



# sam code

## THE SOUTH AFRICAN MINERAL CODES

AS AMENDED JULY 2009



THE SOUTH AFRICAN CODE FOR THE REPORTING OF EXPLORATION RESULTS,  
MINERAL RESOURCES AND MINERAL RESERVES  
(THE SAMREC CODE)

2007 EDITION  
AS AMENDED JULY 2009



THE SOUTH AFRICAN CODE FOR THE  
REPORTING OF MINERAL ASSET VALUATION  
(THE SAMVAL CODE)

2008 EDITION  
AS AMENDED JULY 2009



The Southern African Institute  
of Mining and Metallurgy  
SAIMM



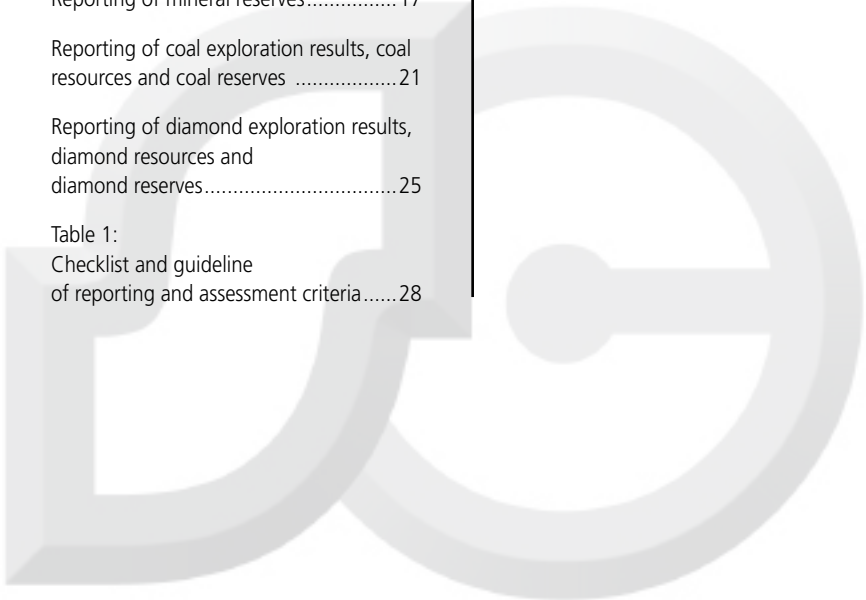
Geological Society of South Africa  
GSSA

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**samrec**

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REPORTING OF EXPLORATION RESULTS,  
MINERAL RESOURCES  
AND MINERAL RESERVES  
(THE SAMREC CODE)

**2007 EDITION**  
as amended July 2009

Prepared by:  
The South African Mineral Resource Committee (SAMREC) Working Group

[www.samcode.co.za](http://www.samcode.co.za)

## GLOSSARY OF TERMS

The terms set out below shall, unless the context otherwise indicates, apply in relation to this Code.

|  |   |
|--|---|
| <b>The Companies Act</b>                             | The Companies Act No 61 of the Republic of South Africa of 1973, as amended or any law that may wholly or in part replace it from time to time.   |
| <b>Dilution / Contamination</b>                      | Waste material that is mined during the course of mining operations and thereby forms part of the Reserve   |
| <b>Discard and Reject Coal</b>                       | Discard and Reject Coal are coal or carbonaceous material resulting from mining or coal processing operations with quality parameters that place it outside the current range of saleable coals.  |
| <b>Economically Mineable</b>                         | Extraction of the Mineral Reserve has been demonstrated to be viable and justifiable under a defined set of realistically assumed modifying factors.  |
| <b>Feasibility Study</b>                             | A comprehensive design and costing study of the selected option for the development of a mineral project in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational and all other modifying factors, which are considered in sufficient detail to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable) and the factors reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The overall confidence of the study should be stated. |
| <b>Life of Mine Plan</b>                             | A design and costing study of an existing operation in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational and all other modifying factors, which are considered in sufficient detail to demonstrate at the time of reporting that extraction is reasonably justified.   |
| <b>Licence, Permit, Lease or similar entitlement</b> | Any form of licence, permit or lease, including new- or old-order rights or other entitlement granted by the relevant Government in accordance with its mining legislation that confers on the holder certain rights to explore for or extract minerals (or both) that might be contained in the designated area. Alternatively, any form of title that may prove ownership of the minerals.  |

