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ENSURING THE EXPERTISE TO GROW SOUTH AFRICA

Code of Practice for the Performance of Mining Engineering Work

R-02-COP-MIN

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DEFINITIONS

Act means the Engineering Profession Act (46 of 2000, as revised).

Code means this code of practice.

Code of Conduct means the Code of Conduct for Registered Persons: Engineering Profession Act, 46 of 2000.

Competency means a combination of knowledge, training, experience and applicable qualifications that enables an individual to perform a task or an activity successfully.

Council means the Engineering Council of South Africa established by Section 2 of the Act.

Discipline means the disciplines of engineering as recognised by ECSA.

Engineering Practitioner means a person who performs engineering work or provides advisory services relating to engineering work. It includes both registered and unregistered persons.

Engineering Work means the process of applying engineering and scientific principles, concepts, contextual and engineering knowledge to the research, planning, design, implementation, maintenance and management of work in the natural and built environments. It includes advisory services, assessment of engineering designs and determination of the risks posed by the design on workers, the public and environment.

Identification of Engineering Work means the Identification of Engineering Work Regulations, as gazetted.

Mining Engineering Practitioner means an engineer practicing in the sub-disciplines of Mining Engineering, Rock Engineering or Ventilation Engineering.

Overarching Code of Practice means the Overarching Code of Practice for the Performance of Engineering Work, as gazetted.

Practice means any engineering professional service, advisory service or creative work requiring engineering education, training and experience, and the application of special knowledge of the mathematical, physical and engineering sciences, or creative work such as consultation, research, investigation, evaluation, planning, surveying, hazard identification and risk assessment and design in connection with any public or private utility, structure, building, machine, equipment, process, work or project.

Profession means Engineering Profession.

Registration Category means a professional registration category as specified under Section 18(1) (a)–(c) of the Act, including Professional Engineer, Professional Engineering Technologist, Professional Certificated Engineer, Professional Engineering Technician, Candidate and Specified Category Practitioner.

Registered Person means a person registered under a category referred to in Section 18 of the Act.

Specified Category means those registration categories classified as such by ECSA, for example those related to fire protection systems, lifting machinery and medical equipment.

Unregistered Person means any person undertaking engineering work who is not registered in terms of the Act or any other statutory body.

Other definitions not specifically referenced will take their meaning from the Act.

ABBREVIATIONS

BEng	Bachelor of Engineering
BEng Tech	Bachelor of Engineering in Technology
BSc Eng	Bachelor of Science in Engineering
BTech	Bachelor of Technology
CPD	Continuing Professional Development
DMRE	Department of Mineral Resources and Energy
ECSA	Engineering Council of South Africa
GISTM	Global Industry Standard on Tailings Management
IDoEW	Identification of Engineering Work
HIRA	Hazard Identification and Risk Assessment
LOM	Life of Mine
MHSA	Mine Health and Safety Act
MSc Eng	Master of Science in Engineering
OHS	Occupational Health and Safety
Pr Eng	Professional Engineer
Pr Tech Eng	Professional Engineering Technologist
Pr Techni Eng	Professional Engineering Technician
SAMREC	South African Code for Reporting Exploration Results, Mineral Resources and Mineral Reserves
SAMVAL	South African Code for Reporting Mineral Asset Valuation
SHE	Safety, Health and Environment
TSF	Tailings Storage Facility
VS	Ventilation System

1. INTRODUCTION

In terms of Section 27(1) of the Act, the Council must draw up a Code of Conduct for Registered Persons and may draw up a Code of Practice in consultation with the Council for the Built Environment, Voluntary Associations and Registered Persons. The Council is also responsible for administering the Code of Conduct and the Code of Practice, and ensuring that these codes are available to all members of the public. An "Overarching Code of Practice for the Performance of Engineering Work" was therefore developed and published in the Government Gazette dated 26 March 2021, which further in this document is referred to as the "Overarching Code of Practice". The Overarching Code of Practice applies to all engineering disciplines.

