



THE INSTITUTION OF FIRE ENGINEERS  
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## Professional Review Report and interview guidance for Chartered Engineer applicants

### 1. Purpose

Benchmark standards of competence and commitment are specified by the Engineering Council. In order to show that you meet these standards, you are required to write a Professional Review Report in which you describe and cross-reference relevant career episodes to the UK-SPEC standards.

This report forms a very important part of your application and it is considered as part of an initial peer review of your application. The final stage of the application process involves a Professional Review Interview to discuss your professional development including relevant aspects of the Professional Review Report.

At the interview, which will take approximately one hour, you will be asked questions about your Professional Review Report and particularly on areas where the interviewers would like clarification or further information. Therefore it is essential that you take a copy of your original report to the interview and that you are able to talk about any aspect of it knowledgeably and with the minimum amount of prompting. You may bring additional supporting information to the interview with you if you wish.

You will be notified in writing of the outcome of the interview by the IFE's Engineering Council and Membership Adviser after the interview outcome has been ratified by the IFE's Registrants Group Membership Committee.

Your report should describe **your** relevant professional experience *in Fire Engineering* as concisely as possible. Those reviewing your report will be interested in what **you** have done, **your roles and responsibilities** and how **you** have applied and developed your technical fire engineering knowledge. The emphasis being on your personal contributions, not those of others.

Your report will be treated as confidential by the Membership Committee and any other persons authorised to see it. However, please ensure that you have obtained any necessary clearance from employers or others to whom information contained in the report may be considered confidential.

### 2. Structure

- 2.1 Your report must be your own work, in English, word-processed, printed on single-sided A4 paper and must not exceed 10 pages.
- 2.2 Your report must be written in the first person singular.
- 2.3 At the end of the report, you must include a validation statement about the report being accurate and entirely your own work and you and both your referees must sign below this statement. In addition, each page of your Professional Review Report must be initialled by both your referees.
- 2.4 The body of your report consists of career episodes. You must state your role and responsibilities, and the detail that you provide must be relevant to fire engineering and clearly cross-referenced to the specific UK-SPEC standard(s) being claimed. Whilst the full range of standards must be covered, the extent to which each one has to be demonstrated by each applicant will vary with their job role. However, you are strongly advised to pay particular attention to demonstrating that you have met standards A1 and A2.
- 2.5 If you specialise in a particular field of fire engineering, it is important to show that you have also acquired an appropriate understanding of the other areas of fire engineering to enable you to work effectively as a Chartered Fire Engineer.
- 2.6 You will be expected to demonstrate:
  - An appreciation of relevant regulations and legislation as well as a working knowledge of codes and standards in your field of operation.
  - A critical understanding of the assumptions and limitations of analytical techniques including computer programmes, in so far as they affect fire safety, where used by you, or on your behalf.

