



ENSURING THE EXPERTISE TO GROW SOUTH AFRICA

**Processing of Applications for Registration of Candidates
and Professionals**

R-03-PRO-PC

REVISION 3: 09 February 2022



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BACKGROUND

The documents that define the Engineering Council of South Africa (ECSA) system for registration in professional categories are shown in Figure 1, which also locates the current document.

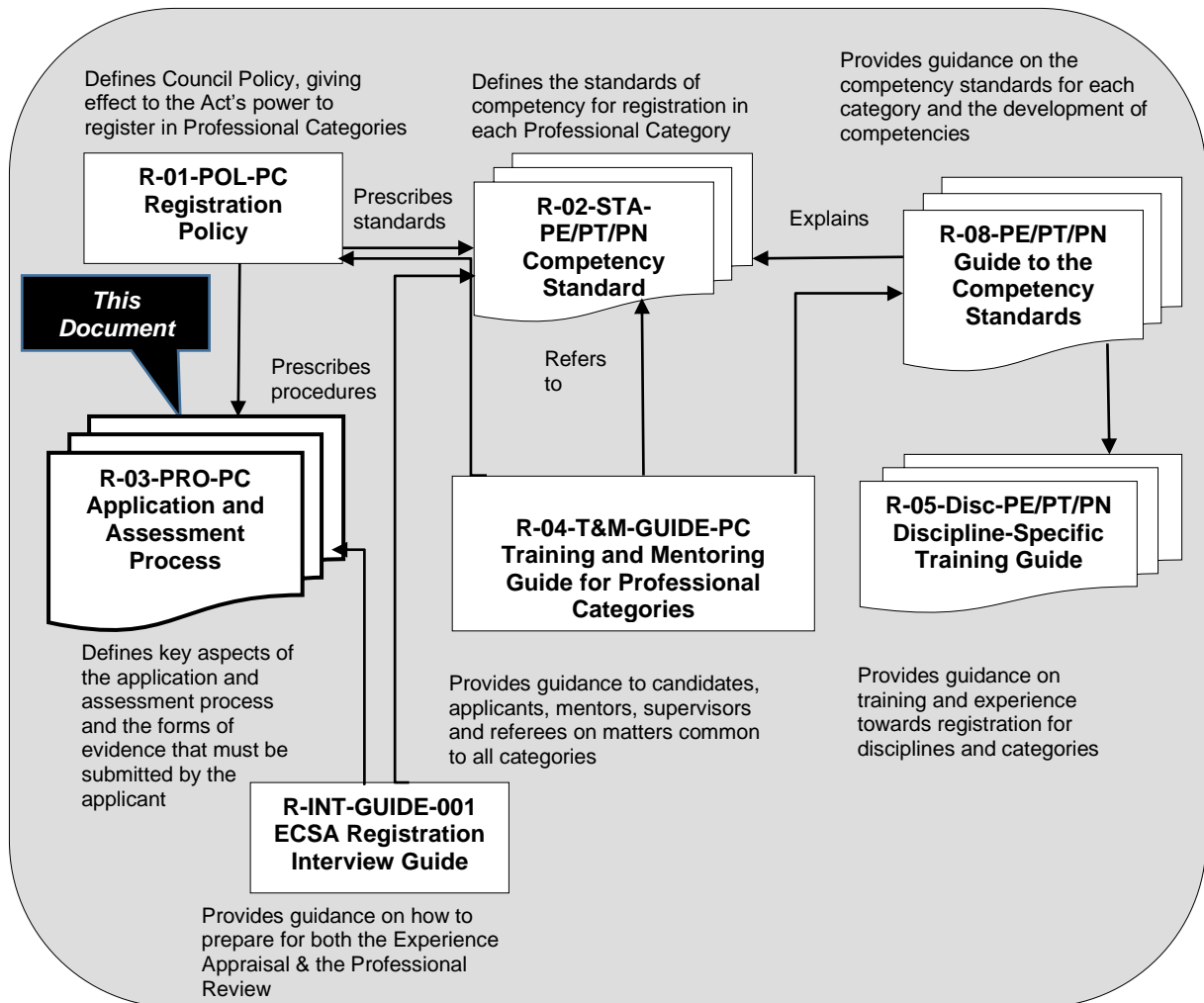



Figure 1: Documents defining the ECSA Registration System

1. PURPOSE OF THIS DOCUMENT

This document defines the process flow used by ECSA to process and make decisions regarding applications for registration as a Candidate Engineer, a Candidate Engineering Technologist and a Candidate Engineering Technician or as a Professional Engineer, a Professional Engineering Technologist and a Professional Engineering Technician.

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These processes are carried out under the authority of the Engineering Profession Act, 46 of 2000 (EPA) and the registration policies defined in document **R-01-POL-PC**. This document supports the management of the registration process and the assessment of applicants against the competency standard **R-02-STA-PE/PT/PN**, which provide a high-level definition of the registration process that results from implementation of the policy defined in document **R-01-POL-PC**.

2. CHANGES INTRODUCED IN THIS DOCUMENT

The ECSA approved Registration Policy, the Competency Standards and Education Evaluation Policy and the processes defined in this document bring about a number of changes to the registration system and provide greater clarity on and improvements to the application and assessment process. The main changes are summarised in Table 1 of this document. In summary:

- It is not the intention to change the standard required for registration but to define it better in terms of the outcomes produced and the level of competence required. Table 1 compares the specifications supplemented by the Discipline-Specific Training Guide (DSTG) and the Competency Standards identified in document **R-02-STA-PE/PT/PN**.
- The forms of evidence of competence have been made uniform across the disciplines and they provide evidence against all the outcomes (See the relevant appendix for the role of each form of evidence in relation to individual outcomes).
- The assessment process is uniform across the disciplines.

3. PROCESS OUTLINE

The processes defined below are designed to manage the various cases that may arise on the route to registration. These processes consider that applicants for professional registration do not necessarily register in a candidate category and that the educational requirement may be satisfied by several mechanisms, including educational evaluation.

The registration process is divided into two main sections:

- A secure system for entering the necessary data and uploading documents as required
- The core assessment process that encompasses the Experience Appraisal, Professional Review, Panel of Moderators and Administrative finalisation.

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Table 1: Changes introduced by 2011 policy, standards and procedure

	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
Aspect	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
Registration Policy	Embedded in Policy R2/1A: Acceptable Work for Candidate Engineers; does not explicitly consider other classes of applicants	<ul style="list-style-type: none"> Single, integrated policy R-01-POL-PC, defining registration and education policy and linking with standards (R-02-STA-PE/PT/PN) and processes (this document); applies to all applicants 	Embedded in Policy R2/1B: Acceptable Work for Candidate Engineering Technologists; does not explicitly consider other classes of applicants	Single, integrated policy R-01-POL-PC , defining registration and education policy and linking with standards (R-02-STA-PE/PT/PN) and processes (this document); applies to all applicants	Embedded in Policy R2/1C: Acceptable Work for Candidate Engineering Technicians; does not explicitly consider other classes of applicants	Single, integrated policy R-01-POL-PC , defining registration and education policy and linking with standards (R-02-STA-PE/PT/PN) and processes (this document); applies to all applicants
Educational Requirements Policy	Accredited or recognised qualification or prior evaluation of qualification(s) as meeting educational requirements	<ul style="list-style-type: none"> No change to accredited or recognised qualifications Accelerated evaluation of listed qualifications Evaluation criteria defined in document E-17-PRO for qualifications and assessed learning 	Accredited or recognised qualification or prior evaluation of qualification(s) as meeting educational requirements	<ul style="list-style-type: none"> No change to accredited or recognised qualifications Accelerated evaluation of listed qualifications Evaluation criteria defined in document E-17-PRO for qualifications and assessed learning 	Accredited or recognised qualification or prior evaluation of qualification(s) as meeting educational requirements	<ul style="list-style-type: none"> No change to accredited or recognised qualifications Accelerated evaluation of listed qualifications Evaluation criteria defined in document E-17-PRO for qualifications and assessed learning

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	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
Aspect	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
Standard of Competency for Registration	<p>Training requirements for Candidate Engineers in R2/1A, with further requirements in the R-05-PE Discipline-Specific Training Guide</p> <p>Professional Attributes in Section 5 for seven disciplines</p>	<ul style="list-style-type: none"> Competency Standard for registration as a Professional Engineer in document (R-02-STA-PE/PT/PN) Eleven outcomes, with definitions for the level of problem-solving and engineering activities Professional Attributes included in standard Level descriptors differentiate categories 	<p>Training requirements for Candidate Engineering Technologists in R2/1B, with further requirements in the R-05-PT Discipline-Specific Training Guide</p>	<ul style="list-style-type: none"> Competency Standard for registration as a Professional Engineering Technologist in document (R-02-STA-PE/PT/PN) Eleven outcomes, with definitions for the level of problem-solving and engineering activities Professional Attributes included in the standard Level descriptors differentiate between categories 	<p>Training requirements for Candidate Engineering Technicians in R2/1C, with further requirements in the R-05-PN Discipline-Specific Training Guide</p>	<ul style="list-style-type: none"> Competency Standard for registration as a Professional Engineering Technician in document (R-02-STA-PE/PT/PN) Eleven outcomes, with definitions for the level of problem-solving and engineering activities Professional Attributes included in the standard Level descriptors differentiate between categories
Seeking	Only the Engineer 'Alternative Route'	<ul style="list-style-type: none"> Criterion-based method of meeting educational requirements by 	The Technologist 'Alternative Route' allows experience of a	<ul style="list-style-type: none"> Criterion-based method of meeting educational 	The Technician 'Alternative Route' allows experience of a	<ul style="list-style-type: none"> Criterion-based method of meeting educational

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	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
Aspect	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
registration without normal qualification	available (ND or equivalent plus 10 years working at level of Pr. Eng.; Experience Appraisal, followed by final-year examinations).	evaluation and assessment defined in document E-17-PRO . When educational requirements are complete, apply for registration in normal way. Identified methods of further learning and assessment.	defined standard, duration and Initial Professional Development (IPD) achievement to be accepted in lieu of academic qualifications. Development assessed on educational outcomes based on competency claim submitted by the Candidate.	requirements by evaluation and assessment defined in document E-17-PRO . When educational requirements are complete, apply for registration in normal way. Continuation of assessment of educational competency development (Interim) • Identified methods of further learning and assessment	defined standard and duration to be accepted in lieu of academic qualifications. Development assessed on educational outcomes based on competency claim submitted by the Candidate.	requirements by evaluation and assessment defined in document E-17-PRO . When educational requirements are complete, apply for registration in normal way. Continuation of assessment of educational competency development (Interim). • Identified methods of further learning and assessment.
Evidence of Training/ Competency	For all disciplines: • Training and Experience Summary (TES)	Uniform requirements across disciplines: • Training and Experience Summary (TES)	For all disciplines: • Training and Experience Summary (TES)	Uniform requirements across disciplines: • Training and Experience Summary (TES)	For all disciplines: • Training and Experience Summary (TES)	Uniform requirements across disciplines: • Training and Experience Summary (TES)

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	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
Aspect	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
	<ul style="list-style-type: none"> • Training and Experience Reports (TERs) <p>Varying requirements across disciplines:</p> <ul style="list-style-type: none"> • Project Report (a) • Essay Test (b) • Claim to Competency (c) • Presentation (d) 	<ul style="list-style-type: none"> • Training and Experience Reports (TERs) • Training and Experience Outlines (TEOs) (e) • Engineering Report (f) • Presentation at Professional Review • Pre-registration of Continuing Professional Development (CPD)-type activity 	<ul style="list-style-type: none"> • Training and Experience Reports (TERs) • Project Report • Referee Reports • Educational Development Report for Alternative Route applicants • Initial Professional Development (IPD) Report • Presentation at Professional Review 	<ul style="list-style-type: none"> • Training and Experience Reports (TERs) • Training and Experience Outlines (TEOs) (a) • Engineering Report (b) • Referee Reports • Pre-registration CPD-type activity – IPD • Educational Development Report for Alternative Route applicants (Interim) • Discretionary interview in individual cases 	<ul style="list-style-type: none"> • Training and Experience Reports (TERs) • Project Report • Referee Reports • Educational qualification • Development Report for Alternative Route applicants • Initial Professional Development (IPD) Report • Discretionary interview in individual cases 	<ul style="list-style-type: none"> • Training and Experience Reports (TERs) • Training and Experience Outlines (TEOs) (a) • Engineering Report (b) • Referee Reports • Pre-registration CPD-type activity – IPD • Educational Development Report for Alternative Route applicants (Interim) • Presentation at Professional Review
Assessment of Competency	Two different assessment instruments used in professional reviews	<ul style="list-style-type: none"> • Policy (document R-01-POL-PC) defining main stages and permitted decisions in 	Assessment against outcomes and criteria, applying evidence submitted mainly in the Project Report,	<ul style="list-style-type: none"> • Policy (document R-01-POL-PC) defining main stages and permitted decisions in 	Assessment against outcomes and criteria, applying evidence submitted mainly in the Project Report,	<ul style="list-style-type: none"> • Policy (document R-01-POL-PC) defining main stages and permitted

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	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
Aspect	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
	<ul style="list-style-type: none"> Civil (including essay) and Electrical Other disciplines 	<ul style="list-style-type: none"> the assessment process Common assessment instruments addressing the outcomes and an integrative judgement providing consistent trails through all stages 	<ul style="list-style-type: none"> Educational Development Report (if applicable) and IPD Report and supplemented by the Experience Reports and Referee Reports Interviews if necessary 	<ul style="list-style-type: none"> the assessment process Common assessment instruments addressing the outcomes and an integrative judgement providing consistent trails through all stages 	<ul style="list-style-type: none"> Educational Development Report (if applicable) and IPD Report and supplemented by the Experience Reports and Referee Reports Interviews if necessary 	<ul style="list-style-type: none"> decisions in the assessment process Common assessment instruments addressing the outcomes and an integrative judgement providing consistent trails through all stages
Decision-making	Delegation of decision to register or defer to the Professional Advisory Committee (PAC); reserve refusal to Central Registration Committee	Delegation to register or to refuse to the Panel of Moderators	Delegation of decision to register or defer to the Registration Committee; reserve refusal to Central Registration Committee	Delegation to register or to refuse to the Panel of Moderators	Delegation of decision to register or defer to the Registration Committee; reserve refusal to Central Registration Committee	Delegation to register or to refuse to the Panel of Moderators
Application	Manual (paper-based)	Online (Transitional paper-based)	Manual (paper-based)	Online (Transitional paper-based)	Manual (paper-based)	Online (Transitional paper-based)

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Aspect	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
Process Definition	Embedded in part in other documents	<ul style="list-style-type: none"> High-level process definition (this document) Process flow 	Embedded in part in other documents	<ul style="list-style-type: none"> High-level process definition (this document) Process flow 	Embedded in part in other documents	<ul style="list-style-type: none"> High-level process definition (this document) Process flow
Training and Mentoring Guidelines	Discipline-specific guidelines having force of standards/policy. Three variants: <ul style="list-style-type: none"> Chemical Civil Remaining seven disciplines 	Layered set of guidelines: <ul style="list-style-type: none"> Training and mentoring (all categories) (document R-04-T&M-GUIDE-PC) with defined responsibility levels Guide to Competency Standards for Professional Engineers (document R-08-PE) Discipline-Specific Training Guide (document R-05-PE) 	Discipline-specific guidelines having force of standards/policy	Layered set of guidelines: <ul style="list-style-type: none"> Training and mentoring (all categories) (document R-04-P) with defined responsibility levels Guide to Competency Standards for Professional Engineering Technologists (document R-08-PT) Discipline-Specific Training Guide (document R-05-PT) 		Layered set of guidelines: <ul style="list-style-type: none"> Training and mentoring (all categories) (document R-04-T&M-GUIDE-PC) with defined responsibility levels Guide to Competency Standards for Professional Engineering Technicians (document R-08-PN) Discipline-Specific Training Guide (document R-05-PN)

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Aspect	Professional Engineer		Professional Engineering Technologist		Professional Engineering Technician	
	Prior to this policy	Under this policy	Prior to this policy	Under this policy	Prior to this policy	Under this policy
Notes	<ul style="list-style-type: none"> • Different formats across the disciplines • Civil Engineering only • Electrical Engineering only • Defined short form of TER, with clear rules regarding a TEO substitution by experienced applicant • Engineering Report replaces Project Report • When seeking registration without the normal qualification, the process will be held in abeyance and will only resume once the qualification assessment and evaluation is complete. 	<ul style="list-style-type: none"> • Defined short form of TER, with clear rules regarding a TEO substitution by an experienced applicant • Replaces Project Report; emphasis on demonstrating the applicant's engineering ability • When seeking registration without the normal qualification, the process will be held in abeyance and will only resume once the qualification assessment and evaluation is complete. 	<ul style="list-style-type: none"> • Defined short form of TER, with clear rules regarding a TEO substitution by an experienced applicant • Replaces Major Task Report; emphasis on demonstrating the applicant's engineering ability • When seeking registration without the normal qualification, the process will be held in abeyance and will only resume once the qualification assessment and evaluation is complete. 			

