

ENGINEERS  
AUSTRALIA

# MSA Booklet

March 2020



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# Section A

## Introduction

# Introduction

Engineers Australia is the designated assessing authority for most engineering occupations.

## 1. Occupational Categories in Engineering

Engineers Australia recognises 3 occupational categories within the engineering practice in Australia:

- Professional Engineer
- Engineering Technologist
- Engineering Associate

For migration purposes, the additional category of Engineering Manager is also recognised.

### PROFESSIONAL ENGINEER

The required academic qualification is an Australian 4 year Bachelor degree in engineering at a University following 12 years of schooling or comparable education.

The Professional Engineer:

- Focuses on overall systems
- Pursues engineering opportunities in a holistic way, taking environmental, community & social issues into account
- Applies systematic approaches to the conduct and management of engineering projects
- Applies systematic engineering synthesis and design processes
- Applies established engineering methods to complex engineering problems
- Applies leadership & management skills

(Please refer to Appendix Page 31 for more information)

### ENGINEERING TECHNOLOGIST

The required academic qualification is an Australian 3 year Bachelor of Technology degree in engineering following 12 years of schooling or comparable education.

The Engineering Technologist:

- Focuses on interactions within the system
- Applies established engineering methods, techniques, tools and resources within the technology domain

- Advances engineering technology

(Please refer to Appendix Page 37 for more information)

### ENGINEERING ASSOCIATE

The required academic qualification is an Australian 2 year Advanced Diploma or Associate Degree in engineering following 12 years of schooling or comparable education.

The Engineering Associate:

- Focuses on specific elements of the system
- Operates within codes and applies established practices and procedures
- Provides technical support to construction managers and engineering professionals in research, design, manufacture, assembly, construction, operation and maintenance of machines and equipment, facilities, distribution systems and installations
- Assists in resource estimation and site inspection
- Prepares, interprets, inspects and revises drawings, plans, diagrams, designs, maps and charts

(Please refer to Appendix Page 42 for more information)

### ENGINEERING MANAGER

The required academic qualification is generally a Bachelor degree or higher in engineering or in an engineering related field following 12 years of schooling or comparable education.

The Engineering Manager:

- Formulates engineering strategies, policies and plans and their direction
- Administrates and reviews engineering operations for an organisation

Applicants should note that this occupation is not an engineering occupation, but rather belongs to the Managers ANZSCO group. Consequently, a positive outcome will not allow automatic membership with Engineers Australia.

**Please Note:** It is mandatory for Engineering Manager applicants to apply for Relevant Skilled Employment Assessment.

(Please refer to Appendix Page 47 for more information)

## 2. English Language Requirements

All applicants applying to have their skills assessed by Engineers Australia are required to provide evidence of their English language competency through one of the following tests:

### IELTS™

Engineers Australia accepts both the General and Academic versions of the test.

### TOEFL®

Engineers Australia accepts the TOEFL iBT® English language test.

### PTE ACADEMIC

Engineers Australia accepts the Pearson PTE ACADEMIC test.

For PTE ACADEMIC, you must send your score through Pearson's online secure portal to "Engineers Australia - Admissions (the one with 'Barton' address)" so that we can verify your result.

Please refer to Pearson's website which can be found [here](#) for the detailed instructions of how to do it.

The following table indicates the minimal scores for each module:

|           | IELTS™ | TOEFL iBT® | PTE ACADEMIC |
|-----------|--------|------------|--------------|
| Listening | 6      | 12         | 50           |
| Reading   | 6      | 13         | 50           |
| Writing   | 6      | 21         | 50           |
| Speaking  | 6      | 18         | 50           |

Applicants will need to upload test results as well as enter Test Report Number/Registration Number/Score Report Code.

IELTS™, TOEFL iBT® and PTE ACADEMIC results must not be more than 2 years old at the time your application is submitted.

The following applicants may be exempted from the requirement to provide an English language test:

- Applicants who have completed an Australian undergraduate engineering qualification or a two year Master degree (92 weeks full time) or PhD program at an Australian university. Documentary evidence of successful completion of the Australian qualification is required for exemption on this basis;
- Applicant who is a citizen of and holds a valid passport issued by the United Kingdom, the United States of America, Canada, New Zealand or the Republic of Ireland

**Please Note:** Exemptions are determined on a case by case basis.

For further information on English language tests, please refer to the following websites:

[IELTS™](#)

[TOEFL®](#)

[PTE ACADEMIC](#)

#### Please Note

**Providing invalid English Language Test Results and/or failing to demonstrate English Language Competency and/or failing to present English Language Test Results in the original application may result in immediate unsuccessful outcome.**

### 3. Pathways for Migration Skills Assessment

There are 6 application pathways for migration skills assessment:

#### a) Accredited qualifications (refer to Section B)

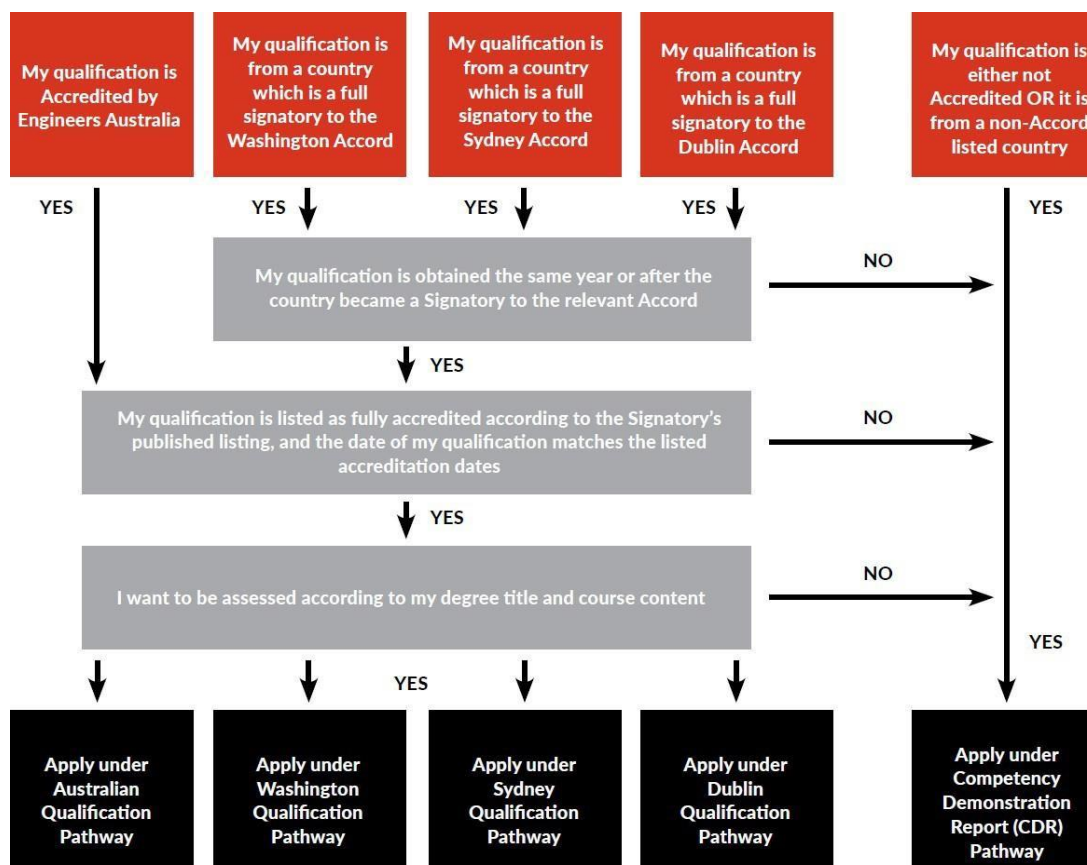
- 1) Australian Qualifications
- 2) Washington Accord Qualifications
- 3) Sydney Accord Qualifications
- 4) Dublin Accord Qualifications
- 5) Other Recognised Qualifications

#### b) Non-Accredited qualifications/Engineering Managers (refer to Section C)

- 6) Competency Demonstration Report (CDR)

The pathways to recognition are shown in the diagram below. Please refer to Sections B and C for detailed instructions on how to determine the correct pathway for your application.

**Engineers Australia does not provide any pre-assessment services. It is the applicant's responsibility to identify the correct pathway for their qualifications.**



## 4. Applying Online

Applicants are required to submit an online application for Migration Skills Assessment. Please refer to the [MSA Online Application User's Guide](#) to ensure applications are submitted correctly. If you are unable to apply online, please contact us.

To initiate an online application you must have an individual EA ID number.

If you are already a member of Engineers Australia or have a previous application with us, note that your EA ID number is the same as your CID number or your membership number. If you have an EA ID/CID/Membership number you will need to register for a password via the Engineers Australia [myPortal](#).

If you do not have an EA ID/CID/Membership number, you will need to register for an EA ID through [myPortal](#). Once you have received your EA ID, you can register for a password via the Engineers Australia [myPortal](#).

Prior to lodging and paying for your application, ensure that your contact details and billing address on MyPortal are correct to ensure that you are charged the correct assessment fee.

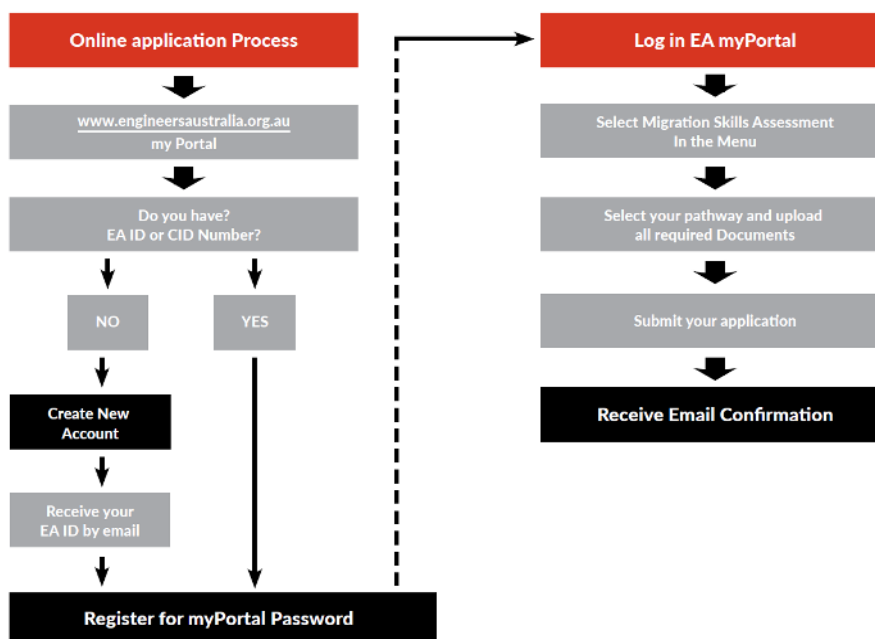
Once you have logged onto myPortal, click on the "Menu" button on the top right and select "Migration Skills Assessment" to access MSA system. You will then be able to start, save, resume and submit your application.

It is your responsibility to provide any supporting documents for your application.

Once you have submitted your application, an email notification including your EA ID number and application number will be sent to your registered email address confirming the successful submission of your application. Your application will be placed in the processing queue upon payment of the fee. If you are using a credit card, the fee will be processed immediately and a receipt will be sent to you by email. If you are paying by invoice, a receipt will be sent to you once the payment has been processed. Please follow the steps as shown in the diagram below.

### 4.1. Specifications for uploaded documents:

- All uploaded documents must be colour scans of original documents and must have a resolution of at least 300 dpi.
- Where documents are not in the English language, you must upload colour scans of the documents in the original language as well as English translations. All translations must be conducted by an authorised translator. The registered ID, name, status and contact details of the translator must be provided on the English language translation.





## 5. Using a Migration Agent

If you are using an agent, you must provide your agent with your EA ID/CID/membership number. If you do not yet have a number, your agent will be able to create one for you. Your agent will then initiate an application on your behalf. If you lodge an application using a Migration Agent, all communication to Engineers Australia must be made via your agent.

Note that your agent does not need to register for a password on your behalf and you do not need to provide details of your password to them.

Migration agents must read the information provided for agents on the Engineers Australia website. This can be found [here](#).

## 6. Assessment Fees and Payments

Current assessment fees are available on our website.

Note: Extra fees apply for the additional services. A discount is applicable when standard assessment and additional service applications are submitted at the same time. If an application for additional services is submitted after the standard assessment application, the full fee of each additional service applies.

