ENGINEERS
AUSTRALIA

Victorian state registration

Self-assessment guide for holistic assessments (Clause 9.3)

September 2023 v2

Table of contents

Introduction

1. This guidance document has been developed to assist you to self-assess and collate evidence to support a holistic assessment application to demonstrate that your combination of qualifications, experience and competencies are consistent with the *Professional Engineer Registration Act 2019* (PER Act) for registration of Professional Engineers in Victoria, Australia.

2. Engineers Australia has been approved as an Assessment Entity by the Business Licensing Authority (BLA) to assess the qualifications, experience and competencies required for the registration and endorsement of professional engineers in Victoria. The requirements for Assessment Schemes are described in the Guidelines for applying for approval of assessment schemes (Guidelines).

3. Engineers Australia's Assessment Scheme includes three assessment pathways:
   - National Engineering Register (NER) assessment pathway (Engineers Australia members only)
   - Chartered assessment pathway (Engineers Australia members only)
   - State registration eligibility assessment pathway (non-members of Engineers Australia only)

4. For each of the three assessment pathways there are two components of the assessment.
   - The first component is an 'Entry to Practice' assessment in which the acceptability of your qualifications is determined.
   - The second component is an 'Independent Practice' assessment in which the acceptability of your experience and competency is determined.

5. If you are not a member of Engineers Australia and wish to be assessed by Engineers Australia, you can apply to be assessed under the state registration eligibility assessment pathway. The BLA's Guidelines for applying for approval of assessment schemes specifies that for each of the prescribed areas of engineering for which you are applying through the state registration eligibility pathway, you must have successfully completed either:
   - a relevant Washington Accord accredited under-graduate Bachelor of Engineering degree or post-graduate Master of Engineering degree
   - a relevant non-Washington Accord academic qualification that has been assessed as substantially equivalent to an accredited Washington Accord under-graduate Bachelor of Engineering degree by Engineers Australia
   - a combination of education and experiential learning which demonstrates substantial equivalence with the competencies and outcomes of a Washington Accord undergraduate Bachelor of Engineering degree.

6. If you will be seeking to use the combination of education and experiential learning to comply with the BLA mandated qualification requirement, this document is for you. It will guide you through the process of applying to Engineers Australia to have your combination of academic study and experiential learning holistically assessed.

7. If you have a Washington Accord accredited qualification, or a non-accredited qualification which has been assessed by Engineers Australia as equivalent to an accredited Washington Accord qualification, then this document is not for you. The equivalence of your qualification may have been previously assessed by Engineers Australia in a Migration Skills Assessment or a Stage 1 (Eligibility for Membership) assessment. This document is for those applicants who are seeking to rely on a combination of education and experiential learning in lieu of a qualification. This pathway has been referred to as a competency pathway, holistic assessment or a Clause 9.3 assessment[1]. Also, if you are a member of Engineers Australia, this document is not for you. If you are an Engineers Australia member you should refer to Stage 1, NER or CPEng assessment requirements.

1 Guidelines for applying for approval of assessment schemes

Washington Accord benchmark

8. The Guidelines for applying for approval of assessment schemes specifies the benchmark qualification requirement for registration as a professional engineer as a Washington Accord qualification. A Washington Accord qualification is an academic engineering qualification that has been accredited by a signatory to the Washington Accord. A Washington Accord qualification is acknowledged by signatories as the foundation for the practice of engineering at the professional level.

9. Engineers Australia was a founding signatory of the Washington Accord in 1989, and accredits engineering programs to this benchmark. Signatories recognise graduates of Washington Accord accredited programs as having achieved substantially equivalent outcomes from their qualifications.

10. The Engineers Australia Stage 1 Competency Standard for the Professional Engineer align to the Washington Accord Graduate Attributes. It is these Stage 1 competencies that Engineers Australia uses as the benchmark to assess individuals that have not completed a Washington Accord accredited qualification.

