ECSA

ENGINEERING COUNCIL OF SOUTH AFRICA

An Effective Regulator Assuring Engineering Excellence

Sub Discipline-specific Training Guide for Registration as a Lift Inspector in specified Category

R-05-LI-SC

REVISION 0: 12 February 2025

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DEFINITIONS

Alternative Route is applicable to an applicant who does not have the accredited or recognised qualifications to become registered in a Specified Category but who proposes to meet the educational requirement through assessment as per the requirements of the ECSA process indicated in **E-17-PRO**: *Criteria and Processes for Recognition of Educational Qualifications and Individual Assessment for Professional Categories*.

Benchmark Route is the normal process to apply for the attainment of registration that consists of the completion of an accredited, recognised or evaluated substantially equivalent qualification that is a well-structured and effectively executed programme of training and experience for the category of registration.

Competency *area* means the performance area where all the outcomes can be demonstrated at the level prescribed in a specific technology in an integrated manner, meeting the requirement as defined by Specified Category Registration within the scope.

Engineering *problem* means a problematic situation that is amenable to analysis and solution using engineering sciences and methods.

Ill*-posed *problem means a problem whose requirements are not fully defined or may be defined erroneously by the requesting party.

***Integrated* performance** means that an overall satisfactory outcome of an activity requires several outcomes to be satisfactorily attained, for example a design will require analysis, synthesis, analysis of impacts, checking of regulatory conformance and judgement in decisions.

***Level* descriptor** means a measure of performance demands at which outcomes must be demonstrated.

Lift Inspectors: means a third-party, independent, or corporation employed in connection with any Project to perform and carry out duties of the Lift Inspector (LI) under this Indenture or any Supplemental Indenture

Management of engineering *works* or *activities* means the coordinated activities required to:

(a) direct and control everything that is constructed or results from construction or manufacturing operations;

(b) operate engineering works safely and in the manner intended;

(c) return engineering works, plant and equipment to an acceptable condition by the renewal, replacement or mending of worn, damaged or decayed parts;

(d) direct and control engineering processes, systems, commissioning, operation and decommissioning of equipment;

(e) maintaining engineering works or equipment in a state in which it can perform its required function.

Over*-determined *problem means a problem whose requirements are defined in excessive detail, making the required solution impossible to attain in all of its aspects.

Outcome at the *specified category* level means a statement of the performance that a person must demonstrate to be judged competent.

Practice *area* means a generally recognised or distinctive area of knowledge and expertise developed by an engineering practitioner by virtue of the path of education, training and experience followed.

***Range* statement** *means* the required extent of or limitations on expected performance stated in terms of situations and circumstances in which outcomes are to be demonstrated in a particular competency area.

Scope means the registered scope within which Lift Inspectors can perform the duties or consult – refer to **Appendix B**.

Specified Category means a category of registration for persons who must be registered through the Engineering Profession Act or a combination of the Engineering Profession Act and external legislation as having specific engineering competencies normally at NQF Level 5

related to an identified need to protect the public safety, health and interest or the environment, in relation to an engineering activity.

Sustainable development means development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

ABBREVIATIONS

ASME	American Society of Mechanical Engineers
C&U	Commitment and Undertaking
ECSA	Engineering Council of South Africa
(DoEL)	Department of Employment and Labour
IPD	Initial Professional Development
ISO	International Organisation for Standardisation
ISP	Inspection Service Provider
LI	Lift Inspector
LEPC	Lift Escalator and Passenger Conveyor (Regulations)
OEM	Original Equipment Manufacturer
SANS	South African National Standards
SC	Specified Category
VA	Voluntary Association

BACKGROUND

The illustration below defines the documents that comprise the Engineering Council of South Africa (ECSA) system for registration in Specified Categories. The illustration also locates the current document.

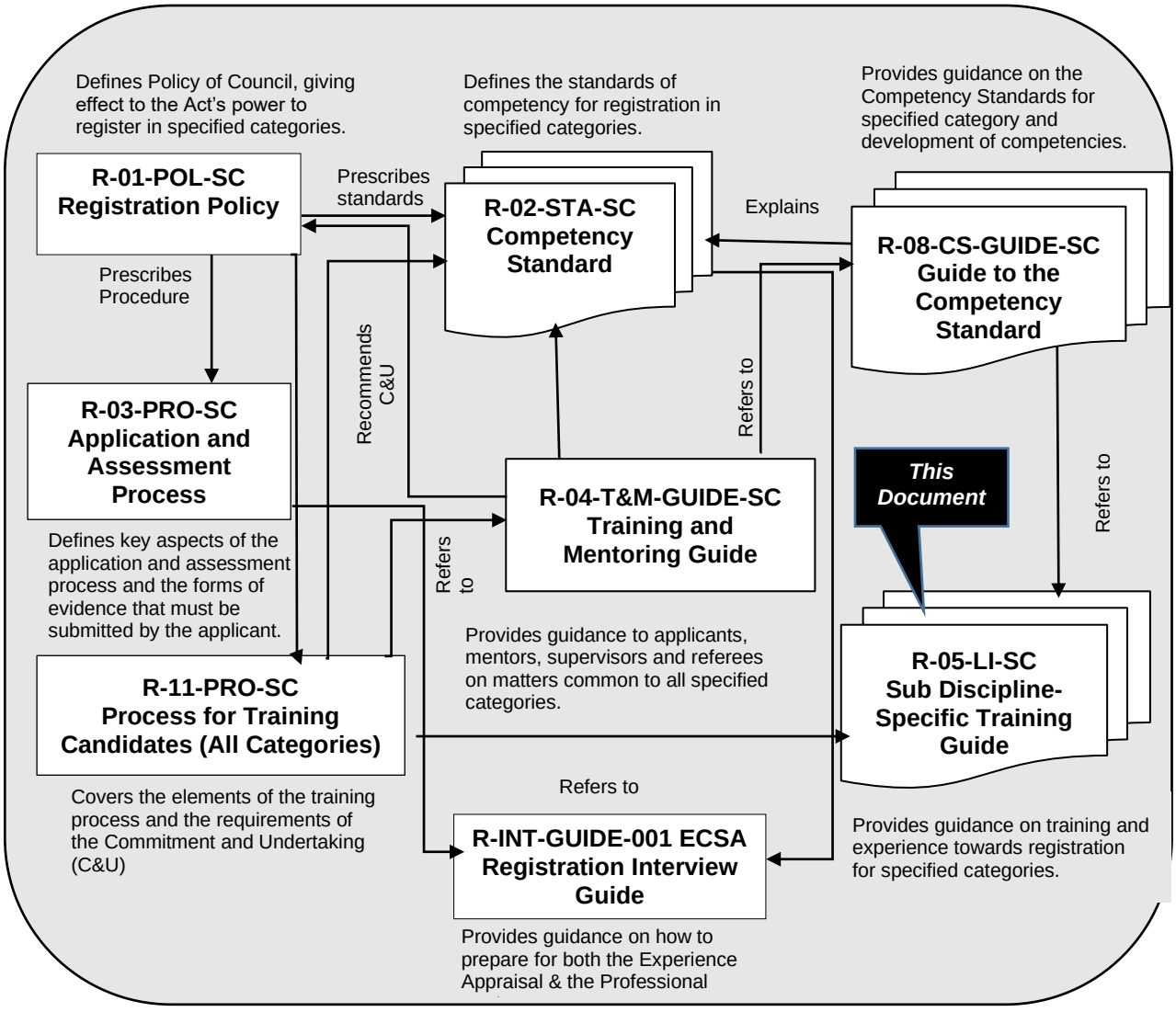

Figure 1: Documents defining the ECSA registration system

1. PURPOSE OF THIS DOCUMENT

All persons applying for registration in the Specified Category of Lift Inspectors are expected to demonstrate the competencies specified in policy document **R-02-STA-SC** at the prescribed level, irrespective of the type of lift, escalator and passenger conveyor equipment applicable through work performed by the applicant at the prescribed level of responsibility.