The following methods of payment are acceptable:

- Credit Card (Visa, MasterCard and American Express)
- BPAY – You must request an invoice for the BPAY details (Biller Code and Reference Number)

Alternative methods of payment may be available upon request.

The assessment fee is not refundable.

Goods and Service Tax (GST):

- Applicants who are living in Australia MUST pay 10% GST on the application fee.
- Applicants living overseas, who lodge an application from overseas, are NOT required to pay the GST.

- Applicants living overseas, who lodge an application for assessment through an agent in Australia are NOT required to pay the GST.

## 7. The Assessment Process

You will be able to check the status of your application online by logging into Engineers Australia's myPortal.

Should your assessor require further information, a notification will be sent to you by email informing you that you have a task to complete in the system. You will need to log into Engineers Australia's myPortal for details of the request and to submit any additional documentation.

### Assessment Turnaround Time

The turnaround time for processing assessments can vary, depending on the number of incoming applications. Refer to the website for regular updates. Please DO NOT contact Engineers Australia within this time frame as this may delay processing time for all applications. Please check the Fast-Track Migration Skills Assessment section of the Engineers Australia website for the current MSA turnaround times. This can be found [here](#).

**Your response to any request from this office must be actioned within the specified time frame to avoid your application being finalised as unsuccessful.**

## 8. Assessment Outcome

If the assessment is successful, an assessment outcome letter suitable for migration purposes will be sent to you by email.

The outcome letter can be verified online by entering the application details [here](#).

**Please Note:** The assessment letter has no expiry date from the perspective of Engineers Australia. However, we are aware that the Department of Home Affairs validity policy may vary from this. As such, if the Department of Home Affairs requests an updated letter, please contact Engineers Australia for instructions.

## 9. Reviewing/Appealing the Assessment Outcome

If you are not satisfied with the assessment outcome you can proceed with the review process.

**Step 1:** Apply for a Review. This must be made within 3 months of the date of the original assessment outcome letter. To lodge a review you must submit the form “Application for Review of Assessment Outcome” and pay the Review fee. You may include a cover letter explaining your reasons for reviewing the assessment outcome. No new information can be presented. Applicants that are not satisfied with the outcome of the Review may apply for an Appeal.

**Step 2:** Apply for an Appeal. An application for an appeal may only be submitted **after** a Review outcome is received. This must be made within 6 months of the date of the original assessment outcome letter. To lodge an appeal you must submit the form “Application for Appeal of Assessment Outcome” and pay the Appeal Fee. The outcome of the Appeal is **FINAL** in the review process.

- Applications and fees for the review process can be found [here](#). Download the form and submit the form with your review application.
- Please check under the “After Your Assessment” heading in the Migration Skills Assessment FAQs on the Engineers Australia website for the current review and appeal turnaround times. This can be found [here](#).
- The review and appeal fees can be refunded if the process yields the outcome originally sought by the applicant and no additional documents were provided.

## 10. Ethical Standards

Information you provide to Engineers Australia may be used for data matching with Australian Government agencies. Engineers Australia reserves the right to use software applications to screen your submitted work for matches either to published sources or to other submitted applications.

Misleading and false information is viewed as a major breach of ethical behaviour. We refer applicants to the Engineers Australia Code of Ethics, in particular the demonstration of integrity, available [here](#). Please also refer to Section C and Section D for further details regarding plagiarism, fraudulent documents and ethical behaviour.

The sanctions regarding misleading applications include notification to the Department of Home Affairs and up to 36 months ban from applying for a skills assessment with Engineers Australia.

# Section B

## Assessment of Accredited Qualifications

# Introduction

Accredited qualifications are Australian and overseas engineering qualifications which are recognised through formal international agreements.

Engineers Australia is a signatory to three international agreements - the Washington Accord, the Sydney Accord and the Dublin Accord.

Additional agreements have been entered with a small number of countries independently from the International Accords. Check your eligibility in the Item 5 "Other Recognised Qualifications".

The assessment of Australian and Accord accredited qualifications is primarily based upon undergraduate qualifications. However, some postgraduate qualifications have been accredited as standalone qualifications.

Please make sure your qualification is accredited through the representative body of the signatory country by checking the International Engineering Alliance (IEA) website [here](#).

If your postgraduate qualification is not independently accredited and you do not have an accredited undergraduate qualification, you will need to submit a Competency Demonstration Report (CDR) assessment. The CDR assessment will be based on your combined qualifications so both the undergraduate and postgraduate qualifications must be submitted.

## 1. Occupational Outcome

The occupational outcome of your assessment generally reflects the title and/or content of your degree. If you have completed a double major, the outcome will reflect the dominant major. Only one outcome is given per assessment. If you have a double major and you have a preference as to which one is recognised, please upload a cover letter to explain your nomination.

**Please Note:** This does not guarantee an outcome in the occupation requested but rather notifies us of your preference.

If you are seeking assessment in an occupation that is not the same as the title of your degree, you will need to submit a CDR for assessment.

## 2. Recognition of Prior Learning

If you have received credit/recognition of prior learning (RPL) for prior studies towards your qualification, you will also need to upload your original academic documents from the tertiary institution where those subjects were originally completed.

## 3. Accords Accredited Qualifications

### Please Note:

Only qualifications based in a signatory country can be considered further to be accredited under the Accords.

Only qualifications completed in or after the year in which the country gained full signatory status to the Accord can be considered further to be accredited under the Accords.

### 3.1 Australian Qualifications

Graduates of accredited Australian engineering programs are eligible for migration skills assessment via the Australian Engineering Qualifications application pathway.

Current listings of accredited programs at the level of Professional Engineer, Engineering Technologist and Engineering Associate are available [here](#).

The year shown after each program is the year in which that program was first accredited by Engineers Australia. Students are deemed to have graduated from an accredited program provided that they have commenced their studies within the period that full, ongoing accreditation applies. This is denoted by a (F) after the commencement date of an accredited program. Provisional accreditation is denoted by a (P) after the commencement date and indicates that full accreditation is expected but not guaranteed. Applicants with provisionally accredited qualifications will be required to submit a Competency Demonstration Report for assessment.

Engineers Australia has accredited several engineering programs delivered by Australian universities offshore. Please refer to our published list of accredited Australian qualifications for information on the accreditation of offshore programs. Applicants with accredited Australian qualifications obtained offshore are required to provide an IELTS™, TOEFL iBT® or PTE ACADEMIC test result (see Section A).

Graduates of recognised Australian Associate Degree or Advanced Diploma programs are also eligible for migration skills assessment seeking Engineering Associate category of occupations via the Australian Engineering Qualifications application pathway.

### 3.2 The Washington Accord

Only qualifications publicly listed as accredited by the relevant signatory will be considered for recognition via the Washington Accord. The title of your qualification must be the same as the title on the published list of accredited qualifications for the relevant signatory.

Accreditation applies for qualifications completed in or after the year in which the relevant organisation gained full signatory status to the Washington Accord. Provisional accreditation is not sufficient for assessment under this pathway.

Please [follow this link](#) for relevant dates and signatory details. Click on the relevant signatory web link for the published list of accredited programs for that country.

The minimum academic requirements for an assessment via the Washington Accord are qualifications which are broadly comparable to an Australian 4 year Bachelor degree in engineering.

The Washington Accord applies only to engineering degrees accredited by the representative body of the signatory country (for example, a Turkish qualification accredited by ABET will not fall under the Washington Accord as MUDEK is the representative body for Turkey).

**Please ensure that you check the accreditation status of your qualification with the relevant signatory. Applications submitted under the incorrect pathway will not be successful.**

#### Applicants with qualifications from the UK

Please pay attention to the Public Notes on the accredited course list.

Some qualifications are listed with a Further Learning Requirement for recognition as a Professional Engineer via the Washington Accord. Where further learning is required and has not been obtained, the qualification is not accredited via the Washington Accord.

For applicants who have not undertaken further learning but have completed an Honours degree, there is a dual Accreditation provision (see “Honours degrees and IEng (dual accreditation)” on the Engineering Council Accredited Course Search page which can be found [here](#)).

All Honours degrees accredited from the intake year of 1999 are eligible for recognition via the Sydney Accord. Applicants with ordinary Bachelor degrees and no further learning will be required to submit a Competency Demonstration Report for assessment.

Programs that are ‘accredited for further learning for CEng’ require an accredited undergraduate qualification to apply via the Washington Accord pathway.

### 3.3 The Sydney Accord

Only qualifications publicly listed as accredited by the relevant signatory will be considered for recognition via the Sydney Accord. The title of your qualification must be the same as the title appearing on the published list of accredited qualifications for the relevant signatory.

Accreditation applies for qualifications completed in or after the year in which the relevant organisation gained full signatory status to the Sydney Accord. Provisional accreditation is not sufficient for assessment under this pathway.

Please [follow this link](#) for relevant dates and signatory details. Click on the relevant signatory web link for the published list of accredited programs for that country.

The minimum academic requirements for an assessment via the Sydney Accord are qualifications which are broadly comparable to an Australian 3 year Bachelor of Technology degree in engineering.

The Sydney Accord applies only to engineering degrees accredited by the representative body of the signatory country.

**Please ensure that you check the accreditation status of your qualification with the relevant signatory. Applications submitted under the incorrect pathway will not be successful.**

### 3.4 The Dublin Accord

Only qualifications publicly listed as accredited by the relevant signatory body will be considered for recognition via the Dublin Accord. The title of your qualification must be the same as the title appearing on the published list of accredited qualifications for the relevant signatory body.

Accreditation applies for qualifications completed in or after the year in which the relevant organisation gained full signatory status to the Dublin Accord. Provisional accreditation is not sufficient for assessment under this pathway.

Please [follow this link](#) for relevant dates and signatory details. Click on the relevant signatory web link for the published list of accredited programs for that country.

The Dublin Accord applies only to engineering degrees accredited by the representative body of the signatory country.

**Please ensure that you check the accreditation status of your qualification with the relevant signatory. Applications submitted under the incorrect pathway will not be successful.**

### 3.5 Other Recognised Qualifications

In February 2019, Engineers Australia signed an agreement with the French Commission des Titres d'Ingénieurs to facilitate the recognition of French engineering degrees in Australia.

This agreement applies to the holders of a French Diplôme

d'Ingénieur completed in or after 1970 and listed in the Journal Officiel de la République in the list of institutions habilitated to deliver the title of Engineer for the year of completion are eligible for an assessment via the recognised qualifications pathway.

When applying online, eligible applicant must select the pathway "Washington Accord" and follow the instructions for this pathway.

## 4. Checklist

- Recent (no more than 6 months old) colour photography (dimensions: 35mm x 45mm) of yourself in JPEG format with 1200 x 1600 pixels resolution (against a plain colour background, facing directly towards the camera, including full head, neck and shoulders, both eyes, nose and mouth)
- Prime identification document (current passport, only page including photo and name)
- Academic degree certificate (a letter of completion will only be accepted as a substitute before graduation and only for Australian qualifications)
- Complete and official academic transcript (including any recognition of prior learning and course syllabus where applicable)
- Curriculum Vitae/Resume
- IELTS™, TOEFL iBT® or PTE ACADEMIC result
- Official change of name documents where applicable (e.g., marriage certificate, gazette publication, or letter/certificate issued by registry)
- Official English translations of above documents where applicable

The documents listed above must be colour scans of the original documents. Please upload each document separately (a document might consist of more than one page. DO NOT upload each page of the document separately).

**Please DO NOT submit the following:**

- **Certified copies of original document**
- **Black and white scans**
- **Scan of photocopies**
- **Low resolution scans. All scans must have a resolution of at least 300 dpi**

**Please also refrain from uploading a document multiple times.**

**Processing will be delayed if above instructions are not followed.**

# Section C

## Assessment of Non-Accredited Qualifications and Engineering Managers

# Introduction

This section provides instructions for compiling a Competency Demonstration Report (CDR). The CDR assessment is based primarily upon the undergraduate qualification and demonstrated graduate competencies (refer to Appendix Page 30 onwards).

