




mineral resources

Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

**SYLLABUS OF EXAMINATIONS
FOR THE FOR MINE SURVEYOR'S
CERTIFICATE OF COMPETENCY**

**Framed in accordance with regulation 28.6, in force in terms of Schedule 4
of the Mine Health and Safety Act, 1996 (Act No 29 of 1996)**


.....
CHIEF INSPECTOR OF MINES

APPROVED

22/02/2011
.....
DATE

MINING ECONOMICS 1

DEFINITIONS AND VALUATION TERMINOLOGY: ALL TYPES OF MINERALS (Definitions as published in "South African Mine Valuation" – Edited by ED Storrar and available from the Institute of Mine Surveyors of South Africa) Development, primary development, secondary development, stope development, ore, pay limit, payable ore, payable development, total ore, ore reserve, block, block width, block value, block factor, mine call factor, ore reserve mining factor, high value shoot, cutting, discounting, regression, dilution tonnage, tonnage discrepancy, reef width, internal waste width, external waste width, channel width, stope width, tramming width, milling width, milling grade, residue value, grams per ton, centimetre/grams per ton, forcing, picking, reclamation ore, sweeping, vamping, volatile matter, ash content, fixed carbon, calorific value, inherent moisture, swelling index, roga, density.

DESCRIPTION OF:

- Purpose and importance of sampling records
- Procedures followed in the Assay Office/ laboratory from delivery of samples to the dispatch of results
- Sampling of stope or working faces, development ends, shaft reef intersections, pulp, slimes dams, dumps, broken ore, outcrops, trenches and pits, alluvial, deposits
- Safety factor (coal)
- (With the aid of diagrams) the flow of rock/ material from the working face to the final product, (coal)

CALCULATIONS ON:

- Sampling data including the averaging and weighting of widths and values in stopes, development ends, massive ore bodies and open cast workings
- True widths and values from boreholes results
- Areas, volumes, tonnages, contents, tramming and treatment widths and values, mine call factor, block factor, ore reserve mining factor, dilution, recovery, tonnage discrepancy and other relevant factors, quality and grade control, pay limit, payability (marginal stoping, development, multiple products, massive ore bodies), ore reserves, value and width contours, value trends.

Plot and interpolate coal washability curves.

SURVEY 1

1. GENERAL SCOPE

General mine survey practice and techniques, including all types of instruments and equipment used in the field and in the survey department on the mines, survey records, survey problems and terms related to survey instruments and mine surveying.

2. DESCRIPTION OF THE TERMS

Leveling, datum (datum plane), reduced level (or elevation), bench mark, line of sight (or collimation), backsight, foresight, intermediate sight, survey peg, grading, grade peg, gradient.

3. INSTRUMENTS AND SURVEY SYSTEMS

3.1 Describe the purpose, principle of operation, care and use adjustment, calibration defect and effects of maladjustment of surveying instruments, and equipment such as:

- Magnetic compass
- Optical theodolite, Gyro-theodolite, Electronic theodolite, Electronic field book, Total Station
- Dumpy (Surveyor's), Spirit (Tilting) and Automatic Levels together with auxiliary equipment such as the parallel plate micrometer
- Leveling staves (invar etc.)
- Electronic distance measures – all wavelength (e.g. sonar, infrared, laser, radar, radio, microwave)
- Verniers, optical micrometers and electronic reading devices
- Planimeters and pantographs
- Various types of tapes
- Optical plummets (zenith and nadir), optical square
- Borehole survey instruments
- Tapes
- Profilers
- Gyro compass
- Data logger
- Targets and prisms
- Global positioning system
- Cameras – metric and non metric, analog or digital
- Laser scanner – terrestrial and aerial

3.2 DESCRIPTION OF :

- WGS 84
- Goldfield, Local and Gauss Conform systems
- Satellite survey systems

3.3 Basic knowledge of photogrammetry with particular references to:

- Application
- Ground control
- Pre-marking
- Identification and annotation
- Use of a terrestrial camera
- Post marking
- Products (orthophotos, mosaic and contact prints)

4. CALCULATIONS

Perform calculations on, and interpret the results of problems relating to:

- Leveling by rise and fall, collimation and trigonometrical heighting, GPS heighting
- Cut and fill, earthwork quantities
- Areas from co-ordinates and alternative methods
- Volumes and dams, reservoirs, dumps, embankments, excavations and structures
- Planimetry
- Traversing
- Joins and triangulation's
- Trilaterations
- Tacheometry and contouring
- Calculation of small angles and eccentric set-ups
- Volumes by Simpson's, end areas and trapezoidal rules

Preparations of:

- Surface and underground plans
- Stope sheets
- Layouts
- Mensuration: Determination of areas and perimeters of plane figures with special reference to: Triangles, quadrilaterals, rectangles, squares, parallelograms, trapezoids, polygons, circles (sectors and segments), ellipse and parabola.