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3.1 Core process for Candidacy and Professional Registration

The process in Figure 2 gives effect to the Registration Policy in document **R-01-POL-PC**. The assessors for the Experience Appraisal are selected, and the appraisal starts. A provisional selection of reviewers and a date for the Professional Review are established (to be confirmed or cancelled later). This takes into account the timelines as stipulated in the acknowledgement letter.

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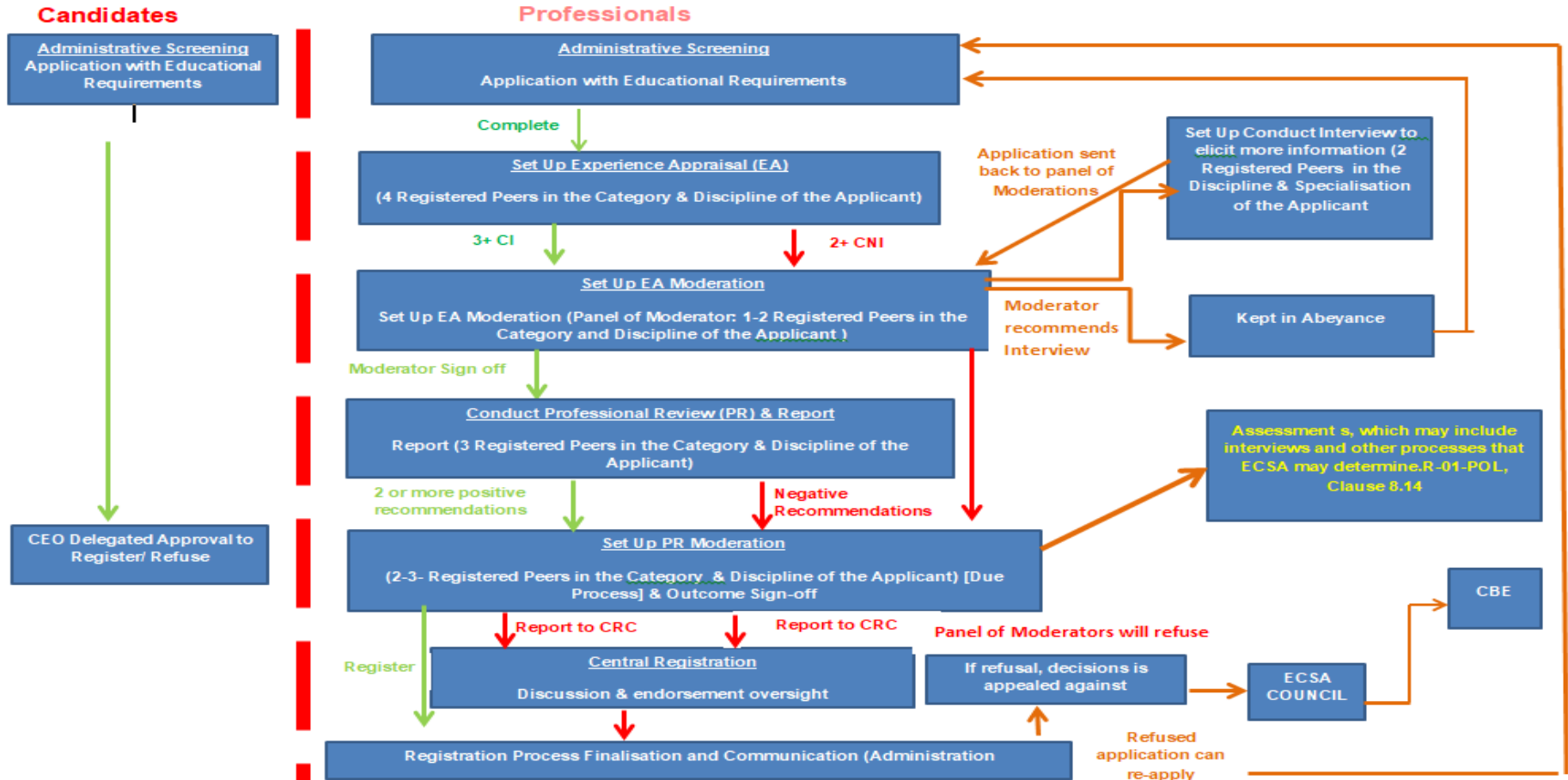



Figure 2: Process flow-diagram of Registration

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The process flow is in accordance with the policy presented in document **R-01-POL-PC** which includes the following main elements:

1. Experience Appraisal: An assessment of the applicant's competence using the submitted documentation.
 - If competence is indicated, proceed to Professional Review
 - If competence is not indicated, refer to the Panel of Moderators


2. If the Experience Appraisal is not indicative of competence, the Experience Appraisal Moderators must adopt one of the following measures:
 - Recommend that the applicant be interviewed by the reviewers to elicit further information.
 - Request additional information to be submitted, giving the applicant the opportunity to gain experience and fulfil outstanding competency requirements for a minimum period of 12 months.
 - Determine if the Professional Review should take place.

3. Professional Review
 - If competence is confirmed, recommend registration to Panel of Moderators.
 - If competence is not confirmed, recommend refusal of registration to Panel of Moderators.

4. Consideration of reports by the Panel of Moderators with the following possible outcomes:
 - Register applicant.
 - Refuse applicant.

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4. EVIDENCE AND ASSESSMENT FOR REGISTRATION AS A CANDIDATE OR PROFESSIONAL ENGINEER, ENGINEERING TECHNOLOGIST OR ENGINEERING TECHNICIAN

Table 2: Forms and documents (Applicable Registration System)

Ref.	Components of application	For registration as a Candidate or Professional Engineer		For registration as a Candidate or Professional Engineering Technologist		For registration as a Candidate or Professional Engineering Technician	
		Candidate	Professional	Candidate	Professional	Candidate	Professional
	Online application form	X	X	X	X	X	X
	Declaration signed by applicant and Commissioner of Oaths	X	X	X	X	X	X
	Proof of identity (SA ID book or foreign passport)	X	X*	X	X	X	X
TES	Summary of Training and Experience Reports		X		X		X
TER & TEO	Training and Experience Reports (generally more than one) – individual reports to be signed by supervisor. Training and Experience Outlines may be used where permitted		X		X		X
ER	Engineering Report (incorporating self-assessment)		X		X		X
IPD	Record of IPD (Pre-registration CPD)		X				X
EDR	Interim Educational Development Report until ECSA examinations can be conducted for Alternative Route applicants only (Voluntary – evidence of development)				X		X
	Proof of VA membership (Copy of certificate or letter)	X	X	X	X	X	X
	Qualification certificates (if not already submitted)	X	X*	X	X	X	X

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AR	Academic Record/transcript (List of Subjects and Grades)	X	X*	X	X		
RR/REF	<p>Professional Engineers: Referee Report must be completed and signed by two referees. The applicant must, with the permission of the persons concerned, supply the Council with the names and addresses of two referees who have personal knowledge of the applicant's professional performance and engineering experience. One referee must be registered with ECSA as a Professional Engineer or Professional Certificated Engineer (BSC or BEng Degree in Engineering). Under certain circumstances, foreign equivalents to the above categories may be accepted.</p> <p>Professional Engineering Technologists: Referee Report must be completed and signed by the referees. A minimum of three referees is required, who have personal knowledge of the applicant's work and registered with ECSA as a Professional Engineering Technologist, Professional Certificated Engineer or a Professional Engineer, <u>of which one should be a direct supervisor.</u></p> <p>Professional Engineering Technicians: Referee Report must be completed and signed by the referees. A minimum of three referees are required, who have personal knowledge of the applicant's work and registered with ECSA as a Professional Engineering Technician, a Professional Engineering Technologist, Professional Certificated Engineer or a Professional Engineer, <u>of which one should be a direct supervisor.</u></p>		X		X		X

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4.1 Professional Engineer

4.1.1 General requirements for registration

Assessment of an applicant for registration as a Professional Engineer must incorporate the requirements stipulated in the Competency Standard, document **R-02-STA-PE/PT/PN**:

Competence must be demonstrated within *complex engineering activities* ... [clause omitted because not relevant – text available in original source] by integrated performance of the outcomes ... [clause omitted because not relevant – text available in original source] at the level defined for each outcome. Required contexts and functions may be specified in the applicable discipline specific training guide.

The evidence used to demonstrate competency must, therefore, address the defined outcomes in the Competency Standard and indicate the level at which outcomes are achieved.

4.1.2 Required information and Evidence of Competency

Table 2 lists the information and the forms of evidence the applicant must provide for registration as a Candidate or Professional Engineer, Candidate or Professional Engineering Technologist and Candidate or Professional Engineering Technician.


4.1.3 Training and Experience Summary (Appendix C)

The Training and Experience Summary (TES) is a record of distinct phases of training and work experience during the applicant's career until the time of application.

The TES must identify each phase of training and experience and the Level of Responsibility. A phase of training and experience corresponds to a period in which particular high-level training objectives are fulfilled or a major task or project is completed. A phase typically ends when new training objectives are set, the type of work changes, the expected level of achievement changes, employment is terminated or engineering work is interrupted. See Table 3 for a list of events that demarcate a period of training and experience.

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The degrees of responsibility defined in document **R-04-T&M-GUIDE-PC** are presented below (and in the TERs).

Level A	Being exposed
Level B	Assisting
Level C	Participating
Level D	Contributing
Level E	Performing

Degree of Responsibility Level E means performing at the level required for registration. This corresponds to the range statement in Outcome 10 of the Competency Standard, document **R-02-STA-PE/PT/PN**, which requires the applicant to display responsibility “for the outcomes of significant parts of one or more complex engineering activities”.

4.1.4 Training and Experience Reports (Appendix D)

Two templates are available for reporting on an applicant’s training and experience; their use depends on the length and nature of the training and experience.

1. In general, an applicant must complete and submit a TER for each phase of training and work experience from graduation to application for registration. Training and Experience Reports covering at least one year working at the Degree of Responsibility Level E (Performing) must be submitted. Such phases need not include the last period(s) in the applicant’s TES.
2. The requirement above is relaxed in the case of an applicant who has at least 10 years engineering training and experience after completing the educational requirement and reports at least three years at the Degree of Responsibility Level E (Performing) in detail in the TERs that are signed by the supervisor. Such periods need not include the last period(s) in the applicant’s TES. Such an applicant may submit Training and Experience Outlines (TEOs) for the remaining periods or groups of related periods.
3. Training and Experience Outline (Appendix E): Table 3 below presents the information that is required in the TERs and TEOs.

Information to be provided in Training and Experience Reports and Outlines for registration as a Professional Engineer.

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Table 3: Information to be provided in Training and Experience Reports and Outlines for registration as a Professional Engineer

Aspect	Training and Experience Report (TER)	Training and Experience Outline (TEO)
Supervisor's signature	Required (indicates agreement with levels of responsibility A–E inserted in header)	Not required (covered by general declaration by applicant)
A period ends when:	<ul style="list-style-type: none"> The work environment has changed (e.g. a major training phase or task ends) The type of work has changed The responsibilities or level of function has changed (e.g. a promotion, change of employer) Training or employment is interrupted (e.g. by study, unemployment or prolonged illness). 	<ul style="list-style-type: none"> The Level of Responsibility changes from Level B to Level C. The Level of Responsibility changes from Level D to Level E. A promotion is received. There is a change of employment. Training or employment is interrupted. Nature of work changes significantly.
Position in organisation	Supply an organogram showing supervisors, co-workers and persons you supervised (if any). Show two levels above and below if possible.	Simplified organogram: Identify yourself, your supervisor and state the number and level of persons supervised.
Reporting format	<ul style="list-style-type: none"> Write in the first person. Construct proper paragraphs and address key aspects from the list below. 	Use bulleted format and cover the items below.
Topics to be covered (Elements marked * are mandatory, others as applicable)	Objective of training or major work phase*	Nature of the training/work phase or related phases
	<ul style="list-style-type: none"> Nature of problem(s) addressed* Method of analysis* Method used in developing solution* Criteria used in evaluating solution* 	Typical problems addressed*
	<ul style="list-style-type: none"> Documentation, reports, presentations prepared Interaction with clients, stakeholders and other disciplines Management of materials, machines, manpower, methods or money Contracts 	<ul style="list-style-type: none"> Responsibilities for communication and documentation Management responsibilities

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Aspect	Training and Experience Report (TER)	Training and Experience Outline (TEO)
	<ul style="list-style-type: none"> • Health and safety considerations • Hazards and environmental considerations • Other legislation 	Legal and impact analysis
	<ul style="list-style-type: none"> • The applicant's contribution to the task* • Nature of the applicant's responsibility (in addition to levels A–E)* 	Applicant's role and responsibility (in addition to levels A–E)*
Length limit	Do not exceed 2 000 words in total (all TERs)	Summary of training and experience in bullet points per TEO.

An applicant whose training and experience history is less than three years and who has less than one year working at the Degree of Responsibility Level E (Performing) will be notified that the application is premature and will be invited to submit further TESs as they become available. The information to be provided in the TER and TEO format is defined in Table 3 above.

4.1.5 Engineering Report (Appendix F)


Each applicant must submit an Engineering Report covering aspects of work at a performance level that demonstrates the applicant has fulfilled the required outcomes. This report must be specifically written for the application; the document is not “simply a report on a specific project”. While the Engineering Report may be based on a major project or a series of projects, it is a report in which applicants reflect on their engineering activity that demonstrates the required level of competence. The work presented in the report does not need to be project based; in an operational engineering work environment, problem-solving and engineering management may provide evidence of performance against the required outcomes.

The report should be reflective rather than purely narrative and should cover the following:

- The engineering and contextual knowledge and understanding required for effective performance of the work that was gained in the applicant's education and acquired thereafter.
- The theoretical and practical methods used to analyse and solve engineering problems encountered in the work.

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- The planning, organising, leading and controlling of human and other resources to achieve the goals of the engineering work.
- The management of regulatory considerations, impacts of the work that were not necessarily covered by regulation and ethical issues and the recognition of obligations to society, the profession and the environment.
- The risks and uncertainties associated with the work and its product.
- The recommendations, judgement calls and decisions that the applicant had to make and in which the applicant's leadership skills were exercised
- The nature of the responsibility carried by the applicant and the identification of persons for whom the applicant was responsible.

The report must be written in the first person and in the English language and must demonstrate proper structure and style. A template for the heading and closure of the report is provided. The report body, including headings and sub-headings, should be approximately 6 000 words. Diagrams, tables and pictures appropriate to the purpose defined above must not exceed four A4 pages in total. The report is a test of written communication ability from a structural, stylistic and linguistic aspect and must demonstrate logical development.