Applicants need to provide documentary evidence of BOTH:

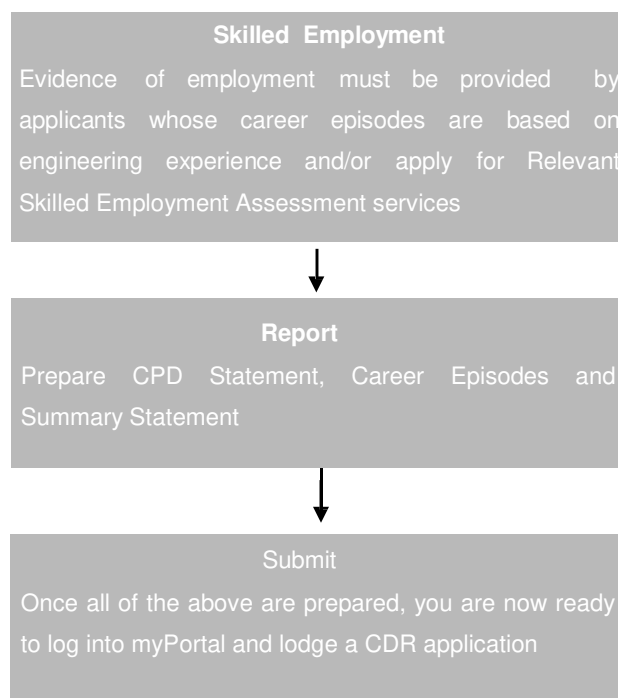
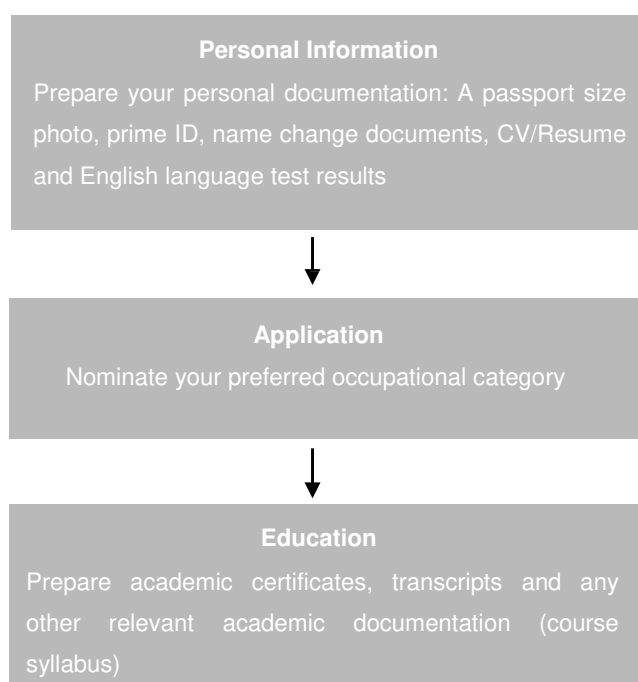
- The core technical engineering knowledge supporting the nominated occupation AND;
- The demonstrated application of that knowledge in the nominated occupation.

The CDR must be all your own work. All typed components of the CDR must be done using a word processor and you are strongly advised to keep a copy.

Your CDR will be assessed against the graduate competency standards and the ANZSCO definition of the occupational category nominated by you.

## 1. Steps in Preparing a CDR

The flow chart below shows the steps you need to take in preparing your CDR.



## 2. Components of the CDR Assessment

### 2.1 Personal Information

#### 2.1.1 Passport Size Photo:

You are required to provide a recent colour photography (dimensions: 35mm x 45mm) of yourself.

The photograph must:

- be no more than 6 months old;
- be in JPEG format with 1200 x 1600 pixels resolution
- include full head, neck and shoulders, both eyes, nose and mouth facing directly towards the camera (Do not include other people or parts of other people);
- be clear and against a plain colour background (Selfies are not acceptable).

#### 2.1.2 Prime Identification Document:

You will need to provide your current passport bio-data page (not the entire passport) and English translation where applicable. Where this is not available a scan of your Birth Certificate and/or National Identity Card may be acceptable in lieu.



### 2.1.3 Name Change Documentation:

If your current name is not the same as that on your academic documents, you must provide evidence of your name change. This may include: marriage certificate, a gazette publication, and an official letter/certificate issued by registry. A Statutory Declaration or Affidavit will not be accepted as official name change document.

### 2.1.4 Curriculum Vitae (CV)/Résumé:

A full summary of your engineering education and work experience is required. Your CV must be a complete record of your activities and must even include any periods of inactivity. The CV is to be a chronological listing of employment, not projects. Your CV should be no more than three A4 pages.

#### For each workplace provide:

- organisation name and location, including contact details
- dates and duration of employment
- title of position occupied by you
- your defined role (provide a duty or appointment statement where available) and/or a brief description of your activities

### 2.1.5 English Language Competency:

Applicants applying to have their skills assessed by Engineers Australia are required to provide evidence of their English language competency. See Item 2 of Section A for full details of the English competency requirements.

## 2.2 Application Information

### 2.2.1 Engineering Occupation:

You must select the engineering occupation in which you are seeking assessment.

**Please Note:** An outcome is not guaranteed in the nominated occupation and will be determined upon assessing. For further information on ANZSCO occupations, please refer to the Australian Bureau of Statistics website: [www.abs.gov.au](http://www.abs.gov.au)

### 2.2.2 Registration:

You will need to upload any evidence of your professional registration if applicable.

## 2.3 Education

You must provide your degree certificate, official academic transcript and/or other supporting documents (for example course syllabus). If you have more than one engineering qualification, all relevant additional qualifications must be provided. If you are currently enrolled in any formal educational program, please upload your enrolment letter and current transcript if available. Please ensure the name of the educational institution is entered using the appropriate upper and lower case letters (for example University of New South Wales).

## 2.4 Employment

Applicants are required to provide documentary evidence of work experience specified in 2.4.1 and/or 2.4.2. If the document is not in the English language, both translation and original language documents must be provided. All translations must be carried out by an authorised translator (see Item 4 Section A).

### 2.4.1 Standard Competency Demonstration Report Assessment:

Applicants who have based their career episode upon professional engineering experience must provide a reference letter or certificate of employment from the employer (on official company letterhead, stating your title/position, commencement and termination dates of employment, signed and dated by the author).

### 2.4.2 Relevant Skilled Employment Assessment:

Applicants seeking a relevant skilled employment assessment, must provide both primary and secondary documentary evidence. Refer to Section D for further details.

## 2.5 The Report

This section includes the Continuing Professional Development, three Career Episodes and Summary Statement.

### 2.5.1 Identification of Continuing Professional Development:

Continuing Professional Development (CPD) is the means by which you keep up-to-date with developments in your field of engineering after you have gained your undergraduate qualification.

All relevant CPD must be included in your CDR application. The CPD must be provided in Table format (title, date, duration, venue and organiser) and may include details of:

- formal post-graduate study;
- conferences at which you have delivered papers or attended;
- short courses, workshops, seminars, discussion groups, technical inspections and technical meetings you have attended;
- preparation and presentation of material for courses, conferences, seminars and symposia;
- services to the engineering profession (volunteer work, board or committee volunteering, mentoring, etc.);
- private study (includes books, journals, manuals, etc.).

Your CPD listing must not be more than one A4 page.

It is not necessary to include certificates from each course.

### 2.5.2 Writing your Three Career Episodes:

A career episode is an account of your engineering education and/or work experience. Each career episode focuses upon a specific period or distinct aspect of your engineering activity. Each career episode must focus on a different period or aspect of your engineering activity. Each episode should focus on how you applied your engineering knowledge and skills in the nominated occupation.

Career Episodes based on work experience must be accompanied with evidence of employment. These should be uploaded to the "Employment" section of your online application.

**NOTE:** You **do not** need to apply for relevant skilled employment assessment but you **must** provide a reference letter or certificate of employment from the employer (on official company letterhead, stating your title/position, commencement and termination dates of employment, signed and dated by the author).

You may base your career episode upon:

- an engineering task undertaken as part of your educational program;
- a project you have worked on or are currently working on;
- a specific position that you occupied or currently occupy (in this case, the career episode must comprise more than a mere duty statement);
- a particular engineering problem that you were required to solve.

Each career episode must be written in English, in your own words and will act as evidence of your communication skills to your assessor.

Please include reliable and sufficient engineering evidence (diagrams, photos, calculations, tables, etc.) to support each career episode. Do not present excessive textbook materials and instructions. It is recommended that each narrative be a minimum of 1000 and maximum of 2500 words.

Each career episode must clearly demonstrate the application of engineering knowledge and skills in the nominated occupation. That is, state what you did and describe how you did it, emphasising your own personal role in episode (for example, I designed and I investigated).

Each career episode should emphasise any engineering problems identified by you and any particular problem solving techniques you applied. The purpose of this is to assess your personal contribution in meeting project and task objectives.

You must number each paragraph in each of your career episodes. This is necessary to construct the Summary Statement. The following system is recommended:

Career episode 1 (paragraphs 1.1, 1.2, 1.3, etc.)

Career episode 2 (paragraphs 2.1, 2.2, 2.3, etc.)

Career episode 3 (paragraphs 3.1, 3.2, 3.3, etc.)

#### Please Note

**It is not sufficient to merely describe work in which you were involved. Career Episodes must be written in the first person singular clearly indicating your own personal role in the work described. Remember, it is what I did, not what we did or what 'I was involved in' and describe how you did it.**

### 2.5.3 Plagiarism

Career Episodes must be based on work conducted personally by you and must be written entirely in your own words. Presenting work conducted by others as your own and/or using other people's words (templates, Career Episodes, online sources, etc.) is considered as plagiarism

and is a violation of Engineers Australia's Code of Ethics. This carries significant penalties including the rejection of the application, imposition of a 12, 24 or 36-month ban and/or reporting of your details to the Department of Home Affairs for further investigation and action.

### Warning

**Having your Career Episodes written by another person or persons (This includes all hiring or use of any 3rd party professional writers/companies to assist or complete your documentation) constitutes unethical behaviour and may result in serious consequences including but not limited to:**

- 1) Immediate rejection of the application along with the imposition of a 12, 24 or 36-month ban.**
- 2) Mandatory reporting of the applicant's details to the Department of Home Affairs.**

**Engineers Australia reserves the right to impose or extend the ban period when the unethical behaviour was found at any stage of the process.**

#### 2.5.4 Career Episode Format

Each career episode should be in essay form and not formatted into a table. Please do not submit image PDF file.

Each career episode should follow the format below:

##### a) Introduction (approx. 150 words)

This introduces the reader to the career episode and should include such things as:

- the chronology - the dates and duration of the career episode
- the geographical location where the experience was gained
- the name of the organisation

##### b) Background (200-500 words)

This sets the scene and provides the context in which you have been studying/working. It should include such things as:

- the nature of the overall engineering project
- the objectives of the project
- the nature of your particular work area
- a chart of the organisational structure highlighting your position, in relation to the career episode
- a statement of your duties (provide an official duty statement where available)

#### c) Personal Engineering Activity (600-1500 words)

This is the body of the narrative and the key assessable component. In this section you must describe in detail the actual work performed by you. You should state what you did and then describe how you did it. It is not sufficient to describe the activities performed by a team or group - your own role must be clearly identified. Remember it is your own personal engineering competencies that are being assessed.

This section should include such things as:

- how you applied your engineering knowledge and skills;
- the tasks delegated to you and how you went about accomplishing them;
- any particular technical difficulties/problems you encountered and how you solved them;
- strategies devised by you including any original or creative design work;
- how you worked with other team members.

#### d) Summary (50-150 words)

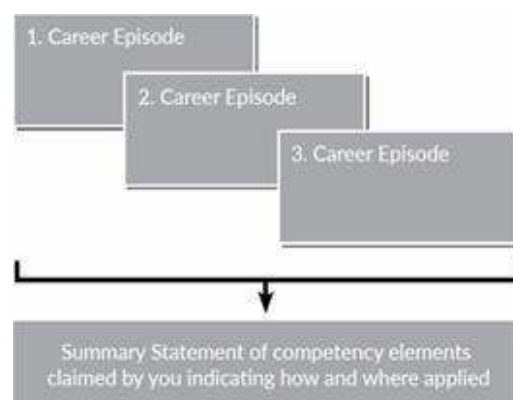
This section sums up your impressions of the engineering activity and your role in it. It should include such things as:

- your view of the overall project;
- how the project fared in meeting the goals/requirements;
- how your personal role contributed to the project.

### Please Note

**You must distinguish other peoples' work from your own by using properly in-text citations and references list. Failing to acknowledge sources you have used in writing each career episode would be considered as plagiarism.**

#### 2.5.5 Preparation of the Summary Statement:



The elements for each occupational category are listed in the following pages. The Appendix gives a detailed description of each competency element for each category.

Once you have completed your career episodes you must analyse them to ensure you have addressed all the competency elements for the nominated occupational category.

