# IFE Level 3 Certificate in Fire Service Operations and Incident Command

## Qualification Specification

Qualification Number: 603/6610/2

# About the Institution of Fire Engineers (IFE)

The IFE is the professional institution for those working in the fire sector. The IFE is a registered charity working for societal benefit. Founded in 1918, the IFE's mission is to promote, encourage and improve the science, practice and professionalism of fire engineering with the overall aim of protecting and saving lives.

Members of the IFE share a commitment to ensuring that the fire profession remains relevant and valued, protecting people, property and the environment from fire.

### The IFE Awarding Organisation

The IFE's awarding organisation is non-profitmaking.

The aim of the of the awarding organisation is to encourage those who work in the sector to engage with, and develop, the critical understanding needed to operate effectively and safely and to the best professional standards so that they can protect and save lives. In doing this, the awarding organisation contributes to three of the IFE's (six) over-arching strategic priorities ie:

- Facilitate awareness of fire issues and developments through the communication of ideas, knowledge and information.
- Foster professionalism by establishing and maintaining pathways and recognised standards of fire professionalism and competency.
- Increase knowledge in the science, practice, and professionalism of fire engineering.

All of the IFE's qualifications are designed for those working in the fire sector and to meet the above priorities. The qualifications and their associated assessments (examinations and practical activities/assignments) provided by the IFE are designed, assessed and quality assured by experts with extensive experience of working within the fire sector.

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# IFE Level 3 Certificate in Fire Service Operations and Incident Command

## Introduction

This qualification has been developed by the Institution of Fire Engineers (IFE) and representatives of the UK Fire and Rescue services. The content and structure of the qualification reflects the content and structure of the UK National Operational Guidance (NOG) and is designed to support those operating in the fire service in dealing with incidents effectively and safety.

This assessment focuses on the knowledge and understanding required to resolve diverse fire and rescue incidents. It covers incident command as well as fire and rescue operations and techniques. Candidates will be required to apply their understanding by assessing situations, determining hazards and risks and drawing conclusions as to the appropriate actions and control measures for the specific situation. They will need to be able to explain the rationale for decisions and to draw on technical understanding specific to the context.

This qualification is derived from unit 6: Fire Services Operations and Incident Command within the Level 3 Diploma in Fire Science and Fire Safety. It is directly equivalent to that unit in that the content and assessment remain exactly the same. Individuals who achieve this qualification may use it towards the achievement of the Level 3 Diploma in Fire Science and Fire Safety in the same way as unit 6 is used. For information, please see - https://www.ife.org.uk/IFE-Qualifications-with-Syllabus-Links

## Target Audience

This qualification will be appropriate for individuals working in fire and rescue roles. It is particularly suited for those who either hold, or are preparing for, roles involving the management of fire service operations such as a Watch Manager or Incident Commander.

## Learning Outcomes

Candidates who achieve this qualification should be able to:

- assess fire and rescue incidents and identify appropriate actions to resolve the incident safely and with regard to environmental issues
- understand how to supervise activities at incidents including the management of sectors
- assess the scale of an evolving incident and know when and how to escalate/hand over to appropriate colleagues
- assess the requirements of diverse incidents involving fire and/or rescue in a wide range of contexts including incidents involving buildings, transport or open air
- explain the operation of firefighting equipment, knowing when to use equipment and how to manage risks associated with the use of different equipment

- evaluate risk and identify appropriate action in order to preserve the safety of emergency services personnel and members of the public

**Membership of the IFE**

Achievement of the Level 3 Certificate in Fire Service Operations and Incident Command will enable a candidate to meet the academic requirement for membership of the Institution at Technician Grade (TIFireE); achievement of this qualification along with one other IFE Level 3 Certificate, will enable the candidate to meet the academic requirement for membership of the Institution at Graduate Grade (GIFireE).

Please see Membership and Registration (ife.org.uk) for information on membership.

**Qualification Content**

The content of the qualification is set out in the section entitled "Content" below. This provides information on the range of topics that must be studied including the way that candidates need to show their understanding (Assessment Criteria) and the scope/range/contexts in which they can be tested (Knowledge, Understanding and Skills).

