not able to use one of the listed qualifications above to demonstrate equivalency, they can prove their meeting of the unit requirements through the use of both RPL and a

knowledge discussion conducted and recorded by the Trainer/Assessor where the candidate will be required to demonstrate their knowledge of the subject matters covered within the unit.

Both RPL and the knowledge discussion will be submitted to FireQual for verification prior to the authorisation of certification claims in line with the RPL policy.

A knowledge discussion should be planned and conducted by the Trainer/Assessor with the candidate where careful thought has been completed to provide thoughtful responses to the questions posed. The questions should be based on the standards within this unit to allow the candidate to fully demonstrate their knowledge of the subject matters indicated below.

If appropriate, and where possible, the candidate can use examples of their working practice to help in their demonstration of their knowledge.

The discussion should ensure that the candidate does demonstrate their knowledge and so it is not just enough to evidence that the candidate has done something, they should demonstrate they understand what they did and why they did it in the context of the subject matters covered within this unit.

Unit Detail

Subject Area	Assessment Criteria	
H&SAW Act 1974, H&SAW Order (NI) 1978	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Health and safety law 2. The provision of regulations supporting legislation and their status in law 3. The responsibilities defined by the legislation <ol style="list-style-type: none"> a. The responsibilities of the employer b. The responsibilities of the employee c. The responsibilities of everyone else 4. Responsibilities for health and safety when working at third party premises 5. Hierarchy of controls 6. Risk assessments 7. Method statements 8. Permit to work 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Name and provide a brief overview of current applicable legislation for health and safety across all nations of the UK 2. Name and provide a brief overview of selected regulations applicable, according to health and safety law 3. Provide a brief overview of the responsibilities according to legislation of the: <ol style="list-style-type: none"> a. Employer b. Employee c. Everyone else 4. Explain the requirement to comply with both the employer's health and safety and those specified by other persons for premises under their control 5. Explain the term 'hierarchy of controls' with examples 6. Explain what a risk assessment is and who is responsible for producing one, with reference to: <ol style="list-style-type: none"> a. Formal and dynamic risk assessments b. Requirements for review and revision

		<ol style="list-style-type: none"> 7. Explain what a method statement is and the: <ol style="list-style-type: none"> a. Responsibilities for their production b. Requirements for review and revision 8. Provide an explanation of permits to work and their application
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Explanatory Notes:

Compliance with Health and Safety is not only common sense but also a legal responsibility. Candidates will understand aspects of Health and Safety law according to UK nation in which they will be employed and pertinent to their role in the fire detection and alarm sector. Intended as a common subject for technicians progressing to the more advanced units, this Health and Safety unit will be required to cover the tasks performed by technicians in general. Included within will be requirement to comply with the Health and Safety policies and method statements of the employer as well as compliance with the Health and Safety Policy of the site in which they are working. and the hierarchy of controls (Eliminate, substitute/replace, engineering controls, administrative controls, PPE).

This unit is not intended to train the technician as a Health and Safety Manager or Advisor, rather to cover the responsibilities for the technician as an employee and to bring about safe practice in the workplace.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought.

Subject Area	Assessment Criteria	
Manual Handling	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Manual handling regulations 2. Structure, function, and operation of the spine 3. Risk factors for back pain 4. Application of efficiency movement principles to: <ol style="list-style-type: none"> a. Routine loads b. Non-routine loads c. Pulling d. Pushing e. Team handling 5. Application of the hierarchy of controls for manual handling 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Name and provide a brief overview of current regulations for manual handling 2. Provide a brief overview of the spine and how it operates 3. Explain the risk factors for back pain and how manual handling techniques can prevent injuries 4. Describe efficient manual handling techniques and the considerations necessary for manual handling of routine loads, non-routine loads, pulling, pushing and team handling 5. Explain how the hierarchy of controls can be applied to manual handling

Explanatory Notes:

The most common causes of back injuries are the result of bad manual handling techniques. Tailored for the field service technician, candidates will understand the reasons for efficient manual handling techniques, the implications of not employing such techniques and the nature of injuries

that can be incurred. Candidates will also cover the correct manual handling techniques for a range of manual handling tasks pertinent to the FD&A technician.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought

Subject Area	Assessment Criteria	
Working at Height	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Work at Height Regulations 2. The risks involved when working at height 3. Alternatives to working at height 4. Different methods of working at height, eg. scaffold (mobile/static), mobile elevated working platform, steps, and ladders 5. Appropriate PPE and its correct use for working at height 6. Application of the hierarchy of controls to working at height 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Name and provide a brief overview of current regulations for work at height 2. Explain the risks involved when working at height 3. Explain and provide examples of alternative methods to working at height 4. Explain the different methods for working at height and the safety measures that can be applied 5. Explain what PPE is available for working at height, its correct use, limitations, and the checks required before use 6. Explain how the hierarchy of controls can be applied to working at height

Explanatory Notes:

Many technicians will at times be required to work at height, be it standing on a ladder, installing a detector head or alarm sounder or running cabling through a ceiling void or roof space. Some tasks have been made safer through the development of specialised tools, such as a long reach equipment, but others still require a direct approach.

This section will detail to the candidate what it means to be working at height and develops understanding, which may lead to safer working practices and the application of risk reducing equipment. For technicians involved in design, this may also lead to design consideration of physical access for installation and maintenance.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought

Subject Area	Assessment Criteria	
Lone Workers and Working in Confined Spaces	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Confined Spaces Regulations, health and safety guidance on the risks of lone working 2. The risks of lone working, including road risk 3. Working in confined spaces 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Name and provide a brief overview of current regulations, approved codes of practice and guidance for lone workers and working in confined spaces

	<ol style="list-style-type: none"> 4. Control measures 5. Compliance with site safety regulations 6. Application of the hierarchy of controls to lone workers and working in confined spaces 7. Working Time Regulations 	<ol style="list-style-type: none"> 2. Define what is meant by lone working and provide a brief overview of the risks 3. Define what is meant by 'confined spaces' and provide a brief overview of the risks to persons 4. Explain the need for applicable control measures 5. Explain the need for compliance with onsite safety regulations 6. Explain how the hierarchy of controls can be applied to lone workers and working in confined spaces 7. Provide a brief explanation of the Working Time Regulations
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Explanatory Notes:

Technicians will often find themselves working alone or in positions where a working partner is removed from their own direct contact. As a result, candidates must develop knowledge and understanding of how to safeguard themselves and the importance of safeguarding others, the permit to work process and the importance of its implementation in conjunction with compliance with onsite Health and Safety Policy.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought

Subject Area	Assessment Criteria	
Provision and Use of Work Equipment Regulations (PUWER)	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. PUWER regulations 2. Scope of equipment covered by PUWER 3. Ensuring that equipment used is suitable, maintained and inspected 4. Use of safety guards and PPE 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Name and provide a brief overview of current regulations for the provision and use of work equipment 2. Provide an explanation of the equipment included within the requirements of current regulations 3. Explain the importance of a comprehensive inspection and maintenance regime and what inspections should be completed before using work equipment 4. Explain the importance of ensuring correct installation/fitting and the use of safety guards and of PPE

Explanatory Notes:

Work equipment is not simply limited to power tools but will also cover other construction tools such as hammers, manual screwdriver, test meters and long reach testing equipment. Ensuring that the technician is safe in their correct use of any work equipment is a key aspect of the legislation in protecting the health and safety of both the technician and all persons in the area.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought

Subject Area	Assessment Criteria	
Personal Protective Equipment (PPE)	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Why is PPE important and its role as a control measure 2. Types of PPE available 3. Selection and use of PPE 4. Maintenance 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Explain the reasons for using PPE and its role as a control measure 2. List the types of PPE available and explain the protection provided 3. Explain the considerations when selecting the correct PPE according and appropriate to the hazard 4. Explain the importance of maintenance and the checks required to ensure PPE is still serviceable

Explanatory Notes:

PPE should only be implemented to supplement other protection measures or as a last resort. However, where it is required and provided by the employer the initial issue at least, must be made free of charge. Ensuring that the technician has the correct PPE and that it is in good serviceable condition is not only the responsibility of the employer, but also of the technician. Understanding these requirements will ensure correct and appropriate use of PPE.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought.