The results of your analysis will be demonstrated in your Summary Statement. The Summary Statement cross-references the competency elements with the particular paragraph in your Career Episode where each element occurs. To do this, you will need to number the paragraphs in your career episodes.

You must download and complete the appropriate summary statement for your nominated occupational category.

The summary statement templates are available on the website. These are guides only. Do not attempt to restrict your Summary Statement to one page only.

You do not need to cover all the indicators within each competency element.

**Please Note:** Only one Summary Statement is required for all three episodes.

### 3 Checklist

- Recent (no more than 6 months old) colour photography (dimensions: 35mm x 45mm) of yourself in JPEG format with 1200 x 1600 pixels resolution (against a plain colour background, facing directly towards the camera, including full head, neck and shoulders, both eyes, nose and mouth)
- Prime Identification Document (current passport, only page including photo and name)
- Academic degree certificate (a letter of completion will only be accepted as a substitute before graduation and only for Australian qualifications)
- Complete and official academic transcript (including any recognition of prior learning and course syllabus where applicable)
- Curriculum Vitae/Resume
- IELTS™, TOEFL iBT® or PTE ACADEMIC result

- Official change of name documents where applicable (e.g., marriage certificate, gazette publication, or letter/certificate issued by registry)
- Registration certificate under the relevant licensing authority where applicable (for example Philippine Professional Regulations Commission)
- Documentary evidence of employment (if the employment provides a basis for a career episode/s)
- List of Continuing Professional Development (CPD)
- Three Career Episodes
- Summary Statement for the nominated category
- Official English translations of above documents where applicable

**Please upload each document separately (a document might consist of more than one page. DO NOT upload each page of the document separately).**

**The documents listed above must be colour scans of the original documents.**

**Please DO NOT submit the following:**

- Certified copies of original documents
- Black and white scans
- Scans of photocopies
- Low resolution scans. All scans must have a resolution of at least 300 dpi

**Please refrain from uploading a document multiple times.**

**Processing will be delayed if the above instructions are not followed.**

# Summary Statement for Professional Engineers

These are the competency Units and Elements. These elements must be addressed in the Summary Statement. If you are applying for assessment as a Professional Engineer, you will need to download this page from our website, complete it and lodge it with your application. For details, refer to the Appendix, Pages 31-36.

| Competency Element   | A brief summary of how you have applied the element | Paragraph number in the career episode(s) where the element is addressed |
|--|---|--|
| <b>PE1 KNOWLEDGE AND SKILL BASE</b>  |   |  |
| PE1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline. |   |  |
| PE1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.          |   |  |
| PE1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline.  |   |  |
| PE1.4 Discernment of knowledge development and research directions within the engineering discipline.  |   |  |
| PE1.5 Knowledge of contextual factors impacting the engineering discipline.  |   |  |
| PE1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.                            |   |  |
| <b>PE2 ENGINEERING APPLICATION ABILITY</b>   |   |  |
| PE2.1 Application of established engineering methods to complex engineering problem solving.   |   |  |
| PE2.2 Fluent application of engineering techniques, tools and resources.   |   |  |
| PE2.3 Application of systematic engineering synthesis and design processes.  |   |  |
| PE2.4 Application of systematic approaches to the conduct and management of engineering projects.  |   |  |
| <b>PE3 PROFESSIONAL AND PERSONAL ATTRIBUTES</b>  |   |  |
| PE3.1 Ethical conduct and professional accountability.   |   |  |
| PE3.2 Effective oral and written communication in professional and lay domains.  |   |  |
| PE3.3 Creative, innovative and pro-active demeanour.   |   |  |
| PE3.4 Professional use and management of information.  |   |  |
| PE3.5 Orderly management of self and professional conduct.   |   |  |
| PE3.6 Effective team membership and team leadership.   |   |  |

# Summary Statement for Engineering Technologists

These are the competency Units and Elements. These elements must be addressed in the Summary Statement. If you are applying for assessment as an Engineering Technologist, you will need to download this page from our website, complete it, and lodge it with your application. For details, refer to the Appendix, Pages 37-41.

| Competency Element   | A brief summary of how you have applied the element | Paragraph number in the career episode(s) where the element is addressed |
|--|---|--|
| <b>ET1 KNOWLEDGE AND SKILL BASE</b>  |   |  |
| ET1.1 Systematic, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the technology domain. |   |  |
| ET1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the technology.              |   |  |
| ET1.3 In-depth understanding of specialist bodies of knowledge within the technology domain.   |   |  |
| ET1.4 Discernment of knowledge development within the technology domain.   |   |  |
| ET1.5 Knowledge of contextual factors impacting the technology domain.   |   |  |
| ET1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the technology domain.                      |   |  |
| <b>ET2 ENGINEERING APPLICATION ABILITY</b>   |   |  |
| ET2.1 Application of established engineering methods to broadly-defined problem solving within the technology domain.  |   |  |
| ET2.2 Application of engineering techniques, tools and resources within the technology domain.   |   |  |
| ET2.3 Application of systematic synthesis and design processes within the technology domain.   |   |  |
| ET2.4 Application of systematic approaches to the conduct and management of projects within the technology.  |   |  |
| <b>ET3 PROFESSIONAL AND PERSONAL ATTRIBUTES</b>  |   |  |
| ET3.1 Ethical conduct and professional accountability.   |   |  |
| ET3.2 Effective oral and written communication in professional and lay domains.  |   |  |
| ET3.3 Creative, innovative and pro-active demeanour.   |   |  |
| ET3.4 Professional use and management of information.  |   |  |
| ET3.5 Orderly management of self and professional conduct.   |   |  |
| ET3.6 Effective team membership and team leadership.   |   |  |

# Summary Statement for Engineering Associates

These are the competency Units and Elements. These elements must be addressed in the Summary Statement. If you are applying for assessment as an Engineering Associate, you will need to download this page from our website, complete it, and lodge it with your application. For details, refer to the Appendix, Pages 42-46.

| Competency Element   | A brief summary of how you have applied the element | Paragraph number in the career episode(s) where the element is addressed |
|--|---|--|
| <b>EA1 KNOWLEDGE AND SKILL BASE</b>  |   |  |
| EA1.1 Descriptive, formula-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the practice area. |   |  |
| EA1.2 Procedural-level understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the practice area.   |   |  |
| EA1.3 In-depth practical knowledge and skills within specialist sub-disciplines of the practice area.  |   |  |
| EA1.4 Discernment of engineering developments within the practice area.  |   |  |
| EA1.5 Knowledge of contextual factors impacting the practice area.   |   |  |
| EA1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the area of practice.                     |   |  |
| <b>EA2 ENGINEERING APPLICATION ABILITY</b>   |   |  |
| EA2.1 Application of established technical and practical methods to the solution of well-defined engineering problems.   |   |  |
| EA2.2 Application of technical and practical techniques, tools and resources to well-defined engineering problems.   |   |  |
| EA2.3 Application of systematic design processes to well-defined engineering problems.   |   |  |
| EA2.4 Application of systematic project management processes.  |   |  |
| <b>EA3 PROFESSIONAL AND PERSONAL ATTRIBUTES</b>  |   |  |
| EA3.1 Ethical conduct and professional accountability.   |   |  |
| EA3.2 Effective oral and written communication in professional and lay domains.  |   |  |
| EA3.3 Creative, innovative and pro-active demeanour.   |   |  |
| EA3.4 Professional use and management of information.  |   |  |
| EA3.5 Orderly management of self and professional conduct.   |   |  |
| EA3.6 Effective team membership and team leadership.   |   |  |

# Summary Statement for Engineering Managers

These are the competency Elements. These elements must be addressed in the Summary Statement. If you are applying for assessment as an Engineering Manager, you will need to download this page from our website, complete it, and lodge it with your application. For details, refer to the Appendix, Pages 46-48.

| Competency Element   | A brief summary of how you have applied the element | Paragraph number in the career episode(s) where the element is addressed |
|--|---|--|
| EM1.1 Contributes to engineering business strategies.                      |   |  |
| EM1.2 Develops client relationships.                                       |   |  |
| EM1.3 Manages the implementation of engineering plans within the business. |   |  |
| EM1.4 Manages resources.   |   |  |
| EM1.5 Manages people.  |   |  |
| EM1.6 Manages suppliers.   |   |  |
| EM1.7 Manages business information.  |   |  |
| EM1.8 Monitors engineering business performance.                           |   |  |



# Section D

## Additional Assessment Services

# Introduction

The additional assessment services are generally only of interest to the following applicants:

- Applicants that need a skills assessment completed urgently and/or;
- Applicants who hold an overseas engineering PhD and/or;
- Applicants who have received work experience in their nominated occupation or a closely related occupation.

Applicants can apply for one or all of the above services as required.

**Engineers Australia does NOT award the points for migration. Points are issued by the Department of Home Affairs in relation to your application for skilled migration NOT by Engineers Australia as part of your migration skills assessment.**

## 1. Fast Track

Applicants who need a skills assessment completed urgently can apply for the Fast Track service. Fast Track applications will be assigned to an assessor within the timeframe advertised on our [website](#), from receipt of payment. The timeframe for receiving an outcome depends solely on the quality of the lodged application. Engineers Australia will not be responsible for the length of time taken to finalise incorrect/incomplete applications.

The Fast Track service is also available to applicants who have already submitted an online application via this [link](#).

**Please Note:** The end of year office close-down will impact the Fast Track service. Files will not be processed during the close-down period. The close-down dates will be displayed on the website. Fast Track applications will be processed as a priority when work resumes.

## 2. Online Application Process

Please upload colour scans of original documents pertaining to the relevant skilled employment and/or PhD online. We

will not accept documents with poor resolution (should be at least 300dpi). Certified documents are not accepted.

## 3. Overseas PhD in Engineering Assessment

If an applicant holds an overseas PhD qualification in engineering, this service may be employed to assess the equivalence of the overseas PhD to an Australian PhD.

**Please Note:** This service is only for the assessment of overseas PhD qualifications, not Australian PhD qualifications.

Applicants who require this service will need to provide:

- relevant fee payment;
- colour scans of all original academic documentation (testamurs and transcripts as applicable) demonstrating that the qualification has been awarded;
- a list of doctoral examiners and details;
- a list of publications made during and after the doctoral program;
- a thesis abstract

## 4. Relevant Skilled Employment

Applicants who require this service must submit colour scans of original documentary evidence. Relevant Skilled Employment Assessment is an optional service except for Engineering Manager (refer to Appendix Page 47 for more information).

### 4.1 Documentary Evidence:

**Primary Documents:** documents from your employer or client providing all the relevant information and details with regards to your employment.

**Secondary Documents:** third party documents from sources independent of your employer or client in support of each period of employment claimed (documents from government departments or any other government agency: income tax return, social security insurance reports, registration certificate, work permit, etc.).

## 4.2 Fraudulent Documents:

**Please Note:** Submitting fraudulent documentation is a serious breach of Engineers Australia's Code of Ethics and carries significant penalties including the rejection of the application, imposition of a 12, 24 or 36-month ban and reporting of your details to the Department of Home Affairs for further investigation and action.

## 4.3 Skilled Employment Assessment for Employees:

The assessment of each employment period will be based on both Primary and Secondary Documents for the entire period of employment. An applicant can refer to Page 28 for further instructions in regards to the requirement for Primary and Secondary Documents.

## 4.4 Skilled Employment Assessment for Self-Employed:

The assessment of each self-employment period is based on evidence. An applicant must provide both Primary and Secondary Documents in support of the entire period of self-employment (refer to Page 29 for further instructions).

## 4.5 Important Notes:

- Neither statutory declaration nor affidavit will be accepted as primary or secondary documents.
- Work experience cannot be claimed before the completion of the applicable qualification.
- Work experience should be paid at the market or salaried rate for engineering professionals. Clients receiving stipends, living allowances or scholarships will not generally be considered to be salaried.
- Whilst 'full-time' work constitutes 20 hours per week or more, this must be regular employment and must not include long periods of unpaid leave.
- In general, research activities undertaken as a PhD/MPhil student, or work experience as a Research Assistant/Fellow whilst undertaking a PhD/MPhil cannot be considered as relevant skilled employment.
- In general, employment as a university lecturer, university demonstrator and university tutor, are not considered as relevant skilled employment in the engineering profession.