The syllabus content is very broad and deep and therefore not all topics can be tested in all examinations. Candidates are advised to prepare for the examination by covering all topics so that they are able to provide comprehensive responses.

**Assessment**

The assessment takes the form of one three-hour examination. The examination provides a summative assessment of the full range of learning specified in the content below.

Examinations are provided in English only.

Candidates will be required to complete **six** questions from a choice of **eight** questions. There will be 20 marks available for each of the questions.

In order to achieve a pass, candidates will be required to attain at least 40% of the 120 marks available to them via the six questions (ie 48 marks).

Candidates who answer fewer than six questions will be able to achieve a pass as long as they achieve the minimum pass mark of 48. Where candidates answer more than six questions, candidates will not benefit as only the six best responses will be included in the final mark.

Past papers for the last three years are available on the IFE website - https://www.ife.org.uk/Qualifications/Past-Papers-and-Exam-Reports

## Certification

Results of examinations will be reported as follows:

Pass - this is awarded where candidates achieve a mark between the minimum pass mark of 48 marks (40% of the marks available) and 71 marks (59% of the marks available).

Distinction - this is awarded where candidates achieve a mark of 72 or above (60% or more of the marks available).

Fail - candidates who achieve 47 marks or fewer will receive a result showing Fail. Where candidates receive 24 marks (20% of the marks available) or fewer, the result will show as Fail (X).

Candidates who are unsuccessful in the examination may re-sit the examination. There is no limit on the number of times that candidates may re-sit.

Note: The IFE reports achieved results as described in the bands above. However, candidates who wish to know the specific mark awarded to them may email the IFE to request this information.

## Entry Requirements

There are no formal entry requirements.

However, as the paper is provided in English only, candidates will need to be able to read English fluently in order to access the examination questions and the relevant recommended reading material.

## Qualification Level

This qualification has been designed to enable candidates to demonstrate that they have attained skills and knowledge at Level 3. Other types of qualifications that are set at Level 3 include GCE A/As levels, Level 3 NVQs and Level 3 Diplomas such as the IFE Level 3 Diploma in Fire Science and Fire Safety.

The qualifications regulator for England, Ofqual, has provided the following descriptors to illustrate the knowledge and understanding expected from those who hold qualifications at Level 3.

Level 3 Knowledge Descriptor

The candidate:

- has factual, procedural, and theoretical knowledge and understanding of a subject or field of work to complete tasks and address problems that, while well-defined, may be complex and non-routine.

- can interpret and evaluate relevant information and ideas.
- is aware of the nature of the area of study or work.
- is aware of different perspectives or approaches within the area of study or work.

Candidates are advised to bear these descriptors in mind when preparing for assessment and when presenting responses to examination questions.

**Qualification Learning Time**

The length of time needed to prepare for this examination will vary depending upon the starting point for each candidate.

Total qualification time is 200 hours:

- 197 hours of learning/study. Study may be self-study (please see the section on recommended reading below) and may include relevant fire and rescue service training programmes.
- 3 hours of assessment (directed time) ie one three-hour examination.

Most candidates prepare for IFE examinations via self-study or by drawing on training provided by their employer that covers aspects of the syllabus. Candidates are advised to cross-map their study/training against the content of the syllabus to ensure that all parts of the syllabus have been covered. Recommended reading materials are provided below.

**Progression**

Candidates who are successful in achieving this qualification may consider progression to Level 4. A specialist qualification in Fire Service Operations and Incident Command is available from the IFE awarding organisation.

Candidates who wish to broaden their knowledge and understanding at Level 3 could consider working towards other fire-specific qualifications such as the IFE Level 3 Certificate in Fire Safety or the IFE Level 3 Certificate in Fire Investigation.

**Reasonable Adjustments**

The IFE permits reasonable adjustments to be made where candidates have disabilities (including medical conditions and learning disabilities such as Dyslexia). The IFE's policy on reasonable adjustments aims to enable candidates with disabilities and other difficulties to access the IFE qualifications without compromising the assessment process or the validity of the certificate.

The policy, which includes the types of arrangements that may be made (eg additional time, use of technology) and the procedure for applying for reasonable adjustments, is published on the IFE's website - https://www.ife.org.uk/Qualification-FAQs. The IFE will consider all requests for reasonable adjustments. All requests for reasonable adjustments must be submitted to the IFE as all decisions on reasonable adjustments rest with the IFE.

