AIRAH PROFESSIONAL ENGINEER REGISTER

APER

Queensland By-laws

APER Queensland By-laws 2022 version 1.1

Contained in this document are the By-laws of the AIRAH Professional Engineer Register (APER), which:

- Provide the governance structure, guiding principles, rules, and regulations for the APER program;
- Outline the criteria used by AIRAH for the admission and for the assessment of applicants seeking to be included on the APER in the discipline of mechanical engineer – HVAC&R building services;
- Have been established to ensure that people who have been admitted to the APER have achieved such status through meeting well-defined criteria developed in consultation with leaders in the engineering profession;
- Ensure rigour, diligence, and scrutiny have been applied by AIRAH in granting APER status.

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1. Consistency with the Constitution

These By-laws must be read in conjunction with the AIRAH Constitution and AIRAH By-laws. Any expressions, words, or phrases defined in the By-laws shall, as permitted, have the same meaning in the Constitution. In the event of any inconsistency between the provisions of the Constitution and these By-laws, the provisions of the Constitution will prevail.

2. Introduction

AIRAH has operated since 1920 and is the leading specialist membership association for professionals in the heating, ventilation, air conditioning, and refrigeration (HVAC&R) building services industry.

This hidden, innovative industry employs more than 298,000 people in Australia, is worth $38 billion, uses more than 24 per cent of the country's electricity and accounts for 11.5 per cent of our carbon dioxide emissions.

AIRAH's primary aim is to develop the competencies and skills of industry engineering professionals and practitioners so that they can better meet society's evolving health, safety, and environmental demands, and the challenges of a rapidly changing world. AIRAH encourages world's best practice within the industry through continuing professional development, professional certification and accreditation, education and training, specialist technical development, and a wide range of technical guidelines and publications.

AIRAH is also the only body solely focused on representing mechanical engineer – HVAC&R building services professionals. These are a highly skilled group of engineers operating in the built environment. As part of our commitment to the industry and the engineering profession, and to support the recommendation of the *Building Confidence Report* to implement a system of professional registration for engineers, AIRAH introduced a professional accreditation system specifically designed for engineers operating in the HVAC&R building services industry.

AIRAH offers a pathway of assessment for RPEQ and other state- and territory-based engineering registration schemes as they are released via the AIRAH Professional Engineer Register (APER).

AIRAH members who apply successfully for APER assessment will also be able to use the AIRAH Registered Professional Engineer (ARPEng) designation, in addition to RPEQ or other state- and territory-based recognition. Please refer to the AIRAH By-laws for information about the APREng designation.

Those in the mechanical engineer – HVAC&R building services discipline are engineering professionals who plan, design, install, commission, operate, tune, and maintain machines and systems in the built environment. This may include air conditioning plants, ventilation systems, chillers, cooling towers, refrigeration plants and coolrooms, fire and smoke systems, fans, pumps, and control systems.

These By-laws outline the requirements for admission and grading of professional engineers and the criteria used by AIRAH in the assessment of applicants seeking accreditation in the discipline of mechanical engineer – HVAC&R building services. They have been established to ensure that people who are admitted on the AIRAH Professional Engineer Register have achieved such status through meeting well-defined criteria developed in consultation with leaders in the engineering profession and that rigour, diligence, and scrutiny have been applied by AIRAH in granting that status.

3. AIRAH Professional Engineer Register

The AIRAH Professional Engineer Register (APER) is the professional accreditation register designed for engineers operating in the HVAC&R building services industry. These By-laws outline the requirements for admission and the criteria used by AIRAH in the assessment of applicants seeking accreditation in the discipline of mechanical engineer – HVAC&R building services.