Determination of volumes and surface areas with special reference to the cylinder, pyramid, cone, prismoid, wedge, sphere (sectors and segment), ellipsoid, paraboloid and irregular shapes.

GEOLOGY

1. MINERALOGY

1.1 Classification of minerals according to the following chemical grouping-

Native elements, sulphides and arsenides, haloids, oxides, carbonates, sulphates and phosphates, silicates (felspars, micas, amphiboles, pyroxenes, olivines and garnets).

Note: The chemical composition of individual minerals is not required for examination purposes.

1.2 A description based on the physical properties i.e. tenacity, hardness, density, colour, lustre, feasibility and chemical grouping, of the following minerals:

1.2.1 Diamond, graphite, gold, pyrite, chalcopyrite, bornite, chalcocite, galena, stibnite, cinnabar, sperrylite, fluorite, halite, quartz, corundum, hematite, magnetite, limonite, cassiterite, pyrolusite, cuprite, calcite, magnesite, dolomite, malachite, gypsum, barytes, apatite, garnet, beryl, topaz, andalusite and nepheline;

1.2.2 Rock forming minerals- orthoclase, microcline, plagioclase, muscovite, biotite, hornblende, augite and olivine.

1.3 Mode of occurrence and use of the above-mentioned minerals.

2. PETROLOGY

2.1 The general physical characters, composition, structure, texture and mode of origin of igneous, sedimentary and metamorphic rocks

2.2 The commoner rock types:

2.2.1 Igneous-granite, syenite, diorite, andesite, gabbro, pyroxenite, peridotite, dolerite, norite, basalt, anorthosite.

2.2.2 Sedimentary-conglomerates, breccias, clays, tillite, quartzite, grit, the various types of sandstone, mudstone, shale, slate, volcanic agglomerate, volcanic breccia, volcanic tuff, peat lignite, coal, anthracite, limestone, chert, flint, travertine.

2.2.3 Metamorphic- hornfels, gneiss, quartzite, marble, schist, phyllite.

3. PHYSICAL GEOLOGY

The geological action of the atmosphere, rain, rivers, glaciers, ocean, underground water, lake, ice, animals and plants with more particular reference to South African examples.

Underground water: Water table, springs, caves and landlips.

Volcanic activity, earthquakes, elevation and subsidence of land and their results.

Influence of geological structure on topography of a country with special reference to South African examples.

4. STRUCTURAL GEOLOGY

The origin and constitution of the earth. The commoner rock structures. The influence of geological structure on topography of a country with special reference to South African examples.

Common forms assumed by Igneous Rocks- Dyke, sill, boss, batholiths, laccoliths, lopoliths, phacoliths, cones, pipes, lava flows.

Structures due to deposition-stratification, primary or initial dip, false or current bedding.

Faults - tensional and compressional, normal, reverse, strike, dip, oblique, thrust, step, trough, horst and block.

Structures due to erosion, unconformity, inliers and outliers.

5. HISTORICAL GEOLOGY

Stratigraphic sub-divisions in South Africa. The significance of fossils in the identification of strata in South African Geology.

6. ECONOMIC GEOLOGY

Character and origin of the principal types of ore deposits in South Africa.

A knowledge of mineral resources of the Republic of South Africa with special reference to the following:

Gold, diamond, platinum, silver, copper, chromium, iron, lead, manganese, mercury, tin, tungsten, asbestos, salt, corundum, fluorspar, graphite, limestone, mica and vermiculite, coal, clays and slates.

7. PROSPECTING METHODS

A general knowledge of prospecting methods. Geological survey assisted by aerial survey, geophysical survey and boreholes.

8. GEOLOGICAL MAPS

General study of geological maps with deductions regarding economic potentialities.

Drawing of sections across geological maps.

Effect of topography on outcrop.

Determination of dip and strike from outcrops.

True and apparent dips.

Graphical determination of strike and dip.

Graphical solution of three-borehole problems.

The candidate should be especially familiar with the graphical solution of all types of faults and multiple fault problems and problems affecting the relation of one or more stratum planes with each other and with other geological occurrences.