This document supplements the generic **R-04-T&M-GUIDE-SC**: Training and Mentoring Guide for Specified Category and document **R-08-CS-GUIDE-SC**: Guide to the Competency Standards for Registration in Specified Category.

In document **R-04-T&M-GUIDE-SC**, attention is drawn to the following sections:

- Duration of training and period working at level required for registration
- Principles of planning training and experience
- Progression of training programme
- Documenting training and experience
- Demonstrating responsibility.

The second document, **R-08-CS-GUIDE-SC**, provides both a high-level and an outcome-by-outcome understanding of the competency standards as an essential basis for this Sub Discipline-specific Training Guide (DSTG).

This DSTG, as well as documents **R-04-T&M-GUIDE-SC** and **R-08-CS-GUIDE-SC**, is subordinate to the Policy on Registration of Practitioners in Specified Categories (document **R-01-POL-SC**), document **R-02-STA-SC**: Competency Standard for Registration in a Specified Category and document **R-03-PRO-SC**: Processing of Applications for Registration of Candidates and Professionals.

2. AUDIENCE

This DSTG is directed to applicants and their registered supervisors / mentors in the discipline of Specified Category for Lift Inspector (LI). The guide is intended to support a programme of training and experience incorporating good practice elements.

This guide applies to persons who have:

- completed the education requirements by obtaining at least an accredited Higher Certificate (Engineering) type qualification at NQF Level 5, by obtaining substantially equivalent qualification, and through evaluation / assessment;
- registered as Candidate Specified Category *LI*; and/or
- embarked on a process of acceptable training under a registered Commitment and Undertaking (C&U) with a *registered LI m*entor guiding the professional development process at each stage.

3. PERSONS NOT REGISTERED AS A CANDIDATE OR NOT BEING TRAINED UNDER COMMITMENT AND UNDERTAKING (C&U)

Irrespective of the development path followed, all applicants for registration must present the same evidence of competence and be assessed against the same standards. It is noted that application for registration as a Specified Category Practitioner is permitted without being registered as a Candidate Specified Category LI and without training under a C&U. Mentorship and adequate supervision are, however, key factors in effective development to the level required for registration. A C&U indicates that the company is committed to mentorship and supervision.

If the trainee's employer does not offer C&U, the trainee should establish the level of mentorship and supervision the employer is able to provide. In the absence of an internal mentor, the services of an external mentor on specified category for LI should be secured. Alternatively, the recognised Voluntary Association (VA) for the sub discipline may be consulted for assistance in locating an external mentor. A mentor must keep abreast of all stages of the development process.

This DSTG is written for the recent graduate or applicant who has achieved relevant educational level requirements and who is training and gaining experience toward registration as stipulated by council in schedule 3 of policy **R-01-POL-SC**. Mature applicants for registration may apply the guide retrospectively to identify possible gaps in their development.

Any applicant who has been through a mentorship programme is advised to request an experienced mentor (internal or external) to act as an application adviser while he/she prepares his/her application for registration. This DSTG may also be applied in the case of a person moving into a candidacy programme at a later stage that is at a level below that required for registration (see **Section 7.6** of this document).

4. ORGANISATIONAL FRAMEWORK FOR OCCUPATION

Lift Inspectors (Organising Framework for Occupations)

Registered LIs conduct inspections and testing of lifts as defined in the Lift, Escalator and Passenger Conveyor (LEPC) Regulations of the Occupational Health and Safety Act 85 of 1993. This Act defines the equipment in the *Schedule of Equipment* incorporated in the LEPC Regulation.

This equipment also requires rigorous maintenance and inspection throughout its lifetime. A great variety of lift equipment, usually designed and certified for first time operation by engineering professionals, is available to industry for use in the movement of goods and passengers at any location.

It follows that the design, manufacture, use, maintenance, inspection and testing of the *Schedule of Equipment* must be in accordance with accepted prescribed regulations and standards, and audits to verify this at fixed intervals must be undertaken. The required well-administered record of work performed and inspections undertaken must be kept, and inspections must be carried out timeously to avoid incidents that endanger the workforce and the public.

The Department of Labour (DoEL) enforces the legislation stipulating that all Lift Inspection Service Providers (ISPs) performing inspections on lifts must apply for approval with the DoEL. These registered ISPs are expected to ensure that their LIs are registered with ECSA. The ISPs are furthermore expected to ensure that:

- their technical staff's competency and relevant experience in the applicable equipment types are developed continuously, keeping records of training;

- a copy of the Occupational Health and Safety Act and its Regulations is available at all times, and evidence of the training given to technical staff in this regard is kept;
- updated copies of all relevant Codes and Standards are available to technical staff;
- full documentation is available, including records of inspection and testing and projects carried out, as required for audit purposes;
- inspection records issued are kept available for a minimum period of 10 years;
- complete sets of test and inspection equipment are kept for each specific project;
- calibration certificates for the equipment are available.

An inspector from the Department of Labour paying a visit to a site has the right to see whether the lifts, escalators and passenger conveyors have been commissioned and regularly tested, and to check the registration number, name and contact details of the ISP responsible for the test undertaken and whether the user has appointed an ISP in terms of Subregulation 6.

5. NATURE AND ORGANISATION OF THE INDUSTRY

LIs may be employed in both the private and public sector. Typically, in the private sector they would be involved with Inspection Service Providers and contracting, or in supplier or manufacturing organisations. Engineering contractors are responsible for project implementation and activities including planning, construction, labour and resource management. Those working in supply or manufacturing companies could be involved in research and development, and would be involved in production, supply and quality control.

The public sector is responsible for service delivery and is usually the client, although in some departments, construction is also performed. LIs are required at all levels of the public sector, including at national, provincial and local government level, state-owned enterprises (SOEs) and public utilities. The LIs in the public sector largely handle overseeing implementation, operations and maintenance of infrastructure. An extension of the public sector would include tertiary institutions and research organisations. The following steps are to assist Applicant LIs during registration preparation:

Specific equipment types applicable to lift equipment

Depending on the nature of business of each employer, Applicant LIs must select all the equipment types for the purpose of registration as a *Specified Category LI*. The present equipment types recognised by ECSA are listed and described in published *Schedule of Equipment* (**Appendix B)**, with the applicable SANS or other standard listed, if available.

Ability to provide complete training

Depending on where the applicant is employed, there may be situations where the opportunities in-house are insufficiently diverse to develop all the competencies required, which should include training or OEM exposure to manufacturing, creation and commissioning as well as routine maintenance required in the lift industry, in selected or all the groups noted in document **R-02-STA-SC** and in **Appendix B**. The opportunity for developing problem solving competence (including design or developing solutions) and for managing engineering activities (including implementing or constructing solutions), for example, may not both be available to the applicant . In such cases, employers are encouraged to appoint an external mentor.