### 3. Example career episode cross-referenced to UK-SPEC

Career Episode	UK-SPEC
<p><b>Porsche Lane Apartments, W1</b></p> <p>This project related to a six storey block of 24 luxury apartments with a Platform Timber Frame structure and an architectural masonry rain screen cladding. The building was planned with a single stair core serving each floor of the building via a protected lobby and the stair was specified with a softwood main structure and oak balustrading. The local authority rejected the plans on the grounds that the stair design did not comply, on fire safety grounds, with current requirements. At this point the Architect contacted us for professional fire engineering advice. My first task was to establish the nature of the local authority's concern and my first port of call, not surprisingly, was the published guidance that the local authority would be referencing. By virtue of the building size and geometry, statutory guidance published in Part B1 of the Approved Document B in support of the England &amp; Wales Building Regulations recommends that the building be provided with a stair constructed of Materials of Limited Combustibility. This means that the materials used would have to satisfy the appropriate criteria of the British Standard BS476: Part 11 fire test. A stair constructed from timber cannot satisfy this requirement since timber materials, no matter how they are treated, will not satisfy the test criteria.</p> <p>This presented the Design Team with a dilemma. One of the major advantages of timber frame construction is the speed at which the building can be erected and mixing trades in terms of providing a concrete or steel stair would introduce delays into the programme that could potentially effect the viability of the scheme, notwithstanding potential difficulties introduced by differential expansion of the different materials over the height of the medium rise building.</p> <p>At a Design team meeting, I agreed a scope of work with the client (Developer) that involved confirming the concerns of the local authority; then working with the architect to develop, where practicable, a technical specification for a timber stair that would satisfy the client and the local authority.</p> <p>I informally confirmed with the local authority that their concern related to the recommended performance criteria of Limited Combustibility for the stair. I also established with them the principle that, due to the functional nature of the Building Regulations, an appropriately justified alternative approach to published recommendations could be followed.</p> <p>Since the Limited Combustibility guidance of the Approved Document B relates to Reaction To Fire performance, this implies a design fire scenario within the stair itself. The logic of this is inescapable in that fires do occur in stair shafts, generally in association with accumulated temporary storage of materials/goods and that are often ignited maliciously. It is therefore extremely important that the stair itself does not contribute significantly to fire growth nor exhibits loss of load bearing capacity under fire exposure. In terms of accommodation involving a sleeping risk, I determined that this load bearing capacity would be important to enable fire fighters' access to the building, initially to fight the fire and remove persons immediately at risk whilst being available to evacuate other occupants post-fire should this be deemed necessary.</p> <p>A keyword search on the Internet yielded details of a government sponsored research project carried out on a medium rise timber frame building[1]. As part of this research a series of tests were carried out by project engineers and that involved fires in a timber frame stair shaft incorporating a timber stair. The research tests, involving a fire scenario based on a simultaneous accelerant, timber crib and double mattress fire scenario were successful (i.e. load bearing capacity of the stair was maintained) based on a wholly softwood timber stair treated with an impregnated fire retardant treatment to give a notional Class 1 Reaction To Fire Performance (BS476: Part 7).</p> <p>Despite having discovered the potential solution, I was faced with the problem of applying the specific results of the research to the situation in hand that involved the use of an alternative timber specification (oak) for the balustrading. A discussion with the stair manufacturers revealed that the timber balustrading has to be of a hardwood specification in order to comply with the structural safety recommendations of Approved Document K.</p>	<p>B1</p> <p>B1</p> <p>C1 D1, D2</p> <p>A2</p> <p>B2, B3</p> <p>A1, B2</p>

<p>I gathered additional information through contact with the research engineers that indicated that their choice of using Whitewood throughout their test was by virtue of Whitewood representing an onerous timber specification in terms of its low permeability to the treatment process. Hence any more permeable timber would take up a greater quantity of the fire retardant thus maximising the field of application of the research test result. Consultation with industry timber experts confirmed that oak has a slightly better permeability than whitewood and I sourced benchmark test data from the manufacturers of the treatment process that established treated oak as giving at least as good a test result in terms of BS476: Part 7 as treated Whitewood.</p> <p>I put together a report detailing a design fire scenario, the functional fire safety objectives, an analysis drawing on the available research and standard test data and an executive summary. This was submitted to the Local Authority by the Design Team and was accepted by them as an appropriate solution allowing the client to proceed with a slightly modified timber and keeping the project on track.</p>	D1, D2
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#### 4. UK-SPEC Standards for Chartered Engineer

<b>A</b> Use a combination of general and specialist fire engineering knowledge and understanding to optimise the application of existing and emerging technology.	<b>Evidence examples</b>
<b>A.1</b> Maintain and extend a sound theoretical approach in enabling the introduction of new and advanced technology and other relevant developments.	<ul style="list-style-type: none"> <li>• Identify and accept limits of personal knowledge and have a clear appreciation of how to extend capabilities by exploiting available sources of information and additional experience.</li> <li>• Be conversant with key information resources in the field such as professional journals, the Internet and major seminars.</li> <li>• Remain abreast of key developments in the field of Fire Engineering, such as changes in Regulations or major innovations and to be aware of key research/experimental programmes likely to have an influence in the field.</li> </ul>
<b>A.2</b> Engage in the creative and innovative development of engineering technology and continuous improvement systems	<ul style="list-style-type: none"> <li>• Employ creativity and initiative in identifying possible fire safety solutions to achieve the objectives.</li> <li>• Assess marketing needs and make a key contribution to marketing strategies.</li> <li>• Identify constraints and explore opportunities for the development and transfer of technology whilst remaining aware of issues relating to the value of intellectual property.</li> <li>• Demonstrate an ability to take clear cognisance of client, user and community needs in determining the functional objectives of the intended fire safety solutions.</li> <li>• Demonstrate a willingness and ability to extend knowledge into related disciplines or fields. Promote co-operation across engineering discipline boundaries to enable the development of future potential opportunities that could result in better value and/or better performing Fire Engineering solutions.</li> </ul>
<b>B.</b> Apply appropriate theoretical and practical methods to the analysis and solution of fire engineering problems	<b>Evidence examples</b>