- Military Service compulsory or exemption certificate must be provided if the service is mandatory in your country.
- The assessor reserves the right to specify acceptable secondary documents for specific country.
- The decision on assessing the relevant skilled employment will be made on basis of information given in the original application, no further correspondence will be made if there are any shortcomings.
- Any incomplete/misleading information will result in an unsuccessful outcome and sanctions will apply.
- Income tax return acknowledgement receipts should be issued within 12 months after the end of each financial year.

## 4.6 Skilled Employment Recognition:

1. Please be aware that only successful Relevant Skilled Employment assessments will be recorded in the final outcome letter.
2. If all or part of your employment was not included in the outcome letter it may be because of but not limited to one or more reasons as listed in 4.5 above.

| <b>Relevant Skilled Employment Assessment</b>   |  |
|---|--|
| <b>Both Primary and Secondary documents are required for assessment</b>   |  |
| <b>Employees</b>  |  |
| Option 1  | Option 2   |
| <p><b>1. PRIMARY DOCUMENTS</b></p> <p>Reference letter on official company letterhead to:</p> <ul style="list-style-type: none"> <li>• Indicate 5 main specific (not generic) duties undertaken, job title or position;</li> <li>• Indicate the exact period of employment (commencement and completion dates in dd/mm/yyyy format);</li> <li>• Be endorsed and dated by the manager/direct supervisor/HR Section (with official telephone &amp; email address);</li> <li>• Indicate full or part-time with number of work hours;</li> <li>• Pay rate;</li> <li>• Include the company's stamp if applicable.</li> </ul> <p><b>2. SECONDARY DOCUMENTS</b></p> <ul style="list-style-type: none"> <li>• Income Tax Return Acknowledgement or Receipt; <b>and/or</b></li> <li>• Social Security Insurance/ Superfund/ Provident Fund/ Retirement Contribution Statement Reports.</li> </ul> <p style="text-align: center;"><b>AND/OR</b></p> <ul style="list-style-type: none"> <li>• Work Permit/Residence Permit; <b>and</b></li> <li>• Official Contract Document from the Ministry of Labour etc.. (indicating your wage, title and employer's name).</li> </ul> | <p><b>1. PRIMARY DOCUMENTS</b></p> <p>Reference letter on official company letterhead to:</p> <ul style="list-style-type: none"> <li>• Indicate the exact period of employment (commencement and completion dates in dd/mm/yyyy format);</li> <li>• Be endorsed and dated by the manager/ direct supervisor/ HR Section (with official telephone &amp; email address);</li> </ul> <p>Plus, either:</p> <ul style="list-style-type: none"> <li>• Job Offer Letter on employer's official letterhead with main duties/position descriptions. <b>OR</b></li> <li>• Annual Performance Review on employer's official letterhead with main duties.</li> </ul> <p><b>2. SECONDARY DOCUMENTS</b></p> <ul style="list-style-type: none"> <li>• Income Tax Return Acknowledgement or Receipt; <b>and/or</b></li> <li>• Social Security Insurance/ Superfund/ Provident Fund/ Retirement Contribution Statement Reports.</li> </ul> <p style="text-align: center;"><b>AND/OR</b></p> <ul style="list-style-type: none"> <li>• Work Permit/Residence Permit; <b>and</b></li> <li>• Official Contract Document from the Ministry of Labour etc.. (indicating your wage, title and employer's name).</li> </ul> |
| <b>Notes</b>  |  |
| <p>Relevant Skilled Employment will not be recognised for applications submitted without <b>all</b> required documents.</p> <p>Secondary evidence of employment <b>must</b> cover the entire period of employment <b>and</b> indicate the names of the employer and the employee.</p>   |  |

## Relevant Skilled Employment Assessment

**Both Primary and Secondary documents are required for assessment**

Self-Employed

### 1. PRIMARY DOCUMENTS

- Letters from contracting employers or clients on official letterheads stating:
  - the employer's name
  - the main engineering duties or tasks performed
  - exact period of employment (date of commencement and termination in dd/mm/yyyy format)
  - number of hours worked per week
  - salary level or pay rate
- Invoices issued for service rendered (with your business's stamp if applicable)
- Number of staff employed and their occupations & the organisational charts (if applicable)

### 2. SECONDARY DOCUMENTS

- Business Registration (as engineering company) issued by the relevant authority
- Business tax report covering the entire period of the business operation
- Bank Statement showing all your business transactions
- Payroll tax receipts or acknowledgement on the wages paid to employees (if applicable)
- Personal income tax return acknowledgement (if applicable)
- Social Security Insurance/Retirement Contribution/Superannuation Contribution Reports covering the period of self-employment (if applicable)
- Business Financial Report covering the entire period of the business operation (if applicable)
- Compliance letter or Practice certificate issued by the relevant authority (if applicable)

### Notes

Relevant Skilled Employment will not be recognised for applications submitted without **all** required documents.

Secondary evidence of employment **must** cover the entire period of employment **and** indicate the names of the employer and the employee.

# Appendix

## Detailed Description of Competency Elements for Each Occupational Category

# Professional Engineer:

## General Description of Role

Professional Engineers are required to take responsibility for engineering projects and programs in the most far-reaching sense. This includes the reliable functioning of all materials, components, sub-systems and technologies used; their integration to form a complete, sustainable and self-consistent system; and all interactions between the technical system and the context within which it functions. The latter includes understanding the requirements of clients, wide ranging stakeholders and of society as a whole; working to optimise social, environmental and economic outcomes over the full lifetime of the engineering product or program; interacting effectively with other disciplines, professions and people; and ensuring that the engineering contribution is properly integrated into the totality of the undertaking. Professional Engineers are responsible for interpreting technological possibilities to society, business and government; and for ensuring as far as possible that policy decisions are properly informed by such possibilities and consequences, and that costs, risks and limitations are properly understood as the desirable outcomes.

Professional Engineers are responsible for bringing knowledge to bear from multiple sources to develop solutions to complex problems and issues, for ensuring that technical and non-technical considerations are properly integrated, and for managing risk as well as sustainability issues. While the outcomes of engineering have physical forms, the work of Professional Engineers is predominantly intellectual in nature. In a technical sense, Professional Engineers are primarily concerned with the advancement of technologies and with the development of new technologies and their applications through innovation, creativity and change. Professional Engineers may conduct research concerned with advancing the science of engineering and with developing new principles and technologies within a broad engineering discipline. Alternatively, they may contribute to continual improvement in the practice of engineering, and in devising and updating the codes and standards that govern it.

Professional Engineers have a particular responsibility for ensuring that all aspects of a project are soundly based in theory and fundamental principle, and for understanding clearly how new developments relate to established practice and experience and to other disciplines with which they may interact. One hallmark of a professional is the capacity to break new ground in an informed, responsible and sustainable fashion.

Professional Engineers may lead or manage teams appropriate to these activities, and may establish their own companies or move into senior management roles in engineering and related enterprises.

See Summary Statement in Section C

# Units and Elements of Competency

## PE1: Knowledge and Skill Base

**PE 1.1 Comprehensive, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the engineering discipline.**

- a) Engages with the engineering discipline at a phenomenological level, applying sciences and engineering fundamentals to systematic investigation, interpretation, analysis and innovative solution of complex problems and broader aspects of engineering practice.

**PE 1.2 Conceptual understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the engineering discipline.**

- a) Develops and fluently applies relevant investigation analysis, interpretation, assessment, characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, knowledge management and communication tools and techniques pertinent to the engineering discipline.

**PE 1.3 In-depth understanding of specialist bodies of knowledge within the engineering discipline.**

- a) Proficiently applies advanced technical knowledge and skills in at least one specialist practice domain of the engineering discipline.

**PE 1.4 Discernment of knowledge development and research directions within the engineering discipline.**

- a) Identifies and critically appraises current developments, advanced technologies, emerging issues and interdisciplinary linkages in at least one specialist practice domain of the engineering discipline.
- b) Interprets and applies selected research literature to inform engineering application in at least one specialist domain of the engineering discipline.

**PE 1.5 Knowledge of contextual factors impacting the engineering discipline.**

- a) Identifies and understands the interactions between engineering systems and people in the social, cultural, environmental, commercial, legal and political contexts in which they operate, including both the positive role of engineering in sustainable development and the potentially adverse impacts of engineering activity in the engineering discipline.
- b) Is aware of the founding principles of human factors relevant to the engineering discipline.
- c) Is aware of the fundamentals of business and enterprise management.
- d) Identifies the structure, roles and capabilities of the engineering workforce.
- e) Appreciates the issues associated with international engineering practice and global operating contexts

**PE 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the specific discipline.**

- a) Applies systematic principles of engineering design relevant to the engineering discipline.
- b) Appreciates the basis and relevance of standards and codes of practice, as well as legislative and statutory requirements applicable to the engineering discipline.
- c) Appreciates the principles of safety engineering, risk management and the health and safety responsibilities of the professional engineer, including legislative requirements applicable to the engineering discipline.
- d) Appreciates the social, environmental and economic principles of sustainable engineering practice.
- e) Understands the fundamental principles of engineering project management as a basis for planning, organising and managing resources.
- f) Appreciates the formal structures and methodologies of systems engineering as a holistic basis for managing complexity and sustainability in engineering practice.



**Notes:**

- a) 'engineering discipline' means the broad branch of engineering (civil, electrical, mechanical, etc.) as typically represented by the Engineers Australia Colleges.
- b) 'specialist practice domain' means the specific area of knowledge and practice within an engineering discipline, such as geotechnics, power systems, and manufacturing.

**PE2: Engineering Application Ability****PE 2.1 Application of established engineering methods to complex engineering problem solving.**

- a) Identifies, discerns and characterises salient issues, determines and analyses causes and effects, justifies and applies appropriate simplifying assumptions, predicts performance and behaviour, synthesises solution strategies and develops substantiated conclusions.
- b) Ensures that all aspects of an engineering activity are soundly based on fundamental principles - by diagnosing, and taking appropriate action with data, calculations, results, proposals, processes, practices, and documented information that may be ill-founded, illogical, erroneous, unreliable or unrealistic.
- c) Competently addresses engineering problems involving uncertainty, ambiguity, imprecise information and wide-ranging and sometimes conflicting technical and non-technical factors.
- d) Partitions problems, processes or systems into manageable elements for the purposes of analysis, modelling or design and then re-combines to form a whole, with the integrity and performance of the overall system as the paramount consideration.
- e) Conceptualises alternative engineering approaches and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.
- f) Critically reviews and applies relevant standards and codes of practice underpinning the engineering discipline and nominated specialisations.
- g) Identifies, quantifies, mitigates and manages technical, health, environmental, safety and other contextual risks associated with engineering application in the designated engineering discipline.

- h) Interprets and ensures compliance with relevant legislative and statutory requirements applicable to the engineering discipline.
- i) Investigates complex problems using research-based knowledge and research methods.

**PE 2.2 Fluent application of engineering techniques, tools and resources.**

- a) Proficiently identifies, selects and applies the materials, components, devices, systems, processes, resources, plant and equipment relevant to the engineering discipline.
- b) Constructs or selects and applies from a qualitative description of a phenomenon, process, system, component or device a mathematical, physical or computational model based on fundamental scientific principles and justifiable simplifying assumptions.
- c) Determines properties, performance, safe working limits, failure modes, and other inherent parameters of materials, components and systems relevant to the engineering discipline.
- d) Applies a wide range of engineering tools for analysis, simulation, visualisation, synthesis and design, including assessing the accuracy and limitations of such tools, and validation of their results.
- e) Applies formal systems engineering methods to address the planning and execution of complex, problem solving and engineering projects.
- f) Designs and conducts experiments, analyses and interprets result data and formulates reliable conclusions.
- g) Analyses sources of error in applied models and experiments; eliminates, minimises or compensates for such errors; quantifies significance of errors to any conclusions drawn.
- h) Safely applies laboratory, test and experimental procedures appropriate to the engineering discipline.
- i) Understands the need for systematic management of the acquisition, commissioning, operation, upgrade, monitoring and maintenance of engineering plant, facilities, equipment and systems.
- j) Understands the role of quality management systems, tools and processes within a culture of continuous improvement.