Section 18(1) of the Act provides four categories for registration of professionals and candidates, namely Engineers, Technologists, Technicians and Certificated Engineers. Section 18 (2) prohibits persons so registered from practicing in a category other than that in which they are registered.

In line with these requirements, the Mining Engineering Code of Practice is aimed at supplementing the Overarching Code of Practice and the Act. It provides guidance in terms of good practice for Mining Engineering Practitioners by classifying Mining Engineering Work in terms of its complexity, and stipulates the category of registration and the level of competence required for the execution of such work.

Mining Engineering comprises the principal sub-disciplines of Mining Engineering, Rock Engineering and Mine Ventilation Engineering:

- Mining Engineering involves the application of engineering principles to the evaluation and assessment of the economic extraction of mineral reserves, including mine planning and design, development, operation, closure and reclamation of mines in a safe, sustainable, cost-efficient, profitable and environmentally and socially acceptable way. It also includes managing mineral reserves, training mining engineers and providing consultancy services, where applicable.
- Rock Engineering is a branch of geotechnical engineering which focuses specifically on mining operations and includes both rock and soil mechanics. It involves the

determination and design of stable excavations in and/or on rock masses, including geotechnical work associated with tunnelling, stope stability, and pit slope, rock dump and tailings dam stability.

- Mine Ventilation Engineering includes primarily mechanical engineering applications to strategic and tactical mining requirements, based on occupational hygiene principles and requirements, to ensure safety and health. Mine Ventilation Engineering has as its principal objective the design, implementation, operation and control of the mining occupational environment that will meet the required standards of occupational health and safety (OHS) from project definition to mine closure.

2. POLICY STATEMENT

This Code is a statement of good practice for the performance of Mining Engineering Work by Mining Engineering Practitioners. Section 27(3) of the Act requires Registered Persons to adhere to the requirements of this Code when they perform Mining Engineering Work.

3. PURPOSE

The purpose of this Code is to ensure that any Registered Person practicing and executing Mining Engineering Work within the jurisdiction of the Act meets the prescribed requirements of the Act. This Code sets appropriate levels of competence, regulating the execution of Mining Engineering Work and specifying technical standards and leading practices. The purpose is further to reference the range of tasks which Mining Engineering Practitioners registered with ECSA may be qualified and deemed competent to perform, and not to exclude the performance of such work by other qualified and competent Engineering Practitioners.

In South Africa, the Department of Mineral Resources and Energy (DMRE) regulates the mining industry, including underground civil works, under the Mine Health and Safety Act (MHSA), with which mining operations are required to comply. The MHSA addresses Engineering Work in terms of risk management, which includes mine design and planning, mechanical and electrical engineering, infrastructure, surveying, ventilation and rock engineering, and specifies qualifications and competency of persons required to carry out specific activities. In terms of Mining Engineering Work, the DMRE does not currently provide for the Registration Categories and Engineering Work defined in the Act and Identification of Engineering Work (IDoEW) regulations, and specifically does not provide for ECSA Registered Persons as competent persons, unless they have the qualifications and competencies specified in the MHSA.

The Act and IDoEW regulations provide for government certificates of competency referred to in the MHSA and allow registration as a Professional Certificated Engineer. However, the Act and IDOEW regulations do not provide for certificates of competency referred to in the MHSA and regulations. These certificates of competency are specifically listed in the MHSA as requirements for competent persons in rock engineering, ventilation engineering, and survey.

In terms of international best practice, mineral reporting and valuation codes such as the South African Code for Reporting Exploration Results, Mineral Resources and Mineral Reserves (SAMREC) and the South African Code for Reporting Mineral Asset Valuation (SAMVAL) require that the determination and approval of mineral reserves be performed by persons who are Registered Members of a regulatory body such as ECSA, the South African Council for Natural Scientific Professions or the South African Geomatics Council, or by members of professional organisations such as the Southern African Institute of Mining and Metallurgy. In all instances, such persons require the qualifications and competencies specified in the codes.