3.1 Interpretations

Term	Definition
AIRAH Registrar	Staff member, appointed by the AIRAH CEO, with the responsibility of the effective administration of the accreditation program detailed in these By-laws. The AIRAH Registrar will ensure the maintenance of the Register.
APER	AIRAH Professional Engineer Register.
APER Guidelines	Outlines the eligibility criteria used to assess applicants for registration on the AIRAH Professional Engineer Register.
Application	Applicant's application for accreditation. This shall consist of the online application; a certified copy of their professional engineering qualification; examples of their work experience and competence over the past five years (in a detailed resumé); names and contact details of two professional referees who can testify as to the applicant's work experience claims; and a record of continuing professional development activities.
Applicant	Engineer seeking accreditation on the AIRAH Professional Engineer Register.
ARPEng	An AIRAH Registered Professional Engineer; the registration post-nominal granted to AIRAH member engineers on successful accreditation onto the APER.
Assessment Committee	At least three Assessors, appointed by the AIRAH Board of Directors, to administer the accreditation program. This includes any objections to the accreditation program.
Assessor	Person appointed by the AIRAH Board of Directors, based on their experience, qualifications, and the satisfaction of procedures outlined herein, for the purpose of determining whether an applicant meets the requirements for successful accreditation. Section 3.6 lists the training and qualification requirements of an assessor.
By-laws	As determined by the Board. They provide the governance structures for the APER program, as well as its guiding principles, rules, and regulations.
CEng	Chartered Engineer, as awarded by the British Engineering Council.
CPEng	Chartered Professional Engineer, as granted by Engineers Australia.
RPEng	Registered Professional Engineer of Professionals Australia.

Conferral date	Day, month, and year the applicant is successfully recommended for registration.
Continuing professional development (CPD)	The systematic maintenance, improvement, and broadening of knowledge and skills and the development of personal qualities necessary for the execution of professional and technical duties throughout the practitioner's working life. To maintain standing on the APER, 150 hours of CPD must be undertaken over a three-year period, with a minimum of 50 hours in any one year.
Expiration date	Day, month, and year that an individual's recommendation for registration expires. The expiration date is three years from the conferral date.
Matter of APER discipline	1. An individual on the APER who is the subject of a complaint involving conduct prejudicial to the Institute or the engineering profession and the complaint is before the Board for its decision, and/or 2. A failure of an individual on the APER to comply with the Constitution, the By-laws or any other professional standards, and the Board, upon receipt of a complaint, considers the matter and decides whether to terminate the person's Institute membership.
Professional referee	Person nominated by the applicant to support and verify their work experience claims. The professional referee shall be called upon by the assessor to provide a verbal statement that supports the applicant's work experience. Section 3.11 lists the qualification requirements of a professional referee.
Renewal date	Day, month, and year current applicants recommended for registration are advised by the AIRAH Registrar that they have completed the requirements for retention of their ARPEng accreditation. The AIRAH Registrar shall notify participants of upcoming renewal and re-assessment at least three (3) months prior to the expiration date.
Reprimand	The Board may advise an individual on the APER in writing that it has upheld a complaint against them. In this instance, the Board has decided to record the decision as part of the APER record, without further action taken.
Washington Accord	A series of agreements relating to the recognition of equivalence of professional engineering qualifications and competence. Qualifications under this scheme are recognised as fitness to practice as a professional engineer across the signatory jurisdictions.

3.2 Engineer discipline

AIRAH is focussed on representing mechanical engineer – HVAC&R building services professionals. This covers professional engineers whose work is associated with, but not restricted to, the heating, ventilation, air conditioning, and refrigeration industry (HVAC&R).

The AIRAH Professional Engineer Register accredits mechanical engineer – HVAC&R building services professionals. This accreditation is aligned with registration as a professional engineer in the mechanical engineer discipline in state-legislated schemes.

3.3 Responsibilities of engineers on the AIRAH Professional Engineer Register

AIRAH Professional Engineer Register applicants must show their experience has translated into engineering competence and that they are committed to high standards of professional and ethical conduct.