4.1.6 Referee Report (Appendix G)

The Referee Report draws on observations of the applicant's performance under work conditions to obtain information on the applicant's competency. The referee is asked to identify periods in the applicant's career as itemised in the TES for which the referee feels able to comment on the applicant's attributes. In relation to these periods, the referee is required to:

- rate the applicant's problem-analysis and solution-synthesis abilities in relation to the desired level (complex engineering problems)
- rate the applicant's knowledge of engineering principles and of the wider context of the engineering work
- comment on the applicant's engineering management ability, that is, the ability to ensure the achievement of engineering results through management methods
- rate the applicant's communication ability
- comment on the applicant's abilities to manage the regulatory, economic, social and environmental issues arising from engineering activity

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- comment on the applicant's understanding of ethics and ethical behaviour in relation to engineering work
- rate the applicant's judgement in decision-making and acceptance of responsibility
- comment on the applicant's willingness and capacity to accept responsibility; and
- comment on the applicant's commitment and attention to competency and career development.

4.1.7 Initial Professional Development Report

The Initial Professional Development (IPD) Report is a factual record that serves as evidence of proficiency development through Continuing Professional Development (CPD)-type activities of Category 1 and other formal learning activities prior to registration.

4.2 Professional Engineering Technologist

4.2.1 General requirements for registration

The assessment of applicants for registration as Professional Engineering Technologists must incorporate the requirements stipulated in the Competency Standard, document **R-02-STA-PE/PT/PN:**

Competence must be demonstrated within *broadly defined engineering activities* by integrated performance of the outcomes at the level defined for each outcome. Required contexts and functions may be specified in the applicable discipline-specific training guide (Refer to Appendix A: Tables A1 and A2).

The evidence used to demonstrate competency must, therefore, address the defined outcomes in the Competency Standard.

4.2.2 Required information and Evidence of Competency


Table 2 above lists the information and the forms of evidence an applicant must provide for registration as a Candidate Engineering Technologist or Professional Engineering Technologist.

4.2.3 Training and Experience Summary (Appendix C)

The TES is a factual record of distinct phases of training and work experience during the applicant's career until the time of application (see Appendix C). The TES must identify each

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phase of training and experience and the Level of Responsibility.

Periods during which the applicant was not engaged in an activity that contributed to professional development must also be indicated and reasons for the inactivity must be given. The nature of the work and the degrees of responsibility defined in document **R-04-T&M-GUIDE-PC**, (*Progression Throughout the Candidacy Period*) are presented below in Table 4 (and in the TERs).

Table 4: Nature of engineering work and Degree of Responsibility applicable to Professional Engineering Technologists

A: Being exposed	B: Assisting	C: Participating	D: Contributing	E: Performing
Undergoes induction; observes processes and work of competent practitioners	Performs specific processes under close supervision	Performs specific processes as directed with limited supervision	Performs specific work with detailed approval of work outputs	Works in team without supervision; recommends work outputs; responsible but not accountable
Responsible to supervisor	Limited responsibility for work output	Full responsibility for supervised work	Full responsibility to supervisor for immediate quality of work	Level of Responsibility to supervisor is appropriate to that of a registered person; supervisor is accountable for applicant's decisions


Degree of Responsibility Level E means performing at the level required for registration. This corresponds to the range statement in Outcome 10 of the Competency Standard, document **R-02-STA-PE/PT/PN**, which requires that the applicant displays responsibility “for the outcomes of significant parts of one or more broadly defined engineering activities”.

4.2.4 Training and Experience Reports (Appendix D)

The TERs provide a factual record of the main periods in the applicant’s development from graduation to application for registration and to identify the periods in which the applicant took responsibility at the required level, providing evidence of meeting the required outcomes during these times. Reference must be made to the Engineering Report and to the specific outcome that has been met.

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Two templates are available for reporting on the applicant's training and experience; their use depends on the length and nature of the relevant training and experience.

Table 5: Information to be provided in Training and Experience Reports and Outlines for registration as a Professional Engineering Technologist

Aspect	Training and Experience Report (TER)	Training and Experience Outline (TEO)
Supervisor's signature	Required (indicates agreement with inserted Level of Responsibility A–E)	Required (indicates agreement with inserted Level of Responsibility A–E)
A period ends when:	<ul style="list-style-type: none"> The work environment has changed, (e.g. when a major training phase, task ends). The type of work has changed. The responsibilities or level of function has changed (e.g. In a promotion). The employer has changed. Training or employment is interrupted (e.g. by study, unemployment or prolonged illness). 	<ul style="list-style-type: none"> The Level of Responsibility changes from Level B to Level C. The Level of Responsibility changes from Level D to Level E. A promotion is received. There is a change of employment. Training or employment is interrupted. Nature of work changes significantly.
Position in organisation	Supply an organogram showing the names, position and registration (if any) and qualification (if not registered) of supervisor(s), co-workers and persons you supervised (if any). Show two levels above and below if possible. Always show the supervisor.	Simplified organogram: Identify yourself and your supervisor and state the number and level of persons supervised.
Reporting format	<ul style="list-style-type: none"> Write in the first person Construct proper paragraphs and address the key aspects from the list below 	<ul style="list-style-type: none"> Use bulleted format and cover the items below
Topics to be covered (Elements marked * are mandatory,	Nature of training or experience*	Nature of the training or work phase or related phases

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Aspect	Training and Experience Report (TER)	Training and Experience Outline (TEO)
others as applicable)	Discipline of Engineering and discipline-specific fields*	Discipline of Engineering and discipline-specific fields*
	<ul style="list-style-type: none"> Nature of problem(s) addressed Method of analysis 	<ul style="list-style-type: none"> Nature of problem(s) addressed Method of analysis
	Solution development and evaluation*	Solution development and evaluation*
	<ul style="list-style-type: none"> Management of materials, machines, manpower, methods or money, contracts 	Management responsibilities
	Interaction with clients, stakeholders and other disciplines	
	Health and safety considerations; hazards; environmental considerations; other legislation*	Legal and impact analysis*
<ul style="list-style-type: none"> The applicant's contribution to the task* Nature of the applicant's responsibility (in addition to levels A–E)* 	<ul style="list-style-type: none"> The applicant's contribution to the task* Nature of the applicant's responsibility (in addition to levels A–E)* 	
Length limit	Do not exceed 2 000 words in total (all TERs)	Summary of training and experience in bullet points per TEO

See appendices D and E

4.2.5 Engineering Report (Appendix F)


Each applicant must submit an Engineering Report covering aspects of work at the performance level that demonstrates that the applicant has fulfilled the required outcomes. This report must be specifically written for the application; this document is not “simply a report on a specific project”. While the Engineering Report may be based on a major project or a series of projects, it is a report in which applicants reflect on their engineering activity that demonstrates the required level of competence. The work presented in the report does not have to be project based; in an operational engineering work environment, problem-solving and engineering management may provide evidence of performance against the required outcomes.

The report should be reflective rather than purely narrative and should cover the following:

- The engineering and contextual knowledge and understanding required for effective performance of the work that was gained in the applicant's education and acquired thereafter.

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- The theoretical and practical methods used to analyse and solve engineering problems encountered in the work.
- The planning, organising, leading and controlling of human and other resources to achieve the goals of the engineering work.
- The management of regulatory considerations, impacts of the work that were not necessarily covered by regulation and ethical issues and the recognition of obligations to society, the profession and the environment.
- The risks and uncertainties associated with the work and its product.
- The recommendations, judgement calls and decisions the applicant had to make and in which the applicant's leadership skills were exercised.
- The nature of the responsibility carried by the applicant and identification of the persons for whom the applicant was responsible.

The report must be written in the first person and in the English language, demonstrating a proper structure and style. A template for the heading and closure of the report is provided. The report body, including headings and sub-headings should be approximately 6 000 words. Diagrams, tables and pictures appropriate to the purpose defined above must not exceed four A4 pages in total. The report is a test of written communication ability from a structural, stylistic and linguistic aspect and must demonstrate logical development.


4.2.6 Referee Report (Appendix G)

The Referee Report draws on observations of the applicant's performance under work conditions to obtain information on the applicant's competency. The referees are asked to identify periods in the applicant's career as itemised in the TES in which the referee feels able to comment on the applicant's attributes. In relation to these periods, the referee is required to

- rate the applicant's problem-analysis and solution-synthesis abilities in relation to the desired level (broadly defined engineering problems)
- rate the applicant's knowledge of engineering principles and of the wider context of the engineering work
- comment on the applicant's engineering management ability, that is, the ability to ensure the achievement of engineering results through management methods
- rate the applicant's communication ability

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- comment on the applicant's abilities to manage the regulatory, economic, social and environmental issues arising from engineering activity at a broadly defined level
- comment on the applicant's understanding of ethics and ethical behaviour in relation to the engineering work
- rate the applicant's judgement in decision-making and acceptance of responsibility for engineering work at a broadly defined level
- rate the applicant's willingness and capacity to accept responsibility for engineering work at a broadly defined level
- comment on the applicant's commitment and attention to competency and career development.

4.2.7 Academic Record (Appendix H) and IPD Report (Appendix I)


The Academic Record (AR) and the IPD Report are factual records that serve as evidence of proficiency development from an academic base through the CPD-type activities of Category 1 and other formal learning activities including in-house training prior to registration. Reported activities do not require CPD validation. Appendix I specifies the information required for each activity.

4.2.8 Educational Development Report (Appendix J)

- Applicants not in possession of an ECSA-accredited BTech Degree in Engineering should complete this work-based (experience) learning report. WRITE A REPORT IN ABOUT 100 WORDS ON EACH CRITERION LISTED.
- Reports must include reference to any broadly defined practical examples in the workplace and demonstrate how the competencies were satisfied. The report is not restricted to a single task or project. (Additional supporting evidence may be attached if necessary but must not exceed two A4 pages.)
- The information can be obtained from education or experience or a combination of both.
- The applicant and supervisor must sign the completed report.

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4.3 Professional Engineering Technicians

4.3.1 General requirements for registration

The assessment of applicants for registration as Professional Engineering Technicians must incorporate the requirements stipulated in the Competency Standard, document **R-02-STA-PE/PT/PN**:

Competence must be demonstrated within *well-defined engineering activities* by integrated performance of the outcomes at the level defined for each outcome. Required contexts and functions may be specified in the applicable discipline specific training guides (Refer to Appendix A: Tables A1 and A2).

The evidence used to demonstrate competency must, therefore, address the defined outcomes in the Competency Standard.

4.3.2 Required information and Evidence of Competency

Table 2 above lists the information and the forms of evidence that the applicant must provide for registration as a Candidate Engineering Technician or Professional Engineering Technician.

4.3.3 Training and Experience Summary (Appendix C)


The TES is a factual record of distinct phases of training and work experience during the applicant's career until the time of application. The TES must identify each phase of training and experience and the Level of Responsibility.

Periods during which the applicant was not engaged in an activity that contributed to professional development must also be indicated, and the reasons for the inactivity must be given.

A phase of training and experience corresponds to a period in which particular high-level training objectives are fulfilled or a major task or project is completed. A phase typically ends when new training objectives are set, the type of work changes, the expected level of achievement changes, employment is terminated or the engineering work is interrupted. See Table 6 for a list of events that demarcate a period of training and experience.

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The nature of work and the degrees of responsibility defined in document **R-04-T&M-GUIDE-PC** (*Progression Throughout the Candidacy Period*) are presented below (and in the TERs).

Table 6: Nature of engineering work and Degree of Responsibility applicable to Professional Engineering Technicians

A: Being exposed	B: Assisting	C: Participating	D: Contributing	E: Performing
Undergoes induction, observes processes and work of competent practitioner	Performs specific processes under close supervision	Performs specific processes as directed with limited supervision	Performs specific work with detailed approval of work outputs	Works in team without supervision; recommends work outputs; responsible but not accountable
Responsible to supervisor	Limited responsibility for work output	Full responsibility for supervised work	Full responsibility to supervisor for immediate quality of work	Level of Responsibility to supervisor is appropriate to that of a registered person; supervisor is accountable for applicant's decisions

Degree of Responsibility Level E means performing at the level required for registration. This corresponds to the range statement in Outcome 10 of the Competency Standard, document **R-02-STA-PE/PT/PN**, which requires the applicant to display the Level of Responsibility “for the outcomes of significant parts of one or more well-defined engineering activities”. The applicant may not, however, assume accountability for the work.

4.3.4 Training and Experience Reports (Appendix D)

The TER provides a factual record of the main periods in the applicant’s development from graduation to application for registration and to identify the periods in which the applicant took responsibility at the required level, providing evidence of meeting the required outcomes during these times. Reference must be made to the Engineering Report and the specific outcome that has been met.

Two templates are available for reporting on the applicant’s training and experience; their use depends on the length and nature of the relevant training and experience. The information to be provided in the TER and TEO is defined in Table 7.

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Table 7: Information to be provided in Training and Experience Reports and Outlines for registration as a Professional Engineering Technician

Aspect	Training and Experience Report (TER)	Training and Experience Outline (TEO)
Supervisor's signature	Required (indicates agreement with inserted Level of Responsibility A–E)	Required (indicates agreement with inserted Level of Responsibility A–E)
A period ends when	<ul style="list-style-type: none"> The work environment has changed (e.g. a major training phase or task ends). The type of work has changed. The responsibilities or level of function has changed (e.g. a promotion). The employer has changed. Training or employment is interrupted (e.g. study, unemployment or prolonged illness). 	<ul style="list-style-type: none"> The Level of Responsibility changes from Level B to C. The Level of Responsibility changes from Level D to E. A promotion is received. There is a change of employment. Training or employment is interrupted. The nature of the work changes significantly.
Position in organisation	Supply an organogram showing the names, position and registration (if any) and qualification (if not registered) of supervisor(s), co-workers and persons you supervised (if any). Show two levels above and below if possible. Always show the supervisor.	Simplified organogram: Identify yourself, your supervisor and state the number and level of persons supervised.
Reporting format	Write in the first person. Construct proper paragraphs and address the key aspects from the list below.	Use bulleted format covering the items below.
Topics to be covered: (elements marked * are mandatory, others as applicable)	Nature of training or experience*	Nature of the training or work phase or related phases*
	Discipline of Engineering and discipline-specific fields*	Discipline of Engineering and discipline-specific fields*
	<ul style="list-style-type: none"> Nature of problem(s) addressed Method of analysis 	<ul style="list-style-type: none"> Nature of problem(s) addressed Method of analysis
	Solution development and evaluation*	Solution development and evaluation*
		Management responsibilities
	Interaction with clients, stakeholders and other disciplines	Interaction with clients, stakeholders and other disciplines
The applicant's contribution to the task*	The applicant's contribution to the task*	The applicant's contribution to the task*

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Aspect	Training and Experience Report (TER)	Training and Experience Outline (TEO)
	Nature of the applicant's responsibility (in addition to Level A–E)*	Nature of the applicant's responsibility (in addition to Level A–E)*
Length limit	Do not exceed 2 000 words in total (all TERs).	Summary of training and experience in bullet points per TEO.

See Appendices D and E

4.3.5 Engineering Report (Appendix F)

Each applicant must submit an Engineering Report covering aspects of work at the Performance Responsibility Level E to demonstrate that the applicant has fulfilled the required outcomes.

While the report may be based on a major task, a series of tasks or a project, the Engineering Report is a report in which applicants reflect on their engineering activity that demonstrates the required level of competence.

The work drawn on for the report does not have to be project based. In an operational engineering work environment, problem-solving and engineering management may provide evidence of performance against the required outcomes.


The report must be based on problem-solving and activities at a *well-defined* level, applying technician-level educational theory. Calculations at this level done by the applicant must be attached to the report.

The report should be reflective rather than purely narrative and should cover the following:

- The engineering and contextual knowledge and understanding required for effective performance of the work that was gained in the applicant's education and acquired thereafter.
- The theoretical and practical methods used to analyse and solve engineering problems encountered in the work.
- The planning, organising, leading and controlling of human and other resources to achieve the goals of the engineering work.

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- The management of legislative considerations, impacts of the work that were not necessarily covered by regulations and ethical issues and the recognition of obligations to society, the profession and the environment.
- The risks and uncertainties associated with the work and its product.
- The recommendations, judgement calls and decisions that the applicant had to make in which the applicant's leadership skills were exercised.
- The nature of the responsibility carried by the applicant and identification of the persons for whom the applicant was responsible.