4. APPLICABLE LEGISLATIVE FRAMEWORK

Section 27 of the Act empowers the Council to draw up Codes of Practice in addition to codes of conduct, and requires all Registered Persons to comply with such codes.

This Code should be read in conjunction with the Act and related documents, in particular the Code of Conduct for Registered Persons, the Overarching Code of Practice, and the gazetted Identification of Engineering Work.

5. MINING ENGINEERING WORK

Mining engineers play a key role in the evaluation and exploitation of mineral resources. The core functions of mining engineering and its associated sub-disciplines are the analysis, planning, design and development, construction, management, operation, maintenance and rehabilitation of works for the extraction of minerals from natural deposits on the earth's surface, underground or under water through the application of mining engineering science, while meeting all regulatory requirements and protecting the health and safety of persons and the environment.

This Code of Practice describes Engineering Work in terms of Complex, Broadly Defined and Well-Defined Engineering tasks and problems across the principal Mining sub-disciplines (Mining Engineering, Rock Engineering, Ventilation Engineering, supported Survey) during the various phases of mining projects (viz. project definition, project execution, operation and closure/rehabilitation), as reflected in **Figure 1**. Persons must be registered in the appropriate Registration Category in order to carry out or oversee the different levels of Engineering tasks and problems; that is to say, Professional Engineer for Complex Engineering tasks, Professional Engineering Technologist for Broadly Defined tasks, and Professional Engineering Technician for Well-Defined Engineering tasks.

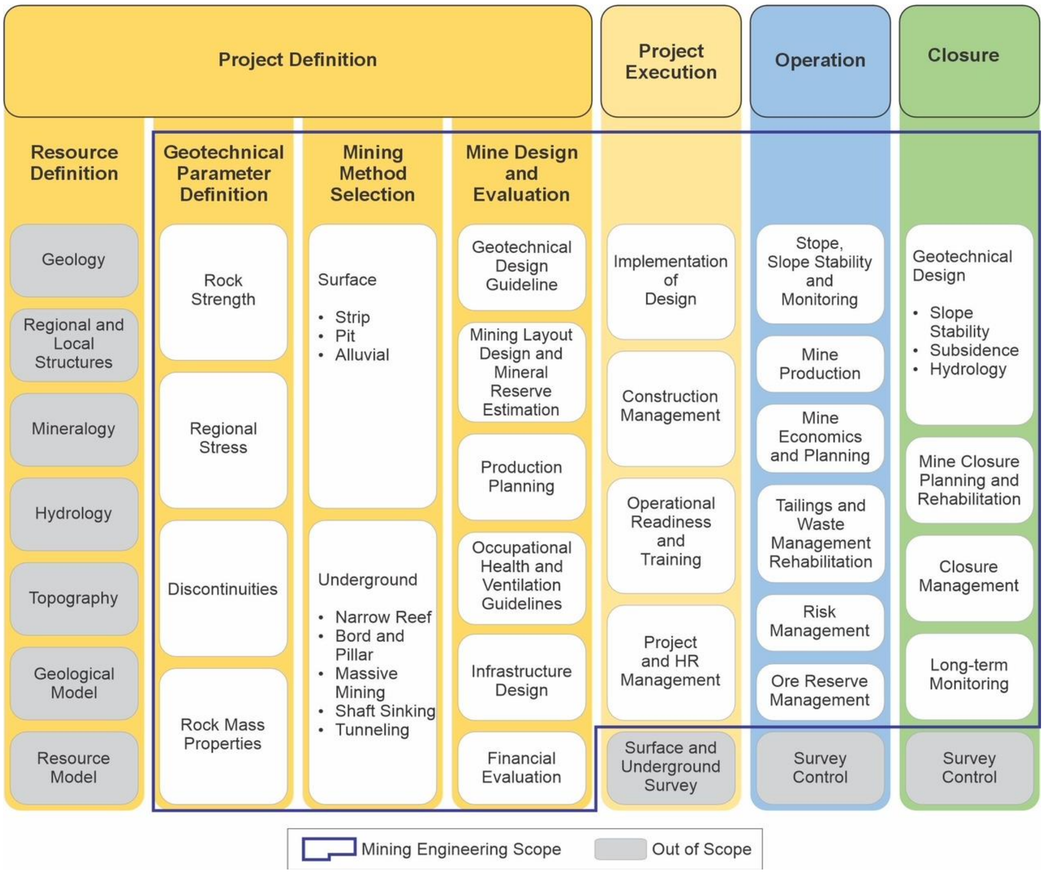

Figure 1: Scope of Mining and Related Disciplines at Various Phases of the Mining Cycle