It is fairly common practice that where an organisation is unable to provide training in certain areas that secondments are arranged with other organisations so that the applicant is able to develop all the competencies required for registration. These secondments are usually reciprocal in nature so both employers and their respective employees get the mutual benefit from the other party. Secondments between consultants and contractors, as well as between the public and private sector should also be possible.

5.1 Investigation

Problem solving is the core of engineering. It is a logical thinking process that requires Lift Inspectors to apply their minds diligently in bringing solutions to technically *specifically defined* problems. This process involves the analysis of lift systems or assembly of mechanical components, and integration of various elements in mechanical engineering as applied to lifts through the application of basic and engineering sciences.

Applicants are required to demonstrate the insight and ability to use and interface various aspects through verifiable performance in providing engineered solutions to practical *specifically defined* problems experienced in their operating work environment. In addition, applicants must develop the skills required to demonstrate the use of applicable engineering knowledge in optimising the efficiency of operations.

Applicant LIs must be able to demonstrate that they have been actively involved in a mechanical workshop environment participating in the execution of practical work such that they have learnt sufficient details on basic mechanical procedures to be able to exercise judgment in the workplace thereafter.

What is a sufficiently *specifically defined* engineering problem (Appendix B)?

The definition of a *specifically defined* engineering problems can be summarised as follows:

"Composed of ***inter-related conditions***; requiring ***underpinning methods, procedures and techniques judgment*** to create a solution within a set of ***specifically defined* conditions**."

The design or development is a logical thinking process that requires LIs to apply their minds carefully in bringing solutions to *specifically defined* problems. This process involves the analysis of systems or assembly of mechanical and electrical components, and integration of various elements in engineering through the application of basic and engineering sciences. Simple, straightforward calculation exercises and graphical representations from computer-generated data are considered to be sufficiently *specifically defined* engineering design or development.

As part of demonstrating the application of theoretical knowledge, applicants must incorporate calculations with clearly defined inputs to the formulae used and detailed interpretation of the results obtained. They have to demonstrate how the calculated results have been used to provide the solution to the problem at hand, and the economic benefit to the project or the operating work environment.

Applicant LIs must obtain experience in solving a variety of problems in their work environment, and the solution to these problems should also involve the use of fundamental engineering knowledge obtained at a University of Technology or from an accredited academic engineering

programme. The problems that require scientific and engineering approach in solving them may be encountered in work required to be done on lifting equipment. From their early training years, applicants must actively seek opportunities to obtain experience in the area of synthesising solutions to real life engineering problems encountered in the workplace on lifts.

A suitable period of time and degree of practical participation should be sought in the workshop/work environment learning the basic practices that are the essence of the mechanical discipline so that applicant LIs are capable of judging the efficacies of such practices in the general workplace thereafter.

5.2 Design and manufacturing

Examples of acceptable design or development include but are not limited to the modifications after obtaining approval to:

- *specifically defined* control systems on lift machinery
- *specifically defined* minor parts of mechanical and electrical components on lift equipment
- test and inspection procedures on lifts, escalators and passenger conveyors
- *specifically defined* structures on lifts.

5.3 Operations and maintenance

This mostly deals with investigating failure or underperformance of lifting equipment and the synthesis of implemented and proven solutions to avoid recurrence of the problem. In addition, this category of work also involves the practical improvement recommended for optimising the operational efficiencies. LIs when, performing the abovementioned work, must apply engineering judgment to all work they do in the management of operations.

The applicant LI's ability to assess design work includes but is not limited to the following criteria:

- Conformance to design specifications, health and safety regulations
- Ease of fabrication and assembly
- Constructability
- Maintainability

- Conformance to environmental requirements
- Ergonomic considerations
- Life cycle costs
- Alternative solutions.

5.4 Research and development

This type of work may be performed in research and product development centres of business organisations or at academic institutions. Applicant LIs must participate in research and development work that is predominantly of mechanical and electrical engineering nature, and this work must include application of the various aspects of mechanical engineering, including product or system testing under controlled experimental conditions.

5.5 Risk and impact mitigation

The potential impact of ethically bound and evaluated LIs, who are listed on a register, conducting regular inspections in a prescribed manner, is incalculable. Their proactive identification of potential hazards and risks/incidents will definitely lead to fewer incidents/accidents, minimising loss of life and injury, as well as lost productivity and reduction in environmental impacts. All stakeholders, which includes manufacturers, equipment users, rental organisations, maintainers and LIs, agree that registration of inspectors, after evaluation, and being ethically bound, will be of tremendous advantage to the industry. Some of the obvious advantages are as follows:

- The DoEL promulgated legislation to ensure that only registered persons may undertake inspections on behalf on an ISP.
- Registered LIs are bound to report unsafe conditions to users, owners or the DoEL.
- Registered LIs can offer trustworthy constructive advice or service to the industry within their competence.
- Registered LIs should be kept abreast of new developments by Continuous Professional Development (CPD).
- Easy access to LIs via known details could involve them in assisting with standard and regulation development.
- Registered LIs receive recognition of their registration from industry.

6. DEVELOPING COMPETENCY – DOCUMENT (R-08-CS-GUIDE-SC)

6.1 Contextual knowledge

Applicant LIs are expected to be aware of the engineering profession requirements and the recognised VAs, organisations and mentors applicable to the LI.

Applicant LIs are encouraged to familiarise themselves with the process industries in general by reading journals, joining industry associations and attending training courses and conferences. This includes gaining knowledge of industry standards and specifications, such as SANS, ASME, ISO and relevant Acts and regulations.

The practice area of LIs identifies specific contextual activities that are considered an essential component of the development of competence of LIs. These include awareness of basic workshop, maintenance, manufacturing, fabrication and on-site activities and the competencies required of the engineer, technologist, technician, LI and artisan. Exposure to practice in these areas must be identified in each training programme within the employer environment.

6.2 Functions performed

Special considerations in the Lift group and each specific type of equipment or specialty must be provided to the competencies specified in the following groups as described in the Degree of Responsibility scales in document **R-04-T&M-GUIDE-SC**:

- Group A: Knowledge based problem solving (this should be a strong focus)
- Group B: Management and communication
- Group C: Identifying and mitigating the impacts of engineering activity
- Group D: Judgment and responsibility
- Group E: Independent learning
- Group F: Lift Sub Discipline-specific Requirements.

It is useful to measure the progression of an applicant's competency using the scales for Degree of Responsibility, Problem Solving and Engineering Activity as specified in the relevant documentation.

Appendix B was developed against the Degree of Responsibility scale. Activities should be selected to ensure that the applicant reaches the required level of competency and responsibility.

It should be noted that Applicant LIs working at Responsibility level E on the Degree of Responsibility Scale carry the responsibility appropriate to that of a registered person, except that an Applicant LI's supervisor is accountable for the applicant's recommendations and decisions under the supervisor's direct supervision.

The nature of work and degrees of responsibility defined in document **R-04-T&M-GUIDE-SC**, are used here (and in **Appendix B** below)**:**

A: Being Exposed	B: Assisting	C: Participating	D: Contributing	E: Performing
Undergoes induction, observes processes, 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 a registered person. Supervisors are accountable for an applicant's decisions under their direct supervision.