<p><b>B.1</b> Identify potential projects and opportunities</p>	<ul style="list-style-type: none"> <li>• Use personal experience, an understanding of the employer's commercial position and available Fire Engineering resources to identify potential projects or opportunities and consider their viability.</li> <li>• In terms of potential projects, possess an ability to identify potential project complexities and problems and be able to exercise original thought in determining a response to new Fire Engineering challenges that the project may introduce.</li> </ul>
<p><b>B.2</b> Conduct appropriate research, and undertake design and development of engineering solutions</p>	<ul style="list-style-type: none"> <li>• Select the most appropriate engineering tools and aids to test the potential of design concepts and to determine design parameters for potential solutions.</li> <li>• Such tools may include, but would not be limited to, physical or computer models, analytical or empirical calculation procedures, statistical analysis, risk assessment techniques, cost benefit analysis and value engineering assessment.</li> <li>• Analyse potential concepts, including an assessment of the impact of factors such as performance, reliability and maintainability.</li> <li>• Select suitable media and/or tools for demonstrating potential solutions to clients.</li> </ul>
<p><b>B.3</b> Implement design solutions, and evaluate their effectiveness.</p>	<ul style="list-style-type: none"> <li>• Prepare documented proposals that clearly identify and describe the fire safety solutions that have been engineered to satisfy the functional objectives of the project.</li> <li>• Ensure that any testing or proving requirements are discussed and that any potential problem areas are highlighted with options for modifications or adaptations identified as necessary.</li> <li>• Take corrective action to overcome shortcomings or omissions that are identified with the proposals.</li> <li>• Determine the impact on Fire Engineering design solutions of factors such as construction, installation, commissioning, life-cycle implications, technical support, training of users and shifting user needs.</li> <li>• Participate in consultation with affected parties on evaluation of the issues that affect them and how resolution of these issues will impact on Fire Engineering design.</li> <li>• Design and evaluate the effectiveness of agreed resolutions ensuring that improvements, modifications or rectifying actions are practicable and still meet the functional strategic objectives.</li> </ul>
<p><b>C.</b> Provide technical and commercial leadership</p>	<p><b>Evidence examples</b></p>
<p><b>C.1</b> Plan for effective project implementation.</p>	<ul style="list-style-type: none"> <li>• Identify the factors affecting project implementation</li> <li>• Prepare and develop project proposals and negotiate contractual arrangements with customers, suppliers and partners to secure the employer's commercial position.</li> <li>• Analyse and organise the necessary resource provision required to execute the work.</li> </ul>
<p><b>C.2</b> Plan, budget, organise, direct and control tasks, people and resources.</p>	<ul style="list-style-type: none"> <li>• Set work objectives and priorities including milestone outputs, project deadlines, quality standards and budgets.</li> <li>• Organise project teams and exercise leadership over other engineers, technical and other personnel as appropriate.</li> <li>• Monitor and/or audit tasks to ensure that work is executed as planned and determine what corrective actions are necessary as appropriate.</li> </ul>
<p><b>C.3</b> Lead teams and develop staff to meet changing technical and managerial needs.</p>	<ul style="list-style-type: none"> <li>• Agree objectives and work plans with teams and individuals</li> <li>• Contribute to the identification of the training needs for teams and individuals in order to respond to changing technical and managerial requirements as well as to further their professional progression.</li> <li>• Develop external and work-experience related training plans for teams and individuals and identify and procure appropriate training activities and resources. Undertake reviews of training effectiveness.</li> </ul>