SURVEY 2

Calculations on, and interpretations of, the results of survey problems with particular reference to:

- Location and rectification of errors
- Balancing of surveys, such as traversing, triangulation, resections, leveling, trilaterations, etc.
- Error figures
- Direction sheet
- Missing data
- Two, three and four point problems
- Simple and compound curves: curve ranging and staking out data
- Major and minor dips
- Lines of intersection and geological structures
- True widths of ore bodies and survey of strata by boreholes
- Shaft plumbing, including Weisbach triangle
- Engineering surveys
- Location and layout of surface shafts
- Building, road, railway and borehole surveys
- Point installations
- Sub-division of land and adjustment of mine boundaries
- Transformation of co-ordinates from one system to another

In addition to the above, any portion of the syllabus for Survey 1 may be included in the examination on this part.

SURVEY 3

Calculation and interpretation of results in respect of surface and underground surveys with particular reference to:

- Connection of surface and underground surveys
- Incline shafts and development tunnels
- Establishing and extending direction and grade
- Stope surveys by theodolites and tapes
- Determination of true North by gyro-theodolite
- Meridian convergence
- Baseline measurements
- Survey transformations

In addition to the above, any portion of syllabi for Survey 1 and Survey 2 may be included in the examination on this part.

MINING ECONOMICS 2

Discuss the following terms and perform calculations involving them:

- Interest annuities
- Present value, rate of return, amortisation
- Discounted cash flow (D.C.F.)
- Sinking fund
- Capital and working costs and profit
- Fixed and variable (direct overhead) costs
- Marginal contributions and area costing
- Taxation and aid state
- Lease consideration

Discuss forecasting under the following headings:

- Preliminary investigations and prospecting
- Short and long term planning
- Life of a mine
- Capital redemption and amortisation of capital
- Lease or royalty payments, income tax and distributable profit
- Rehabilitation trust fund calculations

STATISTICS - Explain and apply the following statistical concepts:

- Variables and graphs
- Frequency distribution including binomial normal, lognormal, and poisson distribution
- The mean, median, mode and other measures of central tendency
- The standard deviation and other measures of dispersion
- Moments, skewness and kurtosis

Explain the statistical concepts of:

- Elementary probability theory
- Sampling theory
- Statistical decision theory
- Curve fitting and the method of least squares
- Correlation and regression theory
- Multiple and partial correlation

Describe the fundamentals of geostatistical concepts and their application i.e. by means of calculations and interpretation of the results

In addition to the above, any portion of the syllabi for Mining Economics 1 may be included in the examination in this part.

A list of some help formulae which may be used in Statistics will be available to the candidates at each examination.

MINING ECONOMICS 2 PROJECT

Every candidate will be required to submit on the day of the Mining Economics II examination a written report on a statistics/geostatistics project done by him.

GENERAL PROVISIONS:

1. The data and instructions for the project will be available at the Secretary of the Commission of Examiners three months before the date of the examination.
2. The required public domain software will be available from the Secretary of the Commission of Examiners. (The candidate will, however, be required to supply the necessary diskettes)
3. This project must be the result of each candidates own work and the candidate may be called upon to discuss the project with a member of the Board of Examiners, or any person nominated by the Board.
4. The project must be conducted within the following outlines:
 - (i) Examine and describe the data statistically
 - (ii) Investigate and discuss the distribution
 - (iii) Analyse the spatial structure of the data
 - (iv) Investigate the variance and optimal sampling interval
 - (v) Comment on the estimation of designated areas

REFERENCE BOOKS:

A list of suitable reference books is available from the Secretary of the Commission of Examiners or from the Institute of Mine Surveyors of South Africa.

MATHEMATICS

ARITHMETIC AND ALGEBRA:

Fundamental principles, simplifications of fractions, partial fractions, factorisation, simultaneous linear and quadratic equations, graphical solution of equations, arithmetic and geometric progressions, logarithms, indices, surds, logarithmic and indicial equations. Graphs of straight lines, parabolas, circles and curves. Linear programming, permutations and combinations, binomial expansions, radian measure and angular velocity. Determinants (only up to third order)

GEOMETRY:

- **Plane Geometry:** Fundamental principles, properties of the straight line, relationship between the sides and angles of any type of triangle, congruent, similar and angles of any type of triangle, congruent, similar and isosceles triangles, parallelograms, similarity of rectilinear figures, equivalent areas, theorems on triangles, theorems on circles (centres, chord, tangents, secants, contacts of circles, sectorial and segmental angles), circumscribed, inscribed and escribed circles, ratios and inequalities.
- **Co-ordinate Geometry** and its application to the solution of survey problems. Straight line equations, distance between two points, proportional subdivision of a straight line, parallelism, perpendicularity, angle of intersection between two straight lines, transformation of co-ordinates, changing of origin and/or changing of axes and areas of rectilinear figures from co-ordinates.
- **Three Dimensional Geometry:** Fundamental principles, relationship between points and lines in different planes, the angle between two planes and problems on dip and strike of strata.