11. A typical Washington Accord qualification will have completion of year 12, including a combination of mathematics, physics, and chemistry as a pre-requisite requirement. Some universities offer pathways for those without the necessary pre-requisites. Washington Accord programs are typically four to five years in duration. In Australia, the majority of accredited programs are four-year Bachelor of Engineering (Honours) programs at the Australian Qualification Framework (AQF) Level 8. There are also accredited Entry to Practice Master of Engineering programs (AQF 9), which support a more diverse range of underpinning qualifications.

12. Accredited Washington Accord programs are structured to provide a breadth of underpinning foundational knowledge for an engineering discipline. This underpinning knowledge is then built upon to develop a depth of expertise to solve complex or open-ended problems. It is the both the breadth and complexity that differentiates a professional engineer qualification from engineering technologist or engineering associate qualifications.

13. The Stage 1 Competency Standard includes 16 Elements, and each of these Elements are supported by Indicators of Attainment. These suggested indicators are intended to provide insight to the breadth and depth of ability expected for each Element of Competency and thus guide the competency demonstration and assessment processes.

14. Applicants seeking to have a combination of education and experience assessed against the Stage 1 Competency Standard will be required to provide evidence for each of the 16 Elements of Competency.

Self-assessment matrix

15. A self-assessment matrix (Appendix A) has been developed to enable you to assess how your combination of education and experiential learning contribute to the achievement of the Stage 1 Elements of Competency. Formal qualifications enable learning to be demonstrated through assessment. Experience alone will not demonstrate the Elements of Competency. It is the learning that has been gained from that experience which demonstrates the Stage 1 Elements of Competency. For example, you will need to provide evidence that in one or more of your engineering roles, you've applied a systematic approach to the conduct and management of engineering projects (Element PE2.4).

16. Some of the competencies can more readily be demonstrated through experiential learning while other competencies can more readily be demonstrated through formal education. Engineers Australia's experience of having conducted these holistic assessments for many years has been that an applicant is unlikely to have developed, through workplace learning alone, the range and depth of Elements PE1.1 and PE1.2 required of a Washington Accord course graduate. Competency in these two Elements at the required level of complexity has proven to be difficult to develop in most workplaces. Many applicants have found that there is a need to have studied mathematics and physical sciences at a tertiary level to demonstrate these two elements.

17. The self-assessment at Appendix A may assist you to determine if you have a possibility of submitting a successful application. To complete the self-assessment, it is recommended that you:

    - review the Stage 1 Competency Standard for the Professional Engineer, including the suggested indicators of attainment (noting that the indicators are intended to provide insight rather than prescribe a requirement). For each of the 16 Elements in the table at Appendix A you should read the text in the second column to understand what the Element requires
    - compare your qualifications with a range of engineering qualifications accredited at the level of the Washington Accord in the Area of Engineering sought. The comparison will provide an indication of the range and academic level of courses within a program. Most Australian engineering programs will have program outlines on their website, and an overview of each course within the program. View the list of Engineers Australia accredited programs
    - consider what additional professional development, courses and qualifications you have completed. Were these formally assessed and/or what evidence do you have of the learning?
    - review your CV and reflect on the nature and range of positions held and work undertake
    - identify projects and evidence of work that could be used to demonstrate the competency Elements. You should decide what, if any, evidence you can provide to the Assessor to demonstrate that you have demonstrated the Element at the required level of complexity.

Gap analysis

18. A gap analysis using the self-assessment matrix will assist prospective applicants determine where additional evidence is required. All 16 Elements of Competency are required to be demonstrated at the Washington Accord graduate level.

19. Note that each applicant is individual and is assessed on a case-by-case basis. Typical gaps seen in assessments include:

    - Lack of underpinning knowledge, or breadth within underpinning knowledge
    - Insufficient development of complexity and/or in-depth expertise and research in an area (i.e. Honours level knowledge and critical thinking)
    - Knowledge which is too narrow within its application. This may result in a focus on a sub-discipline or area of application rather than the broader engineering discipline or Area of Engineering being sought).