Resource definition is performed by persons who are recognised as competent in terms of codes such as SAMREC, and may include input by mining engineers and others in the determination of “reasonable prospects of eventual economic extraction”.

Topographical data and surface and underground survey control data are provided by competent persons as determined by the Minerals Act, Minerals Council and/or South African Association of Mine Surveyors.

5.1 Engineering Problems

Complex, Broadly Defined and Well-defined Engineering problems are summarised as follows:

a) Complex Engineering Problems

Complex engineering problems require in-depth, fundamental and specialised engineering knowledge that enables an analytical approach from first principles. These problems are high-level, ill-posed, unfamiliar and may encompass entire complex engineering systems or subsystems. Solutions to complex engineering problems are not obvious, require abstract thinking or originality in analysis to formulate suitable models, fall outside the scope of usual standards and codes, require information from a variety of sources that is complex, abstract or incomplete and involve wide-ranging or conflicting issues such as technical and engineering matters and interested or affected parties. These problems require responsibility, accountability and judgement in decision-making in uncertain contexts and may have significant risks and consequences.

b) Broadly Defined Engineering Problems

Broadly Defined engineering problems require coherent and detailed engineering knowledge and are characterised by being poorly specified and require identification and interpretation of engineering technology. The problems exist within complex engineering systems but can be solved in well-accepted, innovative and sustainable ways.

In addition, the problems can be solved by structured analysis techniques, and may be partially outside standards and codes and require information which may often be complex or incomplete. The problems may also involve a variety of issues that could impose conflicting technical constraints.

The problems require judgement in decision-making and consideration of the interfaces with other disciplines, have significant consequences and may extend more widely.

c) Well-defined Engineering Problems

Well-defined engineering problems are mainly solved by practical engineering knowledge underpinned by related theory, and the tasks are routine and frequently encountered. These problems can be solved in standardised or prescribed ways covered by standards, codes and documented procedures, and information is largely complete but requires checking and possible supplementation. The problems may cover several issues, but few of these impose conflicting constraints and involve a limited range of interested and affected parties. Interpretation requires practical judgement in evaluating solutions and considering interfaces with other role-players. Such problems have consequences that are locally important but not far reaching.

Activities which constitute **Complex Engineering Problems** will generally be performed or overseen by persons registered as Pr Eng. However, input to these activities may also be described as **Broadly Defined Engineering Problems** (to be carried out or overseen by persons registered as Pr Tech Eng or Pr Cert Eng, often associated with reviewing and optimising processes), and **Well-defined Engineering Problems** (to be carried out or overseen by persons registered as Pr Techni Eng, often associated with maintaining processes). In all cases, the required Registration Category will be determined by the complexity and risk associated with the Engineering Work.

5.2 Project Definition

This covers the well-documented project study levels (conceptual/scoping, pre-feasibility and feasibility) for both green- and brown-field projects, and for any operation where there is a major change of scope during the life of the operation.

The overall process leading to project approval for execution will normally include:

- Determining the resource depletion strategy
- Determining the overall Mine Design Criteria, including geotechnical, mining and ventilation systems design
- Determining inputs to economic evaluation (capital and operating costs)

- Estimating and publishing the mineral reserves.