### **PE 2.3 Application of systematic engineering synthesis and design processes.**

- a) Proficiently applies technical knowledge and open ended problem solving skills as well as appropriate tools and resources to design components, elements, systems, plant, facilities and/or processes to satisfy user requirements.
- b) Addresses broad contextual constraints such as social, cultural, environmental, commercial, legal political and human factors, as well as health, safety and sustainability imperatives as an integral part of the design process.
- c) Executes and leads a whole systems design cycle approach including tasks such as:
  - determining client requirements and identifying the impact of relevant contextual factors, including business planning and costing targets;
  - systematically addressing sustainability criteria;
  - working within projected development, production and implementation constraints;
  - eliciting, scoping and documenting the required outcomes of the design task and defining acceptance criteria;
  - identifying assessing and managing technical, health and safety risks integral to the design process;
  - writing engineering specifications, that fully satisfy the formal requirements;
  - ensuring compliance with essential engineering standards and codes of practice;
  - partitioning the design task into appropriate modular, functional elements; that can be separately addressed and subsequently integrated through defined interfaces;
  - identifying and analysing possible design approaches and justifying an optimal approach;
  - developing and completing the design using appropriate engineering principles, tools, and processes;
  - integrating functional elements to form a coherent design solution;
  - quantifying the materials, components, systems, equipment, facilities, engineering resources and operating arrangements needed for implementation of the solution;

- checking the design solution for each element and the integrated system against the engineering specifications;
  - devising and documenting tests that will verify performance of the elements and the integrated realisation;
  - prototyping/implementing the design solution and verifying performance against specification;
  - documenting, commissioning and reporting the design outcome.
- d) Is aware of the accountabilities of the professional engineer in relation to the 'design authority' role.

### **PE 2.4 Application of systematic approaches to the conduct and management of engineering projects.**

- a) Contributes to and/or manages complex engineering project activity, as a member and/or as the leader of an engineering team.
- b) Seeks out the requirements and associated resources and realistically assesses the scope, dimensions, scale of effort and indicative costs of a complex engineering project.
- c) Accommodates relevant contextual issues into all phases of engineering project work, including the fundamentals of business planning and financial management.
- d) Proficiently applies basic systems engineering and/ or project management tools and processes to the planning and execution of project work, targeting the delivery of a significant outcome to a professional standard.
- e) Is aware of the need to plan and quantify performance over the full life-cycle of a project, managing engineering performance within the overall implementation context.
- f) Demonstrates commitment to sustainable engineering practices and the achievement of sustainable outcomes in all facets of engineering project work.

## **PE3: Professional and Personal Attributes**

### **PE 3.1 Ethical conduct and professional accountability.**

- a) Demonstrates commitment to uphold the Engineers Australia - Code of Ethics, and established norms of professional conduct pertinent to the engineering discipline.
- b) Understands the need for 'due-diligence' in certification, compliance and risk management processes.
- c) Understands the accountabilities of the professional engineer and the broader engineering team for the safety of other people and for protection of the environment.
- d) Is aware of the fundamental principles of intellectual property rights and protection.

### **PE 3.2 Effective oral and written communication in professional and lay domains.**

- a) Is proficient in listening, speaking, reading and writing English, including:
  - comprehending critically and fairly the viewpoints of others;
  - expressing information effectively and succinctly, issuing instruction, engaging in discussion, presenting arguments and justification, debating and negotiating - to technical and non-technical audiences and using textual, diagrammatic, pictorial and graphical media best suited to the context;
  - representing an engineering position, or the engineering profession at large to the broader community;
  - appreciating the impact of body language, personal behavior and other non-verbal communication processes, as well as the fundamentals of human social behavior and their cross-cultural differences.
- b) Prepares high quality engineering documents such as progress and project reports, reports of investigations and feasibility studies, proposals, specifications, design records, drawings, technical descriptions and presentations pertinent to the engineering discipline.

### **PE 3.3 Creative, innovative and pro-active demeanour.**

- a) Applies creative approaches to identify and develop alternative concepts, solutions and procedures, appropriately challenges engineering practices from technical and non-technical viewpoints; identifies new technological opportunities.
- b) Seeks out new developments in the engineering discipline and specialisations and applies fundamental

knowledge and systematic processes to evaluate and report potential.

- c) Is aware of broader fields of science, engineering, technology and commerce from which new ideas and interfaces may be drawn and readily engages with professionals from these fields to exchange ideas.

### **PE 3.4 Professional use and management of information.**

- a) Is proficient in locating and utilising information; including accessing, systematically searching, analysing, evaluating and referencing relevant published works and data; is proficient in the use of indexes, bibliographic databases and other search facilities.
- b) Critically assesses the accuracy, reliability and authenticity of information.
- c) Is aware of common document identification, tracking and control procedures.

### **PE 3.5 Orderly management of self and professional conduct.**

- a) Demonstrates commitment to critical self-review and performance evaluation against appropriate criteria as a primary means of tracking personal development needs and achievements.
- b) Understands the importance of being a member of a professional and intellectual community, learning from its knowledge and standards, and contributing to their maintenance and advancement.
- c) Demonstrates commitment to life-long learning and professional development.
- d) Manages time and processes effectively, prioritises competing demands to achieve personal, career and organisational goals and objectives.
- e) Thinks critically and applies an appropriate balance of logic and intellectual criteria to analysis, judgment and decision making.
- f) Presents a professional image in all circumstances, including relations with clients, stakeholders, as well as with professional and technical colleagues across wide ranging disciplines.

**PE 3.6 Effective team membership and team leadership.**

- a) Understands the fundamentals of team dynamics and leadership.
- b) Functions as an effective member or leader of diverse engineering teams, including those with multi-level, multi-disciplinary and multi-cultural dimensions.
- c) Earns the trust and confidence of colleagues through competent and timely completion of tasks.
- d) Recognises the value of alternative and diverse viewpoints, scholarly advice and the importance of professional networking.
- e) Confidently pursues and discerns expert assistance and professional advice.

# Engineering Technologist:

## General Description of Role

Engineering Technologists normally operate within broadly-defined technical environments, and undertake a wide range of functions and responsibilities. They are often specialists in the theory and practice of a particular branch of engineering technology or engineering-related technology (the technology domain), and specifically in its application, adaptation or management, in a variety of contexts. Their expertise often lies in familiarity with the current state of development of a technology domain and most recent applications of the technology. Within their specialist field, their expertise may be at a high level, and fully equivalent to that of a Professional Engineer. Engineering Technologists may not however, be expected to exercise the same breadth of perspective as Professional Engineers, or carry the same wide-ranging responsibilities for stakeholder interactions, for system integration, and for synthesising overall approaches to complex situations and complex engineering problems.

The work of Engineering Technologists combines the need for a strong understanding of practical situations and applications, with the intellectual challenge of keeping abreast of leading-edge developments as a specialist in a technology domain and how these relate to established practice. For this purpose Engineering Technologists need a strong understanding of scientific and engineering principles and a well-developed capacity for analysis.

The work of Engineering Technologists is most often concerned with applying current and emerging technologies, often in new contexts; or with the application of established principles in the development of new practice. They may also contribute to the advancement of technology.

Engineering Technologists frequently will take responsibility for engineering projects, services, functions and facilities within a technology domain, for specific interactions with other aspects of an overall operating context and for managing the contributions of their specialist work to a broader engineering system or solution. In these roles, Engineering Technologists must focus on sustainable solutions and practices which optimise technical, social, environmental and economic outcomes within the technology domain and over a whole systems life cycle. They will have an intimate understanding of the standards and codes of practice that underpin the technology domain and ensure that technology outcomes comply with statutory requirements. Engineering Technologists are required to interact effectively with Professional Engineers and Engineering Associates, with other professionals, tradespersons, clients, stakeholders and society in general, to ensure that technology outcomes and developments fully integrate with the overall system and context.

Engineering Technologists must ensure that all aspects of a technological product or operation are soundly based in theory and fundamental principle. They must understand how new developments relate to their specific field of expertise. They will be often required to interpret technological possibilities, to investigate interfaces, limitations, consequences, costs and risks.

Engineering Technologists may lead teams responsible for the implementation, operation, quality assurance, safety, management, and maintenance of projects, plant, facilities, or processes within specialist practice area(s) of the technology domain. Some Engineering Technologists may establish their own companies or may move into senior management roles in engineering and related enterprises, employing Professional Engineers and other specialists where appropriate.

See Summary Statement in Section C

# Units and Elements of Competency

## ET1: Knowledge and Skill Base

**ET 1.1 Systematic, theory based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the technology domain.**

- a) Engages with the technology domain at a phenomenological level, applying sciences and engineering fundamentals to systematic investigation, interpretation, analysis and innovative solution of broadly-defined problems and engineering technology practice.

**ET 1.2 Conceptual understanding of the, mathematics, numerical analysis, statistics, and computer and information sciences which underpin the technology domain.**

- a) Fluently applies relevant investigation, analysis, interpretation, assessment, characterisation, prediction, evaluation, modelling, decision making, measurement, evaluation, knowledge management and communication tools and techniques pertinent to the technology domain.

**ET 1.3 In-depth understanding of specialist bodies of knowledge within the technology domain.**

- a) Proficiently applies advanced technical knowledge and skills to deliver engineering outcomes in specialist area(s) of the technology domain and associated industry, commercial and community sectors.

**ET 1.4 Discernment of knowledge development within the technology domain.**

- a) Identifies and critically appraises current developments and emerging issues professionally disseminated in specialist practice area(s) of the technology domain.

**ET 1.5 Knowledge of contextual factors impacting the technology domain.**

- a) Identifies and understands the interactions between engineering technologies and people in the social, cultural, environmental, commercial, legal and political contexts in which they operate, including both the

positive role of engineering in sustainable development and the potentially adverse impacts of engineering activity in the technology domain.

- b) Is aware of the fundamentals of business and enterprise management.
- c) Identifies the structure, roles and capabilities of the engineering workforce. Appreciates the issues associated with international engineering practice activities and a global operating context.

**ET 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the technology domain.**

- a) Applies systematic principles of engineering design relevant to the technology domain.
- b) Understands the standards and codes of practice, as well as the legislative and statutory requirements associated with specialist practice area(s) of the technology domain.
- c) Appreciates the principles of safety engineering, risk management and the health and safety responsibilities of the engineering practitioner, applicable to the technology domain.
- d) Appreciates the social, environmental and economic principles of sustainable engineering practice.
- e) Understands the fundamental principles of engineering project management and systems as a basis for planning, organising and managing resources.

### Notes:

- a) 'technology domain' means the specific technological field (geotechnics, power systems, manufacturing, etc.) within a branch of engineering (civil, electrical, mechanical, etc.) or engineering-related discipline.
- b) 'specialist practice area' means the specific area of knowledge and practice within a technology domain, such as slope instability and stabilisation, power systems protection, industrial automation.

## ET2: Engineering Application Ability

**ET 2.1 Application of established engineering methods to broadly-defined problem solving within the technology domain.**

- a) Identifies, discerns and characterises salient issues, determines and analyses causes and effects, justifies and applies appropriate simplifying assumptions, predicts performance and behaviour, synthesises solution strategies and develops substantiated conclusions.
- b) Ensures that the application of specialist technologies are soundly based on fundamental principles - by diagnosing, and taking appropriate action with data, calculations, results, proposals, processes, practices, and documented information that may be ill-founded, illogical, erroneous, unreliable or unrealistic.
- c) Within specialist practice area(s), competently addresses engineering technology problems involving uncertainty, ambiguity, imprecise information and wide-ranging and sometimes conflicting technical and non-technical factors.
- d) Recognises problems which have component elements and/or implications beyond the engineering technologist's personal expertise and correctly identifies the need for supplementary professional input.
- e) Manages conflicting issues associated with interfacing, integrating and adapting specialist technologies where complex problems, processes or systems that have been partitioned into manageable elements for the purposes of analysis, modelling, design, prototyping, commissioning or testing, are recombined.
- f) Critically evaluates alternative implementation approaches using specialist engineering technologies and evaluates potential outcomes against appropriate criteria to justify an optimal solution choice.
- g) Interprets, applies and verifies compliance with relevant standards and codes of practice as well as legislative and statutory requirements underpinning specialist practice area(s) of the technology domain.
- h) Identifies, quantifies, mitigates and manages technical, health, environmental, safety and other contextual risks
- i) Accesses appropriate professional knowledge resources as input to systematic problem investigation.
- b) Understands the principles, limitations and accuracy of mathematical, physical or computational modelling.
- c) Selects and applies such models in the representation of phenomenon, processes, systems, components or devices.
- d) Determines properties, performance, safe working limits, failure modes, and other inherent parameters of materials, components and systems relevant to specialist areas(s) of the technology domain.
- e) Applies a wide range of engineering tools for analysis, simulation, visualisation, synthesis and design, assesses accuracy and limitations of such tools, and validates results.
- f) Designs and conducts experiments, analyses and interprets result data and formulates reliable conclusions.
- g) Analyses sources of error in applied models and experiments; eliminates, minimises or compensates for such errors; quantifies significance of errors to any conclusions drawn.
- h) Safely applies laboratory, test and experimental procedures appropriate to the technology domain.
- i) Appreciates the need for systematic approaches to acquisition, commissioning, operation, upgrade, monitoring and maintenance of engineering plant, facilities, equipment and systems.
- j) Understands the role of quality management systems, tools and processes within a culture of continuous improvement.