|                              |  |
|------------------------------|--|
| <b>Mineable</b>              | Those parts of the ore body, both economic and uneconomic, that can be extracted during the normal course of mining.   |
| <b>Mine Design</b>           | A framework of mining components and processes taking into account such aspects as mining methods used, access to the ore body, personnel and material handling, ventilation, water, power, and other technical requirements, such that mine planning can be undertaken.   |
| <b>Mine Planning</b>         | Production planning and scheduling, within the Mine Design, taking into account such aspects as geological structures and mineralization and associated infrastructure and constraints.  |
| <b>Modifying Factors</b>     | “Modifying Factors’ include mining, metallurgical, economic, marketing, legal, environmental, social and governmental considerations.  |
| <b>Ore Reserves</b>          | Although the term Mineral Reserve is used throughout this Code, it is recognized that the term Ore Reserve is still in general use. For the purposes of reporting under the SAMREC Code, these terms are considered to be synonymous.  |
| <b>Pre-feasibility Study</b> | A comprehensive study of the viability of a range of options for a mineral project that has advanced to a stage at which the preferred mining method in the case of underground mining or the pit configuration in the case of an open pit has been established and an effective method of mineral processing has been determined. It includes a financial analysis based on realistic assumptions of technical, engineering, operating, economic factors and the evaluation of other relevant factors that are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as a Mineral Reserve. The overall confidence of the study should be stated. A Pre-feasibility Study is at a lower confidence level than a Feasibility Study. |
| <b>ROPO</b>                  | A Recognized Overseas Professional Organization. A ROPO must: <ol style="list-style-type: none"> <li>1. Be a self-regulatory organization covering professionals in mining or exploration or both;</li> <li>2. Admit members primarily on the basis of their academic qualifications and experience;</li> <li>3. Require compliance with the professional standards of competence and ethics established by the organization;</li> <li>4. Have disciplinary powers, including the power to suspend or expel a member; and</li> <li>5. Have been accepted by SSC Committee as a ROPO on behalf of the JSE Limited</li> </ol>  |
| <b>SAMREC</b>                | The South African Mineral Resource Committee   |
| <b>SAMVAL Committee</b>      | South African Mineral Asset Valuation Committee  |
| <b>SSC Committee</b>         | The SAMREC/SAMVAL Committee  |

## FOREWORD

1. The SOUTH AFRICAN CODE FOR THE REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES (the SAMREC Code, or the Code) sets out minimum standards, recommendations and guidelines for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves in South Africa. It has been drawn up by the Working Group of the SSC Committee under the joint auspices of the Southern African Institute of Mining and Metallurgy (SAIMM) and the Geological Society of South Africa (GSSA). The SSC consists of representatives of the SAIMM, the GSSA, the South African Council for Natural Scientific Professions (SACNASP), the Geostatistical Association of South Africa (GASA), the South African Council for Professional Land Surveyors and Technical Surveyors (PLATO), the Association of Law Societies of South Africa, the General Council of the Bar of South Africa, the Department of Minerals and Energy (DME), the JSE Limited (JSE), the Council for Geoscience, the Banking Association of South Africa, the Minerals Bureau, the Chamber of Mines of South Africa (CoM), and the University of the Witwatersrand.

The first version of the SAMREC Code was issued in March 2000 and adopted by the JSE in their Listings Requirements later that same year. The Code has been adopted by the SAIMM, GSSA, SACNASP, ECSA and PLATO, and it is binding on members of these organizations. For background information and the history of the development of the Code, please refer to the SAMREC Code, March 2000. This 2007 edition supersedes the first edition.