They will:

1. Apply mechanical engineer – HVAC&R building services technical knowledge and understanding to their engineering activities, specifically:
    a) Apply appropriate theoretical and practical methods to identify or define problems, opportunities, or projects;
    b) Combine ideas and contributions of different people and disciplines to arrive at appropriate engineering and technical solutions;
    c) Develop creative and innovative solutions, designs, and technological approaches to engineering problems;
    d) Undertake technical evaluation and optimisation to address the brief they were given or requirements they identified;
    e) Plan and execute technical work and projects.
2. Be able to handle the wide implications of their work as a mechanical engineer – HVAC&R building services, specifically:
    a) Handle health, hazard, and safety aspects and meet legal and legislative requirements;
    b) Handle sustainability and resilience aspects to work effectively with other disciplines to achieve optimum outcomes for the built environment;
    c) Handle commercial and economic aspects.
3. Utilise interpersonal, leadership, and communication skills, specifically:
    a) Manage interpersonal relationships;
    b) Demonstrate leadership in a professional role;
    c) Communicate ideas and plans by report writing and oral presentation.
4. Demonstrate personal commitment, and a history of working to high standards of professional and ethical conduct, specifically:
    a) Professional conduct;
    b) Work in an ethical manner.

3.4 Role of AIRAH Board

The AIRAH Board shall:

1. Appoint assessors to conduct assessments of eligibility for registration under the scheme, subject to their meeting stringent requirements for competence, commitment, and professional and ethical conduct.
2. Appoint an Assessment Committee, comprising at least three (3) assessors (deemed of the highest standing) to oversee the assessment process.
3. Oversee development and publication of the AIRAH APER Guidelines for the guidance of applicants and administration of the process.
4. Consider, accept, or reject recommended changes to the assessment process and the AIRAH APER Guidelines, as offered by the Assessment Committee.

3.5 Assessment Committee

The Assessment Committee administers the assessment scheme on behalf of the AIRAH Board. The Assessment Committee shall consist of at least three (3) assessors appointed by the AIRAH Board, supported by the AIRAH Registrar.

The Assessment Committee shall:

1. Ensure that the AIRAH APER Guidelines and assessment processes are continually updated and remain best practice against domestic and international standards.
2. Consider and review assessment findings and recommendations of Assessors.
3. Ensure the APER assessment process is monitored by having at least twenty (20) per cent of APER applications audited and results recorded each year.
4. Consider and review assessment audit findings and recommendations of auditors.
5. Manage appeals against unsuccessful assessments.
6. Ensure all applications for registration are responded to within four (4) weeks of receipt and that all applications are assessed within eight (8) weeks of receipt unless otherwise agreed with the applicant or as varied by notifying the applicant in relation to barriers to the processing of the application.
7. Ensure the AIRAH Registrar maintains a record of all applicants, outcomes, communications, and accreditations pertaining to the AIRAH Professional Engineers Register.
8. Oversee preparation of all materials necessary for the conduct of assessment, application, and appeal.
9. Undertake periodic review, at least every twelve (12) months, of the assessment procedures and processes, materials, By-laws, and Guidelines to ensure the scheme remains efficient and effective.
10. Ensure the quality and competency of assessors.
11. Ensure an annual program of CPD audits is undertaken on at least fifteen (15) per cent of APER registrants and outcomes are appropriately actioned.
12. Consider and review CPD requirement audit findings and recommendations of auditors.
13. Ensure procedures for training and accrediting auditors are in place and reviewed at least biannually.
14. Produce induction materials for assessors and conduct inductions with them. These materials shall include matters which relate to these By-laws, their operation, and all relevant legislative requirements.
15. Prepare continuing professional development (CPD) activities to be completed by assessors on an annual basis.
16. Provide and maintain a centralised recording mechanism for continuing professional development (CPD) of assessors.

3.6 Assessors

Assessors shall satisfy all of the following requirements:

1. Be a current RPEQ to assess those seeking registration with the BPEQ, or, for other registrations, hold APER, ARPEng, CPEng, RPEng, RPEQ, or AIRAH Member or Fellow status.
2. Have demonstrated extensive experience and professional knowledge in the mechanical engineer – HVAC&R building services discipline, typically through more than fifteen (15) years' post-graduation work experience.
3. Possess a full understanding of the interpretation and application of the AIRAH Code of Professional and Ethical Conduct.
4. Have complied with the annual continuing professional development requirements of the Assessment Committee.

Assessors shall be allocated to assess applications for APER by the AIRAH Registrar.

Assessors shall, prior to undertaking any assessment:

1. Disclose to the AIRAH Registrar if they have, or have had, a significant professional or personal relationship with the applicant, and if so exclude themselves from any consideration of the application.
2. Declare to the AIRAH Registrar any conflict of interest in considering applications.

