



1. Introduction

This document states the eligibility criteria for applicants seeking recognition on the National Professional Engineers Register (NPER) in the specific area of practice of Fire Safety Engineering.

The Guideline has been prepared by a competency panel comprising representatives of the Society of Fire Safety Australia and the Colleges of Chemical, Civil, Electrical, Mechanical and Structural Engineers. The setting of standards and administration of the registration scheme is the responsibility of the competency panel, but assessment of applications is the responsibility of an assessment panel, established by Engineers Australia and comprising experienced practitioners from the Society and the Colleges.

By arrangement with the Competency Panel responsible for the general area of practice *Building Services Engineering*, applicants can be registered in the specific area of practice *Fire Safety Engineering* under NPER – Building Services Engineering if no other general area of practice is appropriate.

Administration of the registration scheme is the responsibility of the Associate Director Registration, Engineers Australia.

2. Background to Fire Safety Engineering

Fire safety engineering is multidisciplinary in nature, having substantial relationships with building services, mechanical, electrical, electronics, chemical, structural and civil engineering and embraces an understanding of human behaviour.

It is the application of engineering principles, rules and expert judgement based on a scientific appreciation of the fire phenomenon, of the effects of fire and of the reaction and behaviour of people in order to:

- save life, protect property and preserve the environment and heritage from destructive fire
- quantify the hazards and risk of fire and its effects
- mitigate fire damage by proper design, construction, arrangement and use of buildings, materials, structures, industrial processes and transportation systems
- evaluate analytically the optimum protective and preventive measures, including design, installation and maintenance of active and passive fire and life safety systems, necessary to limit, within prescribed levels, the consequences of fire.

There are currently few structured courses providing training in fire safety engineering. The Society of Fire Safety Australia in conjunction with Engineers Australia intends to facilitate and promote the development of structured programs and will do so in co-operation with the major employers of fire safety engineers.

It is anticipated that most applicants seeking recognition as fire safety engineers will have academic qualifications and professional training in other engineering or related fields. They will need to show that they have received adequate training within the area of fire safety engineering in which they practise and wish to be registered. All applicants are therefore required to submit a Training and Experience Report (TER). In this report they will need to describe the training they have received in specific aspects of their practice (see Section 4.3 below).

It is the express intention of the competency assessment embraced by this application process to align with the standards of relevant overseas bodies (such as SFPE and IFS) with a view to assisting NPER registrants to practise overseas and to comply with building legislation in Victoria and other States or Territories, implementing registration in the Class of Fire Safety Engineering.

3. Criteria for Fire Safety Engineering

Recognition in the specific area of practice Fire Safety Engineering requires that:

- you have an acceptable qualification and sufficient experience to satisfy the Australian Engineering Competency Standards for Professional Engineer at Stage 2
- you have registered in a general area of practice on NPER
- fire safety engineering is a significant area of your professional employment or practice
- you must be able to demonstrate capability in a satisfactory range of the following fire safety engineering activities:
 1. Fire science (fire chemistry) – determining:
 - mass conversion from combustion
 - heat release rate from combustion
 - species products from combustion.
 2. Fire science (fire dynamics) – determining:
 - heat transfer rates
 - smoke movement
 - fire spread rates.

3. Fire protection engineering (active) – using system performance requirements and design verification methods to design:
 - automatic suppression systems
 - detection systems
4. Fire protection engineering (passive) – using system performance requirements and design verification methods to design:
 - fire/smoke barrier systems
 - structural members under fire conditions
5. Smoke control – undertaking:
 - analysis of smoke production,
 - quantitative analysis of smoke spread
 - analysis of smoke control measures
6. Interaction between fire and people – recognising:
 - human behaviour during fire emergencies,
 - building layouts, occupation rates, means of egress
 - methods for estimating occupant response in a fire emergency.
7. Fire-ground operations – taking into account:
 - fire brigade capabilities
 - the role of the fire brigade during a fire emergency
 - methods of incorporating fire brigade intervention in a fire safety analysis.
8. Fire risk assessment – undertaking quantitative risk assessment to estimate:
 - human impact of fire
 - financial impact of fire
 - environmental impact of fire.
9. Fire prevention – taking into account:
 - the causes of fires
 - methods of prevention
 - selection and management of materials
 - control of ignition sources.
10. Codes and Standards – applying:
 - appropriate building regulations
 - fire related standards and codes of practice.
11. Fire investigation
12. Fire insurance (including QRA)
13. Fire safety of consumer items and energy sources
14. Fire safety design and management of buildings
15. Fire safety design and management of industrial processes
16. Fire safety design and management of transport activities
17. Fire safety design and management of cities and communities
18. Fire safety engineering research and teaching.

4. The application and assessment process

4.1 Making an application

The following sections indicate what you must do to register on NPER in a general area of practice, and receive recognition in the specific area of fire safety engineering.

You do not need to join Engineers Australia to register on NPER.

4.2 Required Documents

If you are not a CPEng, you must follow application guidelines in the [Chartered Status Applicant's Handbook](http://www.engineersaustralia.org.au), (<http://www.engineersaustralia.org.au> >education >chartered status) (even if you do not intend to join Engineers Australia) and use the application form in it to apply simultaneously for a general area of practice on NPER and for fire safety engineering. The same process will also allow you to obtain Chartered Membership (CPEng) if you wish.

If you are a CPEng, you may apply for registration on NPER and/or College Membership using the [Application for Registration on NPER](http://www.nerb.org.au/applying/introduction.cfm) (<http://www.nerb.org.au/applying/introduction.cfm>) under the *applying* tab. You must submit a Statement of Experience and evidence of how you have kept up to date in your practice, as explained on the form. You can apply for the specific area of practice fire safety engineering at the same time.