Concurrently with the evolution of the SAMREC Code, the Committee for Mineral Reserves International Reporting Standards (CRIRSCO), initially a committee of the Council of Mining and Metallurgical Institutions (CMMI), has, since 1994, been working to create a set of standard international definitions for the reporting of Mineral Resources and Mineral Reserves.

As a result of the CRIRSCO/CMMI initiative, considerable progress has been made towards widespread adoption of globally consistent reporting standards. These are embodied in similar Codes, guidelines and standards published and adopted by the relevant professional bodies around the world.

The definitions in this edition of the SAMREC Code are either identical to, or not materially different from, those existing international definitions.

## INTRODUCTION

2. The Code is applicable to the reporting of all styles of solid mineralization or economic deposit. Certain commodities, namely coal and diamonds, have specific additional reporting requirements and these are dealt with from Clause 41 onwards. The Code does not apply to oil, gas or water.

In this second edition of the SAMREC Code, the Code is presented predominantly in normal typeface. **Definitions are highlighted in bold text and form part of the Code.** *Guidelines are in italics and are placed after the respective Code clauses to provide assistance and guidance to readers when interpreting the Code.*

The SSC recognizes that further reviews and revisions of the Code may be required. Additional information, rules, lists and best-practice guidelines will be published on the SSC website from time to time, after due process has been followed. ([www.samcode.co.za](http://www.samcode.co.za))

## SCOPE

3. The Code sets out a required minimum standard for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves. References in the Code to Public Report or Public Reporting pertain to those reports detailing Exploration Results, Mineral Resources and Mineral Reserves and prepared as information for investors or potential investors and their advisers.

Although the Code is a required minimum standard for Public Reporting, the SSC committee recommends its adoption as a minimum standard for other reporting.

**Public Reports are all those reports prepared for the purpose of informing investors or potential investors and their advisers and include but are not limited to companies' annual reports, quarterly reports and other reports included in JSE circulars, or as required by the Companies Act. The Code also applies to the following reports if they have been prepared for the purposes described in Clause 3: environmental statements; information memoranda; expert reports; technical papers; website postings; and public presentations.**

*For companies issuing annual reports or other summary reports, the inclusion of all material information relating to Exploration Results, Mineral Resources and Mineral Reserves is recommended. Where a summary is*



*presented, it should be clearly stated that it is a summary, with a reference attached giving the location of the Code-compliant Public Reports or Public Reporting on which the summary is based. Companies and other entities are encouraged to provide information that is as comprehensive as possible in their Public Reports.*

*It is recognized that companies may be required to issue reports for more than one regulatory jurisdiction, with compliance standards other than those contained in the Code. It is recommended that such reports should include a statement alerting the reader to this.*

*Reference in the Code to ‘documentation’ pertains to internal company documents prepared as a basis for, or in support of, a Public Report.*

*It is recognized that situations may arise in which such supporting documentation, prepared by Competent Persons for internal company or other private use, may not specifically be compliant with the Code. In such situations, it is recommended that the documentation should include a prominent statement to this effect.*

*Users of the Code, and those compiling reports that comply with the Code, should be guided by its intent, which is to provide a minimum standard for Public Reporting that investors and their professional advisers would expect to find in the report and for the purpose of making a reasoned and balanced judgement regarding Exploration Results, Mineral Resources or Mineral Reserves.*

4. The Code takes into account issues of a global nature while addressing certain circumstances unique to South Africa. The following principles should be considered in the application of the Code:

**Materiality:** A Public Report contains all the relevant information that investors and their professional advisors would reasonably require, and expect to find, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources and Mineral Reserves being reported on.

**Transparency:** The reader of a Public Report must be provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled.

**Competency:** The Public Report is based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable Professional Code of Ethics.