<p><b>C.4</b> Bring about continuous improvement through quality management</p>	<ul style="list-style-type: none"> <li>• Promote quality throughout the organisation and its customer and supplier networks</li> <li>• Contribute to the development of systems for quality management and foster the acceptance of the principles of quality control throughout the organisation.</li> <li>• Perform work to appropriate quality standards and apply quality control and assurance techniques.</li> </ul>
<p><b>D.</b> Demonstrate effective interpersonal skills</p>	<p><b>Evidence examples</b></p>
<p><b>D.1</b> Communicate in English with others at all levels.</p>	<ul style="list-style-type: none"> <li>• Develop good personal relationships that are appropriate to the level of communication being used and communicate effectively in a manner that the circumstances of the project dictate.</li> <li>• Ensure effective 2-way communication in discussions and be prepared to liaise with colleagues, peers and experts within and beyond the employer's organisation.</li> <li>• Respond effectively and efficiently to all received communication, howsoever it is received.</li> </ul>
<p><b>D.2</b> Present and discuss proposals</p>	<ul style="list-style-type: none"> <li>• Select the most appropriate medium for clearly clarifying Fire Engineering Design objectives and select the most suitable method of communication using, words, images, audio and video as necessary.</li> <li>• Communicate fluently in written and oral expression at an experienced professional standard and prepare and present lectures, reports and published papers at professional level.</li> <li>• Feed back results to improve the proposals.</li> </ul>
<p><b>D.3</b> Demonstrate personal and social skills.</p>	<ul style="list-style-type: none"> <li>• Establish fire engineering teams capable of working towards collective goals and create, maintain and enhance effective working relationships.</li> <li>• Be aware of the needs and concerns of others</li> <li>• Develop the team, the individuals within the team and yourself to enhance performance.</li> <li>• Provide negotiation, conflict resolution and counselling within the team and provide a conduit through which ideas, convictions and attitudes can be exchanged and conveyed.</li> <li>• Demonstrate confidence and flexibility in dealing with new and changing interpersonal situations.</li> </ul>
<p><b>E.</b> Demonstrate a personal commitment to professional standards, recognising obligations to society, the profession and the environment.</p>	<p><b>Evidence examples</b></p>
<p><b>E.1</b> Comply with relevant Codes of Conduct</p>	<ul style="list-style-type: none"> <li>• Comply with rules of professional conduct of the IFE</li> <li>• Apply professional skill in the interests of the employer and client for whom you act in professional matters.</li> <li>• Give evidence, express opinions or make statements in an objective manner and on the basis of adequate knowledge.</li> <li>• Work constructively within all relevant legislation and regulatory frameworks, including social and employment legislation.</li> </ul>
<p><b>E.2</b> Manage and apply safe systems of work</p>	<ul style="list-style-type: none"> <li>• Take account of potential professional risks and liabilities and accept responsibility for them.</li> <li>• Consider and implement as necessary appropriate occupational health, safety and welfare requirements.</li> <li>• Develop and implement appropriate hazard identification and risk management systems</li> <li>• Manage, evaluate and improve these systems.</li> </ul>

<p><b>E.3</b> Undertake engineering activities in a way that contributes to sustainable development</p>	<ul style="list-style-type: none"> <li>• Promote the considerations and actions required in engineering practice to improve, sustain and restore the environment.</li> <li>• Be aware of the wise use of non-renewable resources through waste minimisation, recycling and the development of alternatives where possible.</li> <li>• Promote the considerations and actions required in engineering practice to improve, sustain and restore the environment.</li> <li>• Be aware of the wise use of non-renewable resources through waste minimisation, recycling and the development of alternatives where possible.</li> <li>• Strive to achieve the beneficial objectives of Fire Engineering design whilst striving to minimise the consumption of raw materials and energy, and by designing sustainable management procedures.</li> <li>• Take account of life-cycle implications with respect to how Fire Engineering designs will impact on the environment.</li> <li>• Understand and encourage stakeholder involvement.</li> </ul>
<p><b>E.4</b> Carry out the continuing professional development necessary to maintain and enhance competence in your areas of practice.</p>	<ul style="list-style-type: none"> <li>• Undertake reviews of own development needs and engage in continued professional development (CPD) to maintain and enhance competence.</li> <li>• Set your own objectives in relation to personal and organisational objectives and maintain a career plan.</li> <li>• Maintain records of professional development activities.</li> <li>• Assist others with their own CPD</li> </ul>