## Booking Examinations and Additional Information on Examination Arrangements

Examinations are available in March and in October each year.

Individuals who wish to sit examinations may book examinations through their employer, IFE branch or examination centre or they may book through the IFE using the booking form on the IFE's website. Where appropriate, the IFE will direct individuals to approach their employer or branch contact.

Information on the examination timetable and other relevant dates (such as the last date for booking examinations) for March examinations, together with the booking form, the list of venues available to candidates, the terms and conditions for candidates and additional information on examination arrangements is provided on the IFE website on 1 September each year. A separate page for each March examination session is provided on the IFE website.

Information on the examination timetable and other relevant dates (such as the last date for booking examinations) for October examinations, together with the booking form, the list of venues available to candidates, the terms and conditions for candidates and additional information on examination arrangements is provided on the IFE website on 1 June each year. A separate page for each October examination session is provided on the IFE website.

Detailed guidance for candidates on examination arrangements is provided in the *Information and Rules for Candidates taking IFE Examinations* booklet. This is updated prior to each examination session and sets out the rules to be followed by candidates and also the dates for publication of results and the timetable for candidates to query examination results.

## Complaints and Appeals

Procedures for making a complaint or lodging an appeal are available on the IFE website - https://www.ife.org.uk/Qualification-FAQs

## Information for Examination Centres

Organisations that would like to provide a venue for IFE examinations, should contact the IFE to discuss the requirements for IFE approved examination centres – please email exams@ife.org.uk in the first instance.

Examination centres will need to comply with the terms and conditions set by IFE. Information for examination centres, including the *Examination Centre Handbook* which contains detailed guidance on running an examination centre, is available on the IFE website.

Please see - https://www.ife.org.uk/Information-for-Examination-Centres. Examination centres are required to provide an Examination Centre Invigilation Report following the completion of examinations.

The IFE operates an examination centre inspection programme based on unannounced visits. All Examination centres should anticipate visits from IFE appointed Examination Centre inspectors.

**Recommended Reading**

This qualification covers an extensive range of contexts and candidates are advised to reflect this in their examination preparation. The main source of information is the National Operational Guidance and the supporting scenario and Foundation documents. These are available, free of charge, at https://www.ukfrs.com/nog

Candidates are also advised to review past examination papers. Past papers, together with the associated examiner reports on the papers, can be downloaded, free of charge, from the IFE website - https://www.ife.org.uk/Qualifications/Past-Papers-and-Exam-Reports.

The IFE has applied the following criteria in determining which resources should be included on this recommended reading list:

- the resource provides information which will be of benefit to the candidate in their professional life, providing depth and breadth of understanding;
- the resource contains some information that will be relevant to part of the syllabus;
- the resource is recognised by industry professionals as providing valuable information.

Candidates preparing for the examinations are advised to refer to the list below:

**National Operational Guidance (NOG)**

All Incident National Operational Guidance:

- Operations
- Incident Command
- Environmental Protection

Contexts National Operational Guidance:

- Industry
- Subsurface, height, structures, and confined spaces
- Transport

- Utilities and Fuel
- Major Incidents

Activities National Operational Guidance

- Fires and Firefighting
- Performing Rescues
- Hazardous Materials
- Hazardous Materials – Health Hazards
- Hazardous Materials – Physical Hazards
- Wildfires
- Fires in Buildings
- Fires in Buildings under construction or demolition
- Fires in Waste Sites
- Fires on Board Vessels
- Incidents involving Animals
- Water Rescue and Flooding

Knowledge and Foundation Materials Base

- The Foundation for Incident Command
- Foundation for Breathing Apparatus
- Fires in buildings – building research establishment supplementary information
- Tunnels and underground structures supplementary material
- Utilities and fuel supplementary information
- The Foundation for Hazardous Materials
- Firefighting equipment knowledge sheets
- Industry supplementary information
- Smart motorways national operating agreement
- Joint Doctrine of Interoperability working https://www.jesip.org.uk/uploads/media/pdf/Joint%20Doctrine/JESIP_Joint_Doctrine_Document.pdf