Assessors shall, on completion of any assessment, complete a declaration stating that the assessment has been carried out in accordance with these By-laws.

3.7 AIRAH Registrar

The role of the AIRAH Registrar is to:

1. Administer the day-to-day functions of the accreditation program.
2. Undertake an initial review of application documentation through the application process.
3. Provide information and advice to applicants.
4. Allocate applications to assessors for assessment.
5. Monitor the progress of assessments with assessors.
6. Provide support to assessors during the assessment process.
7. Provide the recommendations from assessors to the Assessment Committee for review and confirmation.
8. Maintain the list of applicants and the outcomes of assessments.
9. Communicate assessment outcomes to applicants and, where successful, issue confirmation letters and certificates of registration.
10. Administer the appeal process.
11. Administer the annual audit process of the APER applications and CPD requirements and provide the Assessment Committee with details and outcomes for consideration.
12. Advise the Assessment Committee, every twelve (12) months, about those who have not maintained their eligibility for registration.

3.8 APER fees

Fees are set annually and will be listed on the AIRAH website.

3.9 APER eligibility

Accreditation on the AIRAH Professional Engineer Register will require evidence that the applicant has the required qualifications, knowledge, and professional experience and competence.

The eligibility requirements for APER are set to exceed the international standard for engineer registration. They are aligned with the requirements of the Board of Professional Engineers of Queensland's (BPEQ) requirements for Registered Professional Engineer of Queensland (RPEQ) status.

To be eligible for acceptance on the AIRAH Professional Engineer Register, an applicant must:

1. Have a four-year undergraduate engineering degree accredited or recognised by a body responsible for accreditation or recognition of tertiary-level engineering qualifications that is a signatory to the Washington Accord 1989; or
2. Have an academic qualification that has been assessed by the accredited authority for Australia under the Washington Accord 1989 to assess qualifications as equivalent.
    a) A scheme must require the person applying to pay all fees associated with assessment of a qualification by the accredited authority for Australia under the Washington Accord 1989 to assess qualifications as equivalent.
3. Have a minimum of five-years of relevant post-graduate work experience in the field of mechanical engineering – HVAC&R building services, and be able to demonstrate that this has translated into competence and commitment.
4. Have two (2) other suitable engineers vouch for their work experience.
5. Be able to demonstrate a commitment to the engineering profession by:
    a) Undertaking 150 hours or more of continuing professional development over the past three (3) years;
    b) Complying with the APER Code of Professional and Ethical Conduct.

3.10 How to apply for APER

The first step in the APER process is to create an account on the AIRAH website. Then, applicants will need to prepare and submit their relevant documentation via the online application process. The applicant's proposal for assessment shall consist of:

1. A certified copy of their eligible engineering qualification, as detailed in section 3.9.
2. A detailed resumé highlighting at least five (5) years' relevant work experience and competence. Details of the competencies that must be demonstrated are provided in the APER Guidelines. The resumé must highlight the name(s) of the organisation(s) and a brief summary of the service or product provided by the organisation(s); job title(s); length of employment; description of role(s); and examples of work experience activities for each organisation where the applicant has been employed. It should also provide examples of competence achieved. The work experience and competence shall outline examples of the applicant's use of theories, concepts, and practices to solve real-world problems.
3. The names, telephone numbers, and email addresses of at least two (2) professional referees who can testify as to the valid nature of the applicant's five (5) years of work experience. The professional referees are qualified to testify as to the applicant's work experience claims only if they satisfy the requirements of section 3.11. Applicants must ensure the professional referees are aware of the applicant's nomination of the referee to testify in relation to the application for assessment. Prior to submitting a proposal, applicants are advised to ensure that the nominated professional referees have read the applicant's resumé and are familiar with the work experience and competence cited.
4. A record of continuing professional development. A total of 150 hours must be accumulated over the past three (3) years, immediately prior to the lodgement of the application. An applicant may be asked to support these claims using copies of certificates from short courses and/or copies of academic transcripts

from post-graduate study. An Assessor will verify all claims made. Applicants are advised to not include original documents in their application.