20. The above gaps can be generalised to typical academic career pathways:

    - *Three-year and four-year engineering programs not accredited under the Washington Accord* – Programs may be non-accredited for several reasons. It may be because they were completed in a country which is not a signatory to the Washington Accord or because their structure does not meet the Washington Accord benchmark. Engineers Australia uses Country Education Profiles[2] to compare programs. This is particularly the case for countries with different tiers of tertiary providers. Or, it may be that the programs have not been recognised. For example, three-year Bachelor of Engineering (Honours) programs in the United Kingdom are not recognised by the Washington Accord and the Engineering Council UK (ECUK) have not sought for them to be recognised at the Engineering Technologist/Sydney Accord level. The ECUK is a signatory to the Washington Accord and graduates from these programs are required to demonstrate further learning prior to the being considered equivalent to the Washington Accord accredited four-year Master of Engineering. These three-year programs are often the first three years of a four-year Master of Engineering and can be combined with a recognised one-year Masters to be recognsied at the Washington Accord level. Some individuals can demonstrate this additional level of depth and complexity through workplace learning, but it depends on the roles undertaken and the knowledge obtained.
    - *Master of Engineering programs and other post-graduate engineering programs not accredited under the Washington Accord* – These programs can be offered by a variety of education providers and are recognised within a formal qualification framework (e.g. in Australia, recognised by TEQSA). The scope of these may be intended to specialise or extend sub-discipline knowledge and these can support demonstration of underpinning knowledge. Other Masters of Engineering programs and other post-graduate engineering programs are targeted at business, engineering or project management. These programs, while valuable, may not contribute directly to all Stage 1 Competency Elements. Typically, the reason why they are not also recognised through professional accreditation (e.g. Washington Accord) is that they have not been designed as foundational (entry to practice) qualifications. The extent to which these qualifications, together with other qualifications held and evidence of experiential learning, demonstrate Stage 1 Competency Elements will require individual assessment.
    - *Bachelor of Engineering Science / Bachelor of Technology* – These programs have typically been designed for engineering technologist roles within an engineering team, with an

2 https://internationaleducation.gov.au/services-and-resources/services-for-organisations/Pages/Services-for-organisations.aspx

emphasis on the application of developed technologies and standards. When they are internationally recognised, they are accredited at the Sydney Accord level. The programs have a typical duration of three years, at an AQF7 level. The programs often have different entry requirements to a Washington Accord program and will not have the same breadth and depth of underpinning knowledge. Depending on the roles you have held, you may be able to demonstrate that your experiential learning has provided breadth within the Area of Engineering sought at the appropriate level of complexity. These programs can readily be combined with further academic study.

- *Bachelor of Science / Bachelor of Applied Science* – Scientifically based qualifications will often be able to demonstrate underpinning knowledge for engineering disciplines (Elements PE1.1 and PE 1.2) and can develop a similar volume of learning as the first three years of an engineering qualification. This is particularly the case for programs requiring mathematics, physics, chemistry or geology. Graduates from these programs who undertake further study in an area of interest related to engineering (honours, masters or postgraduate) can also demonstrate depth of knowledge within a specialised area (PE1.3 -PE1.4). The engineering gap for these programs relate to engineering application (PE2.1 – 2.4), norms (PE1.5 – PE 1.6), and attributes (PE3.1 – PE3.6). These gaps can be filled through workplace learning when an individual can demonstrate roles within engineering teams. Sometimes, this is not evident if the contribution to the team is the application of science.

- *Advanced Diploma of Engineering / Associate Degree in Engineering* – These programs have typically been designed for engineering associate roles in the engineering team, with an emphasis on practical application of particular technology, standards or codes. These roles can be highly specialised. The programs are typically two-years in duration and at the AQF 6 level. If recognised internationally, they will be at the Dublin Accord level, The programs typically do not have the same depth or breadth of underpinning knowledge required for the Washington Accord benchmark. Some programs may be designed as pathway programs for other engineering qualifications with credit given for part of the program. If you hold a qualification which is in engineering or is closely related to or associated with engineering, and typically takes two or more years of full-time study to attain, then perhaps your academic study may be able to be used to demonstrate a range of application and attribute competency elements. The gap between these programs and the Washington Accord program is difficult to bridge without further academic study.