5.2.1 Rock Engineering

Rock Engineering Design Criteria

a) Analyse geotechnical data (regional and local):

- From the geological information available, establish rock types, geological intrusions and discontinuities, hydrology, etc.

b) Define geotechnical properties of rock mass and other materials (e.g. rock dumps, stockpiles and tailings) which require geotechnical design through core and laboratory tests:

- Apply rock engineering tools and techniques to define mechanical properties and strength for rocks and rock masses, broken rock, soil, tailings and paste fill.

c) Determine stress state (regional and local):

- Using relevant techniques, establish the stress state and effects in the area.

d) Determine and define rock mass and other material stability and their potential failure modes:

- Apply relevant rock engineering techniques to develop suitable geotechnical design parameters such as strains, slope failure mechanisms, tailings density, etc.

e) Develop Geotechnical Design Criteria

- Develop design guidelines to achieve the required stability and manage the established failure mechanism, including excavation and structure dimensions, orientation, slope angles, stable spans, etc.

Rock Engineering Design Execution

Using the rock and material design parameters and geotechnical design criteria:

- Determine and review slope angles and support design.

- Determine and review excavation dimensions (shape and size).
- Determine positioning and layout of infrastructure.
- Determine and review mining layout and extraction sequence.
- Develop geotechnical model to review mine design.
- Conduct and review the risk assessment of the conceptual design.

5.2.2 Mining Engineering

Mine Design

- Design and specify mineral excavation processes, mining resources and mining technical services required to meet occupational health, safety, environmental and quality assurance standards, considering hazard identification and risk assessments (HIRA).
- Select the appropriate mining method.
- Mine design and planning, including modifying factors and mining losses.
- Determine mining layout and schedule.
- Determine mining capital and operating costs for mineral project evaluation and any associated engineering studies.
- Prepare scoping, pre-feasibility and feasibility studies and life of mine (LOM) exploitation strategies and plans, business plans and bankable documents based on site-specific assumptions, premises, constraints and leading practice standards.
- Convert mineral resource to mineable reserve, and approve mineral reserve estimates or statement.

5.2.3 Mine Ventilation Engineering

Ventilation System (VS) Design

- Identify occupational hygiene and safety hazards associated with the proposed mining activities, and assess and quantify the associated risks through HIRA.
- Determine the VS requirements and design criteria in accordance with the project study level.
- Design ventilation and associated systems.
- Determine schedule of ventilation systems delivery aligned with overall project plan.
- Determine capital and operating costs.
- Anticipate, plan and motivate expansion requirements in line with the LOM plan.
- Integrate the VS design into any LOM expansion or associated mining projects.
- Optimize existing VS to maximise the use of existing infrastructure.

5.3 Project Execution

Activities include project development, construction, execution and commissioning, and comprise the following:

- Development planning and scheduling
- Operational readiness and training
- Construction management and execution.

5.3.1 Rock Engineering

Develop geotechnical risk management strategy:

a) Compile rock engineering Code of Practice, detailing procedures for:
   - Monitoring and review of design parameters and criteria.
   - Communication and training of rock engineering procedures and standards.

- Integration of rock engineering functions into mine operations.

b) Refine and maintain geotechnical database:

- Develop and implement systems to collect geotechnical data.
- Monitor geotechnical risk, develop and implement a system to monitor and respond to geotechnical risk during construction and operations.

c) Review, refine and update Geotechnical and Mine Design Criteria.

d) Review, refine and updated designs, layout, standards and procedures.

e) Develop the operation and maintenance manual for rock dumps, stockpiles and tailings storage facilities (TSFs), observing the requirements of the Global Industry Standard on Tailings Management (GISTM).

f) Review, refine and update designs, layout, standards and procedures.

g) Monitor geotechnical risk across all mining related areas.

5.3.2 Mining Engineering

- Establish production and operational control standards and procedures to ensure efficient operations and compliance with legislation and site-specific rules.
- Manage occupational health, safety and environmental hazards and associated risks.
- Ensure adherence to the designed mineral excavation processes and schedules, and effective and efficient application of mining resources and mining technical services.
- Prepare LOM exploitation strategies and business plans, including associated studies, based on site-specific assumptions, premises, constraints and leading practices.
- Project manage mine development to ensure the plan is achieved.