*The author of the Public Report should be satisfied that: his work has not been unduly influenced by the organization, company or person commissioning a report or any report that may be deemed a Public Report; all assumptions are documented; and adequate disclosure is made of all material aspects that the informed reader may require in order to make a reasonable and balanced judgement thereof.*

5. The Code is applicable to all solid minerals for which Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves is required. Minerals are defined as any substance occurring naturally in or on the earth, in or under water or in tailings or dumps, and having been formed by or subjected to a geological process and includes sand, stone, rock, gravel, clay, soil and any mineral occurring in stockpiles or in residue deposits but excludes water, oil and gas.
6. Table 1 provides a list of the main criteria that should be considered and reported upon, if relevant, when reporting on Exploration Results, Mineral Resources and Mineral Reserves.

## COMPETENCE AND RESPONSIBILITY

7. Documentation detailing Exploration Results, Mineral Resources and Mineral Reserves from which a Public Report is prepared must be prepared by, or under the direction of, and signed by a Competent Person.
8. A Public Report concerning a company's Exploration Results, Mineral Resources and Mineral Reserves is the responsibility of the company acting through its Board of Directors. Any such report must be based on, and fairly reflect, the Exploration Results, Mineral Resources and Mineral Reserves report(s) and supporting documentation prepared by a Competent Person. A Public Report shall disclose the Competent Person's name, qualifications, professional affiliations and relevant experience. The Competent Person's written approval is required for his or her contribution to the report.

Where any specific documentation is referred to in a Public Report, the written approval of the author must be obtained as to the form, content and context in which that documentation is to be included in the Public Report.

9. **A 'Competent Person' is a person who is registered with SACNASP, ECSA or PLATO, or is a Member or Fellow of the SAIMM, the GSSA or a Recognized Overseas Professional Organisation (ROPO). A complete list of recognized organizations will be promulgated by the SSC from time to time. The Competent Person must comply with the provisions of the relevant promulgated Acts.**

- 10. A Competent Person must have a minimum of five years experience relevant to the style of mineralization and type of deposit or class of deposit under consideration and to the activity he or she is undertaking. If the Competent Person is estimating or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources. If the Competent Person is estimating, or supervising the estimation of Mineral Reserves, the relevant experience must be in the estimation, assessment, evaluation and assessment of the economic extraction of Mineral Reserves. Persons being called upon to sign as a Competent Person must be clearly satisfied in their own minds that they are able to face their peers and demonstrate competence in the commodity, type of deposit and situation under consideration.**

*The key qualifier in the definition of a Competent Person is the word 'relevant'. Determination of what constitutes relevant experience can be difficult, and common sense should be exercised. For example, in estimating vein gold mineralization, experience in a high-nugget, vein-type mineralization such as tin, uranium etc. will probably be relevant, whereas experience in massive-type deposits may not be. Furthermore, a person considered competent in evaluating and reporting on alluvial gold deposits should have considerable experience in this type of mineralization, because of the characteristics of gold in alluvial systems, the particle sizing of the host sediment, and the low grades being quantified. Experience with placer deposits containing minerals other than gold may not necessarily provide relevant experience.*

*The key word 'relevant' could also mean that it is not always necessary for a person to have five years' experience in each and every type of deposit in order to act as a Competent Person if that person has relevant experience in other deposit types. For example, a person with twenty years' experience in Mineral Resource evaluation in a variety of metalliferous hard-rock deposit types may not require five years' specific experience in porphyry copper deposits in order to act as a Competent Person. Relevant experience in the other deposit types would count towards the required experience in relation to porphyry copper deposits.*

*In addition to experience in the style of mineralization, a Competent Person reporting Mineral Resources should have sufficient knowledge of sampling and assaying techniques relevant to the deposit under consideration and be aware of problems that could affect the reliability of the data. Some appreciation of extraction and processing techniques applicable to that deposit type would also be important.*

*It is important that the lead Competent Person accepting overall responsibility for a Mineral Resource or Mineral Reserve report that has been prepared in*

*whole or in part by others is satisfied that the work of the other contributors is acceptable and the constituent parts of the report have been signed off by such contributors.*

*The lead Competent Person undertaking Mineral Resource or Mineral Reserve reporting should accept full responsibility for the report and should not treat the procedure merely as a ‘rubber-stamping’ exercise.*

*Estimation of Mineral Resources may be a team effort (i.e. involving one person or a team collecting the data and another person or team preparing the Mineral Resource estimate). Estimation of Mineral Reserves is commonly a team effort involving a number of technical disciplines. It is recommended that, where there is a clear division of responsibilities within a team, each person should accept responsibility for his or her particular contribution. For example, one person could accept responsibility for the collection of Resource data, another for the Resource estimation process, another for the mining study and the lead Competent Person acting as project leader should accept overall responsibility for the report.*

11. Complaints made in respect of the Public Report of a Competent Person will be subject to the disciplinary procedures of the SSC.