The report must be written in the first person (except when describing the actions of another person or agency) and in the English language, demonstrating proper structure and style. A template for the heading of the report is provided. The report body, including headings and sub-headings, should be approximately 6 000 words in total. Diagrams, tables and pictures appropriate to the purpose defined above must not exceed four A4 size pages in total. The report is a test of written communication ability from a structural, stylistic and linguistic aspect and must demonstrate logical development.


4.3.6 Referee Report (Appendix G)

The Referee Report draws on observations of the applicant's performance under work conditions to obtain information regarding the applicant's competency. The referees are asked to identify periods in the applicant's career as itemised in the TES for which the referee feels able to comment on the applicant's attributes. In relation to these periods, the referee is required to:

- rate the applicant's problem-analysis and solution-synthesis abilities in relation to the desired level (well-defined engineering problems)
- rate the applicant's knowledge of engineering principles and of the wider context of the engineering work
- comment on the applicant's engineering management ability, that is, the ability to ensure the achievement of engineering results through management methods
- rate the applicant's communication ability
- comment on the applicant's abilities to manage the regulatory, economic, social and environmental issues arising from engineering activity at a well-defined level

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- comment on the applicant's understanding of ethics and ethical behaviour in relation to the engineering work
- rate the applicant's judgement in decision-making and acceptance of responsibility for engineering work at a well-defined level
- rate the applicant's willingness and capacity to accept responsibility for engineering work at a well-defined level
- comment on the applicant's commitment and attention to competency and career development.

4.3.7 Academic Record and IPD Reports (Appendices H and I respectively)


The Academic Record (AR) and the Initial Professional Development (IPD) Report are factual records that serve as evidence of proficiency development from an academic base through the CPD-type activities of Category 1 and other formal learning activities including in-house training prior to registration. Reported activities do not require CPD validation. Appendix I specifies the information required for each activity.

4.3.8 Educational Development Report (Appendix J)

- Applicants not in possession of an ECSA-accredited National Diploma in Engineering should complete this work-based (experience) learning report. WRITE A REPORT IN ABOUT 100 WORDS ON EACH CRITERION LISTED.
- Reports must include reference to any *well-defined* practical examples in the workplace and demonstrate how the competencies were satisfied. This report is not restricted to a single task or project. (Additional supporting evidence may be attached, if necessary but must not exceed two A4 pages.)
- The information can be obtained from education or experience or a combination of both.
- The applicant and supervisor must sign the completed report.

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REVISION HISTORY

Revision number	Revision date	Revision details	Approved by
Draft A	26 October 2018	Merging of R-03-PE/PT/PN	RPS BU
Draft B	13 November 2018	Verification of registration process by Registration BU	RPS BU
Draft C	10 December 2018	Verification of updated registration process by Registration BU	RPS BU
1	29 January 2019	Approval	RPSC
Rev 2	23 March 2020	Specifying number of Referees required for each professional category.	EL Nxumalo
Revision 2	09 June 2020	Round robin approval	RPSC Members
Revision 2	18 June 2020	Final Approval	RPSC
Revision 2	16 September 2021	Figure 2 aligned to the Road to Registration (Candidacy and Professional)	Registration and RDD&R BU
Rev. 3 Draft A	20 November 2022	Document reviewed to remove the Professional Technologist from signing the referee report on behalf of a Professional Engineer	RPS BU
Rev. 3 Draft B	24 January 2022	Review and Recommendation for Approval	Executive RPS: EL Nxumalo
Rev. 3	09 February 2022	Approval	RPSC
Rev. 3	13 June 2022	<ul style="list-style-type: none"> Minor changes made on the Appendix F to ensure alignment with application for engineers and Appendix g to remove incorrect information identified Minor changes made on the Appendix D & E to ensure 	Registration and RDD&R BU

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		alignment with application for Professional engineering Technologist <ul style="list-style-type: none"> • Minor changes made on the Appendix D & E to ensure alignment with application for Professional engineering Technician 	
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Applications for Registration of Candidates and Professionals

Revision 3 dated 13 June 2022 and consisting of 29 pages has been reviewed for adequacy by the Business Unit Assistant Manager and is approved by the Acting Executive: Research Policy and Standards (**RPS**).



.....
Assistant Business Unit Manager

13/06/2022

.....
Date



.....
Acting Executive: **RPS**


13/06/2022

.....
Date

This definitive version of the policy is available on our website.

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APPENDICES FOR PROFESSIONAL ENGINEERS

Appendix A: What changes with the introduction of Competency Standards?


Prior to the introduction of the Competency Standards, the requirements were expressed in terms of criteria for acceptable training in the ECSA policy, document R2/1A. The requirements defined in Section 5 of R2/1A are summarised in Column 1 of the following table. The outcomes embedded in the training requirements are presented in Column 2. The formal outcomes indicated in document **R-02-STA-PE/PT/PN** are stated in Column 3, while the level descriptor is presented in Column 4. **Table A1-a** relates to the Group A outcomes while **Table A2-a** relates to the outcomes of groups B, C and D.

Table A1-a: Transition from input-based training specifications to output-based competency specifications in Group A

1: R2/1A Essential Elements of Acceptable Practical Training	2: Outcomes Embedded in Training Elements (Column 1) defined in DSG Discipline Specific Guidelines	3: Corresponding Competency Standard Outcome	4: Level descriptors for Column 3
Common requirement in Section 1.1 of DSGs Persons wishing to become registered as a Professional Engineer must demonstrate that they have been trained to an acceptable level of competence in defined elements for at least 3 years and display the attributes of a professional person.		Requirement (PE): Competence must be demonstrated within <i>complex engineering activities</i> (described below) by the integrated performance of the defined outcomes at the level indicated for each outcome. Note: Outcomes are defined below. Attributes of a professional person are defined in outcomes.	
5.1 Problem Investigation The work must be aimed at investigating engineering problems for which engineering judgement is required. The following practical engineering functions are contained in such work to a greater or lesser degree: a) problem identification and formulation b) finding and selecting relevant information	The applicant must demonstrate the ability to investigate engineering problems at a level that requires engineering judgement through performing the following functions: a) Identify and formulate a problem b) Find and select relevant information c) Evaluate, investigate, test and research d) Analyse all factors that influence the	Group A: Engineering Problem-Solving 1: Define, investigate and analyse <i>complex engineering problems</i> Note: Engineering judgement is specified in Group D, Outcome 8. *3: Comprehend and apply advanced knowledge comprising principles and specialist, jurisdictional and local knowledge	Complex Engineering Problems have the following characteristics: a) require in-depth fundamental and specialised engineering knowledge <i>and one or more of the following:</i> b) are ill-posed, unfamiliar and under or over specified, requiring

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1: R2/1A Essential Elements of Acceptable Practical Training	2: Outcomes Embedded in Training Elements (Column 1) defined in DSG Discipline Specific Guidelines	3: Corresponding Competency Standard Outcome	4: Level descriptors for Column 3
c) evaluating, investigating, testing and research d) analysis of all factors that influence the solution such as relevant engineering and scientific principles.	solution, including relevant engineering and scientific principles		identification and refinement c) are high-level problems comprising component parts or sub-problems d) involve infrequently encountered issues
5.2 Problem Solution The work must be aimed at the full development of the suggested solution to the problem through a process of synthesis, with the application of all information acquired during the problem investigation and the use of design, development and communication. This includes the drawing up of plans, detailed designs, reports, specifications and the adjudication of tenders, taking into account all practical, economic, social, environmental, quality assurance, safety and statutory factors.	The applicant must demonstrate the ability to: a) develop the suggested solution to the problem through a process of synthesis and design by applying all information acquired during the investigation of the problem b) communicating by drawing up plans, detailed designs, reports, specifications, etc. and adjudicating tenders c) taking into account all practical, economic, social, environmental, quality assurance, safety and statutory factors.	2: Design or develop solutions to <i>complex engineering problems</i> Note: Communication in Outcome 5 Note: Impacts in Outcome 7	<i>and one or both of the following:</i> e) solutions are not obvious, require originality or analysis based on fundamentals f) are outside the scope of standards and codes g) require information from a variety of sources that are complex, abstract or incomplete h) involve wide-ranging or conflicting issues: technical, engineering and interested or affected parties <i>and one or both of the following:</i> i) require judgement in decision-making in uncertain contexts j) have significant consequences in a range of contexts.

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Table A2-a: Transition from input-based training specifications to output-based competency specifications in groups B, C and D

<p>5.3 Execution / Implementation</p> <p>The work must be aimed at the execution of engineering tasks or projects (e.g. construction, manufacturing, transformation, processing, production, commissioning, testing, certification, quality assurance, operation, maintenance and closure) and encompass the efficient utilisation of people, materials, machines, equipment, means and funding with due regard for their interaction to achieve the end result within the set parameters.</p>	<p>The applicant must demonstrate the ability to:</p> <ol style="list-style-type: none"> execute engineering tasks; make efficient use of people, materials, machines, equipment, and funding; manage interactions; and achieve end results within set parameters. <p>DSTG 5.2: Demonstrate that their engineering work required them to understand and to consider the financial, economic, commercial and statutory elements</p> <p>DSTG 5.3: Develop the ability to communicate lucidly, accurately and confidently</p> <p>DSTG 5.4: Demonstrate to their mentors that they:</p> <ul style="list-style-type: none"> understand the engineering procedures of the discipline; know the legislation applicable to engineering and the discipline; understand the Code of Conduct; understand the role and relationships of the (professional) organisations in their discipline; and are familiar with the requirements for registration. 	<p>Group B: Managing Engineering Activities</p> <p>4: Manage part or all of one or more complex engineering activities</p> <p>5: Communicate clearly with others in the course of his/her engineering activities</p> <p>Group C: Impacts of Engineering Activities</p> <p>6: Recognise and address the reasonably foreseeable social, cultural and environmental effects of complex engineering activities</p> <p>7: Meet all legal and regulatory requirements and protect the health and safety of people in the course of his/her complex engineering activities</p>	<p><i>Complex engineering activities</i> in which competence is exercised demonstrates several of the following characteristics:</p> <ol style="list-style-type: none"> <i>Scope</i> of activities may encompass entire complex engineering systems or complex subsystems. A <i>context</i> that is complex and varying is multidisciplinary, requires teamwork, is unpredictable and may need to be identified. Activities require diverse and significant <i>resources</i>, including people, money, equipment, materials and technologies. Significant <i>interactions</i> exist between wide-ranging or conflicting technical, engineering or other issues. Activities are <i>constrained</i> by time, finance, infrastructure, resources, facilities, standards and codes, and applicable laws. Activities have significant <i>risks</i> and <i>consequences</i> in a range of contexts.
<p>5.4 Responsibility</p> <p>The work must be aimed at increasing engineering and managerial responsibility until Candidate Engineers are clearly able to accept professional responsibility for taking engineering decisions. Part of their responsibilities should be to ensure that sufficient cognisance is taken of economic considerations,</p>	<p>The applicant must demonstrate the ability to:</p> <ol style="list-style-type: none"> accept professional responsibility for taking engineering decisions ensure that sufficient cognisance is taken of economic considerations, social circumstances, environmental factors, quality assurance and safety and legal aspects follow the code of professional conduct. <p>DSTG 5.1: Demonstrate the ability to work satisfactorily</p>	<p>Group D: Exercise judgement, take responsibility and act ethically</p> <p>8: Conduct engineering activities ethically</p> <p>9: Exercise sound judgement in the course of complex engineering activities</p> <p>10: Be responsible for making decisions on part or all complex engineering activities</p>	

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	<p>on one's own, to have taken responsibility and to have achieved a satisfactory outcome.</p> <p>DSTG 5.2: Demonstrate that the engineering work required independent technical judgement and acceptance of responsibility</p>		
social circumstances, environmental factors, quality assurance, safety and legal aspects and the code of professional conduct.		<p>*Group E: Manage Own Development</p> <p>11: Undertake professional development activities sufficient to maintain and to extend competence</p> <p>*No direct counterpart in R2/1A work requirements</p>	

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Appendix B: Sources of evidence against outcomes for Professional Engineers

Note: *Complex* is the level identifier defined for the Professional Engineer category in document R-02-STA-PE/PT/PN

No.	Outcome	Training and Experience Reports	Engineering Report Incl. Self-assessment	Referee Reports (3)	CPD Report		Presentation	PR Interview	
A1	Define, investigate and analyse <i>complex engineering problems</i>	Factual/Verified	Reflective / Not Verified	Evaluative		Information to the left is considered in the Experience Appraisal		Evaluative/Verified	All information is used by Professional Reviewers when making their recommendation to the Assessing Committee (PAC)
A2	Design or develop solutions to <i>complex engineering problems</i>	Factual/Verified	Reflective / Not Verified	Evaluative				Evaluative/Verified	
A3	Comprehend and apply advanced knowledge comprising principles and specialist, jurisdictional and local knowledge	Factual/Verified	Reflective / Not Verified	Evaluative	Factual: Knowledge Enhancement			Evaluative/Verified	
B4	Manage part or all of one or more <i>complex engineering activities</i>	Factual/Verified	Reflective / Not Verified	Evaluative				Evaluative/Verified	
B5	Communicate clearly with others in the course of his/her engineering activities	Tests concise writing	Tests analytical writing	Evaluative			Tests synthesis, oral, graphic	Evaluative/Verified	
C6	Recognise and address the reasonably foreseeable impacts of <i>complex engineering activities</i>	May not be covered	Reflective/ Not Verified	Evaluative				Evaluative/Verified	
C7	Meet all legal and regulatory requirements and protect the health and safety of persons in the course of <i>complex engineering activities</i>	Factual/Verified	Reflective / Not Verified	Evaluative				Evaluative/ Verified	
D8	Conduct engineering activities ethically	May not be covered	Reflective / Not Verified	Evaluative				Evaluative/Verified	
D9	Exercise sound judgement in the course of <i>complex engineering activities</i>	May not be covered	Reflective / Not Verified	Evaluative				Evaluative/ Verified	

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D10	Be responsible for making decisions on part or all of <i>complex engineering activities</i>	Factual/Verified	Reflective / Not Verified	Evaluative			Evaluative/ Verified
E11	Undertake professional development activities sufficient to maintain and to extend competence		Reflective / Not Verified	Evaluative/ Verified (Commitment)	Factual		Evaluative/Verified (Commitment)

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Appendix C: Training and Experience Summary

Surname and initials: _____

Discipline of Engineering: _____

(e.g. Civil/Mechanical)

For each period, complete Form A2.1


Period No.	Dates From:	To:	No. of weeks	Employer	Post held	Subject and type of work
Total Weeks						

Signature of Applicant: _____

Date: _____

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Appendix D: Training Experience Report

Surname and Initials: _____

Discipline of Engineering: _____
(e.g. Civil/Mechanical)


Consult the enclosed Information Sheet (Sheet A2) before completing this report.

Period Number	Date From: To:	Position held	Number of Weeks:	
Name and address of Employer		Did you train under a Commitment and Undertaking (C&U)? If yes, provide number of C&U	Yes No	Number:
Name and address of Supervisor		Signature of Supervisor		
ECSA Registration Number		Date		

Signature of Applicant: _____ **Date:** _____

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Appendix E: Training and Experience Outline

The following template defines the elements (but not the exact format) of the Training and Experience Outline.

Training and Experience Outline						
Name of Applicant Application Number				Signature of Applicant		Date
Period No.	Start date	End date	Number of Weeks	Position(s) held		Degree of Responsibility
Name and address of Supervisor and Employer				Did you train under a Commitment and Undertaking (C&U)?		Yes
						No
				If yes, provide C&U Number		Number
Outline Report						
Use bulleted format. Compulsory elements are shown as *. Other fields should be selected as required.						
*Nature and purpose of period(s) of training or experience						
*Organogram identifying yourself, your supervisor and persons supervised, with individuals' names and ECSA registration categories, if registered. Identify the applicant's supervisor						
*Typical problems addressed and decisions made						
Responsibility for communication and documentation						
Management responsibilities						
Health and safety considerations; hazards and environmental considerations; legal and other impacts						
*Applicant's role(s) and responsibilities:						Degree of Responsibility A–E

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Appendix F: Engineering Report

Engineering Council of South Africa Engineering Report as part of Application for Registration as Professional Engineer			
Applicant:		Self- evaluation	
In terms of my general declaration, I confirm that this report was written by me for the purpose of this application	Signature:		
	Date:		Word Count:
Holistic Self Evaluation			

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Appendix G: Referee Report

Please complete this form using type or print in **black ink** after consulting the attached guideline (Sheet A4)

The Engineering Council of South Africa agrees that it owes a duty of confidence to all referees in terms of the Promotion of Access to Information Act (No. 2 of 2000).