Even if you are already registered on NPER in a general area of practice:

You [and **ALL OTHER APPLICANTS**] must also provide :

- a. a completed application form for recognition in the specific area of practice fire safety engineering;
- b. a fee of \$550 incl GST; and
- c. a Training and Experience Report (TER)(see 4.3 below), which may be combined with an Engineering Practice Report (EPR) outlined in the Chartered Status Applicant's Handbook, providing details of relevant courses and training activities undertaken to complement their specialisation and practice in fire safety. Typical training activities should have:
 - filled major gaps in their knowledge of fire safety engineering with particular attention to areas 1 to 10 in 3.2 above;
 - helped to identify and quantify fire hazard scenarios in fire risk situations;
 - applied theoretical knowledge to the practice and techniques of fire safety engineering;
 - provided a working knowledge of state of the art practice in the specialisation, including any requirements for installation, maintenance and reliability of appropriate fire protection systems and structures;
 - provided a basic understanding of how to deal with a fire emergency;

- where computer programs are used by the applicant or on his behalf, provided a critical understanding of the assumptions and limitations of the computer modelling techniques in so far as they affect fire safety;

4.3 Preparing a Training and Experience Report

4.3.1 General

The TER should address the more difficult, practical and technical problems you have encountered and how your professional training has enabled you to deal with these problems.

4.3.2 Report Sections

General

The report should have 5 sections, namely:

- formal education and training
- Supervised experience
- Responsible experience
- Other relevant Information
- Verification.

Formal Education and Training

This section covers courses delivered by recognised education providers, seminars and conferences.

Explain how the course content and the subject matter of the seminars and conferences related to the knowledge and skills in Section 3 above, and provide details of any third-party assessment that may have been undertaken of your performance.

Provide a list of the subjects of your academic award courses in fire safety engineering, and explain how they relate to your involvement indicated against 1-18 under 3.2. The subject matter of seminars and conferences attended should also be related to these activities.

Supervised Experience

Provide a brief list of examples of your professional involvement in the areas you have indicated in your application (see F3 attached). Use bullet points to identify relevant projects and training received.

Responsible Experience

Provide a structured statement of your responsible experience in the different types of fire safety assignments undertaken and state clearly your own personal role and the extent to which you have been expected to assume responsibility.

Other Relevant Information

Provide any other information related to your involvement in fire safety engineering that might support your application.

Verification

Have your report reviewed and substantiated by an experienced professional engineer as being a true representation of your training and experience.

4.4 Professional Interview

All applicants must attend a professional interview, with two experienced fire safety engineers. For applicants concurrently seeking registration on NPER – Building Services Engineering, one panel member will be a Building Services Engineer.

The interview enables a quality assurance check of the educational and professional experience in fire safety engineering detailed in the training and experience report.

Applicants should bring examples of professional work that illustrate their experience and competencies in fire engineering. The structure of the interview is as follows:

- a short period for introductions
- a fifteen minute presentation by the candidate, uninterrupted by the panel
- thirty minutes responding to questions by the panel; and
- a brief discussion of topical and ethical issues.

Your application for recognition in the Fire Safety Engineering specific area of practice, together with appropriate attachments and fees, must be forwarded to: Associate Director Registration, Engineers Australia, 11 National Circuit, Barton ACT 2600



APPLICATION FOR RECOGNITION IN THE AREA OF PRACTICE – FIRE SAFETY ENGINEERING

Applicant's NameMembership/Registration No []

If already registered on NPER, attach this form to your Training and Experience Report (TER).
If applying concurrently for a general area of practice on NPER, attach this form to your main application form.
If applying for NPER - Building Services Engineering, refer also to Guideline for Building Services Engineering.
All applicants must provide a Training and Experience Report as summarised below.

F1. Professional Formation in Fire Safety Engineering

I have gained competencies in Fire Safety Engineering, through the experience detailed in my CV and my TER which are attached to this supplementary application form. My training activities have included one or more of: (please tick)

- ◆ an undergraduate or postgraduate qualification in Fire Safety Engineering (please attach certified evidence): []
◆ undertaking a significant relevant educational program, or a number of relevant short courses []
◆ producing relevant publications []
◆ undertaking a relevant course of private study []

F2. Demonstrated Responsibility in Fire Safety Engineering

I have provided professional services independently, or under general direction, in Fire Safety Engineering in the following positions (if necessary, attach a separate summary sheet for F2)

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.....
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Please provide, in your CV, details of these positions, stating the functions you performed and the responsibilities you accepted.

F3. Professional Practice in Fire Safety Engineering

Applicants must have a general understanding of all activities above the line (see section 3 of Guideline).
You must indicate your professional involvement in at least five activities; one must be from below the line. Please 3

- [] Fire science (fire chemistry) [] Interaction between fire and people
[] Fire science (fire dynamics) [] Fire-ground operations
[] Fire protection engineering (Active) [] Fire risk assessment
[] Fire protection engineering (Passive) [] Fire prevention
[] Smoke control [] Codes and Standards
[] Fire investigation [] Fire safety design & management of industrial processes
[] Fire insurance (including QRA) [] Fire safety design & management of transport activities
[] Fire safety of consumer items & energy sources [] Fire safety design & management of cities & communities
[] Fire safety design & management of buildings [] Fire Safety engineering research and teaching

You must describe your professional involvement in the indicated activities in your Training and Experience Report.
This summary of my involvement in Fire Safety Engineering and the details reported in my CV and TER are correct.
Signed Date/...../.....