The mentor and the Applicant LI must identify at which level of responsibility an activity provides compliance with and demonstration of the various outcomes. The mentor must hold the registration of Lift Inspector. The evidence of applicants' activities must be recorded on the appropriate system such that it meets the requirements of the *Training Elements*, **Appendix B**. ECSA specifies the applicable recording system in the *Application for Registration* form (usually an Engineering Report for each type of lift with the associated Inspection Test Report).

6.3 Statutory and regulatory requirements

Applicant LIs are expected to have a working knowledge of the following regulations, Acts and standards, and how they affect their working environment as indicated in **Appendix B** and the following examples of relevant Acts and regulations:

- OHS Act – Occupation Health and Safety Act, 85 of 1993, as amended by Act 181 of 1993
- "C" Regulations
- LEPC Regulations
- Environment Conservation Act, 73 of 1989, as amended by Act 52 of 1994 and Act 50 of 2003
- Labour Relations Act, 66 of 1995
- Building Regulations – National Building Regulations and Building Standards Act, 103 of 1977, as amended by Act 49 of 1995
- Industry specific work instructions as issued by the Chief Inspector
- SANS and other international standards such as ISO, EN, DIN or US Federal Standards
- Engineering Profession Act, 46 of 2000 and its rules, specifically the Code of Conduct.

Many other Acts or SANS Standards not listed here may also be pertinent to an Applicant LIs work environment. Applicant LIs are expected to have a basic knowledge of the applicable Acts and SANS Standards to investigate whether any Acts or SANS Standards are applicable to a particular work environment. Reference should be made to the closest international standard if no SANS standard is available.

6.4 Desirable formal learning

Applicant LIs should register with the relevant VAs to access lists of training, conferences and seminars and other relevant information. The following list of formal learning activities is by no means extensive and is only a sample of some useful course types:

- CPD courses on specific disciplines and equipment types
- Elementary project management
- Negotiation skills
- Risk analysis

- Quality systems
- Occupation health and safety maintenance engineering environmental impacts
- Professional skills report writing and communication planning methods
- Computers and IT knowledge
- Construction regulations
- Problem solving and analysis tools.

7. PROGRAMME STRUCTURE AND SEQUENCING

7.1 Best practice

Best practice is a developmental process that assists applicants to become registered. Best practice comprises the process for continuous development of the applicant. A number of courses (technical and management) must be attended to gain the Initial Professional Development (IPD) points required for registration (courses must be registered and valid at the ECSA). This is in addition to on-the-job learning at the organisation in which the applicant is employed. Applicants must register with the appropriate VA bodies to gain access to courses, articles and relevant information for their development. This may also extend the opportunity to meet with experts during seminars.

It is suggested that Applicant LIs work with their mentors to select appropriate equipment types to gain exposure to eventual responsibility for inspection and testing on the lifts, selected within the mentor's scope. A regular reporting structure with suitable recording of evidence of achievement against the competency outcomes and responsibility needs to be in place.

There is no ideal training programme structure or unique sequencing that constitutes best practice. The training programme for each applicant LI depends on the work opportunities assigned to the applicant by the employer. This means that each applicant effectively undertakes a unique programme in which the various activities carried out at the discipline-specific level are linked to the generic competency requirements of document **R-08-CS-GUIDE-SC**.

7.2 Realities

Generally, irrespective of the equipment type, it is unlikely that the period of training will be 3 years, the minimum time required by ECSA. Typically, it will be longer and would be determined among others by the availability of functions in the actual work situation.

Each applicant will effectively undertake a unique programme where the various activities carried out at the discipline-specific level are then linked to the generic competency requirements of **R-08-CS-GUIDE-SC** and the compulsory sub discipline-specific training guide to be met during the candidacy.

7.3 Generalists, specialists, researchers and academics

Document **R-08-CS-GUIDE-SC** adequately describes what is expected of persons whose formative development has not followed a conventional path, for example academics, researchers, specialists and those who have not followed an applicant training programme.

The overriding consideration is that, irrespective of the route followed, the applicant must provide evidence of competence against the standard and the sub discipline-specific requirements.

7.4 Multi-disciplinary exposure

Interface management among various disciplines needs to be formalised. Details of signed-off interface documents among different disciplines are essential.

7.5 Orientation requirements

- Company Safety Regulations
- Company Code of Conduct
- Company Staff Code and Regulations
- Company records and record-keeping
- Typical functions and activities in the company
- Hands-on experience and orientation in each of the major company divisions.

7.6 Moving into or changing candidacy programmes

This DSTG assumes that the Candidate LI enters a programme after graduation or achieved relevant educational level requirements and continues with the programme until ready to submit an application for registration. The guide also assumes that the candidate LI is supervised and mentored by persons who meet the requirements in document **R-04-T&M-GUIDE-SC**. In the case of a person changing from one candidacy programme to another or moving into a candidacy programme from a less structured environment, it is essential that the following steps are completed:

- The Candidate LI must complete the Training and Experience Summary (TES) and Training and Experience Reports (TERs) for the previous programme or unstructured experience. In the latter case, it is important to reconstruct the experience as accurately as possible. The TERs must be signed off in the appropriate manner.
- On entering the new programme, the LI mentor and supervisor should review the Candidate LI's development while mindful of the experience and opportunities and requirements of the new programme and plan at least the next phase of the candidate's programme.
- The Candidate LI must complete the Sub Discipline-specific Requirements Report (SDSRR) on elements already covered during the first part of the candidacy.

7.7 Compulsory requirements to be met during the candidacy

There is a critical need in the industry to identify people who are able to conduct the essential operations associated with efficient and safe lift inspection and testing. This will lead to competence in the field of work and thereby add value to the industry by improving safety resulting in economic improvement of the country. It will also lead to a balanced society in that trainees will understand how the work they do fits into the greater engineering industry.

Candidate LIs, assisted by LI mentors and supervisors, must during candidacy ensure that they are conversant with the practical knowledge set out in the **Appendix A**, and submit evidence as such in the form of an SDSRR as part of the *Application for Registration* form.

8. CONCLUSION

To attain registration as specified category practitioners, applicants should be able to meet the educational requirements for the category and demonstrate competency against the prescribed standards. Demonstrating competency is achieved by meeting the requirements for the 11 outcomes. Applicants or persons willing to be registered in a specified category, together with their mentors, must ensure that the training provided is geared towards achieving the competency outcomes. Focusing on one training aspect for the entire duration of training will not assist applicants to achieve the necessary skills to demonstrate all the standard competency outcomes. The development of training remains the responsibility of the applicant, and the applicant must ensure that the training plan being provided covers all aspects of the outcomes.