- *Vocational training / Trade Certificate* – If you hold a Trade qualification, even one which is in engineering or is closely related to or associated with engineering, then your academic study alone will often be found to be unable to be used to demonstrate the Stage 1 Competency Elements.

Making an application

21. In assessing whether you have demonstrated the required competencies and outcomes under this holistic assessment, Engineers Australia's Assessor will take into consideration any:
    - academic qualifications, courses and training that you have undertaken
    - professional memberships you have attained and the assessment outcomes to achieve those memberships
    - professional engineering experience you have gained.

22. For any of the Elements, the evidence you provide may comprise any combination of academic study and experiential learning. Where your evidence is academic study, you should describe the course content (subjects, learning outcomes and results obtained). Where your evidence is experiential learning, you should describe what the work activity was, and specifically how the work activity demonstrates the Element. You should provide a copy of the work activity output (e.g. reports, calculations) where possible, with evidence it was your personal work.

23. Engineers Australia will use two or more of the following methods to assess your competence:
    - evidence from work experience
    - evidence of completion of top-up courses
    - interviews
    - professional referee checks
    - evidence of qualifications held.

24. You will be required to provide:
    - photo identification
    - copies of all qualifications held, including a transcript of results as well as a testamur
    - a CV (with the name of a referee who confirms the experience)
    - evidence of competency in the English language at the Competent English level as defined by the Australian Department of Home Affairs (e.g. IELTS Band 6)
    - three career episode reports
    - a completed Self-Assessment matrix (see Appendix A)
    - evidence of any professional registration held.

25. Much of the above information will also be used to assess the second component of the state registration eligibility assessment application, relating to Independent Practice (refer paragraph 4). This second component is based on your workplace experience and requires demonstration of the following five Elements of Competency from the Engineers Australia Stage 2 Competency Standard for the Experienced Professional Engineer:
    - Element 1 – Deal with ethical issues
    - Element 2 – Practice competently
    - Element 4 – Develop safe and sustainable solutions
    - Element 6 – Identify, assess, and manage risks

- Element 13 – Engineering knowledge – according to your area of practice including a knowledge of standards and practices.

Further information is available in the Engineers Australia Assessment Scheme.

What if my holistic assessment is unsuccessful?

26. Should an assessment be unsuccessful, and you wish to address the identified gaps in areas of competency, then a number of options are available. These options will need individual consideration, based on the identified competency gaps and/or evidence of competency. In most cases these options will be structured.

27. Option 1 – Gain additional qualifications accredited under the Washington Accord: This option to complete a Washington Accord accredited qualification may be appropriate for those seeking to move between qualification levels. The Engineers Australia accredited program directory identifies these Washington Accord accredited programs and different universities will suit different needs. Note that there are many signatory countries to the Washington Accord, and a Washington Accord accredited qualification from any of the Washington Accord signatory countries would be satisfactory.

28. Option 2 – Gain additional qualifications which are not accredited under the Washington Accord: This option will only be suitable for some. This may include programs which are not designed as foundational qualifications and specialise in advanced engineering knowledge. For example, there are many Masters of Engineering programs and other post-graduate engineering programs which enable specialisation or extend sub-discipline knowledge such as renewable energy, materials, biological or transport engineering. While these and other similar programs may not have professional accreditation (e.g. Washington Accord), they still may be referred to as an accredited or recognised qualification, with the accreditation provided by an education regulatory body (e.g. in Australia, TEQSA). These programs may address identified gaps in underpinning knowledge and would require individual assessment. Programs that relate to engineering management or project management, may support the demonstration of some of the Stage 1 competency elements but are unlikely to address gaps in underpinning knowledge or depth of knowledge.