## REPORTING TERMINOLOGY

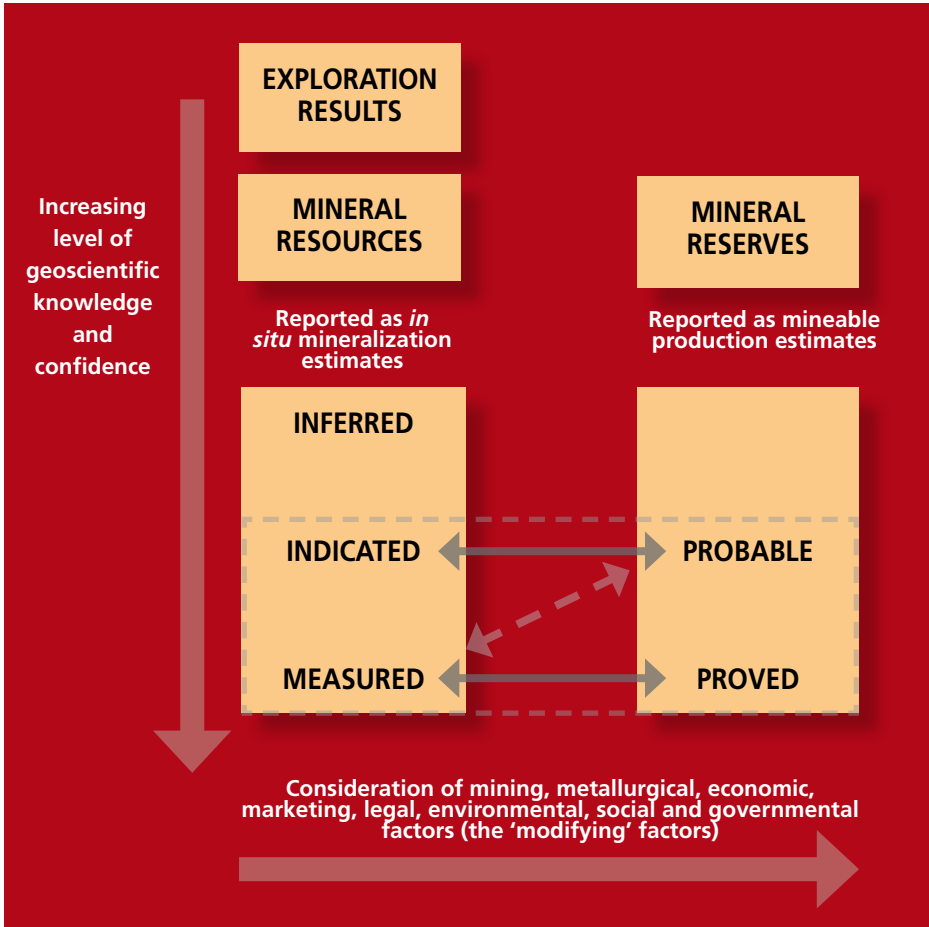
12. Public Reports dealing with Exploration Results, Mineral Resources and Mineral Reserves must use only the terms Proved or Probable Mineral Reserves, Measured, Indicated and Inferred Mineral Resources and Exploration Results as set out in Figure 1.

Figure 1 sets out the framework for classifying tonnage and grade estimates so as to reflect different levels of geoscientific confidence and different degrees of technical and economic evaluation. Mineral Resources can be estimated on the basis of geoscientific information with some input from other relevant disciplines. Mineral Reserves, which are modified Indicated and Measured Mineral Resources (shown within the dashed outline in Figure 1), require consideration of the Modifying Factors affecting extraction.