REVISION HISTORY

Revision Number	Revision Date	Revision Details	Approved By
Rev. 0 Draft A	19 July 2024	First draft submitted	Working group
Rev. 0 Draft B	31 July 2024	First draft Reviewed inputs and changes incorporated	RIDR BU
Rev. 0 Draft C	20 Aug 2024	First draft Reviewed inputs and changes incorporated	RDDR and Working group
Rev. 0 Draft D		Document sent to the identified stakeholders for comments and inputs	RIDR Business Unit
Rev. 0 Draft E	04 Oct 2024	The draft document has been sent to identified stakeholders. The broader consultation Webinar was held on 04 October 2024. The BU had a meeting with DOL and the Associations on 10 October 2024. The BU and Working Group conducted a follow up consultation on 28 October 2024.	RIDR Business Unit
Rev. 0 Draft F	11 Dec 2024	Recommendation for approval by the RPSC	ERSIR
Rev. 0	12 Feb 2025	Approval	RPSC

The Sub Discipline-specific Training Guide for

Registration as a Lift Inspector in Specified Category

Revision 0 dated 12 February 2025 and consisting of 23 pages has been reviewed for adequacy by the Business Unit Manager and is approved by the Executive: Regulatory Services & International Relations **(ERSIR)**.

26 February 2025

Business Unit Manager — Date

2025/02/26

Executive: RSIR — Date

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

APPENDIX A

Sub Discipline-specific Requirements Report

Surname and Initials:

Use this form to report in about 100 words per statement under Requirements 1 to 5 below on the applicant's personal knowledge about the requirements. Attach to this report the actual work schedule and inspection test report done by the applicant under the supervision of a registered LI.

1. Communicate in the workplace	
1.1 Know how compliance and non-compliance reports are generated from available data after completion of an inspection.	
1.2 Understand the importance of data being presented in accordance with the relevant needs of target audiences.	
2. Compile and maintain work schedules	
2.1 Inspection schedules are described in terms of their purpose and process.	
2.2 Know how inspection schedules are completed in accordance with agreed timeframes and efficiency.	
3. Apply engineering skills to the workplace	
3.1 Knowledge of hydraulic flow characteristics and measurement of flow in terms of application in lifting equipment.	
3.2 Ability to explain ferrous and non-ferrous metals and alloys in terms of their properties and uses as applicable to lifting equipment.	
3.3 Ability to explain the design and operation of different types of control systems.	
3.4 Knowledge of basic single- and three phase electrical systems including basic AC and DC motor control and safety measures on electrical equipment.	
3.5 Ability to explain load tension in steel wire ropes and how corrosion in steel wire ropes must be counteracted.	

3.6 Knowledge or exposure to testing of various safety related components	
3.7 Knowledge or exposure to creation and commissioning of lifts and escalators	
3.8 Knowledge or exposure to the maintenance required for lifts and escalators.	
4. Comply with relevant legislation in the workplace (e.g., Lift Regulations)	
4.1 In accordance with work activities, interpret legislation relevant to inspection activities.	
4.2 In accordance with workplace requirements, identify and access legislation relevant to inspection activities.	
4.3 Understand the implications of non-compliance with legislation, and able to explain this in terms of work processes and penalties.	
5. Inspect lift and equipment	
5.1 Able to explain the purpose of conducting various tests in terms of relevant legislation and user safety standards.	
5.2 Understand why the inspection and test equipment selected must be appropriate to the inspection required.	
5.3 Know how the work area must be prepared for the relevant inspection to be done in accordance with the requirements.	
5.4 Know why and how public access to the worksite must be restricted in accordance with statutory requirements and workplace procedures.	
5.5 Conversant with the procedure to inspect and test equipment in accordance with test schedules and relevant safety standards.	
5.6 Able to identify and report to the relevant stakeholder on deviances from acceptable standards in accordance with statutory requirements and manufacturer specifications.	

Signature of Applicant:_____Date:

Signature of Mentor / Supervisor: _____

Name of Mentor/Supervisor printed: **Tel. No**

APPENDIX B

SPECIFIC EQUIPMENT TYPES RECOGNISED FOR REGISTRATION AS A LIFT INSPECTOR		
No.	**Description of Equipment Type**	**Standard Applicable**
1.	Equipment as detailed in the "Schedule of Equipment" As incorporated in the LEPC Regulations	The associated SANS Standards as published for the Schedule of equipment incorporated in the Lift, Escalator and Passenger Conveyor Regulations

APPENDIX C

TRAINING ELEMENTS

This guide is written for the recent graduate who is training and gaining experience toward registration ("Benchmark Route"). Mature applicants for registration ("Alternative Route") may apply the guide retrospectively to identify possible gaps in their development

Synopsis: Candidate specified category practitioners (Lift Inspectors) should achieve specific competencies at the prescribed level during their development towards registration, at the same time accepting more and more responsibility as experience is gained. The outcomes achieved and established during the candidacy phase should form the template to all engineering work performed after registration regardless of the level of responsibility at any particular stage of an engineering career:

1. Confirm understanding of instructions received and clarify if necessary.
2. Use theoretical training to develop possible approaches to do the work: select the best and present to the recipient.
3. Apply theoretical knowledge to justify decisions taken and processes used.
4. Understand role in the work team, and plan and schedule work accordingly.
5. Issue complete and clear instructions and report comprehensively on work completed.
6. Be sensitive about the impact of the engineering activity and take action to mitigate this impact.
7. Consider and adhere to legislation applicable to the task and the associated risk identification and management.
8. Adhere strictly to high ethical behavioural standards and ECSA's Code of Conduct.
9. Display sound judgement by considering all factors, their interrelationship, consequences and evaluation when all evidence is not available.
10. Accept responsibility for own work by using theory to support decisions, seeking advice when uncertain and evaluating shortcomings; and
11. Become conversant with your employer's training and development program and develop your own lifelong development program within this framework.

Specifically defined engineering work is usually restricted to applying standard procedures, codes and systems, i.e., work that was done before within the narrow field of application.

Responsibility Levels: A = Being Exposed; B = Assisting; C = Participating; D = Contributing; E = Performing

Competency Standards for Registration as a Specified Category Practitioner(LI)	Explanation and Responsibility Level
1. Purpose This standard defines the competence required for registration as a Specified Category Practitioner. Definitions of terms having particular meaning within this standard are given in text at the end of this Annexure and in document **R-01-SC**.	Discipline-specific Training Guides (DSTGs) give context to the purpose of the Competency Standards. Registered Specified Category Practitioner operate within the nine disciplines recognised by ECSA. Each discipline can be further divided into sub disciplines and finally into specific workplaces or competency areas. DSTGs are used to facilitate experiential development towards ECSA registration and assist in compiling the required portfolio of evidence (specifically the Engineering Report in the application form). **NOTE:** The training period must be utilised to develop the competence of the trainee towards achieving the standards below at a responsibility level E, i.e., Performing. (Refer to **R-04-SC**, Table 4.)
2. Demonstration of Competence Competence must be demonstrated within ***specifically defined engineering activities,*** defined below, by integrated performance of the outcomes defined in section 3 below at the level defined for each outcome. Required contexts and **functions** may be specified in the applicable Discipline-specific Training Guidelines. **Level Descriptor:** *Specifically defined* engineering activities have several of the following characteristics: a) Scope of specific practice area is defined by specific techniques applied; change by adopting new specific techniques into current practice. b) Practice area is located within a wider, complex *context,* with *specifically defined* working relationships with other parties and disciplines. c) Work involves specific familiar *resources,* including people, money, equipment, materials, technologies. d) Require resolution of *interactions* manifested between specific technical factors with limited impact on wider issues.	Engineering activities can be divided into (approximately): 5% Complex (Professional Engineers) • 5% Broadly defined (Professional Engineering Technologists) 10% Well-defined (Professional Engineering Technicians) 15% Specifically defined (Registered Specified Categories) • 20% Skilled Workers (Engineering Artisan) • 45% Unskilled Workers (Artisan Assistants) The activities can be in-house or contracted out; evidence of integrated performance can be submitted irrespective of the situation. **Level Descriptor:** ***Specifically defined engineering activities*** in the specific discipline are characterised by several or all of the following: a) Scope of practice area does not cover the entire field of the specific discipline (exposure limited to the relevant components of the specific discipline and specific workplace). Techniques applied are largely well established and change by adopting new specific techniques into current practice is the exception. b) Practice area varies substantially with unlimited location possibilities and an additional responsibility to identify the need for *complex, broadly defined and/or well-defined* advice to be included in the *specifically defined* working relationships with other parties and disciplines. c) The bulk of the work involves familiar, defined range of resources, including people, money, equipment, materials, technologies.