1. Name of Applicant:

Address:

2. General Information:

(a) To the best of my memory, my *personal* knowledge of the applicant's engineering training extends from _____ to _____ (month and year).

(b) My association with the applicant was that of: (Please tick appropriate block)

Mentor*	Colleague	Supervisor	Employer	Other (Describe)
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

* If the association with the applicant was that of a mentor, provide the C&U Number:

(c) Are you related to the applicant by birth or marriage? Yes _____ No _____
If yes, please state relationship _____

3. Applicant's Engineering Experience: (Referee's evaluation)


In my opinion, the applicant's involvement in the engineering work described in his training report is as presented in the form below.

TASK or PROJECT (Please refer to Period No. in applicant's training report and indicate core description of work)	Level of Responsibility - (please check <input type="checkbox"/>)	Involvement in:		Exposure to:	
		Full task	Part of task	Full task	Part of task
Period No: _____ From: _____ To: _____	Full: Part: No:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Period No: _____ From: _____ To: _____	Full: Part: No:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Period No: _____ From: _____ To: _____	Full: Part: No:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Period No: _____ From: _____ To: _____	Full: Part: No:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

/...

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4. Evaluation of Competence and Development: Meeting the requirements of ECSA and the discipline-specific guidelines

SUBJECT	Exceptionally high quality of work with sound innovative thinking	Fully meeting the normally high standards of engineering	Adequate but occasionally requiring amendments	Frequently requiring amendments	Do not know
Problem-solving ability					
Application of engineering principles					
Engineering judgement					
Management:					
Time					
Finance and control					
Communication: Accurate, brief and clear?					
Acceptance of responsibility					
Professional conduct					

5. Specific comments on applicant's ability to assume responsibility as a Professional Engineer and his/her competence, development and limitations

6. Referee's recommendation

I regard the applicant competent to be registered as a **Professional Engineer**

Yes	No	No comment	Do not know

7. Declaration by Referee: I declare that to the best of my knowledge, the information provided is correct. I hereby confirm that I am conversant with the Council's requirements for registration as set out in the Competency Standards, document **R-02-STA-PE/PT/PN**, and in the instructions for this Referee Report and that I am prepared to substantiate my view expressed herein at an interview should the Council require me to do so. I also confirm that I submit this information to the ECSA on the understanding that it will be treated as confidential. I understand that the information will not be disclosed by the ECSA unless required by law.

Name of referee: _____ **Title of position held:** _____

Qualifications: _____


ECSA registration: _____ **Registration no:** _____

Employer: _____ **Tel/Cell no:** _____

Signature of referee: _____ **Date:** _____

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APPENDICES FOR PROFESSIONAL ENGINEERING TECHNOLOGISTS

Appendix A: What Changes with the introduction of Competency Standards?


Prior to the introduction of the Competency Standards, the requirements were expressed in terms of criteria for acceptable training in the ECSA policy, document R2/1B. The requirements defined in Section 5 of R2/1B are summarised in Column 1 of the following table. The outcomes embedded in the training requirements are presented in Column 2. The formal outcomes indicated in document **R-02-STA-PE/PT/PN** are stated in Column 3, while the level descriptor is presented in Column 4. Table A1-b relates to the Group A outcomes while Table A2-b relates to outcomes in groups B, C and D.

Table A1-b: Transition from input-based training specifications to output-based competency specifications in Group A

1: R2/1B Essential Elements of Acceptable Practical Training	2: Outcomes Embedded in Training Elements (Column 1) defined in DSG	3: Corresponding Competency Standard Outcome	4: Level descriptors for Column 3
Practical training judged by peer evaluators as acceptable must provide satisfactory experience for Candidates in the application of engineering principles and methods. Training must include the practical training elements as stated in clauses 8.1.1 to 8.1.4 at the Level of Responsibility indicated in the Discipline-Specific Guide. Outcomes expressed in the criteria are to be met.		Requirement (PT): Competence must be demonstrated within <i>broadly defined engineering activities</i> (described below) by the integrated performance of the outcomes at the level indicated for each outcome. Note: Outcomes are defined below. Attributes of a professional person are defined in outcomes.	
8.1.1 Problem Investigation The work must be aimed at investigating engineering problems for which engineering judgement is required. The following practical engineering functions are contained in such work to a greater or lesser degree: a) problem identification and formulation b) finding and selecting relevant information	The applicant must demonstrate the ability to investigate engineering problems at a level that requires engineering judgement by performing the following functions: a) Identify and formulate the problem. b) Find and select relevant information. c) Evaluate, investigate, test and research. d) Analyse all factors that influence the solution, including relevant	Group A: Engineering Problem-Solving 1: Define, investigate and analyse <i>broadly defined engineering problems</i> . *3: Comprehend and apply the knowledge embodied in widely accepted and applied engineering procedures, processes, systems or methodologies and those specific to the jurisdiction in which he/she practises.	<i>Broadly defined engineering problems</i> have the following characteristics: a) Require coherent and detailed engineering knowledge underpinning the applicable technology area. <i>and one or more of the following:</i> b) Are ill-posed, or under or over specified, require identification and interpretation into the technology area.

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<p>c) evaluating, investigating, testing and research</p> <p>d) analysis of all factors that influence the solution such as relevant engineering and scientific principles</p> <p>e) taking into account all practical, economic, social, environmental, quality assurance, safety and statutory factors.</p>	<p>engineering and scientific principles.</p>		<p>c) Encompass systems within complex engineering systems.</p> <p>d) Belong to families of problems that are solved in well-accepted but innovative ways. <i>and one or more of the following:</i></p> <p>e) Can be solved by structured analysis techniques.</p> <p>f) May be partially outside standards and codes (justification to operate outside must be provided).</p>
<p>8.1. 2 Problem Solution</p> <p>The work must be aimed at the full development of the suggested solution to the problem through a process of synthesis, with the application of all information acquired during the problem investigation and the use of design, development and communication. This includes the drawing up of plans, detailed designs, reports, specifications and the adjudication of tenders, taking into account, all practical, economic, social, environmental, quality assurance, safety and statutory factors.</p>	<p>The applicant must demonstrate the ability to develop the suggested solution to the problem through a process of synthesis and design by</p> <p>a) applying all information acquired during the problem investigation</p> <p>b) communicating and drawing up plans, detailed designs, reports and specifications</p> <p>c) adjudicating tenders</p> <p>d) taking into account all practical, economic, social, environmental, quality assurance, safety and statutory factors.</p>	<p>2: Design or develop solutions to <i>broadly defined engineering problems</i></p>	<p>g) Require information from practice area and sources interfacing with practice area that is complex or incomplete.</p> <p>h) Involve a variety of issues that may impose conflicting constraints: technical, engineering and interested or affected parties. <i>and one or both of the following:</i></p> <p>i) Require judgement in decision-making in practice area and consider interfaces with other areas.</p> <p>j) Have significant consequences that are important in the practice area but may extend more widely.</p>

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Table A2-b: Transition from input-based training specifications to output-based competency specifications in groups B, C, D and E

<p>8.1. 3 Execution / Implementation</p> <p>The work must be aimed executing engineering tasks or projects (e.g. construction, manufacturing, transformation, processing, production, commissioning, testing, certification, quality assurance, operation, maintenance and closure) and encompass the efficient use of people, materials, machines, equipment, means and funding with due regard for their interaction to achieve the end result within the set parameters.</p>	<p>The applicant must demonstrate the ability to:</p> <ul style="list-style-type: none"> a) Execute engineering tasks. b) Make efficient use of people, materials, machines, equipment and funding. c) Manage interactions. d) Achieve end results within set parameters. 	<p>Group B: Managing engineering activities</p> <p>4: Manage part or all of one or more <i>broadly defined engineering activities</i>.</p> <p>Engineering activities</p> <p>5: Communicate clearly with others in the course of his/her engineering activities.</p> <p>Group C: Impacts of engineering activities</p> <p>6: Recognise and address the reasonably foreseeable social, cultural and environmental effects of <i>broadly defined engineering activities</i></p> <p>7: Meet all legal and regulatory requirements and protect the health and safety of persons in the course of his/her <i>broadly defined engineering activities</i></p>	<p><i>Broadly defined engineering activities</i> are characterised by several or all of the following:</p> <ul style="list-style-type: none"> a) <i>Scope</i> of practice area is linked to technologies used and changes made through adoption of new technology into current practice. b) Practice area is located within a wider, complex <i>context</i> that requires teamwork and demonstrates interfaces with other parties and disciplines. c) Activities involve the use of a variety <i>resources</i> (including people, money, equipment, materials, technologies). d) Resolution of occasional problems arising from <i>interactions</i> between wide-ranging or conflicting technical, engineering or other issues may be required.
<p>8.1. 4 Responsibility</p> <p>The work must be aimed at increasing engineering and managerial responsibility until Candidates are clearly able to accept full professional responsibility for engineering decisions. Part of their responsibility should also be to ensure that sufficient cognisance is taken of economic considerations, social circumstances, environmental factors, quality assurance, safety and legal aspects and the Code of Conduct.</p>	<p>The applicant must demonstrate the ability to:</p> <ul style="list-style-type: none"> a) accept professional responsibility for engineering decisions b) ensure that sufficient cognisance is taken of economic considerations, social circumstances, environmental factors, quality assurance and safety and legal aspects c) follow the code of professional conduct. 	<p>Group D: Exercise judgement, responsibility and act ethically</p> <p>8: Conduct engineering activities ethically</p> <p>9: Exercise sound judgement in the course of <i>broadly defined engineering activities</i></p> <p>10: Be responsible for making decisions on part or all <i>broadly defined engineering activities</i></p> <p>*Group E: Manage own development</p> <p>11: Undertake professional development activities sufficient to maintain and to extend competence</p>	<ul style="list-style-type: none"> e) Activities are <i>constrained</i> by available technology, time, finance, infrastructure, resources, facilities, standards and codes and applicable laws. f) Activities have <i>significant risks and consequences</i> in the practice area and related areas.

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Nomenclature for figures 1, 2, 3, 4 and 5

AR	Academic Record
CI	Competency indicated
CN	Candidate Engineering Technician
CNI	Competency not indicated
ED	Educational Development
ERC	Educational Requirements complete
ERI	Educational Requirements Incomplete
ID	Online user identification
IPD	Initial Professional Development
ME	More evidence
P	Applicable to all professional categories
PN	Professional Engineering Technician
PW	Online password
R	Registration
REF	Referee Report
Rref	Registration refused
TEO	Training and Experience Outline
TER	Training and Experience Report
TES	Training and Experience Summary
TPQEC	Technology Programme Qualifications and Examinations Committee
VA	Voluntary Association

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Appendix B: Sources of evidence against outcomes


Notes: (a) *Broadly defined* is the level identifier defined for the Professional Technologist category in document **R-02-STA-PE/PT/PN**.

(b) Engineering Report claims are verified by the applicant's supervisor.

No.	Outcome	Training and Experience Reports	Engineering Report incl. claim to competency	Referee Reports (3)	IPD Report		Discretionary Interview	
A1	Define, investigate and analyse <i>broadly-defined engineering problems</i>	Factual/Verified	Factual/Verified	Evaluative		Information to the left is considered in the Experience Appraisal	Evaluative/Verified	All information is used by Interview Panel when making their recommendation to the Registration Committee
A2	Design or develop solutions to <i>broadly-defined engineering problems</i>	Factual/Verified	Factual/Verified	Evaluative			Evaluative/Verified	
A3	Comprehend and apply the knowledge embodied in widely accepted and applied engineering procedures, processes, systems or methodologies and those specific to the jurisdiction in which he/she practises	Factual/Verified	Factual/Verified	Evaluative	Factual: Knowledge enhancement		Evaluative/Verified	
B4	Manage part or all of one or more <i>broadly defined engineering activities</i>	Factual/Verified	Factual/Verified	Evaluative			Evaluative/Verified	
B5	Communicate clearly with others in the course of his/her engineering activities	Tests concise writing	Factual/Verified	Evaluative			Evaluative/Verified	

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C6	Recognise and address the reasonably foreseeable impacts of <i>broadly-defined engineering activities</i>	May not be covered	Factual/Verified	Evaluative		Evaluative/ Verified
C7	Meet all legal and regulatory requirements and protect the health and safety of all persons in the course of <i>broadly defined engineering activities</i>	Factual/Verified	Factual/Verified	Evaluative		Evaluative/ Verified
D8	Conduct engineering activities ethically	May not be covered	Factual/Verified	Evaluative		Evaluative/ Verified
D9	Exercise sound judgement in the course of <i>broadly defined engineering activities</i>	May not be covered	Factual/Verified	Evaluative		Evaluative/ Verified
D10	Be responsible for making decisions on part or all <i>broadly defined engineering activities</i>	Factual/Verified	Factual/Verified	Evaluative		Evaluative/ Verified
E11	Undertake professional development activities sufficient to maintain and to extend competence		Factual/Verified	Evaluative / Verified (Commitment)	Factual	Evaluative/ Verified (Commitment)

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Appendix C: Training and Experience Summary

Surname and Initials:

Complete the Training and Experience Report Form B2.1 TER or a Training and Experience Outline Form B2.1 TEO for each period

No	From	To	Weeks	Work Details		Responsibility A-E
1				Employed by:	Post held:	
				Type of Work:		
2				Employed by:	Post held:	
				Type of Work:		
3				Employed by:	Post held:	
				Type of Work:		
4				Employed by:	Post held:	
				Type of Work:		
5				Employed by:	Post held:	
				Type of Work:		
6				Employed by:	Post held:	
				Type of Work:		
7				Employed by:	Post held:	
				Type of Work:		
8				Employed by:	Post held:	
				Type of Work:		
9				Employed by:	Post held:	
				Type of Work:		
n				Employed by:	Post held:	
				Type of Work:		


When an applicant is not engaged in training and experience towards registration, the period must be reflected as follows:

X				Employed by:	Post held:	
				Not active		
Total period (years, months):				Type of Work: <i>Insert reason here</i>		

Signature of Applicant: _____ Date: _____

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Appendix D: Training and Experience Report

Training and Experience Report (As part of the Application for Registration as a Professional Engineering Technologist)					
Name of Applicant				Signature of Applicant	Date
Period Number	Start date	End date	Number of weeks	Position held	
Name and address of Employer for this period (This is the employer and the site at which the work took place, for example, the site to which the applicant was seconded.)				Did you train under a Commitment and Undertaking (C&U)?	Yes No
				If yes, provide number of C&U	Number
Name and address of Supervisor ECSA Registration Number (If not registered, qualify)				Signature of Supervisor Date	
Discipline of Engineering (Aeronautical, Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, Metallurgical, Mining)					
Discipline-specific field (e.g. Power Transmission, Electronic Communication, Transportation, Structures, Automotive, Roads)					
Organogram showing supervisor (person signing this report), co-workers and persons you supervised (if any). Show two levels above and below, if possible. Give names, positions, qualifications and registration (if any) *. Please do not colour in blocks.					
Report (Note: In paragraph format; first person singular; less than 430 words)					
Nature of training or experience (20–30 words) *					
Nature of problem(s) addressed in this period; method of analysis, solution development and evaluation (120–150 words)*					
Management of materials, machines, manpower, methods, money, contracts (40–50 words)					
Interaction with clients, stakeholders and other disciplines (40–50 words)					
Health and safety considerations; hazards and environmental considerations; other legislation (40–50 words)*					

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Describe role and responsibility (80–100 words) *	Degree of Responsibility	Tick <u>one</u> [*]
	A. Being exposed: Under full supervision	
	B. Assisting: Responsibility limited	
	C. Participating: Supervision limited	
	D. Contributing: Performs work, detailed approval	
	E. Performing: Limited guidance	

*Mandatory

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Appendix E: Training and Experience Outline

Training and Experience Outline (As part of the Application for Registration as a Professional Engineering Technologist)					
Name of Applicant				Signature of Applicant	Date
Period Number	Start date	End date	Number of weeks	Position(s) held	
Name and Address of Employer and Supervisor			Did you train under a Commitment and Undertaking (C&U)?		Yes
ECSA Registration Number (If not registered, qualify)			If yes, provide number of C&U		No
					Number
Discipline of Engineering (Aeronautical, Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, Metallurgical, Mining)					
Discipline-specific field (e.g. Power Transmission, Electronic Communication, Transportation, Structures, Automotive, Roads)					
Organogram identifying yourself, your supervisor and persons supervised. * Please do not colour in blocks.					
Outline Report					
Nature of training or experience during the period(s) (bulleted format; 10–13 bullets) *					
Nature of problem(s) addressed during this period; method of analysis, solution development and evaluation (bulleted format; 10–13 bullets)*					
Management responsibilities (bulleted format; 10–13 bullets)					
Interaction with clients, stakeholders and other disciplines (bulleted format; 10–13 bullets)					
Legal and impact analysis (in bulleted format; 10–13 bullets) *					
Describe role and responsibility (bulleted format; 10–13 bullets) *			Degree of Responsibility		Tick <u>one</u> <u>only</u>*
			A. Being exposed: Under full supervision		
			B. Assisting: Responsibility limited		
			C. Participating: Supervision limited		
			D. Contributing: Performs work, detailed approval		
E. Performing: Limited guidance					

*Mandatory fields

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Appendix F: Engineering Report

Use this form to submit a report on recent engineering work in which you made a significant contribution. Write about 100 words per criterion listed under outcomes 1 to 11 below. The report may cover conceptualisation, design and analysis, specification, tendering and adjudication, manufacturing, project and construction management, commissioning, maintenance, measurement and testing or planning at a broadly defined level. Please cross-reference the reported item with the relevant evidence in the Training and Experience Report (B2.1 TER) or the Training and Experience Outline (B2.1 TEO). Provide samples of relevant calculations and drawings as an addendum.