5. A completed online application including confirmation of identity in accordance with the recognised 100-point identity check utilised within relevant state and federal government agencies. If an application does not contain all the required documentation and information outlined, the applicant shall be given a time period to rectify any deficiency. If not completed in that time period, they shall be given notification that the application has been unsuccessful in accordance with section 3.13.

3.11 Professional referee qualifications

Professional referees do not need to work with the applicant, or be in the same organisation/country, but they must be sufficiently familiar with the applicant's work and career to support their application. They cannot be a family member. They must have known the applicant for a period of at least twelve (12) months.

Professional referees must satisfy one of the following requirements:

1. Be on the AIRAH Professional Engineer Register (APER).

2. Hold CPEng, CEng, RPEng, RPEQ, or equivalent status. The referee's accreditation must be in the discipline or a similar discipline to which the applicant is seeking accreditation.

3. Be an engineer with a four-year undergraduate engineering degree accredited or recognised by a body responsible for accreditation or recognition of tertiary-level engineering qualifications that Is a signatory to the Washington Accord 1989. They must have seven (7) or more years of work experience in the discipline or in a similar discipline to that in which the applicant Is seeking accreditation.

3.12 Successful applicants

Applicants shall be notified by the AIRAH Registrar on the successful outcome of their application. Successful applicants shall be provided with a letter confirming their accreditation and a certificate acknowledging them as being registered on the AIRAH Professional Engineer Register.

3.13 Unsuccessful applicants

Applicants shall be notified as to the reason(s) why their application was unsuccessful and be given the opportunity to rectify any deficiency that may be able to be rectified within such a period as advised in the notification, being no greater than twelve (12) months. They may also choose to appeal against the decision or alternatively re-apply for accreditation after twelve (12) months.

Appeals must be made within one (1) calendar month of the date of notification of the applicant being unsuccessful. Appeals shall be addressed to "APER appeals" and sent to the AIRAH Registrar.

Appeals should detail:

1. The reason the applicant believes the Assessor's decision warrants appeal, specifically how the applicant believes the Assessor has failed to properly apply the AIRAH Membership and AIRAH Professional Engineer Register By-laws to the consideration of their application.
2. Any additional information which could further support the application.

Applicants are permitted to make one appeal per application. If unsuccessful, the applicant is encouraged to reapply in twelve (12) months using the procedure highlighted in Section 3.10.

The AIRAH Registrar shall advise the Assessment Committee of every appeal. The Assessment Committee shall consider the substance of any appeal and shall, if the appeal has merit, appoint a different assessor in consultation with the AIRAH Registrar to assess the appeal.

If the Assessment Committee does not consider that the appeal has merit, the Committee shall afford the applicant an opportunity to provide a verbal presentation to the Assessment Committee to further support the appeal. If the appeal is not upheld, the Assessment Committee shall communicate the determination to the applicant.

3.14 Retention of continuing eligibility

To remain on the AIRAH Professional Engineer Register, the successfully assessed engineer is required to maintain adherence to APER Code of Professional and Ethical Conduct; continue to practice as a professional engineer; and meet the 150-hour continuing professional development requirements over a three (3) year period. Accreditation recommendations for registration are valid for three (3) years after the conferral date, as set by the Assessment Committee. To retain APER status, the engineer must provide current details of employment and continuing professional development before the expiration date. The engineer must submit a written proposal consisting of:

1. Current contact details and employment position.

2. A detailed resumé highlighting three (3) years of work experience and competence in the engineering discipline in which the engineer has been assessed and wishes to continue accreditation.

3. One professional referee who can support the work experience and competence claims. This referee need not be a supervisor.

4. A record of continuing professional development averaging no less than fifty (50) hours per annum over three (3) years. An assessor will review all claims made.

An assessor appointed by the AIRAH Registrar will verify the submission and make a recommendation on the outcome to the AIRAH Registrar. The AIRAH Registrar will make the final decision on the applicant's continued eligibility to remain on the AIRAH Professional Engineer Register.