5.3.3 Mining Ventilation Engineering

a) Development planning and scheduling:

- Confirm final VS operational parameters.
- Align VS planning and scheduling with finalised mining execution.
- Confirm and sign-off mine development VS costing forecasts, delivery and completion schedules (capital and operational).
- Provide technical input on major VS equipment in tendering process.
- Define VS commissioning and performance acceptance parameters and quality assurance guidance.

b) Operational readiness and training:

- Define operational procedure requirements for VS.
- Determine and provide for the installation of fire and gas explosion prevention measures during the development phase.

c) Construction management and execution:

- Review and analyse delivery progress at mining, engineering and VS milestones.
- Execute a programme for the measurement of VS performance, and provide recommendations for the rectification of sub-standard conditions.
- Control allocation and availability of ventilation resources required for the mine development project.
- Determine interventions required to alter the VS layout and system performance to meet changes in mining plans during project execution.
- Provide technical inputs to define and implement fire and gas explosion protective measures and emergency interventions.

5.4 Mining Operations

This comprises mine operations which entail:

- Operational management
- Mine economics and planning
- Mineral reserve estimation and management.

5.4.1 Rock Engineering

a) Review and update geotechnical risk management strategy.

b) Review and update the rock engineering Code of Practice, detailing procedures for:

- Monitoring and review of design parameters and criteria.
- Communication and training of rock engineering procedures and standards.
- Integration of rock engineering functions into mine operations.

c) Refine and maintain geotechnical database:

- Develop and implement systems to collect geotechnical data.

d) Monitor geotechnical risk:

- Review and update system to monitor geotechnical risk during operations.

e) Review and update Geotechnical and Mine Design Criteria.

f) Review and update designs, mine layout, standard and procedures.

g) Monitoring geotechnical risk across all mining related areas.

5.4.2 Mining Engineering

a) Ensure adherence to the designed mineral excavation processes and schedules, and effective and efficient application of mining resources and mining technical services.

b) Establish production and operational control standards and procedures to ensure compliance with legislation and site-specific requirements.

c) Ensure operations and equipment comply with health and safety requirements.

d) Prepare LOM exploitation strategies and business plans, including associated studies on brownfields projects, based on site-specific assumptions, premises, constraints and leading practices.

e) Monitor and evaluate mining performance against standards and leading practice.

f) Manage brownfields construction projects aimed at increasing capacity or improving efficiencies.

g) Develop appropriate site-specific HIRA and associated risk management policies, procedures and standards.

h) Manage the operation of rock dumps, stockpiles and TSFs (where applicable).

i) Mineral reserve estimation and management:

- Update mining schedules, modifying factors and resulting LOM models.
- Review the modifying factors to be used in the conversion of mineral resources to mineral/ore reserves.
- Supervise the preparation, updating and declaration of mineral/ore reserves.
- Oversee mineral reserves reconciliation and optimisation.

5.4.3 Mining Ventilation Engineering

- Manage implementation of ventilation and occupational hygiene standards through regular HIRA and parameter measurement.
- Monitor the performance of major VS equipment components to ensure these are operating within design parameters.
- Prepare medium-term VS expansion requirements in line with production activities.
- Review VS system performance for improvements.

- Provide support for fire and gas explosion protection measures and assist tactical emergency interventions.
- Manage VS resources and controls supporting production activities.

5.5 Closure & Rehabilitation

This covers all aspects of project closure, and includes the following activities:

- Mine closure planning
- Closure execution and management
- Geotechnical design, slope stability, subsidence and hydrology
- Residual gas management and control
- Long-term monitoring.

5.5.1 Geotechnical Engineering

- Develop and implement geotechnical monitoring plan post closure.

5.5.2 Mining Engineering

Develop and implement mine closure plan:

- Demolition and removal of mining infrastructure.
- Rehabilitation of mining areas, stockpiles and waste rock dumps.
- Make safe mine slopes, waste rock dumps, stockpiles and openings.
- Rehabilitate working areas, which may include earthmoving activities and revegetation of disturbed land.