Use Appendix A of the Discipline-Specific Training Guide (document R-05-PT) to help interpret the criteria


Name of Applicant:

Consult the Information Sheet (Sheet B2) before completing this report

Area of Employment (<15 words)	
Dates Undertaken	
Engineering brief and objective (<30 words)	
Environment (Industry; Laboratory; Theory; Simulation) (<15 words)	
Short summary (State engineering problems and solutions in <30 words)	
Budgets (<10 words)	
<p><i>Broadly defined engineering problems</i> have the following characteristics:</p> <p>a) require coherent and detailed engineering knowledge that underpins the applicable technology area <i>and one or more of the following:</i></p> <p>b) are ill-posed and under or over specified, requiring identification and interpretation in the technology area</p> <p>c) encompass systems within complex engineering systems</p> <p>d) belong to families of problems that are solved in well-accepted but innovative ways <i>and one or more of the following:</i></p> <p>e) can be solved by structured analysis techniques</p> <p>f) may be partially outside standards and codes (justification to operate outside must be provided)</p> <p>g) require information from practice area and sources interfacing with practice area that is complex and incomplete</p>	

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- h) involve a variety of issues that may impose conflicting constraints: technical, engineering and interested or affected parties
and one or both of the following:
- i) require judgement in decision-making in practice area and consideration of interfaces with other areas
 - j) have significant consequences that are important in the practice area but may extend more widely.
- Broadly defined engineering activities** have several of the following characteristics:
- a) Scope of practice area is linked to technologies used and changes made through adoption of new technology into current practice.
 - b) Practice area is located within a wider, complex context that requires teamwork and demonstrates interfaces with other parties and disciplines.
 - c) Activities involve the use of a variety resources, including people, money, equipment, materials and technologies.
 - d) Resolution is required of occasional problems arising from interactions between wide-ranging or conflicting technical, engineering or other issues.
 - e) Activities are constrained by available technology, time, finance, infrastructure, resources, facilities, applicable laws, standards and codes.
 - f) Activities have significant risks and consequences in the practice area and related areas.

Outcomes and Criteria		Cross-reference to B2.1 TER or B2.1 TEO
Outcome 1: Define, investigate and analyse broadly defined engineering problems		
1.1 State how <u>you</u> performed or contributed to defining engineering problems that led to agreed definitions of the problems to be solved.		Period No:
1.2 State how <u>you</u> performed or contributed to investigating engineering problems, including collecting, organising and evaluating information.		Period No:
1.3 Describe how <u>you</u> performed or contributed to analysing engineering problems using conceptualisation, justified assumptions, limitations and evaluation of results.		Period No:
Outcome 2: Design or develop a solution to broadly defined engineering problems		
2.1 Describe how <u>you</u> designed or developed		Period No:

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solutions to broadly defined engineering problems.		
2.2 Indicate how <u>you</u> systematically synthesised solutions and alternative solutions or approaches to the problem by analysing designs against requirements, including costs and impacts on outside parameters (requirements).		Period No:
2.3 State <u>your</u> part in the drawing up of detailed specification requirements and design documentation for implementation to the satisfaction of the client.		Period No:
Outcome 3: Comprehend and apply the knowledge embodied in widely accepted and applied engineering procedures and processes, systems or methodologies and those specific to the jurisdiction in which you practise		
3.1 State which engineering principles, practices, technologies and BTEch theory <u>you</u> apply in your practice area.		Period No:
3.2 Indicate <u>your</u> working knowledge of areas of practice that interact with <u>your</u> practice area to underpin teamwork.		Period No:
3.3 Describe <u>your</u> applied related knowledge of finance, statutes, safety and management.		Period No:
Outcome 4: Manage part or all of one or more broadly defined engineering activities		
4.1 State how <u>you</u> managed yourself, people, work priorities, processes and resources in broadly defined engineering work.		Period No:
4.2 State <u>your</u> role in planning, organising, leading and controlling broadly defined engineering activities.		Period No:
4.3 State <u>your</u> knowledge of conditions and operations of contractors and the ability to establish and maintain professional and business relationships.		Period No:

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Outcome 5: Communicate clearly with others in the course of your engineering activities		
5.1 Demonstrate <u>your</u> ability to write clear, concise and effective technical, legal and editorially correct reports.		Period No:
5.2 Indicate <u>your</u> ability to issue clear instructions to stakeholders, using appropriate language and communication skills.		Period No:
5.3 State any oral presentation <u>you</u> have made using structure, style, language, visual aids and supporting documents appropriate to the audience and purpose.		Period No:
Outcome 6: Recognise and address the reasonably foreseeable social, cultural and environmental effects of broadly defined engineering activities		
6.1 Describe <u>your</u> ability to identify interested and affected parties and their expectations in regard to interactions with technical, social, cultural and environmental considerations.		Period No:
6.2 State the measures <u>you</u> have taken to mitigate the negative effects of engineering activities.		Period No:
Outcome 7: Meet all legal and regulatory requirements and protect the health and safety of persons in the course of broadly defined engineering activities		
7.1 State where <u>you</u> have identified applicable legal and regulatory requirements for the engineering activity, including health and safety requirements.		Period No:
7.2 State the circumstances in which <u>you</u> have assisted or demonstrated awareness of the selection of safe and sustainable materials, components and systems and identified risk and applied risk management strategies.		

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Outcome 8: Conduct engineering activities ethically		
8.1 Confirm that <u>you</u> are conversant and operate in compliance with the ECSA Rules of Conduct for registered persons.		Period No:
8.2 State how <u>you</u> identified ethical problems and the affected parties and how you selected the best solution to resolve the problem.		Period No:
Outcome 9: Exercise sound judgement in the course of broadly defined engineering activities		
9.1 Within the application of <u>your</u> technologies and their interrelationships with other disciplines and technologies, state the judgement you exercised in arriving at a conclusion.		Period No:
9.2 State which factors <u>you</u> considered in regard to the risks in technology application and the consequences for affected parties.		Period No:
Outcome 10: Be responsible for making decisions on part or all of broadly defined engineering activities		
10.1 In discharging <u>your</u> responsibilities for significant parts of one or more activities, please state the engineering, social, environmental and sustainable development that you took into consideration.		Period No:
10.2 State the advice <u>you</u> sought from a responsible authority on matters outside your area of competence.		Period No:
10.3 State the academic knowledge (at least BTech level) combined with past experience that <u>you</u> used in formulating <u>your</u> decisions.		Period No:
Outcome 11: Undertake professional development activities sufficient to maintain and to extend competence		
11.1 State the strategy that you have independently		Period No:

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adopted to enhance your professional development.		
11.2 State your philosophy in regard to your professional development.		Period No:
Evidence of your competency development plan and independent learning ability must be given in the Initial Professional Development Report, Form B5.		


Signature of Applicant: _____ **Date:** _____

Signature of Mentor / Supervisor: _____

Name of Mentor / Supervisor (print): _____ **Tel. no:** _____

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Appendix G: Referee Report

Referee Report on an Application for Registration as a Professional Engineering Technologist		Form B4-REF			
Name of Applicant					
Name of Referee		ECSA Registration Category (e.g. Pr. Tech Eng)		Registration Number	
Employer of Referee	Referee Cell No.:				
	Referee E-mail address:				
My personal knowledge of the Applicant's achievements extends:	From		To		
My personal relationship with the Applicant is: (Mark one block)	Unrelated	By birth		By marriage	
My professional relationship with the Applicant for the period shown was: (Mark one block)	Mentor	Supervisor	Employer	Colleague	Client

Evaluation of the applicant's competence or state of development

The level of competency required for registration as a Professional Engineering Technologist is defined in the Competency Standards, document **R-02-STA-PE/PT/PN**. Competency is defined in terms of eleven outcomes and two level definitions, namely *broadly defined engineering problems* and *broadly defined engineering activities*. The applicant is expected to have demonstrated performance at a Degree of Responsibility that is appropriate for a Professional Engineering Technologist (Level E) for at least one year.

As a referee, you are requested to rate the applicant against the outcomes and to make a holistic evaluation.

Please use the following scale:


CDC: The applicant consistently demonstrates competence

CDI: The applicant demonstrated competence but not consistently

CNDD: The applicant has not demonstrated competence but is developing

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CND: The applicant has not demonstrated competence


X: I am unable to comment

Please enter your comments in the third column, giving your reasons for assigning the particular rating, particularly in regard to a rating of CDI, CNDD or CND.

Outcomes	Rating	Reason
Group A: Engineering Problem-Solving		
1. Define, investigate and analyse broadly defined engineering problems.		
2. Design or develop solutions to broadly defined engineering problems.		
3. Comprehend and apply the knowledge embodied in widely accepted and applied engineering procedures, processes, systems and methodologies specific to the jurisdiction in which he/she practises.		
Group B: Management of Engineering Activities		
4. Manage part or all of one or more broadly defined engineering activities.		
5. Communicate clearly with others in the course of his/her engineering activities.		
Group C: Impacts of Engineering Activities		
6. Recognise and address the reasonable, foreseeable social, cultural and environmental effects of broadly defined engineering activities.		
7. Meet all legal and regulatory requirements and protect the health and safety of persons in the course of his/her broadly defined engineering activities.		
8. Conduct engineering activities ethically.		
Group D: Exercise judgement, take responsibility		
9. Exercise sound judgement in the course of broadly defined engineering activities.		
10. Be responsible for making decisions on part or all of broadly defined engineering activities.		
Group E: IPD		
11. Undertake professional development activities sufficient to maintain and to extend competence.		

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Optional: Further comments or additional information regarding the Applicant

Viewed holistically:		
The applicant has demonstrated the required competence to be registered as a Professional Engineering Technologist .		


Declaration by Referee: I declare that to the best of my knowledge, the information provided is correct. I hereby confirm that I am conversant with the Council's requirements for registration as set out in the Competency Standards, document **R-02-STA-PE/PT/PN**, and in the instructions for this Referee Report and that I am prepared to substantiate my view expressed herein at an interview should the Council require me to do so. I also confirm that I submit this information to the ECSA on the understanding that it will be treated as confidential. I understand that the information will not be disclosed by the ECSA unless required by law.

Name of referee: _____ **Title of position held:** _____

Signature of referee: _____ **Date:** _____

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Appendix I: Initial Professional Development (IPD) Report


INITIAL PROFESSIONAL DEVELOPMENT (IPD) REPORT (As part of the Application for Registration as a Professional Engineering Technologist)						
Name of Applicant:						
Discipline of Applicant:						
<i>Itemise courses, workshops, conferences, symposia or congresses attended. List these under the separate headings of engineering, management and computer courses.</i>						
Name or subject of item	Course Provider	Dates attended	SAQA NQF level if available	Duration in hours	Credits	For use by Assessor
Engineering Courses						
Management Courses						
Computer Courses						

Signature of Applicant: _____

Date: _____

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Appendix J: Educational Development Report

A	INSTRUCTIONS		
	<p>Applicants not in possession of an ECSA-accredited BTech (Eng) should complete this work-based (experience) learning report. WRITE A REPORT OF APPROXIMATELY 100 WORDS ON EACH CRITERION LISTED.</p> <p>Reports must include reference to <i>broadly defined</i> practical examples in the workplace that demonstrate how the competencies were satisfied. The report is not restricted to a single task or project. (Additional supporting evidence may be attached if necessary but must not exceed two A4 pages.)</p> <p>This information can be obtained from education or experience or a combination of both.</p> <p>The applicant and his/her supervisor must sign the completed report.</p> <p>The applicant may be invited to an interview to expand and/or to confirm this report.</p> <p><i>Broadly defined engineering problems</i> have the following characteristics:</p> <p>a) require coherent and detailed engineering knowledge underpinning the applicable technology area <i>and one or more of the following:</i></p> <p>b) are ill-posed and under or over specified, requiring identification and interpretation in the technology area</p> <p>c) encompass systems within complex engineering systems</p> <p>d) belong to families of problems that are solved in well-accepted but innovative ways <i>and one or more of the following:</i></p> <p>e) can be solved by structured analysis techniques</p> <p>f) may be partially outside standards and codes (justification to operate outside must be provided)</p> <p>g) require information from practice area and sources interfacing with practice area that is complex and incomplete</p> <p>h) involve a variety of issues that may impose conflicting constraints (technical, engineering and interested or affected parties).</p>		
B.	APPLICANT'S PERSONAL DETAILS		
	Name		Technical Qualifications
C.	EDUCATIONAL DEVELOPMENT REPORT (OUTCOME-BASED, DURING WORK EXPERIENCE)		
Exit-Level Outcome 1: The applicant displays understanding and the ability to apply the fundamentals of engineering in a selected sub-discipline together with the underpinning fundamentals of mathematics and the natural sciences.			
Item	Criteria	Development Report	
1.1	State the mix of mathematical, natural science and engineering knowledge that <u>you</u> applied in the solution of the <i>broadly defined engineering problem</i> . State which theories and principles were used.		
1.2	Describe how <u>you</u> analysed and modelled the engineering materials, components, systems and processes that were used and provide the motivation for the specific selection.		

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1.3	Describe the procedures applied for dealing with uncertainty and risk applicable to <u>your own</u> theoretical limitations and the use of specialists to perform the work.	
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Exit-Level Outcome 2: The applicant displays proficiency in engineering specialist fields of a selected engineering sub-discipline at the exit level.

Item	Criteria	Development Report
2.1	Describe how <u>you</u> analysed and defined a problem and identified the engineering knowledge and skills required for solving the problem.	
2.2	Describe how <u>you</u> generated possible solutions to the problem and how they were modelled, analysed and prioritised.	
2.3	State how <u>you</u> selected, formulated and presented the preferred solution.	

Exit-Level Outcome 3: The applicant displays proficiency in the use of engineering tools and IT support appropriate to the sub-discipline.


Item	Criteria	Development Report
3.1	Describe how <u>you</u> assess methods, skills or tools (including computer applications) for applicability to solving problems.	
3.2	Describe how <u>you</u> applied the method, skill or tool correctly to achieve the required result and how this tested against the required results.	