Scenarios - https://www.ukfrs.com/scenarios

- All incident actions
- Commercial or residential building fire
- Industrial or agricultural building fire
- Domestic dwelling fire
- Fires in tall buildings
- Building under construction or demolition
- Fire in a waste site
- Wildfire
- Fire in electrical installation
- Aircraft fire
- Fire on board a vessel
- Railway or tram fire

- Road vehicle fire
- Rescue from water
- Rescue from depth
- Rescue from height
- Rescue of trapped person
- Recue from collapsed structure
- Rescue involving animals
- Road traffic collision
- Aircraft rescue
- Railway or tram rescue
- Explosives and cylinders
- Flammables
- Health hazards
- Environmental protection

**Further Information**

Further information on examination conditions is also available in the IFE booklet, *Information and Rules Candidates Taking IFE Examinations.* This booklet can be downloaded from the IFE's website.

Candidates may also find our general guide for candidates, *Preparing to Pass IFE Examinations - Guidance for Candidate*' document which provides information on question times and levels helpful -

https://www.ife.org.uk/write/MediaUploads/Exams/217_Candidate_Guide.pdf

Please address any queries to the IFE by emailing: exams@ife.org.uk

# Content

## 1. Pre-planning

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 1.1 Explain the purpose of pre-planning for incidents and assess the issues within different contexts | • Incidents to include:<br>♦ All fire situations<br>♦ All rescue situations<br>♦ Major incidents and incidents involving civil disturbance<br>♦ Acts of terrorism<br>♦ Natural disasters (e.g., wildfires, flooding)<br>♦ Incidents involving hazardous materials<br>• Information gathering on local risks<br>• The safety of all emergency responders, non-emergency personnel working alongside and members of the public, including bystanders<br>• The mitigation of environmental impact<br>• Calculations with regard resources, equipment, and personnel<br>• Liaison with other agencies, key site personnel, responsible persons, government representatives and other external partners/stakeholders<br>• Conformation with legal requirements<br>• Working to meet policy and organisational objectives |

## 2. Incident Command and Management

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 2.1 Explain the key principles of the Incident Command System | • The three functional areas of the Incident Command System (ICS)<br>• The three levels of management applied at operational incidents<br>• The role of other agencies within the ICS<br>• JESIP and JESIP Principles<br>• The common framework under which responders integrate at multi-agency incidents |
| 2.2 Explain the roles and responsibilities of personnel within the incident command structure and explain the factors affecting structuring of incidents | • The role and responsibilities of the following:<br>♦ Incident Commander<br>♦ Sector Commander<br>♦ Operations commander<br>♦ Safety Officer<br>♦ Command Support |

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| | ♦ BA Entry Control Operative<br>♦ Tactical Adviser and specialist roles to include the following remits: Hazmat, HVP, USAR, Flooding etc.<br>• The relationship between the different roles and the Incident Command system<br>• Sectorisation<br>• The progression at an incident from first pump attending to the arrival of a dedicated vehicle<br>• Deployment of BA wearers<br>• The responsibility for determining the cause of an incident<br>• The range and the types of evidence available at an operational incident |
| 2.3 Explain the requirements for the successful management of risk at operational incidents | • Definition of a hazard, risk, and control measure<br>• The categories of risk assessment<br>• The risk philosophy applied to the management of operational incidents<br>• The Dynamic Risk Assessment<br>• The hierarchy of control measures in relation to managing risks<br>• Firefighter safety maxim |
| 2.4 Explain the factors and processes that affect effective decision making at operational incidents | • Situational awareness<br>• Decision control process (DCP)<br>• Decision making at multi-agency incidents |
| 2.5 Describe the tactical mode options available at incidents and explain how they are implemented | • Modes: offensive mode, defensive mode, no overall mode<br>• Factors determining mode and changes in mode |
| 2.6 Explain the need for effective lines and methods of communication at incidents | • The lines of communication available at incidents in relation to an Incident Commander's span of control<br>• The impact of poor or inappropriate communication<br>• The methods of briefing of crews at operational incidents<br>• Sectorisation utilised at operational incidents<br>• Barriers to effective communication |
| 2.7 Explain the principles for general control and tactics for resolving emergency incidents and explain when and how these principles should be applied to different contexts | • Need for, and management of, evacuation at fires<br>• Strategy and tactics involved in rescue work<br>• Objectives of ventilation at fires<br>• Procedures for ensuring the safety of both personnel and public<br>• Use of cordons at incidents<br>• How to identify signs and symptoms of stress in relation to trauma and/or work-based activity |