3.15 Expiry of eligibility

Persons recommended for registration must provide evidence of continuing eligibility no later than three (3) months after the expiration date. If they fail to provide evidence within this timeframe, their accreditation on the AIRAH Professional Engineer Register will lapse and they will need to undergo the entire registration process to be re-accredited.

3.16 Cancellation of registration

Registration on the AIRAH Professional Engineer Register shall be cancelled by the Assessment Committee when the successfully assed engineer:

1. Provides written notification they no longer wish to be on the AIRAH Professional Engineer Register.
2. Fails to provide details required in section 3.15 within the timeline outlined in section 3.15.
3. Is not recommended for continuing eligibility by the assessor appointed in section 3.15.
4. Is found to have engaged in unprofessional conduct through the processes detailed in section 3.17.
5. Is no longer paying their registration fee.

After cancellation, an applicant's rights and privileges of accreditation shall cease. The person must not represent themselves as being on the AIRAH Professional Engineer Register. Notification of the cancellation shall be provided by the Accreditation Committee. This will state the reasons for cancellation, as well as any further obligations of the individual.

3.17 Breaches and disciplinary action

The Assessment Committee will investigate any complaints and/or allegations of unprofessional conduct made against an individual on the APER. In investigating any complaints and/or allegations of unprofessional conduct made against an individual on the APER, the Assessment Committee may seek advice from independent individuals who can validate the nature of the misconduct. The identity of individuals reporting or validating misconduct shall be held in strictest confidence. The Assessment Committee may terminate an individual's registration if the outcome of the complaint's investigation finds the member in breach of:

1. APER Code of Professional and Ethical Conduct;
2. These By-laws;
3. Any other requirements of the Assessment Committee.

3.18 Discipline of mechanical engineer – HVAC&R building services

The mechanical engineer – HVAC&R building services discipline highlights the criteria used by AIRAH in the assessment of applicants who are applying for accreditation. Examples of experience common in this field of engineering that may be used toward assessment are provided, however, these are not exhaustive or comprehensive. AIRAH understands many other examples from specialist areas exist, in addition to those presented. Thus, other examples of work experience shall be considered in the assessment.

3.19 Scope of activities and work experience

Mechanical engineer – HVAC&R building services are those engineering professionals who plan, design, install, commission, operate, tune, and maintain mechanical machines and systems in the built environment that include air conditioning plants, ventilation systems, chillers, cooling towers, refrigeration systems for food production and preservation applications, transport cooling systems, fire and smoke systems, medical facilities, and control systems. Applicants shall have a minimum of five (5) years' work experience in areas such as:

- Planning, designing, and supervising the manufacturing, installation, and commissioning of air conditioning and ventilation systems
- Managing maintenance of existing mechanical building services plant and equipment
- Interpreting and applying relevant Australian legislation, building codes, Australian standards, and international standards during the design of HVAC&R systems
- Participating in detailed engineering design involving application of theory; mathematical calculations; writing of specifications; and drafting of mechanical drawings specific to mechanical components, machinery, and plant
- Performing computer-simulated building information modelling and analysing resultant data on reaction of key mechanical systems, subjected to thermal load and acoustic performance (including heat load calculations, energy simulations, and computational fluid dynamics)
- Adhering to applicable mechanical engineering processes and practices to ensure realisation of products and services
- Evaluating mechanical design solutions against the requirements of original specifications
- Supervising paraprofessionals, technicians, and mechanical tradespeople during the manufacturing, installing, and commissioning of HVAC&R systems
- Assessing the condition of existing machinery and systems and writing reports highlighting recommendations on safety, maintenance, remaining life expectancy, and replacement
- Writing plans, standards, procedures, work instructions, and forms

- Reviewing and proposing amendments to relevant Australian legislation, Australian standards, and international standards
- Investigating and documenting the causes of mechanical failure to provide subsequent recommendations on how to eliminate future occurrences
- Specifying, evaluating, and purchasing engineering products and services
- Improving existing engineering products, processes, and services
- Creating an awareness of new mechanical technology and, where applicable, attaining intellectual property rights
- Liaising with architects and/or civil, structural, hydraulic, vertical transportation, and electrical engineers to ensure optimum integration of mechanical systems with other services.