### **ET 2.3 Application of systematic synthesis and design processes within the technology domain.**

- a) Proficiently applies technological knowledge and problem solving skills as well as established tools and procedures to design components, system elements, plant, facilities and/or processes to meet technical specifications and performance criteria.
- b) Accommodates contextual factors that impact the technology domain, and in particular to ensure that health, safety and sustainability imperatives are addressed as an integral part of the design process.
- c) Engages with a whole systems design cycle, including tasks such as:
  - determining client requirements and identifying the impact of relevant contextual factors, including business planning and costing targets;
  - systematically addressing sustainability criteria;
  - working within projected development, production and implementation constraints;
  - eliciting, scoping and documenting the required outcomes of the design task and defining acceptance criteria;

### **ET 2.2 Application of engineering techniques, tools and resources within the technology domain.**

- a) Proficiently identifies, selects and applies the materials, components, devices, systems, processes, resources, plant and equipment relevant to the technology domain.

- identifying assessing and managing technical, health and safety risks integral to the design process;
  - writing engineering specifications, that fully satisfy the formal requirements;
  - ensuring compliance with essential engineering standards and codes of practice;
  - partitioning the design task into appropriate modular, functional elements; that can be subsequently integrated through defined interfaces;
  - identifying and analysing possible design approaches and justifying an optimal approach;
  - developing and completing the design using appropriate engineering principles, tools, and processes;
  - integrating functional elements to form a coherent design solution;
  - quantifying the materials, components, systems, equipment, facilities, engineering resources and operating arrangements needed for implementation of the solution;
  - checking the design solution for each element;
  - and the integrated system against the engineering specifications;
  - devising and documenting tests that will verify performance of the elements and the integrated realisation;
  - prototyping/implementing the design solution and verifying performance against specification;
  - documenting, commissioning and reporting the design outcome.
- d) Is aware of the accountabilities of the members of the engineering team in relation to the 'design authority' role.

#### **ET 2.4 Application of systematic approaches to the conduct and management of projects within the technology domain.**

- a) Contributes to and/or manages broadly-defined technological project activity, as a member of the engineering team and/or as leader of a specialist technological team.

- b) Seeks out the requirements and associated resources and realistically assesses the scope, dimensions, scale of effort and indicative costs of a broadly-defined technological project.
- c) Accommodates relevant contextual issues into all phases of project work, including the fundamentals of business planning and financial management.
- d) Proficiently applies basic systems engineering and/or project management tools and processes to the planning and execution of project work, targeting the delivery of a significant outcome to a professional standard.
- e) Is aware of the need to plan and quantify performance over the full life-cycle of a project, managing performance outcomes within the overall implementation context.
- f) Demonstrates commitment to sustainable engineering practices and the achievement of sustainable outcomes in all facets of technological project work.

### **ET3: Professional and Personal Attributes**

#### **ET 3.1 Ethical conduct and professional accountability.**

- a) Demonstrates commitment to uphold the Engineers Australia - Code of Ethics, and established norms of professional conduct pertinent to the technology domain.
- b) Understands the need for 'due-diligence' in certification, compliance and risk management processes.
- c) Understands the accountabilities of the engineering technologist and the broader engineering team for the safety of other people and for protection of the environment.
- d) Is aware of the fundamental principles of intellectual property rights and protection.

#### **ET 3.2 Effective oral and written communication in professional and lay domains.**

- a) Is proficient in listening, speaking, reading and writing English, including:



- comprehending critically and fairly the viewpoints of others;
  - expressing information effectively and succinctly, issuing instruction, engaging in discussion, presenting arguments and justification, debating and negotiating - to technical and non-technical audiences and using textual, diagrammatic, pictorial and graphical media best suited to the context;
  - representing an engineering technology position to professional colleagues, or to the broader community;
  - appreciating the impact of body language, personal behaviour and other non-verbal communication processes, as well as the fundamentals of human social behaviour and their cross-cultural differences.
- b) Prepares high quality engineering documents such as progress and project reports, reports of investigations and feasibility studies, proposals, specifications, design records, drawings, technical descriptions and presentations pertinent to the technology domain.

### **ET 3.3 Creative, innovative and pro-active demeanour.**

- a) Applies creative approaches to identify and develop alternative concepts, solutions and procedures, appropriately challenges engineering practices from technical and non-technical viewpoints; identifies new technological opportunities.
- b) Seeks out new developments in specialist area(s) of the technology domain and applies fundamental knowledge and systematic processes to evaluate and report potential.
- c) Is aware of broader fields of technology, science, engineering and commerce from which new ideas and interfaces may be drawn and readily engages with professionals from these fields to exchange ideas.

### **ET 3.4 Professional use and management of information.**

- a) Is proficient in locating and utilising information including accessing, systematically searching, analysing, evaluating and referencing relevant published materials and data.
- b) Critically assesses the accuracy, reliability and authenticity of information.

- c) Is aware of common document identification, tracking and control procedures.

### **ET 3.5 Orderly management of self and professional conduct.**

- a) Demonstrates commitment to critical self-review and performance evaluation against appropriate criteria as a primary means of tracking personal development needs and achievements.
- b) Understands the importance of being a member of a professional and intellectual community, learning from its knowledge and standards, and contributing to their maintenance and advancement.
- c) Demonstrates commitment to life-long learning and professional development.
- d) Manages time and processes effectively, prioritises competing demands to achieve personal, career and organisational goals and objectives.
- e) Thinks critically and applies an appropriate balance of logic and intellectual criteria to analysis, judgment and decision making.
- f) Presents a professional image in all circumstances, including relations with clients, stakeholders, as well as with professional and technical colleagues across wide ranging disciplines.

### **ET 3.6 Effective team membership and team leadership.**

- a) Understands the fundamentals of team dynamics and leadership.
- b) Functions as an effective member or leader of diverse engineering teams, including those with multi-level, multi-disciplinary and multi-cultural dimensions.
- c) Earns the trust and confidence of colleagues through competent and timely completion of tasks.
- d) Recognises the value of alternative and diverse viewpoints, scholarly advice and the importance of professional networking.
- e) Confidently pursues and discerns expert assistance and professional advice.
- f) Takes initiative and fulfils the leadership role whilst respecting the agreed roles of others.

# Engineering Associate:

## General Description of Role

Engineering Associates have a wide range of functions within engineering enterprises and engineering teams. Examples of their roles may include feasibility investigation, scoping, establishing criteria/performance measures, assessing and reporting technical and procedural options; design and development; component, resources and materials sourcing and procurement; construction, prototyping, manufacture, testing, installation, commissioning, service provision and de-commissioning; tools, plant, equipment and facilities acquisition, management, maintenance, calibration and upgrades; operations management; procedures documentation; presentation and reporting; maintenance systems design and management; project and facility management; quality assurance, costing and budget management; document control and quality assurance.

Engineering Associates are often required to be closely familiar with standards and codes of practice, and to become expert in their interpretation and application to a wide variety of situations. Many develop very extensive experience of practical installations, and may well be more knowledgeable than Professional Engineers or Engineering Technologists on detailed aspects of plant and equipment that can contribute very greatly to safety, cost or effectiveness in operation.

In other instances, Engineering Associates may develop high levels of expertise in aspects of design and development processes. These might include, for example, the use of advanced software to perform detailed design of structures, mechanical components and systems, manufacturing or process plant, electrical and electronic equipment, information and communications systems, and so on. Other examples might be in the construction of experimental or prototype equipment. Again, experienced operators in these areas often develop detailed practical knowledge and experience complementing the broader or more theoretical knowledge of others.

Engineering Associates need a good grounding in engineering science and the principles underlying their field of expertise, to ensure that their knowledge and skills are portable across different applications and situations within the broad field of practice. Equipment, vendor or context-specific training in a particular job is not sufficient to guarantee generic competency. Given a good knowledge base, however, Engineering Associates may build further on this through high levels of training in particular contexts and in relation to particular equipment. Aircraft maintenance is an excellent example.

The competencies of Engineering Associates equip them to certify the quality of engineering work and the condition of equipment and systems in defined circumstances, laid down in recognised standards and codes of practice.

Engineering Associates may lead or manage teams appropriate to these activities. Some may establish their own companies or may move into senior management roles in engineering and related enterprises, employing Professional Engineers, Engineering Technologists, and other specialists where appropriate. In Australia, the term 'para- professional' is frequently used to describe the Engineering Associate occupation.

See Summary Statement in Section C

# Units and Elements of Competency

## EA1: Knowledge and Skill Base

**EA 1.1 Descriptive, formula-based understanding of the underpinning natural and physical sciences and the engineering fundamentals applicable to the practice area.**

- a) Applies science and engineering fundamentals to investigate and address new problems, applications procedures, practices and requirements, extrapolating from a defined and established operating context.

**EA 1.2 Procedural-level understanding of the mathematics, numerical analysis, statistics, and computer and information sciences which underpin the practice area.**

- a) Rigorously and objectively applies analysis, characterisation, measurement, interpretation, assessment, evaluation, visualisation, simulation, decision making, knowledge management and communication tools and techniques pertinent to specialist sub-disciplines of the practice area.

**EA 1.3 In-depth practical knowledge and skills within specialist sub-disciplines of the practice area.**

- a) Proficiently executes advanced tasks, processes, techniques, and procedures in a para-professional support role using plant and equipment, instrumentation, measurement and test facilities, materials, components and systems.

**EA 1.4 Discernment of engineering developments within the practice area.**

- a) Maintains a broad understanding of development trends and emerging issues disseminated within specialist sub-disciplines of the practice area.

**EA 1.5 Knowledge of contextual factors impacting the practice area.**

- a) Identifies and understands the interactions between engineering practice and people in the social, cultural, environmental, commercial, legal and political contexts

in which they operate, including both the positive role of engineering in sustainable development and the potentially adverse impacts of engineering activity in the practice area.

- b) Is aware of the fundamentals of business and enterprise management.
- c) Identifies the structure, roles and capabilities of the engineering workforce.
- d) Appreciates the issues associated with international engineering practice in the practice area.

**EA 1.6 Understanding of the scope, principles, norms, accountabilities and bounds of contemporary engineering practice in the area of practice.**

- a) Applies engineering design principles of a standardised nature, relevant to the area of practice and specialist sub-disciplines.
- b) Understands the standards and codes of practice, as well as the legislative and statutory requirements which underpin practical and technical work in sub-discipline(s) specialisations of the practice area.
- c) Appreciates the principles of safety and risk management and the health and safety responsibilities of the engineering team operating within the practice area.
- d) Appreciates the broad principles and implications of sustainable engineering practice.
- e) Understands the role of engineering project management tools and procedures as a basis for planning, organising and managing resources.

### Notes:

- a) 'practice area' means the broad area of engineering such as aviation, mechanical, civil, telecommunications.
- b) 'specialised sub-discipline' means the specific domain of technical practice within a practice area such as aviation maintenance, mechanical design, foundation design, communications equipment installation.

## EA2: Engineering Application Ability

### **EA 2.1 Application of established technical and practical methods to the solution of well-defined engineering problems.**

- a) Provides practical input to the analysis of key issues, applies established diagnostic processes to investigate causes and effects, applies codified methods for characterisation and analysis as well as performance and behaviour evaluation, fluently applies standardised solution methodologies and formulates substantiated conclusions.
- b) Uses systematic and rigorous processes to reliably judge the appropriateness and/or practical validity of tasks, processes, practices, data, results and documented information that may be ambiguous, ill founded, illogical or subject to uncertainty.
- c) Proficiently selects and combines available components or elements to create a system, documents outcomes and systematically verifies performance against specifications and overall requirements of the system.
- d) Thoroughly evaluates alternative practical approaches to the solution of technical problems in the practice area.
- e) Critically observes, assesses and systematically reports in accordance with procedural requirements and codes of practice.
- f) Reliably interprets, applies and verifies compliance with standards and codes in the conduct of standardised engineering tasks relevant to specialist sub-disciplines in the practice area.
- g) Contributes responsibly and appropriately to the identification, quantification, mitigation and management of technical, health, environmental, safety and other contextual risks associated with practical engineering application in the practice area.
- h) Appreciates the need to ensure compliance with legislative and statutory requirements applicable to specialist sub-disciplines in the practice area.
- i) Accesses appropriate knowledge resources as input to investigatory work and practical problem solving.