29. Option 3 – Undertake bespoke professional development: This option may include study that does not result in the award of qualification and/or forms only part of a qualification. In this option you would select and complete a range of topics or courses that could complement your existing evidence to demonstrate the Stage 1 Competency Elements at the level of a Professional Engineer. Further advice may be required to determine if the selected courses are likely to address the competency gaps.

30. Option 4 – Targeted experiential learning: Once you have identified which Stage 1 Competency Elements require further development, you could actively seek work experiences that allow you to fill the competency gaps. For example, you may need to find opportunities outside of your usual work to demonstrate a breadth of underpinning knowledge. Or, you may need to seek a research activity to demonstrate depth in a specific area. Or, you may seek to work with particular engineers to develop competencies related to design processes.

31. If you receive an assessment outcome that you have not yet demonstrated the 16 Stage 1 Competency Elements, you may appeal against that assessment outcome. The outcome will typically include feedback as to why your outcome was unsuccessful. Please send an email to vicregistration@engineersaustralia.org.au for information about making that appeal. Appeals may require additional information to be presented. Appeals can be made on several grounds and should be made within 30 days of receiving an outcome.

Further questions?

32. For information about Engineers Australia's assessment for registration under the PER Act, contact the Registration team at:

Website: Engineers Australia Statutory Registration website for Victoria

Email: vicregistration@engineersaustralia.org.au

Phone: +61 2 6270 6555 or toll free: 1300 653 113

Appendix A

State registration eligibility holistic assessment self-assessment matrix

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE1 Knowledge and skill base				
PE1.1 **Comprehensive, theory-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline**	Have a broad range of university level courses relevant to the discipline been completed. For example (but not limited to), Statics, Dynamics, Electric Circuits, Fluid Mechanics, Strength of Materials, Geology, Physics, Thermodynamics etc.? OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Qualifications and transcripts Evidence of relevant CPD Project reports Design documents		
PE1.2 **Conceptual understanding of the mathematics, numerical analysis, statistics and computer and information sciences which underpin the engineering discipline**	Have a broad range of university level courses in mathematics, numerical analysis, statistics and information sciences relevant to the discipline been completed? For example (but not limited to), First year university mathematics, computer programming, optimisation techniques, statistics, MatLab, data analytics? OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Qualifications and transcripts Evidence of relevant CPD Project reports Design documents		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE1.3 **In-depth understanding of specialist bodies of knowledge within the engineering discipline**	Have honours level advanced engineering courses or specialisations, relevant to the discipline been completed? For example (but not limited to), Structural Analysis, Steel Structures, Concrete Structures, Electrical Energy Conversion, Power Systems Analysis and Control, Heat Transfer, Mechanical Vibrations etc.? OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Qualifications and transcripts Evidence of relevant CPD Publications Project reports / thesis Design documents		
PE1.4 **Discernment of knowledge development and research directions within the engineering discipline**	Have the Continuing Professional Development been consistent and regularly updated with the activities relevant to the engineering discipline? AND/OR Interprets and applies knowledge from the selected research literature? AND/OR Have relevant university courses been completed? For example (but not limited to), Research Methods for Engineers.	Qualifications and transcripts Evidence of relevant CPD Publications / literature reviews Project reports / thesis Design documents		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE1.5 **Knowledge of contextual factors impacting the engineering discipline**	Applicant has a broad knowledge of the engineering discipline. Is often involved in feasibility studies, impact analysis, integrated reporting, may work with other disciplines to appreciate context etc. Have a broad range of university courses relevant to the engineering but outside of the specialization been completed? For example (but not limited to): Water Engineering, Transport Engineering, Electronics Engineering, Embedded Systems, Mechatronics etc. AND/OR Identifies and understands interactions between engineering systems and people? AND/OR Is aware of the founding principles of human factors relevant to the engineering discipline?	Qualifications and transcripts Project reports Feasibility studies Risk analysis, Integrated reporting Non-engineering qualifications that provide context		