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| | and strategies to manage stress<br>• Actions to reduce the exposure to and impact on operational personnel and casualties |

### 3. Fire & Rescue Procedures – Operations and Tactics

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 3.1 Explain the process and principles of fire development in relation to the procedures for extinguishing fires in different contexts. | • The identification of different types of burning material and the effects on building construction<br>• Ways in which fires can spread detected and undetected both internally and externally<br>• Principles and application of ventilation – natural, mechanical, and technical<br>• Flashover, backdraught, and fire gas explosion. |
| 3.2 Assess the operational response and tactics along with both general and specialist techniques that may be required for dealing with fires that occur in different contexts.<br><br>*(Note: further amplification of the range of situations is provided in sections 5 and 6 below.)* | • Fires in the built environment including fires in:<br>♦ Buildings under construction and demolition or derelict<br>♦ High rise properties or buildings with atriums, basements, and tunnels<br>♦ Leisure facilities, camp sites and temporary structures<br>♦ Waste sites (including renewable energy facilities)<br>♦ Retail and leisure facilities<br>♦ Commercial premises and industrial/petrochemical processes<br>♦ Hospitals, health care and educational establishments<br>♦ Prisons and places of lawful detention<br>♦ Places of research and laboratories<br>♦ Premises used for the generation, distribution, storage or supply of gas, LPG, electricity, solar panels, and other sources of power<br>♦ Historical buildings and premises containing valuable artefacts including Heritage buildings, museums, and galleries<br>♦ Fires involving transportation by road, rail, air, and waterways, to include:<br>♦ Modes of transportation, i.e., vehicles rolling stock, aircraft, and vessels<br>♦ Infrastructure, such as roads, terminals, stations, tunnels, docks, marinas, etc.<br>• Wildfires including rural areas such as forests, heath land, wildland, crops, bush, etc<br>• Farms, farm buildings, processes, and equipment |
| 3.3 Evaluate the benefits of salvage operations and controlled burn | • Salvage considerations to prevent avoidable damage and mitigate the effects of fire and |

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| strategies | firefighting operations<br>• Subsequent effects on business continuity and restoration of normality<br>• Environmental, community and business impacts of control burn strategies |
| 3.4 Assess the operational response and tactics along with the specialist techniques and methodologies involved when carrying out rescue operations<br><br>*(Note: further amplification of the range of situations is provided in sections 5 and 6 below.)* | • Rescues from the built environment, to include:<br>♦ Entry into and searching of buildings and collapsed structures<br>♦ Release of trapped persons from machinery, lifts, escalators<br>• Rescues from sub-surface and confined spaces, to include:<br>♦ Entry into and searching of tunnels and shafts<br>♦ Vat, silo, sewer, trench, pit, chimney<br>• Rescues from transportation incidents, to include:<br>♦ Extrication of persons from vehicles, trains, aircraft, ships, and boats<br>• Rescues from height, to include:<br>♦ Working at height or with ropes including:<br>♦ Buildings, cranes, shafts, cliffs and other permanent or temporary structures<br>• Rescues from water and unstable ground to include:<br>♦ People, property, and vehicles from flood water<br>♦ Incidents involving still and fast flowing water<br>♦ Incidents involving ice, mud, and other free flowing solids<br>• Large animals and humanitarian rescues |
| 3.5 Explain the operational procedures and tactical response to terrorist related incidents and civil unrest. | • High level terrorist threats or acts, including release of chemical, biological, radiological, nuclear contamination.<br>• Explosive devices such as Improvised Explosive Devices or suicide bombings<br>• Marauding firearm attacks<br>• Low level threats or acts from groups making protestations.<br>• Major incidents and civil disturbances |
| 3.6 Explain the risks associated with different hazardous materials and explain the safe systems of work required to protect people, property and the environment when responding to operational incidents in different contexts. | • The nature of specific hazardous substances and the risks posed to operational personal and the public<br>• Factors to take into account when undertaking incidents involving specific hazardous substances and the implications for establishing safe systems of work<br>• Hazardous material release by defect, natural occurrence, or human act.<br>• Storage of hazardous materials and implications |