### **EA 2.2 Application of technical and practical techniques, tools and resources to well-defined engineering problems.**

- a) Proficiently identifies, selects and applies the materials, components, devices, systems, processes, resources, physical tools, plant and equipment relevant to the area of practice.

- b) Proficiently applies computer based engineering tools and resources specific to specialist sub-discipline(s) of the area of practice, and recognises the limitations and accuracy of such tools.
- c) Proficiently and safely implements laboratory test and measurement outcomes including experimental procedures, calibration and operation of equipment and facilities, interpretation of result data and the formulation of reliable conclusions.
- d) Understands the application, capabilities, working limitations and performance expectations of the physical tools, plant and equipment as well as instrumentation and test facilities that support the underlying trades and specialist work within the practice area.
- e) Recognises common sources of error and eliminates or compensates for them, and quantifies their significance to any conclusions drawn.
- f) Appreciates the need for systematic approaches to the acquisition, commissioning, operation, upgrade, monitoring, maintenance and management of engineering plant, facilities, equipment and systems.
- g) Understands the role of quality management systems, tools and processes within a culture of continuous improvement.

### **EA 2.3 Application of systematic design processes to well-defined engineering problems.**

- a) Proficiently applies technical and practical knowledge and problem solving skills as well as established tools and standardized procedures to design components, system elements, plant, tools, facilities and/or resources to meet clearly specified user requirements.
- b) Accommodates contextual factors that impact the practice area, and in particular ensures that health, safety and sustainability imperatives are addressed as an integral part of the design process.
- c) Engages with technical and practical elements of a whole systems design cycle, including tasks such as:
  - interpreting and negotiating specified user requirements and acceptance criteria;
  - systematically addressing sustainability criteria;
  - ensuring that health, safety and technical risks are adequately addressed;
  - ensuring compliance with essential engineering standards and codes of practice;

- consideration of alternative approaches and justifying an optimal approach;
  - developing and completing the design using standardised tools and processes;
  - implementing the design using standard presentation/development/prototyping/fabrication/construction techniques;
  - checking the design outcome and/or verifying performance against specified user requirements using standard audit processes, acceptance testing and/or evaluation procedures;
  - documenting and reporting the design outcome.
- d) Is aware of the accountabilities of the members of the engineering team in relation to the 'design authority' role.

#### **EA 2.4 Application of systematic project management processes.**

- a) Engages with basic project management tools and practices in the execution of well-defined technical project work.
- b) Supports a project development cycle through the application of standardised processes, methodologies, tools and resources within a complex, but clearly partitioned engineering environment.
- c) Contributes to well-defined and technical project activity as a member of the engineering team and/or through leadership of technical and trades personnel. Identifies the requirements and resources, and realistically assesses the scope, dimensions, scale of effort and indicative costs of well-defined practical and technical project activity.
- d) Is aware of the need to accommodate relevant contextual issues into practical and technical project work, including the fundamentals of costing and financial control.
- e) Is aware of the need to plan and quantify performance over the full life-cycle of an engineering project, managing practical and technical outcomes within the overall implementation context.
- f) Is able to implement sustainable practices to achieve sustainable outcomes in all facets of practical and technical project work.

### **EA3: Professional and Personal Attributes**

#### **EA 3.1 Ethical conduct and professional accountability.**

- a) Demonstrates commitment to uphold the Engineers Australia - Code of Ethics, and established norms of professional conduct pertinent to the practice area.
- b) Understands the need for 'due-diligence' in certification, compliance and risk management processes.
- c) Understands the accountabilities of the engineering team for the safety of other people and for protection of the environment.
- d) Is aware of the need to recognise and protect intellectual property rights.

#### **EA 3.2 Effective oral and written communication in professional and lay domains.**

- a) Is proficient in listening, speaking, reading and writing English, including:
- comprehending critically and fairly the viewpoints of others;
  - expressing information effectively and succinctly, issuing instruction, engaging in discussion, presenting justification, and negotiating - to technical and non-technical audiences and using textual, diagrammatic, pictorial and graphical media best suited to the context;
  - representing a technical position to professional engineering colleagues or to the broader community;
  - appreciating the impact of body language, personal behaviour and other non-verbal communication processes, as well as the fundamentals of human social behaviour and their cross-cultural differences.
- b) Prepares high quality engineering documents such as sketches, charts, diagrams, plans, drawings, spreadsheets, databases, presentations, reports, technical instructions and manuals.

#### **EA 3.3 Creative, innovative and pro-active demeanour.**

- a) Applies creative approaches and procedures to the solution of well-defined problems, appropriately challenges existing engineering practices and identifies practical opportunities for improvement and innovation.
- b) Seeks out new developments and practical approaches and considers their application within specialist sub-discipline(s) of the practice area.

**EA 3.4 Professional use and management of information.**

- a) Is proficient in locating and utilising professionally published knowledge, information and data.
- b) Critically assesses the accuracy, reliability and authenticity of information.
- c) Is aware of common document tracking and control procedures.

**EA 3.5 Orderly management of self and professional conduct.**

- a) Demonstrates commitment to critical self-review and performance evaluation against appropriate criteria as a primary means of tracking personal development needs and achievements.
- b) Understands the importance of being a member of an engineering community, learning from its knowledge and standards.
- c) Demonstrates commitment to life-long learning and development.
- d) Manages time and processes effectively, prioritises competing demands to achieve personal, career and organisational goals and objectives.
- e) Presents a professional image in all circumstances, including relations with clients, stakeholders, as well as with colleagues across wide ranging disciplines.

**EA 3.6 Effective team membership and team leadership.**

- a) Understands the fundamentals of team dynamics and leadership.
- b) Functions as an effective member of the engineering team, including those with multicultural dimensions, and as a leader of a technical and/or trades team within the area of practice.
- c) Earns the trust and confidence of colleagues through competent and timely completion of tasks.
- d) Recognises the value of alternative and diverse viewpoints, scholarly advice and the importance of networking with other para-professional and professional colleagues.
- e) Confidently pursues and discerns expert assistance and professional advice.
- f) Takes initiative and fulfils the leadership role whilst respecting the agreed roles of others.

# Engineering Manager:

## General Description of Role

Engineering Manager is a high level executive position involving the formulation of engineering strategies, policies and plans and the direction, administration and review of engineering operations for an organization.

### Tasks Include:

- Determining, implementing and monitoring engineering strategies, policies and plans
- Interpreting plans, drawings and specifications, and providing advice on engineering methods and procedures to achieve construction and production requirements
- Establishing project schedules and budgets
- Ensuring conformity with specifications and plans, and with laws, regulations and safety standards
- Ensuring engineering standards of quality, cost, safety, timeliness and performance are observed
- Overseeing maintenance requirements to optimise efficiency
- Liaising with marketing, research and manufacturing managers regarding engineering aspects of new construction and product design
- Contributing to research and development projects
- Responsibility for selection, training and development of personnel working for him/her
- Responsibility for planning, organising, directing, controlling and coordinating the engineering and technical operations of the organisation

**Note: A Project Manager or Project Engineer is not considered an Engineering Manager; but rather is considered as working as an engineering professional.**

## Eligibility and Conditions

### An Engineering Manager should typically have:

- Five years of experience as an engineering professional before they can demonstrate sufficient competencies at the Engineering Manager level.

- Two years of experience operating at the Engineering Manager level.
- Persons reporting to them who are at the managerial level.

## Documentary Requirements in addition to the CDR

**It is mandatory for an Engineering Manager applicant to apply for a Relevant Skilled Employment assessment.**

- Letters of reference and organisational charts must be provided. Should provide the Official Organisational Chart approved by the person he or she reports to in the organisation
- Official duty statement approved by authorised person in the organisation
- Company profile of the whole organisation, including details of the size and business activities of the organisation being managed
- Detailed employment documentary evidence for the last ten years
- Documentary evidence of your appointment as an Engineering Manager (performance reviews, letters of offers and promotion letters)
- Historical career profile showing your career progression within the organisation
- Details of the formal management training undertaken
- Remuneration for the last three years
- Additional documentation to support your claim See Summary Statement in Section C

# Units and Elements of Competency

## EM 1.1 Contributes to Engineering Business Strategies

- Provides engineering analysis to contribute to the development of strategic plans and sustainability
- Integrates engineering objectives into business planning
- Seeks emergent business opportunities based upon engineering initiatives to create opportunities
- Works with others to develop engineering performance targets and financial plans
- Provides advice on engineering related costs and risks
- Implements processes to monitor and adjust team performance within the organisation's continuous improvement policies
- Undertakes risk assessment within organisational guidelines
- Develops quality plans for engineering operations
- Applies whole of life costing

## EM 1.2 Develops Client Relationships

- Plans to meet internal and external clients' engineering requirements
- Ensures delivery of quality engineering products and services
- Seeks client feedback on the delivery of engineering products and services
- Monitors adjusts and reports on the client service received
- Assists customers to identify sustainable options and implications

## EM 1.3 Manages the Implementation of Engineering Plans within the Business

- Allocates roles and responsibilities to staff to achieve engineering plans
- Provides engineering leadership
- Manages performance and standards
- Contributes to the solution of engineering problems
- Monitors strategic engineering plans, goals and targets
- Manages costs
- Manages safety and quality
- Manages environmental issues
- Manages risks and contingencies

## EM 1.4 Manages Resources

- Implements resource management plans
- Procures resources
- Manages asset maintenance
- Manages disposal, waste management and recycling plans
- Provides advice on engineering costs
- Contributes to the innovative management of resources

## EM 1.5 Manages People

- Implements people management plan
- Monitors team and individual performance targets
- Participates in the selection of staff
- Ensures the provision of skills and competencies requested to meet business targets
- Manages the workplace culture so that staff work in a continual learning environment
- Ensures the adherence to ethical, OH&S and quality standards
- Provides performance feedback

## EM 1.6 Manages Suppliers

- Participates in supplier selection
- Prepares documents for engagement of suppliers
- Plans and implements monitoring of suppliers

## EM 1.7 Manages Business Information

- Identifies and complies with all statutory reporting requirements
- Uses management information systems effectively to store and retrieve data for decision making
- Prepares and presents business plans / budgets in accordance with the organisation's guidelines and requirements

## EM 1.8 Monitors Engineering Business Performance

- Establishes monitoring processes and feedback systems to ensure agreed targets are met
- Establishes monitoring and reporting processes to ensure statutory requirements are met
- Establishes and monitors processes so that continuous improvement is achieved at all levels of the business Professional Engineer Category (Skill Level 1)



# ANZSCO Occupations Designated to Engineers Australia

## Professional Engineer Category (Skill Level 1)

Aeronautical Engineer (233911) including specializations  
Agricultural Engineer (233912) including alternative title  
Biomedical Engineer (233913) including specializations  
Civil Engineer (233211) including specializations  
Chemical Engineer (233111)  
Electronics Engineers (233411) including specialization  
Electrical Engineer (233311) including specializations  
Environmental Engineer (233915)  
Geotechnical Engineer (233212)  
Industrial Engineer (233511) including specialization  
Materials Engineer (233112)  
Mechanical Engineer (233512) including specializations  
Mining Engineer (233611) including specialization  
Naval Architect (233916)  
Petroleum Engineer (233612) including specializations  
Production or Plant Engineer (233513) including specialization  
Structural Engineer (233214)  
Telecommunications Engineer (263311) including specialization  
Telecommunications Network Engineer (263312) including alternative titles  
Transport Engineer (233215)  
Engineering Professional nec (233999)

## Engineering Technologist Category (Skill Level 1)

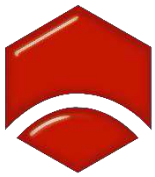
Engineering Technologist (233914) including specializations

## Engineering Associate Category (Skill Level 2)

Building and Engineering Technicians nec (312999)  
Civil Engineering Draftsperson (312211) including specializations  
Electrical Engineering Draftsperson (312311) including specializations  
Electronic Engineering Draftsperson (312411) including specializations  
Mechanical Engineering Draftsperson (312511) including specializations  
Telecommunication Field Engineer (313212)  
Telecommunications Network Planner (313213)  
Telecommunications Technical Officer or Technologist (313214)

## Managers and Administrators Category (Skill Level 1)

Engineering Manager (133211)



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