PE1.6 **Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline**	Has the knowledge of the relevant codes and can demonstrate the accurate use of such codes. Is able to explain sustainability practices relevant to the engineering discipline and can demonstrate the responsibility for multiple aspects of a project.	Project reports Feasibility studies Risk analysis Integrated reporting / triple bottom line reporting		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE2 Engineering Application Ability				
PE2.1 **Application of established engineering methods to complex engineering problem solving**	Applicant has the knowledge of the engineering methods relevant to the engineering discipline. Demonstrates the ability to define the problem and to choose a resolution method. Proposes innovative solutions to engineering problems that may not have obvious solutions. Can a range of established engineering methods be demonstrated through Professional Development activity or in the workplace? OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Design reports Project reports Calculations / tables / standards Positions held (position description / responsibility) Professional development Qualifications and short courses		
PE2.2 **Fluent application of engineering techniques, tools and resources**	Applicant has knowledge and ability to apply of multiple, diverse engineering techniques relevant to the engineering discipline. Has thorough understanding of the underlying principles based on which techniques and tools work. Have the university courses relevant to the underpinning knowledge on which Simulation Tools/Programs are based, been completed? For example (but not limited to): Finite Element Analysis, Electrical Circuits, Heat Transfer, Fluid Mechanics etc. OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Design reports Project reports Calculations / tables / standards Use of equipment and tools including software (CAD, simulation, calculation, machine learning) Minutes of technical meetings Professional development Qualifications and short courses		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE2.3 **Application of systematic engineering synthesis and design processes**	Applicant is able to design autonomously, generates design information, provides synthesis results. Demonstrates the ability to design innovative solutions. Have the university courses relevant to Professional Engineering Practice and Engineering Design applicable to the engineering discipline been completed? OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Design reports Project reports Calculations / tables / standards Use of equipment and tools including software (CAD, simulation, calculation, machine Learning) Minutes of technical meetings		
PE2.4 **Application of systematic approaches to the conduct and management of engineering projects**	Applicant can define a work breakdown structure and can complete project management processes required of a management plans or systems. Have university courses relevant to Project Management been completed? OR Is there evidence that fundamentals from these types of courses have been acquired and used across a diverse (and complex) selection of engineering projects?	Project reports Project management plan Additional quals Risk assessment plan Positions/responsibility held Project management professional development or qualifications		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE3 Professional and Personal Attributes				
PE3.1 **Ethical conduct and professional accountability**	Applicant has a knowledge of and practice within the code of ethics. Can identify ethical dilemmas and potentially solve with support and according to the level of responsibility.	Minutes of meetings Email communications Project reports Performance review Exposure to ethical dilemma Character referral		
PE3.2 **Effective oral and written communication in professional and lay domains**	Range of communication abilities including consideration of different audiences and stakeholders. Demonstrates. Has awareness of communication challenges arising from cultural diversity.	Presentations Author of documentation and reports Emails Technical reports		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE3.3 **Creative innovative and proactive demeanour**	Applicant pro-actively contributes to innovation. Is committed to professional development. Seeks innovative solutions. Has undertaken university level research and design projects.	Design documentation Project reports Character referral		
PE3.4 **Professional use and management of information**	Applicant demonstrates the ability to use a document control system, refers sources appropriately.	Referencing (use of standards) Document management system		

Competency element	Questions	Possible methods of providing evidence	What evidence do I have of this element?	Is competency demonstrated? (Yes/No/Potentially)
PE3.5 Orderly management of self, and professional conduct	Applicants demonstrates reliability and commitment to CPD	Character referral Communication Performance review reports Professional development plan		
PE3.6 Effective team membership and team leadership	Applicant demonstrates leadership potential, is able to operate effectively within the team. Engages with different stakeholders.	Character referral, communication Performance review reports Professional development plan Position description		

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