Measured Mineral Resources may convert to either Proved Mineral Reserves or Probable Mineral Reserves if there are uncertainties associated with modifying factors that are taken into account in the conversion from Mineral Resources to Mineral Reserves. The broken arrow in Figure 1 demonstrates this relationship. Although the trend of the broken arrow includes a vertical component, it does

not, in this instance, imply a reduction in the level of geoscientific knowledge or confidence. In such a situation these modifying factors should be fully explained.

The term ‘Modifying Factors’ is defined to include mining, metallurgical, economic, marketing, legal, environmental, social and governmental considerations.



**Figure 1:** Relationship between Exploration Results, Mineral Resources and Mineral Reserves

## REPORTING GENERAL

13. Public Reporting concerning a company's Exploration Results, Mineral Resources and Mineral Reserves must include a description of the style and nature of mineralization.
14. A company must disclose relevant information concerning the status and characteristics of a mineral deposit that could materially influence the economic value of the deposit and promptly report any material changes in its Exploration Results, Mineral Resources and Mineral Reserves.
15. When reporting on commodity-specific requirements for Coal Resources and Coal Reserves, use must be made of Clauses 41 to 53, which contain amendments and additions, and such will take precedence over all common clauses.
16. When reporting on commodity-specific requirements for Diamond Resources and Diamond Reserves, use must be made Clauses 54 to 62, which contain amendments and additions, and such will take precedence over all common clauses.
17. Throughout the Code, where appropriate, 'quality' may be substituted for 'grade' and 'volume' may be substituted for 'tonnage.' In the Code, any reference to the singular shall include a reference to the plural, where appropriate.

## REPORTING OF EXPLORATION RESULTS

18. Exploration Results include data and information generated by exploration programmes that may be of use to investors. The Exploration Results may or may not be part of a formal declaration of Mineral Resources or Mineral Reserves.
19. In Public Reports, under 'Exploration Results,' mineralization not classified as a Mineral Resource or Mineral Reserve must be described as a deposit, and the data and information relating to it must be enough to allow a considered and balanced judgement of their significance. Exploration Results must include all relevant exploration information, part of which is the location of the deposit. Such reporting must not be presented in a way that unreasonably implies the discovery of potentially economic mineralization.

Reporting of selected information such as isolated assays, isolated drill holes, assays of panned concentrates or supergene-enriched soils or surface samples, without placing them in perspective, is unacceptable.

*When assay and analytical results are reported, one of the following methods, selected as the most appropriate by the Competent Person, must be used: by listing all results, along with sample intervals (or size, in the case of bulk samples), or by reporting weighted average grades of mineralized zones, indicating clearly how the grades were calculated.*

*Exploration information should include the interpretation of geological continuity, sampling results, locations etc. Table 1, at the end of this Code, is a checklist for all who prepare reports on Exploration Results, Mineral Resources and Mineral Reserves. It should be used as a guide. The checklist is not prescriptive and, as always, relevance and materiality are overriding principles that determine what information should be publicly reported.*

20. It is common practice for a company to comment on and discuss its Exploration Results in terms of size and type. Any such information relating to exploration targets must not be expressed or misrepresented as an estimate of Mineral Resources or Mineral Reserves. The term Resource(s) or Reserves(s) must not be used in this context. Any statement referring to potential quantity, quality and content, as appropriate, of the target must be expressed as ranges and include a detailed explanation of the basis for the statement and a proximate statement that the potential quantity, quality and content, as appropriate, are conceptual in nature, that there has been insufficient exploration to define a Mineral Resource and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

## REPORTING OF MINERAL RESOURCES

- 21. A ‘Mineral Resource’ is a concentration or occurrence of material of economic interest in or on the earth’s crust in such form, quality and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, or estimated from specific geological evidence, sampling and knowledge interpreted from an appropriately constrained and portrayed geological model. Mineral Resources are subdivided, and must be so reported, in order of increasing confidence in respect of geoscientific evidence, into Inferred, Indicated or Measured categories.**

**A deposit is a concentration (or occurrence) of material of possible economic interest, in or on the earth’s crust, that may include mineralized material that cannot be estimated with sufficient confidence to be classified in the**

**Inferred category. Portions of a deposit that do not have reasonable and realistic prospects for eventual economic extraction are not included in a Mineral Resource.**

For each category of Mineral Resource the basis of classification must be disclosed (refer to Table 1).