5.5.3 Mining Ventilation Engineering

Closure management:

- Plan VS infrastructure requirements in line with mine closure.
- Control and monitor VS performance during mine closure activities.

Residual gas management and control:

- Plan the management and monitoring of any residual gas emissions from closed portions of mines.

5.6 General

- Conduct discipline specific research and consultancy work.
- Review and consider relevant technical and regulatory developments.
- Incorporate lessons learned from the mining industry to improve standards of safety, system performance and environmental conditions.
- Communicate personal experience in research and implementation of innovative methods and systems.
- Where appropriate, participate in regulatory and technical forums for the development of standards, legislation and skills pertaining to the mining engineering disciplines.
- Conduct teaching and mentoring of engineers in training, including ECSA Candidate Engineers.

6. MINING ENGINEERING COMPETENCY REQUIREMENTS

The Core Competencies Required to Perform Identified Engineering work are gazetted in the Identification of Engineering Work, and the General Requirements and Requirements for Registered Persons are listed in the Overarching Code of Practice.

6.1 General Requirements

a) Any Registered Person who performs Mining Engineering Work must be registered in the appropriate category and must comply with the Act, as well as any requirement contemplated in the Act.

b) Such a Mining Engineering Practitioner will be qualified by virtue of knowledge, training, experience and applicable qualifications to perform such work.

c) All such Registered Persons shall confine their performance of Mining Engineering Work to the areas in which they are competent, subject to the provisions of (b) above.

d) All such Registered Persons shall undertake continuing professional development (CPD) or independent learning activities sufficient to maintain and extend their competence in line with current good practice in the industry.

e) The competence of such Registered Persons and the nature of the work they are competent to perform should be assessed in terms of the criteria applicable to them.

6.2 Criteria for Assessment of Competency

The criteria for assessing competency are defined in the ECSA Competency Standard for Registration in Professional Categories as **PE/PT/PN** (**R-02-STA-PE/PT/PN**), Competency Standard for Registration as a Professional Certificated Engineer (R-02-STA-PCE) and Competency Standard for Registration in Specified Category **R-02-STA-SC**.

a) **Competence Levels**

The competency level of engineers varies depending on their education, experience, and specialized skills. Generally, there are three levels of engineering competency, as listed in **Table 1**.

Table 1: Competency Levels

Competency Level	Description	Responsibility	Experience (Years)	Risk Level
Junior	Recently graduated or candidate Technicians, Technologists and Engineers. They are typically assigned routine tasks and require close supervision from more experienced Engineers.	Junior engineers are responsible for executing Well-defined engineering tasks. They are expected to learn the basics of engineering design, analysis, and testing.	0 – 3	Low
Senior	These Engineers have at least five years of experience in their field and have demonstrated proficiency in their work. They can manage more complex projects and provide technical guidance to junior engineers.	Senior engineers are responsible for executing Broadly Defined engineering tasks and overseeing projects and operations from conception to completion. They are expected to analyse data, provide solutions to problems, and ensure that projects are completed within budget and on time.	5 – 10	Medium
Competent	These are experienced Mining Engineering Practitioners. They have extensive knowledge of and competency in their field and are responsible for executing complex engineering tasks and	Competent engineering practitioners are responsible for managing teams of engineers, overseeing mining operations and technical services, developing project timelines and budgets, and overseeing the design and	> 10	High

	managing large-scale projects.	implementation of complex systems.		

7. RISK ANALYSIS

Mining Engineering Practitioners must perform thorough HIRA, which are crucial elements of the design process to ensure the efficiency and safety of mines and mining operations. Risk mitigation must include the structured process of:

- Identifying potential hazards
- Assessing their likelihood and severity
- Implementing measures to reduce or eliminate them.

This process includes performing safety analyses, developing safety requirements and designing safety-critical systems. It also includes performing impact analyses, designing robust systems with sufficient redundancy, and implementing safety measures such as emergency response procedures.