Exit-Level Outcome 4: The applicant demonstrates design proficiency through substantial project work. The design problem meets the requirements of a broadly defined engineering problem and the design approach is properly structured.

Item	Criteria	Development Report
4.1	Describe how <u>you</u> formulated the design problem and how the design process was managed.	
4.2	Describe how user needs, legislation, standards and resources were acquired and evaluated.	

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4.3	Describe how <u>you</u> performed the design task subject to relevant premises, assumptions and constraints and selected the preferred solution from alternatives.	
4.4	Describe how the selected design was evaluated in terms of impact and benefits and how this information was communicated in an Engineering Report.	

Exit Level Outcome 5: The applicant displays proficiency in experimental or investigative and information handling methodology.

Item	Criteria	Development Report
5.1	Describe the plan <u>you</u> devised to perform the investigation and state the information that was used.	
5.2	Describe the methodology <u>you</u> used to perform the analysis, stating how the equipment and/or software was selected and used.	
5.3	From the data that was available, describe how information was derived, critically analysed and interpreted to reach conclusions.	
5.4	Describe how the purpose, process and outcomes of the investigation are recorded in an Engineering Report.	

Exit-Level Outcome 6: The applicant communicates in writing at the exit level of a BTech programme.

No entry required. Assessment will be done against evidence submitted in Item 5 of the Engineering Report (Form R-03-ER-PT).

Exit-Level Outcome 7: The applicant explains and analyses impacts of engineering technologies of the sub-discipline.


No entry required. Assessment will be done against evidence submitted in Item 6 of the Engineering Report (Form R-03-ER-PT).

Exit-Level Outcome 8: The applicant explains ethical principles and analyses ethical issues.

No entry required. Assessment will be done against evidence submitted in Item 8 of the Engineering Report (Form R-03-ER-PT).

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Exit-Level Outcome 9: The applicant demonstrates knowledge and understanding of engineering management principles and applies these to his/her own work in the management of projects as a member or leader in a team.

No entry required. Assessment will be done against evidence submitted in item 4 of the Engineering Report (Form R-03-ER-PT).

Exit-Level Outcome 10: The applicant engages in independent and life-long learning through well-developed learning skills.

No entry required. Assessment will be done against evidence submitted in the Initial Professional Development Report (Form R-03-ER-PT).

Signature of applicant: _____


Date: _____

Signature of mentor / supervisor: _____

Name of mentor / supervisor (print): _____ **Tel. no:** _____

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APPENDIX FOR PROFESSIONAL ENGINEERING TECHNICIAN

Appendix A: What Changes with the introduction of Competency Standards?


Prior to the introduction of the Competency Standards, the requirements were expressed in terms of criteria for acceptable training in the ECSA policy document R2/1C. The requirements defined in Section 5 of document R2/1C are summarised in Column 1 of the following table. The outcomes embedded in the training requirements are presented in Column 2. The formal outcomes indicated in document **R-02-STA-PE/PT/PN** are stated in Column 3, while the level descriptor is presented in Column 4. Table A1-c relates to the Group A outcomes, while Table A2-c relates to the outcomes in groups B, C and D.

Table A1-c: Transition from input-based training specifications to output-based competency specifications in Group A

1: R2/1C Essential Elements of Acceptable Practical Training	2: Outcomes Embedded in Training Elements (Column 1)	3: Corresponding Competency Standard Outcome	4: Level Descriptors for Column 3
Acceptable practical training must provide satisfactory experience for Candidates in the implementation of novel engineering technology in an innovative manner and must include the practical training elements stated in Clause 3.1 at the level of responsible competence indicated. Outcomes expressed in criteria to be met are judged by peer evaluators.		Requirement (PN): Competence must be demonstrated within <i>well-defined engineering activities</i> (described below) by the integrated performance of the outcomes defined below at the level indicated for each outcome. Note: Attributes of a professional person are defined in outcomes.	
Problem Investigation Not covered by R2/1C	Not covered by R2/1C	Group A: Engineering Problem Solving *1: Define, investigate and analyse <i>well-defined engineering problems</i> 3: Comprehend and apply the knowledge embodied in established engineering practices and knowledge specific to the jurisdiction in which he/she practises	<i>Well-defined engineering problems</i> have the following characteristics: a) Can be solved mainly by practical engineering knowledge underpinned by related theory. <i>and one or more of the following:</i> b) Are largely defined but may require clarification. c) Are discreet, focused tasks within engineering systems. d) Are routine and are frequently encountered;
Problem Solution 3.3 a) Application of known and novel technology – Involves a variety of	The applicant must demonstrate the ability to develop the suggested solution to the problem through a process of synthesis and design by:	2: Design or develop solutions to <i>well-defined engineering problems</i>	c) Are discreet, focused tasks within engineering systems. d) Are routine and are frequently encountered;

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<p>activities or functions to carry out engineering works within a specific discipline, sub-discipline or a combination of disciplines of engineering, and these may include specialisation.</p> <p>b) There are a variety of activities or functions that Candidate Engineering Technicians may carry out in the execution of engineering work.</p> <p>These include:</p> <p>(i) Design and draughting, specifying and planning</p> <p>3.4</p> <p>c) Problem-solving, requiring the use of fundamental principles, underlying techniques and calculations based on formulas.</p>	<p>a) applying all information acquired during planning</p> <p>b) communicating by drawing up known plans, detailed designs, reports, specifications, etc.</p> <p>c) adjudicating tenders</p> <p>d) taking into account all practical, economic, social, environmental, quality assurance, safety and statutory factors.</p>		<p>may be unfamiliar but in a familiar context.</p> <p><i>and one or more of the following:</i></p> <p>e) Can be solved in standardised or prescribed ways.</p> <p>f) Are encompassed by standards, codes and documented procedures (authorisation required to work outside limits).</p> <p>g) Information is concrete and largely complete but requires checking and possible supplementation.</p> <p>h) Involve several issues (few of these impose conflicting constraints) and a limited range of interested and affected parties.</p> <p><i>and one or both of the following:</i></p> <p>i) Require practical judgement in the practice area in evaluating solutions and considering interfaces with other role- players.</p> <p>j) Have consequences that are locally important but not far reaching (wider impacts are dealt with by others).</p>
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Table A2-c: Transition from input-based training specifications to output-based competency specifications in groups B, C, D and E

<p>Execution / Implementation</p> <p>3.3(b)</p> <p>ii) Manufacturing, construction, installation, calibration, commissioning, operating, monitoring</p> <p>iii) Maintenance, modification, development</p> <p>iv) Operational management, economics and resource management</p> <p>3.3</p> <p>c) Social, economic, safety, health and environmental issues within engineering practice</p> <p>3.4</p> <p>g) Compliance with legislation</p>	<p>The applicant must demonstrate the ability to:</p> <p>a) execute engineering tasks</p> <p>b) make efficient use of people, materials, machines, equipment, funding</p> <p>c) manage interactions</p> <p>d) achieve end results within set parameters.</p>	<p>Group B: Managing Engineering Activities</p> <p>4: Manage part or all of one or more <i>well-defined engineering activities</i></p> <p>5: Communicate clearly with others in the course of his/her engineering activities</p> <p>Group C: Impacts of Engineering Activities</p> <p>6: Recognise the reasonably foreseeable social, cultural and environmental effects of <i>well-defined engineering activities</i>.</p> <p>7: Meet all legal and regulatory requirements and protect the health and safety of persons in the course of his or her <i>well-defined engineering activities</i>.</p>	<p><i>Well-defined engineering activities</i> are characterised by several or all the following:</p> <p>a) <i>Scope</i> of practice area is defined by techniques applied and changed by adopting new techniques into current practice.</p> <p>b) Practice area is located within a wider, complex <i>context</i>, with well-defined working relationships with other parties and disciplines.</p> <p>c) Work involves a familiar, defined range of <i>resources</i> (including people, money, equipment, materials and technologies).</p> <p>d) Activities require resolution of <i>interactions</i> manifested between specific technical factors with limited impact on wider issues.</p>
<p>Level of Responsibility</p> <p>3.3</p> <p>e) Independent work, teamwork supervision and management.</p> <p>f) Increasing responsibility and accountability for work</p> <p>3.4</p> <p>h) Compliance with the code of professional conduct</p> <p>3.3 Training must be developmental, building upon the knowledge and skill gained through the educational qualification. This is indicated through innovation in the application of technology, the acquisition of knowledge through research, increasing the scope of work, additional studies and continuing professional development.</p>	<p>The applicant must demonstrate the ability to accept professional responsibility for taking engineering decisions by:</p> <p>a) ensuring that sufficient cognisance is taken of economic considerations, social circumstances, environmental factors, quality assurance and safety and legal aspects</p> <p>b) following the code of professional conduct.</p>	<p>Group D: Exercise judgement and responsibility and act ethically</p> <p>8: Conduct engineering activities ethically.</p> <p>9: Exercise sound judgement in the course of <i>well-defined engineering activities</i>.</p> <p>10: Be responsible for making decisions on part or all of <i>well-defined engineering activities</i>.</p> <p>Group E: Manage own development</p> <p>11: Undertake professional development activities sufficient to maintain and to extend competence.</p> <p>*No direct counterpart in R2/1C work requirements</p>	<p>e) Activities are <i>constrained</i> by operational context, defined work package, time, finance, infrastructure, resources, facilities, standards and codes, and applicable laws.</p> <p>f) Activities have <i>risks</i> and <i>consequences</i> that are locally important but are not generally far reaching.</p>

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Nomenclature for figures 1, 2, 3, 4 and 5

AR	Academic Record
CI	Competency indicated
CN	Candidate Engineering Technician
CNI	Competency not indicated
ED	Educational Development
ERC	Educational Requirements complete
ERI	Educational Requirements incomplete
ID	Online user identification
IPD	Initial Professional Development
ME	More evidence
P	Applicable to all professional categories
PN	Professional Engineering Technician
PW	Online password
R	Registration
REF	Referee Report
RRef	Registration refused
TEO	Training and Experience Outline
TER	Training and Experience Report
TES	Training and Experience Summary
TPQEC	Technology Programme Qualifications and Examinations Committee
VA	Voluntary Association

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Appendix B: Sources of Evidence against Outcomes


Notes: (a) *Well-defined* is the level identifier defined for the Professional Technician category in document R-02-STA-PE/PT//PN.

(b) Engineering Report claims are verified by the applicant's supervisor.

No.	Outcome	Training and Experience Reports	Engineering Report incl. claim to competency	Referee Reports (3)	IPD Report		Discretionary Interview	
A1	Define, investigate and analyse <i>well-defined engineering problems</i>	Factual / Verified	Factual / Verified	Evaluative		Information to the left is considered in the Experience Appraisal	Evaluative / Verified	All information is used by Interview Panel when making their recommendation to the Registration Committee
A2	Design or develop solutions to <i>well-defined engineering problems</i>	Factual / Verified	Factual / Verified	Evaluative			Evaluative / Verified	
A3	Comprehend and apply the knowledge embodied in established engineering practices and the knowledge specific to the jurisdiction in which he/she practises	Factual / Verified	Factual / Verified	Evaluative	Factual: Knowledge Enhancement		Evaluative / Verified	
B4	Manage part or all of one or more <i>well-defined engineering activities</i>	Factual / Verified	Factual / Verified	Evaluative			Evaluative / Verified	
B5	Communicate clearly with others in the course of his/her engineering activities	Tests concise writing	Factual / Verified	Evaluative			Evaluative / Verified	

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C6	Recognise and address the reasonably foreseeable impacts of <i>well-defined engineering activities</i>	May not be covered	Factual / Verified	Evaluative		Evaluative / Verified
C7	Meet all legal and regulatory requirements and protect the health and safety of persons in the course of <i>well-defined engineering activities</i>	Factual / Verified	Factual / Verified	Evaluative		Evaluative / Verified
D8	Conduct engineering activities ethically	May not be covered	Factual / Verified	Evaluative		Evaluative / Verified
D9	Exercise sound judgement in the course of <i>well-defined engineering activities</i>	May not be covered	Factual / Verified	Evaluative		Evaluative / Verified
D10	Be responsible for making decisions on part or all <i>well-defined engineering activities</i>	Factual / Verified	Factual / Verified	Evaluative		Evaluative / Verified
E11	Undertake professional development activities sufficient to maintain and to extend competence		Factual / Verified	Evaluative/ Verified (Commitment)	Factual	Evaluative / Verified (Commitment)

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Appendix C: Training and Experience Summary

Surname and Initials:

Complete the Training and Experience Report (Form B2.1 TER) or the Training and Experience Outline (Form B2.1 TEO) for each period.

No.	From	To	Weeks	Work Details		Responsibility A-E
1				Employed by:	Post held:	
				Type of Work:		
2				Employed by:	Post held:	
				Type of Work:		
3				Employed by:	Post held:	
				Type of Work:		
4				Employed by:	Post held:	
				Type of Work:		
5				Employed by:	Post held:	
				Type of Work:		
6				Employed by:	Post held:	
				Type of Work:		
7				Employed by:	Post held:	
				Type of Work:		
8				Employed by:	Post held:	
				Type of Work:		
9				Employed by:	Post held:	
				Type of Work:		
n				Employed by:	Post held:	
				Type of Work:		

When an applicant is not engaged in training and experience towards registration, the period must be reflected as follows:


x				Employed by: Not active	Post held:	
				Type of Work: <i>Insert reason here</i>		
Total period (years, months):						

Signature of Applicant: _____

Date: _____

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Appendix D: Training and Experience Report

Training and Experience Report				
(As part of the Application for Registration as a Professional Engineering Technician)				
Name of Applicant		Signature of Applicant		Date
Period Number	Start date	End date	Number of weeks	Position held:
Name and address of Employer for this period (This is the employer and the site at which the work took place, for example, the site to which the applicant was seconded.)		Did you train under a Commitment and Undertaking (C&U)?		Yes No
		If yes, provide number of C&U		Number:
Name and address of Supervisor		Signature of Supervisor		
ECSA Registration Number (If not registered, qualify)		Date		
Discipline of Engineering (Aeronautical, Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, Metallurgical, Mining)				
Discipline-specific field (e.g. Power Transmission, Electronic Communication, Transportation, Structures, Automotive, Roads)				
Organogram showing supervisor (person signing this report), co-workers and persons you supervised (if any). Show two levels above and below if possible. Give names, positions, qualification and registration (if any) *. Please do not colour in blocks.				
Report: (Note: In paragraph format; first person singular; less than 430 words)				
Nature of training or experience (20--0 words) *				
Nature of problem(s) addressed in this period; method of analysis, development of solution and evaluation (120--150 words)*				
Management of materials, machines, manpower, methods or money, contracts (40--50 words)				
Interaction with clients, stakeholders and other disciplines (40--50 words)				
Health and safety considerations; hazards and environmental considerations; other legislation (40--50 words)*				
Describe role and responsibility (80--100 words) *		Degree of Responsibility		Tick <u>one only</u> *
		A. Being exposed: Under full supervision		
		B. Assisting: Responsibility limited		
		C. Participating: Supervision limited		
		D. Contributing: Performs work, detailed approval		
		E. Performing: Limited guidance		

*Mandatory fields

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Appendix E: Training and Experience Outline

Training and Experience Outline				
(As part of the Application for Registration as a Professional Engineering Technician)				
Name of Applicant		Signature of Applicant		Date
Period Number	Start date	End date	Number of weeks	Position(s) held
Name and address of Employer and Supervisor:		Did you train under a Commitment and Undertaking (C&U)?		Yes
ECSA Registration No. (If not registered, qualify):		If yes, provide number of CU		No
Discipline of Engineering (Aeronautical, Agricultural, Chemical, Civil, Electrical, Industrial, Mechanical, Metallurgical, Mining)				
Discipline-specific field (e.g. Power Transmission, Electronic Communication, Transportation, Structures, Automotive, Roads)				
Organogram identifying yourself, your supervisor and persons supervised*. Please do not colour in blocks.				
Outline Report				
Nature of training or experience in the period(s) (bulleted format; 10–13 bullets) *				
Nature of problem(s) addressed in this period; method of analysis, development of solution and evaluation (bulleted format; 10–13 bullets)*				
Management responsibilities (bulleted format; 10–13 bullets)				
Interaction with clients, stakeholders and other disciplines (bulleted format; 10–13 bullets)				
Legal and impact analysis (bulleted format; 10–13 bullets) *				
Describe role and responsibility (bulleted format; 10–13 bullets) *		Degree of Responsibility		Tick <u>one only</u>*
		A. Being exposed: Under full supervision		
		B. Assisting: Responsibility limited		
		C. Participating: Supervision limited		
		D. Contributing: Performs work, detailed approval		
		E. Performing: Limited guidance		

*Mandatory fields

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Appendix F: Engineering Report

- Note:** (a) Use Appendix A of the Discipline-Specific Training Guide, document **R-05-PN**, to assist in the interpretation of the criteria
- (b) Consult the Information Sheet (Sheet B2) before completing this report

Name of Applicant:


Area of employment (<15 words)	
Dates undertaken	
Engineering brief and objective (<30 words)	
Environment (Industry, Laboratory, Theory, Simulation) (<15 words)	
Short summary (State engineering problems and solutions in <30 words)	
Budgets (<10 words)	

Well-defined engineering problems have the following characteristics:

- a) can be solved mainly by practical engineering knowledge, underpinned by related theory;
and one or more of:
- b) are largely defined but may require clarification;
- c) are discrete, focused tasks within engineering systems;
- d) are routine, frequently encountered, may be unfamiliar but in familiar context;
and one or more of:
- e) can be solved by standardised or prescribed ways;
- f) are encompassed by standards, codes and documented procedures; requires authorisation to work outside limits;
- g) information is concrete and largely complete, but requires checking and possible supplementation;
- h) involve several issues but few of these imposing conflicting constraints and a limited range of interested and affected parties;
and one or both of:
- i) requires practical judgement in practice area in evaluating solutions, considering interfaces to other role-players;
- j) have consequences which are locally important but not far reaching (wider impact are dealt with by others).