e) Are *constrained* by operational context, defined work package, time, finance, infrastructure, resources, facilities, standards and codes, applicable laws. f) Have *risks* and *consequences* that are locally important but are specifically defined. ***Activities*** include but are not limited to planning; investigation and problem resolution; improvement of materials, components, systems or processes, engineering operations, maintenance, project management, development and commercialisation.	d) Most of the impacts in the specific discipline are on wider issues, and although occurring frequently, are *specifically- defined* and can be resolved by following established procedures. e) The work packages and associated parameters are constrained by operational context with variations limited to different locations only. (Cannot be covered by laws, standards and codes only.) f) Even locally important minor risks can have far reaching consequences. ***Activities*** include but are not limited to design; planning; investigation and problem resolution; improvement of materials, components, systems or processes; engineering operations; maintenance; project management and general management. For Specifies Category Practitioners, research, development and commercialisation happen more frequently in some disciplines and are seldom encountered in others.
3. Outcomes to be satisfied:	**Explanation and Responsibility Level**
Group A: Engineering Problem Solving.	
Outcome 1: Define, investigate and analyse *specifically defined* engineering problems (tasks).	**Responsibility level E** Analysis of an engineering problem means the "separation into parts possibly with comment and judgement".
Level Descriptor: *Specifically defined engineering <u>problems</u> have the following characteristics*: a) can be solved mainly by specific practical engineering knowledge, underpinned by related theory ***and one or more of:*** b) are fully defined but require feedback c) are discrete, specifically focused tasks within engineering systems d) are routine, frequently encountered and in familiar specified context	a) practical problems for Specified Category Practitioners means the problem encountered cannot be solved by artisans because theoretical calculations and engineering decisions are necessary to substantiate the solution proposed; further investigation to identify the nature of the problem is seldom necessary; b) discrete means *individually distinct*: the problem is easily recognised as part of the larger engineering task, project or operation c) recognised that the problem is within the specific scope and occurred in the past or the work to be done is a standard operation – seldom something new d) solving the problem does not require the development of a new solution – find out how it was solved/done before

and one or more of: e) can be solved by standardised or prescribed ways f) are encompassed by specific standards, codes and documented procedures; requires authorisation to work outside limits g) information is concrete, specific and largely complete, but requires checking and possible supplementation h) involve specific issues but few of these imposing conflicting constraints and a specific range of interested and affected parties ***and one or both of:*** i) requires practical judgement in specific practice area in evaluating solutions, considering interfaces to other role-players j) have consequences that are locally important but within a specified category (wider impact are dealt with by others).	e) encompassed means *encircled:* The standards, codes and documented procedures must be obtained to solve the problem and authorisation from Professionals responsible must be obtained to wave the stipulations f) the responsibility lies with the Specified Category Practitioner to check that the information received as part of the instruction is correct, and added to as is necessary to ensure the correct and complete execution of the work g) the problem handled by a Specified Category Practitioner must be limited to well know specific matters needing standardised solutions without possible complications h) practical solutions to problems include knowledge of the skills displayed by Practical Specialists and Engineering Artisans without sacrificing theoretical engineering principles and / or cutting corners to satisfy parties involved i) Specified Category Practitioners must realise that their engineering actions might seem to be of local importance only but may develop into further problems where support from Engineering Professionals might be needed to deal with these consequences.
Competency Indicators: A structured analysis of specifically-defined problems typified by the following performances within the competency area is expected: 1.1 State how <u>you</u> interpreted the work instruction received, checking with your client or supervisor if your interpretation is correct 1.2 Describe how <u>you</u> analysed, obtained and evaluated further clarifying information, and if the instruction was revised as a result.	To perform an engineering task Specified Category Practitioners typically receive an instruction from a senior person (customer) to do this task, and must: 1.1 make very sure that the instruction is complete, clear and within their capability and that the person who issued the instruction agrees with their interpretation 1.2 ensure that the instruction and information to do the work is fully understood and is complete, including the engineering theory needed to understand the task and to carry out and/or check calculations, and the acceptance criteria; if needed, supplementary information must be gathered, studied and understood.
Range Statement: The problem (task) may be part of a larger engineering activity or may be stand alone. The design (planning) problem is amenable to solution by specific techniques practised regularly. This outcome is concerned with the understanding of a problem: Outcome 2 is concerned with the solution.	

Outcome 2: Design or develop (plan) sustainable solutions to specifically defined engineering problems (tasks).	**Responsibility level C** Design means “drawing or outline from which something can be made”. Develop means “come or bring into a state in which it is active or visible”.
Competency Indicators: This outcome is normally demonstrated after a problem analysis as defined in outcome 1. Working systematically to synthesise a solution to a well-defined problem, typified by the following performances is expected: 2.1 Describe how you designed or developed and analysed alternative approaches to do the work. Impacts and sustainability checked. Calculations attached. 2.2 State what the final solution to perform the work was; client or your supervisor in agreement.	The task given must be fully understood and interpreted; solutions developed (designed) to execute. To synthesise a solution means “the combination of separate parts, elements, substances, etc. into a whole or into a system” by: 2.1 The development (design) of more than one way to do an engineering task or solve a problem should always be done, including the costing and impact assessment for each alternative. All the alternatives must meet the requirements set out by the instruction received, and the theoretical calculations to support each alternative must be done and submitted as an attachment. The alternatives must be within the legal boundaries imposed. 2.2 Specified Category Practitioners will in some cases be unable to support proposals with the complete theoretical calculation to substantiate every aspect and must in these cases refer their alternatives to a Professional for scrutiny and support. The alternatives and alternative recommended must be convincingly detailed to win customer support for the alternative recommended. Selection of alternatives might be based on tenders submitted with alternatives submitted deviating from those specified.
Range Statement: The solution conforms to specific established methods, techniques or procedures within the *specifically defined* competency area. Engineering should not look only to decrease impacts, but also to restore and regenerate through design.	Applying theory to *specifically defined engineering* work is done in a way that’s been used before, probably developed by Professionals in the past, and documented in written procedures, specifications, drawings, models, examples, etc. Specified Category Practitioners must seek approval and engineering verification for any deviation from these established methods.
Outcome 3: Comprehend and apply knowledge embodied in established specific engineering practices and knowledge specific to the field in which they practise.	**Responsibility level E** Comprehend means “to understand fully”.
Competency Indicators: This outcome is normally demonstrated in the course of design, investigation or operations, confined to the competency area.	Design (development) work for Specified Category Practitioners is mostly to utilise, configure, certify, test, verify, etc. manufactured components or proven engineering or management systems, and repetitive design (development) work using an existing design (development) as an example. Specified Category Practitioners apply existing codes, policies and procedures in their design (development) work.