TRIGONOMETRY:

Measurement of angles; Definition of- and relation between trigonometrical ratios for angles of any magnitude; Expression of the ratios of all angles in terms of angles less than 90 degrees; Relations between sides and angles; Multiple and sub-multiple angles; Sums to products and vice versa; Geometrical proofs of trigonometrical identities; Plotting of graphs of the trigonometrical ratios; Functions of compound angles; Proofs of and problems on identities.

Circular measurement of angles; Sine and tangent of a small angle; Problems on true and apparent dips as applied to mine surveying; Solution of triangles; Calculation of heights and distances.

INTRODUCTION TO CALCULUS:**Differentiation:**

- Limits and limiting functions.
- Proof of general formula from first principles.
- Sums, differences, products and quotients.
- Function of a function.
- Turning points and gradients.
- Differentiating linear, quadratic and cubic equations.
- Second derivatives.
- Basic problems on gradients, velocity and acceleration.
- Solution of simultaneous linear and quadratic equations, points of intersection and gradients. Distinguish between maxima and minima. Point of inflexion.
- Integration: Simple integration to show that it is the reverse of differentiation

PRACTICAL TRIAL SURVEY PROJECT

Every candidate is required to perform a survey of a portion of a mining property and from such survey to compile a plan on durable draughting material.

All survey work, calculations, and the plan drawn therefrom, must –

- Include the necessary checks to eliminate errors and ensure the required accuracy and standards
- Be within the allowable limits of error as is prescribed in the regulations
- Be done in accordance with the specifications, conventions and standards laid down in the regulations.

PROJECT REPORT:

A report of approximately two pages is required in which an overview of the trial survey project as a whole is given. This report must be submitted together with the Field Book(s), the Calculation Book(s) and Plan and must contain short notes on the following subjects:

- Planning of the Project
- Reconnaissance of the chosen terrain
- Sketches, survey routes, observed rays, etc. (if not indicated in field- or calculation books)
- Instruments and equipment used
- Measuring and calculation of the Base-Line (corrections applied)
- Other aspects of the survey which may be of interest such as the Resection, Triangulation, Survey and Level Traverse, methods used for the location and description of features and other detail of the terrain, Tachometric survey, etc.
- Reductions and Calculations in connection with above, i.e. Error Figure, closing errors and corrections/adjustments
- Time spent on the various aspects of the Project
- Labour
- Problems encountered
- Any other interesting features or comments on the Project

Marks will be given for the Report to a maximum of 10% of the total Trial Survey marks.

REQUIREMENTS FOR THE SURVEY:

- Area – must not be less than 10 (Ten) hectares.
- Objects - the area chosen must contain sufficient of the surface detail found on a mine to make the plan interesting – e.g. buildings, roads, railways, dumps, slimes dams, shafts, trenches and launders.

- Each candidate must establish their own base line – it must not be less than 150 metres in length – the direction will be determined by trigonometric observations.
- The co-ordinates and elevations of one end must be determined by triangulation from at least three (3) trigonometrical or recognised established survey beacons. Use must be made of an error figure and a direction sheet to select the final co-ordinates of this point.
- At least two (2) survey points must be established from the above base line, or the extension of the base line, by triangulation or trilateration.
- One additional point must be co-ordinated by resection using the above established point and trigonometrical or other beacons. An error figure and direction sheet is required for this exercise.
- At least six (6) tache stations, reasonably distributed around the area chosen, must be fixed by means of traverse, the elevations of which must be obtained by trigonometrical heighting. These elevations must be checked by means of a closed level survey.
- A sufficient number of ground elevations must be established by means of a tachometric survey so that at least 50% of the area covered by the plan has contour lines.
- The allowable error in elevation of these check points must be, at most, 0.02% of the length between them. Elevations of such points to be shown on the plan thus:
 - 229.086 (level)
 - 229.090 (Trig)
- The traverse must start at one end of the base line and close at the point fixed by resection. If the closure so obtained is not within the limits of error as laid down for class C surveys of the Land Survey Act, Act No.9 of 1927 as amended, the traverse must be adjusted using a recognised method.
- An EDM may be used for the tachometry and the traverse, provided it is checked against the base line as set out by taping. The EDM must be calibrated against the base line. All distances must be reduced to mean sea level and the trigonometric heighting must be corrected for curvature and refraction.
- The method used to locate surface objects is left to the discretion of the candidate, but it must be unmistakably recorded in the field book.