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| | for safety<br>• Hazardous materials<br>♦ Explosive hazards<br>♦ Ammonium nitrate-based based fertiliser<br>♦ Gases under pressure<br>♦ Acetylene<br>♦ Liquefied petroleum gas (LPG)<br>♦ Natural Gas<br>♦ Carbon monoxide<br>♦ Flammable hazards<br>♦ Flammable liquids<br>♦ Flammable solids<br>♦ Oxidising hazards<br>♦ Biological or infectious agents/hazards<br>♦ Materials containing asbestos<br>♦ Corrosive hazards<br>♦ Radioactive materials |
| 3.7 Explain the procedures and operational techniques to be followed when BA is in use | • Procedures/operational techniques prior to donning BA<br>• Entry procedures<br>• Search and rescue procedures<br>• Procedures for working with other equipment<br>• Procedures for different contexts<br>• Procedures for emergencies |

## 4. Post-Incident Actions

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 4.1 Explain how to close down the operational phase of an incident. | • Measures to hand over control of an incident to the appropriate person, agency, or authority<br>• Actions to identify and mitigate hazards and associated risks within operational restraints |
| 4.2 Explain the principles and the value of debriefs and apply these principles to different contexts. | • How to contribute to a post-incident debrief appropriate to the type and scale of the incident<br>• How to gather all relevant information from internal and external sources<br>• How to engage crews in debriefing and to review crew welfare and learning issues<br>• How to implement remedial measures to improve future practice and performance<br>• Effects of critical incidents on the personal resilience of attending personnel and taking steps to manage staff welfare |

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| 4.3 Determine the requirements for scene preservation when required for further investigations | • Further investigation to include:<br>♦ Fire Investigation<br>♦ Fire Safety Investigation<br>♦ Health and Safety Investigation<br>♦ Criminal Investigation<br>♦ Internal Investigation<br>• How to identify, preserve, gather, and present potential evidence identified at the incident to support a subsequent investigation |

## 5. Incidents Involving Buildings

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 5.1 Assess the hazards presented and the implications for firefighting and rescue operations on the incident ground due to building structure and the behaviour of different elements of structure. | • Building methods to include:<br>♦ Framed and unframed buildings<br>♦ Steel and concrete frame<br>♦ Concrete construction methods<br>♦ Composite and Modular construction<br>♦ Portal frame and Glulam construction<br>♦ Traditional heritage<br>♦ Modern methods of construction<br>♦ Claddings and fixing methods<br>♦ Staircases<br>♦ Roofs, ceilings, and roof lights<br>♦ Flooring and fixing methods<br>♦ Doors and windows<br>♦ Non load bearing walls and partitions<br>• Elements of structure include:<br>♦ Load bearing and compartment walls<br>♦ Columns and Beams<br>♦ Floors and frames<br>♦ Enclosed protected shafts and staircases |
| 5.2 Assess the effects of building facilities in relation to fire spread and explain how fixed installations may be utilised to progress firefighting operations and assist with business continuity. | • Building facilities to include:<br>♦ Heating and Air Conditioning systems<br>♦ Ventilation and smoke handling systems<br>♦ Stairwell and pressurisation systems<br>♦ Lifts and Escalators<br>♦ Service utilities such as electricity, gas, oil, and water<br>• Fixed installation to include:<br>♦ Sprinkler, drencher, and water spray projection systems<br>♦ Rising mains, falling mains and hose-reels<br>♦ Foam and flooding systems including |

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| | Gas/vapour and dry powder systems<br>♦ Automatic fire detection and alarm systems<br>♦ Communication and security systems |