3.1 State what HCert level engineering standard procedures and systems you used to execute the work, and how HCert level theory was applied to understand and/or verify these procedures. 3.2 Give your own HCert level theoretical calculations and/or reasoning on why the application of this theory is considered to be correct (actual examples).	Investigations on *specifically defined* incidents and condition monitoring and operations mostly on controlling, maintaining and improving engineering systems and operations. 3.1 The understanding of *specifically defined* procedures and techniques must be based on fundamental mathematical, scientific and engineering knowledge. Specific procedures and techniques applied to do the work accompanied by the underpinning theory must be given. 3.2 Calculations confirming the correct application and utilisation of equipment and/or systems listed in the Discipline-specific Training Guide must be done on practical *specifically defined* activities. Reference must be made to standards and procedures used and how it was derived from HCert level theory.
Range Statement: Applicable knowledge includes the following: a) Technical knowledge that is applicable to the practice area irrespective of location, supplemented by locally relevant knowledge, for example established properties of local materials. b) A working knowledge of interacting disciplines confined to the competency area. Codified knowledge in related areas: financial, statutory, safety, management and sustainability. c) Jurisdictional knowledge includes legal and regulatory requirements as well as prescribed codes of practice.	a) The specific location of a task to be executed is the most important determining factor in the layout design and utilisation of equipment and/or systems. A combination of educational knowledge and practical experience must be used to substantiate decisions taken including a comprehensive study of laws, policies, procedures, standards, environment, manpower, materials, components and projected customer requirements and expectations. b) In spite of having a working knowledge of interacting disciplines, Specified Category Practitioners must appreciate the importance of working with specialists like Civil Engineers on structures and roads, Mechanical Engineers on fire protection equipment, Architects on buildings, Electrical Engineers on communication equipment, etc. The codified knowledge in the related areas means working to and understanding the requirements set out by specialists in the areas mentioned. c) Jurisdictional in this instance means “having the authority”, and Specified Category Practitioners must adhere to the terms and conditions associated with each task undertaken. They may even be appointed as the “responsible person” for specific duties in terms of the OHS Act.

Group B: Managing Engineering Activities	Explanation and Responsibility Level
Outcome 4: Manage part or all of one or more *specifically defined* engineering activities.	**Responsibility level E** Manage means "control".
Competency Indicators: The display of personal and work process management abilities within the competency area is expected: 4.1 State how you managed yourself, priorities, processes and resources in doing the work (e.g., bar chart). 4.2 Describe your role and contribution in the work team.	In engineering operations and projects Specified Category Practitioners are typically given the responsibility to carry out specific tasks and/or complete projects. 4.1 Resources are usually subdivided based on availability and controlled by a work breakdown structure and scheduling to meet deadlines. Quality, safety and environment management are important aspects. 4.2 Depending on the task, Specified Category Practitioners can be the manager, team leader, a team member, or can supervise appointed contractors.
Outcome 5: Communicate clearly with others in the course of their *specifically defined* engineering activities	**Responsibility level E**
Competency Indicators: Demonstrates effective communication by: 5.1 State how you presented your point of 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	5.1 Refer to Range State for Outcome 4 and 5 below. Presentation of point of view mostly occurs in meetings and discussions with immediate supervisor. 5.2 Refer to Range State for Outcome 4 and 5 below.
Range Statement for Outcomes 4 and 5: Management and communication in *specifically defined engineering* involves: a) Planning activities b) Organising activities c) Leading activities d) Implementing activities e) Controlling activities.	a) Planning means "the arrangement for doing or using something, considered in advance". b) Organising means "put into working order; arrange in a system; make preparations for". c) Leading means to "guide the actions and opinions of; influence; persuade". d) Implementing means to "carry an undertaking, agreement, or promise into effect". e) Controlling means the "means of regulating, restraining, keeping in order; check". Specified Category Practitioners participate in writing or adhere to specifications for the purchase of materials and/or work to be done, recommendation on tenders received, place orders and variation

Communication relates to technical aspects and wider impacts of professional work. Audience includes peers, other disciplines, clients and stakeholder audiences. Appropriate modes of communication must be selected. The Specified Category Practitioner is expected to perform the communication functions reliably and repeatedly confined to the competency area.	orders, write work instructions, report back on work done, draw, correct and revise drawings, compile test reports, use operation and maintenance manuals to write or apply work procedures, write inspection and audit reports, write commissioning reports, prepare and present motivations for new projects, compile budgets, report on studies done and calculations carried out, report on customer requirements, report on safety incidents and risk analysis, report on equipment failure, report on proposed system improvement and new techniques, report back on cost control, report on environmental impact and sustainability, etc.
Group C: Impacts of Engineering Activity.	**Explanation and Responsibility Level**
Outcome 6: Recognise the foreseeable social, cultural, environmental and sustainability effects of *specifically defined* engineering activities generally	**Responsibility level D** Social means “people living in communities; of relations between persons and communities”. Cultural means ”all the arts, beliefs, social institutions, etc. characteristic of a community”. Environmental means “surroundings, circumstances, influences”. Sustainable is defined in the definitions below.
Competency Indicators: This outcome is normally displayed in the course of analysis and solution of problems within the competency area, by typically: 6.1 describing the social, cultural, environmental impact and long-term sustainability of this engineering activity 6.2 stating how you communicated mitigating measures to affected parties and acquired stakeholder engagement.	6.1 Engineering impacts heavily on the environment e.g., servitudes, expropriation of land, excavation of trenches with associated inconvenience, borrow pits, dust and obstruction, street and other crossings, power dips and interruptions, visual and noise pollution, malfunctions, oil and other leaks, electrocution of human beings, detrimental effect on animals and wildlife, dangerous rotating and other machines, demolishing of structures, etc. 6.2 Mitigating measures taken may include environmental impact studies, environmental impact management, community involvement and communication, barricading and warning signs, temporary crossings, alternative supplies (ring feeders and bypass roads), press releases, compensation paid, etc.
Outcome 7: Meet all legal and regulatory requirements, protect the health and safety of persons and adhere to sustainable practices in the course of their *specifically defined* engineering activities.	**Responsibility level E**
Competency Indicators: 7.1 List the major laws and regulations applicable to this particular activity and how sustainability practices and health and safety matters were handled.	7.1 The OHS Act is supplemented by a variety of parliamentary acts, regulations, local authority by-laws, standards and codes of practice. Places of work might have standard procedures, instructions, drawings and operation and maintenance manuals available. These documents, depending on the