REQUIREMENTS FOR THE PLAN:

- The scale must be 1:500 (one in five hundred)
- It must be constructed in terms of Chapter 17 of the Regulations of the Mine Health and Safety Act 1996 (Act No 29 of 1996), as amended, and in conformity Regulation 17(4)(e).
- It must incorporate a sworn statement to the effect that the plan has been compiled by the candidate from his own original field notes and calculations.
- Computer Aided Draughting (CAD) may not be used for the construction of the plan nor electronic data recording (Datalogger) for the recording of field work.

PLAN, FIELD NOTES AND CALCULATIONS:

- The original field notes and calculations used in compiling the plan must comply with accepted best practice and must be submitted with the plan. These notes and calculations must not contain any erasures. Any mistakes must be clearly and neatly crossed out.
- The field notes, calculations and plan will become the property of the Commission of Examiners and will not be returned.

CHECK SURVEY:

The Commission of Examiners reserves the right to ask any candidate, within a reasonable time after submission of the plan, to indicate to a designated officer of the Directorate: Mine Surveying any survey points or survey stations of the trial survey in order for a check survey to be carried out.

CAUTION:

Every candidate must conduct an independent trial survey and no two or more candidates will knowingly use the same base line and specific area for their trial survey.

MINING LEGISLATION

Sufficient knowledge of the relevant subject matter listed below is required.

- PART A MINE HEALTH AND SAFETY ACT AND APPLICABLE REGULATIONS**
PART B REGULATIONS REGARDING SURVEYING MAPPING AND MINE PLANS
PART C THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT
AND APPLICABLE REGULATIONS

PART A

THE MINE HEALTH AND SAFETY ACT, 1996 (ACT No 29 OF 1996)

1. THE ACT

CHAPTER	SECTION	DESCRIPTION
1	1	Objects of the Act
2	2 (1) (a) (b)	Design and commissioning of mines
	2 (2)	Mines not working
	3	Employer must appoint manager
	4	Employer may entrust functions to other persons
	5	Employer to maintain healthy and safe mine environment
	6	Employer to ensure adequate supply of health and safety equipment
	7	Employer to staff mine with due regard to health and safety
	9	Codes of practice
	10	Employer to provide health and safety training
	11	Employer to assess and respond to risk
	17	Exit certificates
	19	Employees right to information
	22	Employees duty for health and safety
	23 (1)	Employees right to leave dangerous working place
24	Employees not to pay for safety measures	
5	47	Inspectorate established
	48	Chief Inspector of Mines
	49	Chief Inspector's functions
	50	Inspector's powers
	51	Inspector may be accompanied
	52	Duty to assist inspector and answer questions
	53	Duty to produce documents required by inspector
	55	Inspector's power to order compliance
	55A (1)	Inspector's power to recommend fine
	60	Initiating investigations
61	Chief Inspector of Mines may designate assistant in investigation	
62	Duty to answer questions during investigations	

5	70	Powers of person presiding
	71	Duty of person summoned or instructed
6	79	Exemption from all or part of this Act
7	83	No discrimination against employee who exercises rights
	84	Safety equipment not to be interfered with
	85	Juvenile employment underground prohibited
	86	Negligent act or omission
	87	Breach of confidence
	88	Hindering administration of this Act
	89	Falsifying documents
	90	Failure to attend when summoned
	91 (1)	Failure to comply with this Act
	92	Penalties
	95 (a) (b)	Proof of facts
8	96	Delegation and exercise of power
	98(1) (a).....(f)(i) (l)....(o) (x) (y) (zN) (3)(a)...(c) (m)	The Minister may make regulations regarding: - health and safety; -do- - form of register, record, notice, sketch, or information; - mine plans; - any other regulations; - Providing for qualifications, examinations and certificates; - Issuing of qualifications;
	102	Definitions: Chief Executive Officer, Chief Inspector, employee, employer, hazard, health, health hazard, health-threatening occurrence, inspector, manager, mine, mineral, mining area, officer, owner, prescribed, Principal Inspector of Mines, prospecting, reasonably practicable, record, regulation, risk, substance, working place.