Subject Area	Assessment Criteria	
Asbestos Awareness	Candidates will have knowledge and understanding of: <ol style="list-style-type: none"> 1. Control of Asbestos regulations 2. What asbestos is and where it was commonly used 3. Limiting exposure to asbestos and the asbestos register 4. Licenced or unlicenced work 5. Requirements for asbestos training 	Candidates will understand how to: <ol style="list-style-type: none"> 1. Name and provide a brief overview of current regulations for the control of asbestos 2. Explain what asbestos is, the different types of asbestos and where it has commonly been used in buildings 3. List the serious illnesses that can result from exposure to asbestos 4. Provide an outline description of recommendations to limit exposure to asbestos and the

		<p>use of an asbestos register and its limitations</p> <ol style="list-style-type: none"> 5. Explain the difference between work involving asbestos that requires licencing and work that may be carried out without a licence 6. State the requirements for provision of formal training in the handling of asbestos
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Explanatory Notes:

The health risks to Asbestos are significant and usually do not become apparent until many years after exposure. Asbestos was a common constituent of a range of building materials until as recently as 2000 and so it remains vitally important that the hazards and the danger posed, are managed effectively.

This section is awareness only and is not intended to replace formal asbestos training. Candidates working in any building liable to contain asbestos should carry out formal training appropriate to the work environment.

Subject Area	Assessment Criteria	
Control of Substances Hazardous to Health (COSHH)	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. COSGG regulations 2. Definitions of substances hazardous to health 3. Substances not covered by COSHH and their associated regulations <ol style="list-style-type: none"> a. Lead (Control of Lead at Work Regulation) b. Asbestos (Control of Asbestos Regulation) c. Radioactive Substances (Ionising Radiation Regulation) 4. Safety data sheets 5. Hierarchy of controls 6. emergencies 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Name and provide a brief overview of current COSHH regulations 2. Explain what is meant by 'substances hazardous to health' and provide examples with their health hazards 3. List the substances not covered by COSHH and name the regulations for each 4. Explain the requirements for safety data sheets with examples of the information contained within them 5. State the methods of risk assessment and measures available to eliminate/reduce risk according to the hierarchy of controls 6. Explain what facilities should be in place for dealing with emergencies

Explanatory Notes:

Substances covered by COSHH have significant risks to personal health and safety through both immediate injury and ill health. Such effects on personal health may not become apparent for numerous years. The effective application of the COSHH regulations will reduce those risks to manageable levels. Candidates will have sufficient knowledge and understanding of the COSHH regulations to apply defined controls to their working role and practices.

Some of the aspects covered within this unit will be limited to awareness of the requirements and candidates should be able to recognise where further training and/or advice should be sought

Subject Area	Assessment Criteria	
General Safety Awareness	<p>Candidates will have knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. Fire safety 2. Safety signs and signals regulations 3. Electrical safety 4. Health and hygiene 	<p>Candidates will understand how to:</p> <ol style="list-style-type: none"> 1. Provide an explanation of fire safety systems and procedures when working on site including: <ol style="list-style-type: none"> a. Identification of portable extinguishers b. Site evacuation c. Appropriate measures when carrying out high risk activities, hot water testing 2. Provide an outline description of the safety signs and signals regulations including the identification of signs by shape and colour and their application 3. Provide an explanation of requirements for electrical safety and safe isolation of low voltage systems 4. Provide an explanation of requirements for personal health and hygiene including: <ol style="list-style-type: none"> a. Provision of first aid and individual responsibilities b. Accident reporting and RIDDOR reporting c. Preventing the spread of infectious diseases d. Preventative first aid measures e. Drugs and alcohol
<p>Explanatory Notes:</p> <p>Candidates should have general awareness of elements of health and safety that will influence their place of work or others, whether working at employers' premises or on site at a third party. This section is intended to cover subject areas not included elsewhere within this unit but will have an impact or influence on their work and working environment.</p>		