*The term Mineral Resource covers in-situ mineralization as well as dumps or tailings that have been identified and estimated through exploration or assessment and sampling from which Mineral Reserves may be derived by the application of modifying factors.*

*Any material assumptions made in determining the ‘reasonable and realistic prospects for eventual economic extraction’ should be clearly stated in the Public Report.*

*The term ‘reasonable and realistic prospects for eventual economic extraction’ implies a judgement (albeit preliminary) by the Competent Person in respect of technical and economic factors likely to influence the prospect of economic extraction, including the approximate mining parameters. In other words, a Mineral Resource is not an inventory of all mineralization drilled or sampled, regardless of cut-off grades, likely mining dimensions, location or continuity. It is a realistic inventory of mineralization that, at the time of reporting and under assumed and justifiable technical and economic conditions, might become economically extractable.*

*Portions of a mineral deposit that do not have reasonable and realistic prospects for eventual economic extraction must not be included in a Mineral Resource.*

*Interpretation of the word ‘eventual’ in this context may vary depending on the commodity, mineral involved or legal tenure. For example, for many occurrences of coal, iron ore, bauxite and other bulk minerals or commodities, it may be reasonable to envisage ‘eventual economic extraction’ as covering periods of 50 years or more. However for other deposits, application of the concept would normally be restricted to perhaps 20 to 30 years and frequently much shorter periods.*

*Certain reports (e.g. exploration reports to Government and other similar reports not intended primarily for providing information for investment purposes) may require full disclosure of all mineralization including some material that does not have reasonable and realistic prospects for eventual economic extraction. Portions of the mineral deposit that do not qualify as Mineral Resources must not be described as such.*



*Any adjustment made to the data for the purpose of making the Mineral Resource estimate, for example by cutting or factoring grades, or any other relevant assumptions, should be clearly described in the Public Report.*

*Where considered appropriate by the Competent Person, Mineral Resources may include mineralization below the selected cut-off grade to ensure that the Mineral Resource consists of bodies of mineralization of adequate size and continuity to properly consider the most appropriate approach to mining, including any dilution or contamination resulting from the requirements of any minimum mining width. Documentation of Mineral Resource estimates should clearly define any such inclusions, and Public Reports should include commentary on the matter if considered material.*

- 22. An 'Inferred Mineral Resource' is that part of a Mineral Resource for which volume or tonnage, grade and mineral content can be estimated with only a low level of confidence. It is inferred from geological evidence and sampling and assumed but not verified geologically or through analysis of grade continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes that may be limited in scope or of uncertain quality and reliability.**

An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource.

*Where Inferred Mineral Resources are extrapolated beyond data points, the proportion extrapolated must be described and disclosed.*

*This category is intended to cover situations in which a mineral concentration or occurrence has been identified and limited measurements and sampling have been completed, but in which the data are insufficient to allow the geological or grade continuity to be interpreted with confidence. Due to the uncertainty that may be attached to some Inferred Mineral Resources, it cannot be assumed that all or part of an Inferred Mineral Resource will necessarily be upgraded to an Indicated or Measured Mineral Resource after continued exploration.*

23. It is accepted that mine design and planning may include a proportion of Inferred Mineral Resources. If this category is considered in mine design, planning or economic studies, the results of which are publicly reported, full disclosure must be made and the effect on the results of the studies must be stated. Inferred Mineral Resources may be included in mine design, mine planning and economic studies only if there exists a mine plan and a statement of Mineral Reserves that admits that Inferred Mineral Resources have been used. Where a material amount

of mining in the mine plan includes Inferred Mineral Resources, a comparison of the results with and without these Inferred Mineral Resources must be shown, and the rationale behind their inclusion must be explained.