7.2 State how you obtained advice in doing risk management for the work and elaborate on the risk management system applied.	situation (emergency, breakdown, etc.) are consulted before work is commenced and during the activity. 7.2 It is advisable to attend a Risk Management (Assessment) course, and to investigate and study the materials, components and systems used in the workplace. Specified Category Practitioners seek advice from knowledgeable and experienced specialists if any doubt exists that safety and sustainability cannot be guaranteed.
Range Statement for Outcomes 6 and 7: Impacts and regulatory requirements include the following: a) Impacts to be considered are generally those identified within the established methods, techniques or procedures used in the specific practice area. b) Regulatory requirements are prescribed. c) Apply prescribed risk management strategies. d) Effects to be considered and methods used are defined. e) Prescribed safe and sustainable materials, components and systems. f) Prescribe maintenance protocols. g) Persons whose health and safety are to be protected are both inside and outside the workplace.	a) The impacts vary substantially with the location of the task, e.g., the impact of laying a cable or pipe in the main street of town will be entirely different to construction in a rural area. The methods, techniques or procedures will differ accordingly and are identified and studied by the Specified Category Practitioners before starting the work. b) The Safety Officer and/or the Responsible Person appointed in accordance with the OHS Act usually confirms or checks that the instructions are in line with regulations. Specified Category Practitioners are responsible to see to it that this is done, and if not, establish which regulations apply, and ensure that they are adhered to. Usually, the people working on site are strictly controlled w.r.t. health and safety, but Specified Category Practitioners check that this is done. Tasks and projects are mostly carried out where contact with the public cannot be avoided, and safety measures like barricading and warning signs must be used and maintained. c) Risks are mostly associated with elevated structures, subsidence of soil, electrocution of human beings, moving parts on machinery, fraud and corruption and theft. Risk management strategies are usually done by more senior staff but are understood and applied by the Specified Category Practitioners. d) Effects associated with risk management are mostly well known if not obvious, and methods used to address, clearly defined. e) Usually the safe and sustainable materials, components and systems are prescribed by Professionals or other specialists. It is the responsibility of Specified Category Practitioners to use their knowledge and experience to check and interpret what is prescribed and report anything they are not satisfied with. f) Draw up maintenance systems and procedures from Codes of Practice and Manufacturer's Instructions. g) Staff working on the task or project as well as persons affected by the engineering work being carried out.

Group D: Exercise judgment, take responsibility, and act ethically.	Explanation and Responsibility Level
Outcome 8: Conduct engineering activities ethically.	**Responsibility level E** Ethically means "science of morals; moral soundness". Moral means "moral habits; standards of behaviour; principles of right and wrong".
Competency Indicators: Sensitivity to ethical issues and the adoption of a systematic approach to resolving these issues are expected, typified by the following: 8.1 State how you identified ethical issues and affected parties and their interest and what you did about it when a problem arose. 8.2 Confirm that you are conversant and in compliance with ECSA's Code of Conduct and why this is important in your work.	Systematic means "methodical; based on a system". 8.1 Ethical problems that can occur include tender fraud, payment bribery, alcohol abuse, sexual harassment, absenteeism, favouritism, defamation, fraudulent overtime claims, fraudulent expenses claimed, fraudulent qualifications, misrepresentation of facts, etc. 8.2 ECSA's Code of Conduct, as per ECSA's website, is known and adhered to. Applicable examples given.
Outcome 9: Exercise sound judgement in the course of *specifically defined* engineering activities	**Responsibility level E** Judgement means "good sense: ability to judge".
Competency Indicators: Exhibition of judgement is expected by**:** 9.1 State the factors applicable to the work, their interrelationship and how you applied the most important factors. 9.2 Describe how you foresaw work consequences and evaluated situations in the absence of full evidence.	9.1 The extent of a project or task given to junior Specified Category Practitioners is characterised by the limited number of factors and their resulting interdependence. They will seek advice if educational and/or experiential limitations are exceeded. Examples of the main engineering factors applied must be given. 9.2 Taking risky decisions leads to equipment failure, excessive installation and maintenance cost, damage to persons and property, bankruptcy, poor service delivery, etc. Give examples.

Range Statement for Outcomes 8 and 9: Judgement is expected both within the application of the candidate's category specific methods, techniques and specific procedures and in assessing their immediate impacts. Judgement in decision making involves: a) taking limited risk factors into account some of which may be ill-defined; **or** b) consequences are in the immediate work contexts; **or** c) identified set of interested and affected parties with defined needs to be taken into account.	In engineering about 15% of the activities can be classified as *specifically defined* where Specified Category Practitioners use standard procedures, codes of practice, specifications, etc. Judgement must be displayed to identify any activity falling outside the *specifically defined* range, as defined above by the following a) Seeking advice when risk factors exceed their capability. b) Consequences outside the immediate work contexts, e.g., long-term, not normally handled. c) Interested and affected parties with defined needs outside the *specifically defined* parameters to be taken into account.
Outcome 10: Be responsible for making decisions on part or all of all of one or more *specifically defined* engineering activities	**Responsibility level E** Responsible means "legally or morally liable for carrying out a duty; for the care of something or somebody in a position where one may be blamed for loss, failure, etc."
Competency Indicators: Responsibility is displayed by the following performance: 10.1 Show how you used HCert level theoretical calculations to justify decisions taken in doing engineering work. Attach actual calculations. 10.2 State how you took responsible advice on any matter falling outside your own education and experience. 10.3 Describe how you took responsibility for your own work and evaluated any shortcoming in your output.	10.1 The calculations, for example fault levels, load calculations, losses, return on investment, etc. are done to ensure that the correct material and components are utilised. 10.2 Specified Category Practitioners do not operate on tasks at a higher level than *specifically defined* and consult professionals if elements of the tasks to be done are beyond their education and experience, e.g., power system stability, legal actions, etc. 10.3 This is, in the first instance, continuous self-evaluation to ascertain that the task given is done correctly, on time and within budget. Continuous feedback to the originator of the task instruction and corrective action, if necessary, form an important element.
Range Statement: Responsibility must be discharged for significant parts of a one or more *specifically defined* engineering activity.	The responsibility is mostly allocated within a team environment with an increasing designation as experience is gathered.
Note 1: Responsibility for the evaluation of work in a supervisory capacity.	

Group E: Initial Professional Development (IPD)	Explanation and Responsibility Level
Outcome 11: Undertake independent learning activities sufficient to maintain and extend his or her competence	**Responsibility level D**
Competency Indicators: Self-development managed by typically: 11.1 Provide <u>your</u> strategy adopted independently to enhance professional development. (IPD report); 11.2 Be aware of the philosophy of employer in regard to professional development.	11.1 If possible, a specific field of the sub-discipline is chosen, available developmental alternatives established, a program drawn up (in consultation with employer if costs are involved), and options open to expand knowledge into additional fields investigated. 11.2 Record keeping must not be left to the employer or anybody else. The trainee must manage his/her own training independently, taking initiative and be in charge of experiential development towards Specified Category Practitioner registration level. Knowledge of the employer's policy and procedures on training is essential.
Range Statement: Professional development involves: a) taking ownership of own professional development b) planning own professional development strategy c) selecting appropriate professional development activities d) recording professional development strategy and activities while displaying independent learning ability.	a) This is <u>your</u> professional development, not the organisation you are working for. b) In most places of work training is seldom organised by some training department. It is up to the Specified Category Practitioner to manage his/her own experiential development. Specified Category Practitioners frequently end up in a 'dead-end street' being left behind doing repetitive work. If self-development is not self-driven, success is unlikely. c) Preference must be given to engineering development rather than developing soft skills. d) Developing a learning culture in the workplace environment of Specified Category Practitioners is vital to their success. Information is readily available and most senior personnel in the workplace are willing to mentor, if approached.