



## Environmental Engineering

### 1 Introduction

This document provides the criteria that will be used for assessing applicants under the general area of practice of Environmental Engineering.

The Guideline was originally prepared by a competency panel comprising representatives of the Environmental Engineering Society and the Colleges of Civil, Chemical and Mechanical Engineers. With the formation of the College of Environmental Engineers, the setting of standards and administration of the registration scheme is now the responsibility of a competency panel of the College of Environmental Engineers.

The area of practice of Environmental Engineering is to distinguish professional engineers competent in the practice of Environmental Engineering, and where Environmental Engineering is the dominant area of practice in their professional life.

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

### 2 Background to Environmental Engineering

The profession of Environmental Engineering developed out of concern as to the level of pollution that became evident in the 1960s and early 1970s. In response to that concern, the prevention and management of pollution in the environment was introduced into the undergraduate course material for engineers, both civil and chemical, from the 1970s onwards.

In the 1980s, environmental impact assessment became established as a way of planning for projects, in order to prevent some of the social and waste problems of the past and importantly, to take into consideration natural and social systems in the assessment of a project's worth.

In the late 1980s and early 1990s, the concept of ecologically sustainable development was introduced, internationally and nationally. The design of engineering projects and systems to be "*sustainable*" brought a new dimension to environmental planning. Valuing of resources, considerations of social equity, understanding uncertainty and managing risk, etc. became the new paradigms in an increasingly complex environmental planning and management regime. The advent of the international series of standards under ISO 14000 for environmental management systems brought quality management into environmental management, as a way of sustaining the environmental performance of projects, products, systems, etc.

Environmental engineering today is very different from the earlier "*environmental control*" engineering that was part of civil and chemical engineering disciplines. It is now an engineering discipline in its own right with environmental engineering degree courses having been offered at universities across Australia since 1992.

Most of the earlier programs were hybrids or additions to civil and chemical engineering programs. Some still are. However, the better programs fully incorporate sustainability teaching in a holistic integrated program, linking biophysical, social and economic aspects into engineering systems.

Many applicants seeking recognition as environmental engineers will have academic qualifications and professional experience in civil or chemical engineering and not environmental engineering. Such applicants will need to show that they have developed specialist skills within their practice area in environmental engineering, and that they have developed expertise in the general field of environmental engineering and particularly, in the principles and applications of sustainable development. They will also need to describe the ongoing training that is specific to environmental engineering. It will not be sufficient to have maintained expertise within their traditional civil or chemical practice areas.

### 3 Areas of Practice

Environmental engineering is a very broad field in which there are new applications and adaptations of all the traditional disciplines of engineering.

The main areas of practice are as follows:

- Water and waste water treatment and management, including application of re-use, recycling, etc.
- Waste management, including ecoefficiency, cleaner production concepts, life cycle assessment, etc.
- Surface and groundwater system environmental management, including water quality management
- Contaminated land assessment and remediation
- Natural resource management
- Environment protection, management and pollution control
- Environmental management system design, including environmental management planning, auditing, etc.
- Environmental impact assessment and environmental management planning

- Environmental information systems
- Natural system accounting, including economic evaluation
- Social impact analysis, community consultation, dispute resolution, etc.
- Sustainable energy planning and design, greenhouse gas mitigation and management
- Environmental risk assessment and management
- Environmental policy formulation

#### 4 Eligibility Requirements for Registration

Applicants must possess an academic qualification (eg. a four year engineering degree), accredited or recognised by Engineers Australia, or equivalent overseas qualification. They must also be able to satisfy the Australian Engineering Competency Standards for Professional Engineers at Stage 2.

In addition to their qualifications and experience, applicants will need to demonstrate:

- That environmental engineering is a major part of their professional employment or practice.
- That they have a high level of awareness of the scope of environmental engineering, the principles and practice of ecological sustainability, of best practice environmental management and implementation, and of local and global environmental issues generally.
- That they practise independently or under general direction, in the provision of environmental services related to at least one of the areas of practice identified in Section 3 above.

Documented evidence should be provided in support of each of the above, and accompany the application.

### 5 The Application and Assessment Process

#### 5.1 Making an Application

The following sections indicate what you must do to register on NPER in the general area of practice of Environmental Engineering.

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

#### 5.2 Required Documents

*If you are a CPEng*, you may apply for registration on NPER – Environmental Engineering (and Environmental College membership if not already a member) using the form for *Application for Registration on NPER* ([www.nerb.org.au](http://www.nerb.org.au) >applying). You must submit a Statement of Experience and evidence of how you have kept up to date in your practice, as explained on the application form. If your academic qualification is in a field other than

environmental engineering, you must show in your Statement of Experience and your record of continuing professional development (CPD) that you have received adequate formation in the discipline of environmental engineering.

*If you are not a CPEng*, you must follow the application guidelines in the *Chartered Status Applicant's Handbook*, ([www.engineersaustralia.org.au](http://www.engineersaustralia.org.au) >education >chartered status) (even if you do not intend to join Engineers Australia) to write an Engineering Practice Report, and use the application form in it to apply for NPER – Environmental Engineering. The same process will also allow you to obtain Chartered Membership (CPEng) if you wish.

**All applicants must provide clear evidence that they have worked competently in the areas covered by Environmental Engineering, and show that they meet the requirements described in this Guideline. Your documents must be reviewed and substantiated by an experienced professional engineer as being a true representation of your recent responsibilities.**

**You should note that UnitPE4A, in the Chartered Status Applicant's Handbook, is mandatory for applicants applying for Environmental Engineering.**

#### 5.3 Assessment

*If you are a CPEng*, your Statement of Experience and CPD will be analysed for evidence that you meet the requirements for Environmental Engineering (see Section 4 above). You may be invited to attend an interview with a member of the Environmental Engineering Assessment Panel, as explained on the application form.

*If you are not a Chartered Professional Engineer (CPEng)*, you will be assessed for registration as explained in the *Chartered Status Applicant's Handbook* ([www.engineersaustralia.org.au](http://www.engineersaustralia.org.au) >education >chartered status). When your Engineering Practice Report is accepted, you will attend a professional interview lasting about one hour as explained in the Handbook.

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