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Well-defined engineering activities (WDEA) have several of the following characteristics:

- Scope of practice area is defined by techniques applied; change by adopting new techniques into current practice;
 - Practice area is located within a wider, complex *context*, with well-defined working relationships with other parties and disciplines;
 - Work involves familiar, defined range of *resources*, including people, money, equipment, materials, technologies;
 - Require resolution of *interactions* manifested between specific technical factors with limited impact on wider issues;
 - Are *constrained* by operational context, defined work package, time, finance, infrastructure, resources, facilities, standards and codes, applicable laws;
- Have *risks* and *consequences* that are locally important but are generally not far reaching.

Outcomes and Criteria		Cross-reference to B2.1 TER or B2.1 TEO
Outcome 1: Define, investigate and analyse well-defined engineering problems encountered in your work:		
1.1 State how you interpreted the work instruction received, checking with your client or supervisor if your interpretation is correct.		Period No:
1.2 Describe how you analysed, obtained and evaluated further clarifying information, and if the instruction was revised as a result.		Period No:
1.3 Describe how <u>you</u> performed or contributed to analysing engineering problems, using conceptualisation, justified assumptions, limitations and evaluation of results.		Period No:
Outcome 2: Design or develop a solution to well-defined engineering problems encountered in your work:		
2.1 Describe how you designed or developed and analysed alternative approaches to do the work. Impacts checked. Calculations attached.		Period No:
2.2 State what the final solution to perform the work was, client or your		Period No:

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supervisor in agreement.		
2.3 State <u>your</u> part in the drawing up of detailed specification requirements and design documentation for implementation to the satisfaction of the client.		Period No:
Outcome 3: Comprehend and apply the knowledge in established engineering practices and knowledge specific within your practice area as applied in your task:		
3.1 State what NDip level engineering standard procedures and systems you used to execute the work, and how NDip level theory was applied to understand and/or verify these procedures.		Period No:
3.2 Give your own NDip level theoretical calculations and/or reasoning on why the application of this theory is considered to be correct (Actual examples).		Period No:
		Period No:
Outcome 4: Manage part or all of one or more well-defined engineering activities embodied in your work:		
4.1 State how you managed yourself, priorities, processes and resources in doing the work (e.g. bar chart).		Period No:
4.2 Describe your role and contribution in the work team.		Period No:
4.3 State <u>your</u> knowledge of conditions and operations of contractors and the ability to establish and maintain professional and business relationships.		Period No:
Outcome 5: Communicate clearly with others in the course of your engineering activities (well-defined engineering work):		
5.1 State how you presented your point of		Period No:

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view and compiled reports after completion of the work.		
5.2 State how you compiled and issued instructions to entities working on the same task.		Period No:
5.3 State any oral presentation <u>you</u> have made using structure, style, language, visual aids and supporting documents appropriate to the audience and purpose.		Period No:
Outcome 6: Recognise the reasonably foreseeable social, cultural and environmental effects of your well-defined engineering activity (task):		
6.1 Describe the social, cultural and environmental impact of this engineering activity.		Period No:
6.2 State how you communicated mitigating measures to affected parties and acquired stakeholder engagement.		Period No:
Outcome 7: Meet all legal and regulatory requirements and protect the health and safety of persons in the course of your well-defined engineering activity (task):		
7.1 List the major laws and regulations applicable to this particular activity and how health and safety matters were handled.		Period No:
7.2 State how you obtained advice in doing risk management for the work and elaborate on the risk management system applied.		
Outcome 8: Conduct engineering activities ethically in executing your work:		
8.1 State how you identified ethical issues and affected parties and their interest and what you did about it when a problem arose.		Period No:

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8.2 Confirm that you are con-versant and in compliance with ECSA's Code of Conduct and why this is important in your work.		Period No:
Outcome 9: Exercise sound judgement in the course of well-defined engineering activities encountered in your work:		
9.1 State the factors applicable to the work, their interrelationship and how you applied the most important factors.		Period No:
9.2 Describe how you foresaw work consequences and evaluated situations in the absence of full evidence.		Period No:
Outcome 10: Be responsible for making decisions on part or all of well-defined engineering activities included in your work:		
10.1 Show how you used NDip theoretical calculations to justify decisions taken in doing engineering work. Attach actual calculations		Period No:
10.2 State how you took responsible advice on any matter falling outside your own education and experience.		Period No:
10.3 Describe how you took responsibility for your own work and evaluated any shortcoming in your output.		Period No:
Outcome 11: Undertake professional development activities sufficient to maintain and extend your competence.		
11.1 State what strategy you have independently adopted to enhance your own		Period No:

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professional development.		
11.2 State the philosophy of your employer in regard to your professional development.		Period No:
Evidence of your competency development plan and independent learning ability must be given in the Initial Professional Development Report, Form C5 IPD		


Signature of Applicant: _____ **Date:** _____

Signature of Mentor / Supervisor: _____

Name of Mentor / Supervisor (print): _____ **Tel. No.:** _____

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Appendix G: Referee Report

Referee Report on an Application for Registration as a Professional Engineering Technician					
Name of applicant					
Name of referee		ECSA Registration Category (e.g. Pr. Tech Eng)		Registration number	
Employer of referee	Referee cell no.				
	Referee email address				
My personal knowledge of the applicant's achievements extends:	From		To		
My personal relationship with the applicant is: (Mark one block)	Unrelated	By birth		By marriage	
My professional relationship with the applicant for the period shown is: (Mark one block)	Mentor	Supervisor	Employer	Colleague	Client

Evaluation of the applicant's competence or state of development

The level of competency required for registration as a Professional Engineering Technician is defined in the Competency Standards, document **R-02STA/PE/PT/PN**. Competency is defined in terms of eleven outcomes and two level definitions, namely *well-defined engineering problems* and *well-defined engineering activities*. The applicant is expected to have demonstrated performance at a Degree of Responsibility appropriate to a Professional Engineering Technician (Level E) for at least one year.

As a referee, you are requested to rate the applicant against the outcomes and make a holistic evaluation.

Please use the following scale:

CDC: The applicant consistently demonstrates competence

CDI: The applicant demonstrated competence but not consistently


CNDD: The applicant has not demonstrated competence but is developing

CND: The applicant has not demonstrated competence

X: I am unable to comment

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Please enter your comments in the third column, giving your reasons for assigning the particular rating, particularly in regard to a rating of CDI, CNDD or CND.

Outcomes	Rating	Reason
Group A: Engineering Problem-Solving		
1. Define, investigate and analyse well-defined engineering problems		
2. Design or develop solutions to well-defined engineering problems		
3. Comprehend and apply the knowledge embodied in established engineering practices and knowledge specific to the jurisdiction in which he/she practises		
Group B: Management of Engineering Activities		
4. Manage part or all of one or more well-defined engineering activities		
5. Communicate clearly with others in the course of his/her engineering activities		
Group C: Impacts of Engineering Activities		
6. Recognise the reasonable foreseeable social, cultural and environmental effects of well-defined engineering activities		
7. Meet all legal and regulatory requirements and protect the health and safety of persons in the course of his/her well-defined engineering activities		
8. Conduct engineering activities ethically		
Group D: Exercise judgement, take responsibility		
9. Exercise sound judgement in the course of well-defined engineering activities		
10. Be responsible for making decisions on part or all of well-defined engineering activities		
Group E: IPD		
11. Undertake professional development activities sufficient to maintain and to extend competence		

Optional: Further comments or additional information on the Applicant

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Viewed holistically		
The Applicant has demonstrated the required competence to be registered as a Professional Engineering Technician.		


Declaration by Referee: I declare that to the best of my knowledge, the information provided is correct. I hereby confirm that I am conversant with the Council's requirements for registration as set out in the Competency Standards, document **R-02-ST/PE/PT/PN** and in the instructions for this Referee Report and that I am prepared to substantiate my view expressed herein at an interview should the Council require me to do so. I also confirm that I submit this information to the ECSA on the understanding that it will be treated as confidential. I understand that the information will not be disclosed by the ECSA unless required by law.

Name of Referee: _____ **Title of Position held:** _____

Signature of Referee: _____ **Date:** _____

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Appendix H: Academic Record


Detailed information on TERTIARY ENGINEERING QUALIFICATIONS (As part of the Application for Registration as a Professional Engineering Technician)		
Name of Applicant:		
Name of Qualification:		
All subjects passed	Year Obtained	Mark obtained (if available)
Extra subjects passed for incomplete qualifications		
<i>Total Credits</i>		

Signature of Applicant

Date

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Appendix J: Educational Development Report

A	INSTRUCTIONS		
	<ul style="list-style-type: none"> Applicants not in possession of an ECSA-accredited National Diploma in Engineering should complete this work-based (experience) learning report. WRITE A REPORT OF APPROXIMATELY 100 WORDS ON EACH CRITERION LISTED. Reports must include reference to any <i>well-defined</i> practical examples in the workplace, demonstrating how the competencies were satisfied. The report is not restricted to a single task or project. (Additional supporting evidence may be attached, if necessary but must not exceed two A4 pages). This information can be obtained from education or experience or a combination of both. The applicant and his/her supervisor must sign the completed report. The applicant may be invited to an interview to expand and/or to confirm this report. <p><i>Well-defined engineering problems have the following characteristics:</i></p> <p>a) can be solved mainly by practical engineering knowledge, underpinned by related theory and one or more of the following:</p> <p>b) are largely defined but may require clarification</p> <p>c) are discrete, focused tasks within engineering systems</p> <p>d) are routine, frequently encountered and may be unfamiliar but in a familiar context and one or more of the following:</p> <p>e) can be solved by standardised or prescribed ways</p> <p>f) are encompassed by standards, codes and documented procedures (authorisation required to work outside limits)</p> <p>g) information is concrete and largely complete but requires checking and possible supplementation</p> <p>h) involve several issues (few of these impose conflicting constraints) and a limited range of interested and affected parties.</p>		
B.	APPLICANT'S PERSONAL DETAILS		
	Name		Technical Qualifications
C.	EDUCATIONAL DEVELOPMENT REPORT (OUTCOME-BASED, DURING WORK EXPERIENCE)		
<p>Exit-Level Outcome 1: The applicant displays understanding of and the ability to apply a coherent range of discipline-specific fundamental principles in engineering science and technology that is supported by established mathematical formulas to solve well-defined engineering problems.</p>			

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Item	Criteria	Development Report
1.1	State the mix of mathematical, natural science and engineering knowledge that <u>you</u> applied in the solution of the <i>well-defined engineering problem</i> . State which principles and laws were used.	
1.2	Describe how <u>you</u> analysed the engineering materials, components, systems and processes used and provide the motivation for the specific selection.	
1.3	Describe the procedures applied for dealing with uncertainty, the risk applicable to <u>your own</u> theoretical limitations and the use of specialists to do the work.	

Exit-Level Outcome 2: The applicant displays proficiency in discipline-specific engineering techniques at exit level.

Item	Criteria	Development Report
2.1	Describe how <u>you</u> analysed and defined a problem and identified the engineering knowledge and skills required for solving the problem.	
2.2	Describe how <u>you</u> generated possible solutions to the problem and how they were analysed and prioritised.	
2.3	State how <u>you</u> selected, formulated and presented the preferred solution.	

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Exit-Level Outcome 3: The applicant displays proficiency in the use of engineering tools and IT support that is appropriate to the discipline for the solution of well-defined engineering problems.


Item	Criteria	Development Report
3.1	Describe how <u>you</u> assess methods, skills or tools (including computer applications) for applicability to solving problems.	
3.2	Describe how <u>you</u> applied the method, skill or tool correctly to achieve the required result and how this tested against the required results.	

Exit-Level Outcome 4: The applicant demonstrates procedural design proficiency through project work. The design problem meets the requirements of a well-defined engineering problem, and the design approach is properly structured.

Item	Criteria	Development Report
4.1	Describe how <u>you</u> formulated the design problem and how the design process was managed.	
4.2	Describe how user needs, legislation, standards and resources were acquired and evaluated.	
4.3	Describe how <u>you</u> performed the design task subject to relevant premises, assumptions and constraints and selected the preferred solution from alternatives.	
4.4	Describe how the selected design was evaluated in terms of impact and benefits and how this information was communicated in a technical report.	

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Exit-Level Outcome 5: The applicant displays proficiency in standardised experimental and research methodology.

Item	Criteria	Development Report
5.1	Describe the plan <u>you</u> devised to perform the investigation and state which information was used.	
5.2	Describe the methodology <u>you</u> used to perform the analysis and state the equipment and/or software used.	
5.3	From the data that was available, describe how information was derived, analysed and interpreted to reach conclusions.	
5.4	Describe how the purpose, process and outcomes of the investigation are recorded in a technical report.	

Exit-Level Outcome 6: The applicant communicates in writing at the exit level of a NDip programme

No entry required. Assessment will be done against evidence submitted in Item 5 of the Engineering Report (Form R-03-ER-PN).

Exit Level Outcome 7: The applicant explains and analyses impacts of engineering activity, addressing issues by defined procedures.


No entry required. Assessment will be done against evidence submitted in Item 6 of the Engineering Report (Form R-03-ER-PN).

Exit Level Outcome 8: The applicant understands and commits to professional ethical principles in engineering.

No entry required. Assessment will be done against evidence submitted in Item 8 of the Engineering Report (Form R-03-ER-PN).

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Exit-Level Outcome 9: The applicant demonstrates knowledge and understanding of engineering management principles and applies these to his/her own work in the management of projects as a member or leader in a team.

No entry required. Assessment will be done against evidence submitted in Item 4 of the Engineering Report (Form R-03-ER-PN).

Exit-Level Outcome 10: The applicant engages in independent and life-long learning through well-developed learning skills.

No entry required. Assessment will be done against evidence submitted in Item 11 of the Engineering Report (Form R-03-ER-PN) and the Initial Professional Development Report (Form R-03-IPD-PN).

Signature of Applicant: _____ **Date:** _____

Signature of Mentor / Supervisor: _____

Name of Mentor/Supervisor (print): _____ **Tel. No.:** _____

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