## 6. Incidents Involving Transportation

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 6.1 Explain the hazards and actions that should be considered when working with ships/boats and marine infrastructure | • Hazards and risks when working:<br>♦ Alongside waterways, docks, harbour, and marina infrastructure.<br>♦ On or with ships and boats<br>• Measures incorporated into ships to assist firefighting and provide fire protection<br>• Concept of buoyancy and procedures for ensuring stability during firefighting operations<br>• Factors relevant to ship firefighting both in ports and at sea |
| 6.2 Explain the hazards and actions that should be considered when working with railways and rail infrastructure | • Hazards and risks when working:<br>♦ Alongside railway lines, sidings, crossings and at other rail premises.<br>♦ On or with trains and rolling stock<br>• Design features of railways and types of trains and rolling stock<br>• Rail and train power systems<br>• Identification of freight including signage of goods and information retrieval systems<br>• Firefighting and emergency procedures for railway incidents |
| 6.3 Explain the hazards and actions that should be considered when working with vehicles and on roadways | • Hazards and risks when working:<br>♦ On roadways and motorways<br>♦ With vehicles including cars, LGVs and specialist vehicles<br>• General features of road networks<br>• Identification of freight including signage of goods and information retrieval systems<br>• Fuel systems, MMMFs and SRS<br>• Firefighting and emergency procedures for incidents on roadways |

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| 6.4 Explain the hazards and actions that should be considered when working with aircraft and at aerodromes | • Hazards and risks when working:<br>♦ At aircraft crash sites both on and off an aerodrome<br>♦ With civil and military aircraft, including fixed wing and rotary wing aircraft<br>• Firefighting and emergency procedures for incidents involving aircraft and/or airports |

## 7. Fire and Rescue Equipment

| Assessment Criteria | Knowledge, Understanding and Skills |
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| 7.1 Explain how and when to deploy appropriate firefighting equipment and other resources | • Select and use appropriate equipment, resources, and specialist skills to meet the needs of the incident |
| 7.2 Assess the provision and operational use of water supplies for firefighting purposes and determine tactics to resolve issues | • Provision of supplies of water for firefighting purposes<br>• Operational use of water from its supply for firefighting purposes |
| 7.3 Assess the provision and operational use of various types of foam and foam making equipment and determine tactics to resolve issues | • Production and application of foam for firefighting purposes<br>• Properties of the various foams and foam concentrates<br>• Expansion rates of foam and factors to be taken into account when using foam to extinguish a fire |
| 7.4 Explain the use of ladders and the procedures for safe working at height | • General principles and precautions when working with all ladders and aerial ladder platforms |
| 7.5 Explain the performance requirements and the procedures for using Breathing Apparatus (BA) and associated equipment | • Management, control, and safety procedures for using Breathing Apparatus<br>• Component parts and testing procedures for Breathing Apparatus<br>• Associated equipment to include; Communication Equipment, Personal Lines, Guidelines, Telemetry Equipment, and all types of resuscitation equipment |
| 7.6 Explain the performance requirements and the construction of the various types of chemical protective clothing and how these apply in different situations | • Operating principles of using Gas Tight Chemical Protection suits and limited protection splash suits<br>• General maintenance and safety precautions<br>• Factors affecting effective selection of equipment |

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| 7.7 Explain the selection of detection, identification and monitoring equipment used in relation to radiation incidents | • Operating principles of Radiation measuring equipment, Personal Protective Equipment and Decontamination equipment<br>• General maintenance and safety precautions applicable to all detection identification and monitoring equipment |
| 7.8 Explain the performance requirements and selection of rescue equipment to be used during extrication, heavy lifting and search and rescue | • Operating principles of all cutting, spreading, stabilisation equipment<br>• Operating principles of all Search and Rescue Equipment<br>• Operating principles of hauling and lifting equipment, including blocks and tackle, and the associated anchoring methods<br>• General maintenance and safety precautions applicable to all rescue equipment |
| 7.9 Explain the performance requirements and the selection of ropes and lines and how these apply in different rescue situations | • Operating principles when using ropes and lines<br>• General maintenance and safety precautions applicable to all rope and line equipment |
| 7.10 Explain the performance requirements and the selection of various types of water and unstable rescue equipment and ancillaries | • Operating principles when using throwlines/safety lines, Inflatable Rescue Boats, outboard motor engines, mud paths and lances<br>• General maintenance and safety precautions applicable to all water rescue equipment |