Both risk and impact mitigation require a thorough understanding of mining systems and processes and their potential interactions with other systems. Mining Engineering Practitioners use advanced computer simulations, testing, and analysis techniques to identify potential risks and impacts, designing mining systems and processes to mitigate them.

7.1 Risk Levels

The three risk levels are low, medium and high. These risk levels are determined by the potential consequences of a failure (**Table 2**).

Table 2: Risk Levels

Risk Level	Scenario	Example	Impact
Low	Scenarios where the consequences of a failure are minor, such as a small decrease in performance or a minor inconvenience.	Delay in the installation of local mine infrastructure such as ventilation control brattices.	• Temporary sub-standard workface environmental conditions. • Can be resolved relatively quickly and easily.
Medium	The consequences of a failure are more significant, such as a localised interruption in development or production, a threat of injury or deterioration in occupational health.	Inadequate mine, rock engineering or ventilation design for a new mining section. Optimistic planning assumptions.	• Significant slowdown in mine development. • Lengthy and costly alterations and mitigating actions resulting in extended sub-standard conditions. • Delays in attaining production targets.
High	The consequences of a failure are severe, such as serious injury, loss of life, business interruption affecting financially viability, or catastrophic damage to mine infrastructure.	Area roof support (depth and/or pattern) inadequate for the regional geotechnical structure. Missing or sub-standard operating and /or emergency procedures.	• Extended production work stoppage / production delay. • Hazardous and lengthy mitigating interventions • Total review of the mine's geotechnical protection measures.

			• National media coverage.

It is critical to identify and assess the risk level of each situation to ensure appropriate safety measures are in place to minimise the potential consequences of failures or errors in the system.

8. OVERLAPS

Mining Engineering Practitioners in all sub-disciplines shall comply with their respective legal pre-requisites while fulfilling the requirements of this Code of Practice when performing Mining Engineering Work.

As per Paragraph 7.3 of the Overarching Code, persons registered in a particular discipline may perform Engineering Work in a different discipline if their knowledge, training, experience and applicable qualifications specifically render them competent to perform such work. Accordingly, Mining Engineering Practitioners will liaise with other engineering disciplines (e.g. Mechanical, Electrical, Civil) to ensure clarity as to which engineering discipline should perform certain tasks.

Persons registered as professionals under a Professions Act other than the Act may perform Engineering Work if their knowledge, training, experience and applicable qualifications specifically render them competent to perform such work and the work is performed in accordance with the requirements of the Act under which they are registered.

9. ADMINISTRATION

ECSA shall be responsible for the Administration of this Code of Practice, including its publication, maintenance, and distribution.

ECSA shall ensure that the Code of Practice and all amendments are available on the ECSA Website and shall, upon request, provide a copy thereof.

ECSA shall take all reasonable steps to introduce the Code of Practice to the general public.

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Subject: Code of Practice for the Performance of Mining Engineering Work			
Compiled by: Manager RPS	Approved by: Executive RPS	Next Review Date:	Page 28 of 28
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REVISION HISTORY

Revision Number	Revision Date	Revision Details	Approved By
Rev A	06 July 2023	New Document	Working Group
Rev B	21 August 2023	Broader Consultation Webinar	RPS & Working Group
Rev C	11 September 2023	Presentation before Steering Committee	Code of Practice Steering
Rev D	30 October 2023	Updates to incorporate comments from the Broader Consultation.	RPS & Working Group
Rev E	04 December 2023	Recommendation for approval (Round robin)	Code of Practice Steering Committee
Rev.0	08 February 2024	Approval	RPSC
Rev.0	05 April 2024	Ratification	Council

The Code of Practice for the performance of:

Mining Engineering

Revision 0 dated 05 April 2024 and consisting of 28 pages, has been reviewed for adequacy by the Business Unit Manager and is approved by the Executive: Research, Policy and Standards (RPS).

.... 09 April 2024 ....

Business Unit Manager Date

.... 11 April 2024 ....

Executive: RPS Date

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