2. APPLICABLE REGULATIONS OF THE MINE HEALTH AND SAFETY ACT

**** Denotes Regulations which are still part of the Minerals Act, but are in force in terms of Schedule 4 of the Mine Health and Safety Act.**

****CHAPTER I DEFINITIONS**

All definitions

****CHAPTER II RESPONSIBILITY**

Regulations: 2.10.4, 2.11, 2.12.1, 2.12.2, 2.12.3, 2.12.4, 2.12.5, 2.12.6, 2.12.7, 2.12.8, 2.12.9, 2.12.11 & 2.12.12.

****CHAPTER III GENERAL PROVISIONS**

Regulations: 3.12, 3.14 & 3.15.1

****CHAPTER IV WORKMEN**

Regulations: 4.4.1, 4.4.2, 4.4.3, 4.4.4, 4.4.5, 4.4.6, 4.7.1, 4.7.2 & 4.11

****CHAPTER V SURFACE PROTECTION, THE MAKING SAFE OF
UNDERMINED GROUND AND THE PREVENTION
AND COMBATING OF POLLUTION**

Regulations: 5.4.1, 5.4.2, 5.4.3, 5.4.4, 5.8.3, 5.11, 5.15 & 5.16

****CHAPTER VI OUTLETS, LADDERWAYS AND TRAVELLINGWAYS**

Regulation: 6.10

****CHAPTER VII PROTECTION IN WORKINGS**

Regulations: 7.3.1, 7.3.2, 7.3.3, 7.3.4, 7.5.1, 7.5.2, 7.7.1, 7.7.2, 7.7.3, 7.8.1,
7.8.2, 7.8.3, 7.9.1 & 7.10.5(b)

****CHAPTER XVI WINDING**

Regulations: 16.45, 16.46, 16.48, 16.53, 16.53.1, 16.53.2, 16.54, 16.54.1,
16.54.2, 16.62, 16.63, 16.64, 16.65, 16.65.1, 16.65.2, 16.65.3,
16.65.4, 16.67, 16.69, 16.71, 16.86.7, 16.87, 16.89.1, 16.90,
16.93.5 & 16.93.6.

****CHAPTER XX MACHINERY: SPECIAL SAFETY MEASURES**

Regulations: 20.2, 20.3.1, 20.3.2 & 20.4.

****CHAPTER XXIV FIRST AID AND RESCUE BRIGADES**

Regulations: 24.1, 24.1.1, 24.2, 24.2.1, 24.2.2, 24.2.3, 24.3, 24.3.1, 24.3.2,
24.3.3, 24.4, 24.5.1, 24.5.2, 24.6, & 24.7

CHAPTER 14 PROTECTION OF THE SURFACE AND THE WORKINGS

Regulations: 14(4), 14(5), 14(6), & 14(7)

PART B

SURVEYING, MAPPING AND MINE PLANS

CHAPTER 17 REGULATIONS

All parts

PART C

**THE MINERAL AND PETROLEUM RESOURCES DEVELOPMENT ACT, 2002
(ACT No 28 OF 2002)**

1. THE ACT

CHAPTER 1 DEFINITIONS

Block, environment, environmental management plan, environmental management programme, exploration area, exploration operation, exploration right, exploration work programme, mining area, prospecting, residue stockpile, sustainable development, topsoil,

CHAPTER 2 FUNDAMENTAL PRINCIPLES

Section 2

CHAPTER 4 MINERAL AND ENVIRONMENTAL REGULATION

Sections: 13, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 28, 37, 38, 39, 41, 42, 43, 44, 47, 48, 49, 51, 52, 53, 55 & 56.

CHAPTER 5 MINERALS AND MINING DEVELOPMENT BOARD

Sections: 58 & 59

CHAPTER 7 GENERAL AND MISCELLANEOUS PROVISIONS

Sections: 91, 92, 93, 100 & 106

2. REGULATIONS

CHAPTER 1 DEFINITIONS

Competent Person, Interested and affected person, Latent environmental impact, Produced water, Residual environmental impact, The Act

CHAPTER 2

Regulations: 2, 4, 5, 8, 10, 18, 50, 56, 57, 61, 62, 65, 67, 68, 69 & 73.