Modifying factors and assumptions that were applied to the Indicated and Measured Mineral Resources to determine the Mineral Reserves must be equally applied to the Inferred Mineral Resources.

Inferred Mineral Resources cannot be converted to Mineral Reserves and must not be stated as part of the Mineral Reserve.

- 24. An 'Indicated Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence. It is based on information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological or grade continuity but are spaced closely enough for continuity to be assumed.**

The Indicated Mineral Resource has sufficient confidence for mine design, mine planning or economic studies.

*An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource but has a higher level of confidence than that applying to an Inferred Mineral Resource.*

Confidence in the estimate is sufficient to allow the appropriate application of technical and economic parameters and enable an evaluation of economic viability.

- 25. A 'Measured Mineral Resource' is that part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity.**

A Measured Mineral Resource provides sufficient confidence for mine design, mine planning, production planning and detailed economic studies to be undertaken.

*A Measured Mineral Resource requires that the nature, quality, amount and distribution of data are such as to leave the Competent Person with no*

*reasonable doubt that the tonnage and grade of the mineralization can be estimated to within close limits and any variation within these limits would not materially affect the economics of extraction.*

*This category requires a high level of confidence in, and understanding of, the geology and the controls on mineralization.*

26. The Competent Person responsible for the Resource estimate must determine the appropriate Mineral Resource category based upon the quantity, distribution and quality of data available and the level of confidence attached to the data with reference to Table 1. The method of determining these confidence levels must be disclosed. Resource classification guidelines are included in Table 1.
27. The Mineral Resource statement is a summary report of the Resource estimates, with key assumptions used in their derivation as per the guidelines in Table 1.
28. Public Reports of Mineral Resources must specify one or more of the categories of 'Inferred', 'Indicated' or 'Measured'. Reports must not contain Mineral Resource figures combining two or more of the categories unless figures for the individual categories are also provided.
29. A Mineral Resource must not be reported in terms of contained mineral content unless corresponding tonnages and grades are also reported.
30. The words 'Ore' and 'Reserves' must not be used in stating Mineral Resources. These terms imply a level of technical feasibility and economic viability and are appropriate only when all relevant modifying factors have been applied.
31. Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information about the location, shape and continuity of the occurrence and on the available sampling results.

*Rounding off must convey the uncertainties in estimation.*

*In order to emphasize the imprecise nature of a Mineral Resource estimate, the final results should always be referred to as an estimate not a calculation, and Inferred Mineral Resources should be qualified with terms such as 'approximately'.*

## REPORTING OF MINERAL RESERVES

- 32. A 'Mineral Reserve' is the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-Feasibility Study for a project and a Life of Mine Plan for an operation must have been completed, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors (the modifying factors). Such modifying factors must be disclosed.**

Mineral Reserves are reported as inclusive of diluting and contaminating uneconomic and waste material delivered for treatment or dispatched from the mine without treatment. To avoid confusion in reporting Mineral Reserves, the definition of treatment is taken to include any beneficiation of the raw product that might take place before or during the metallurgical process. For clarity, tonnages and grades of saleable product may be reported for certain commodities, with clear descriptions indicating such.

*Commodity prices and exchange rates used for Mineral Reserve estimation should be disclosed.*

*For commodities traded on metal exchanges, reasonable forward-looking prices should be used. Such prices should be based on historic full-cycle price averages and should be disclosed. However, for commodities not traded on metal exchanges, it is recognized that disclosure of a specific price may put a company at a competitive disadvantage, and this must be stated.*

*When commodity prices are disclosed, disclosure can be as a single price estimate equal to that used for reserve determination, or as a range of prices within which no material change in reserves would occur. Whether or not the commodity prices used to estimate reserves are published, the method used to determine those prices should be disclosed. Such disclosure should be in a manner that helps investors determine whether, in their own opinion, the stated prices represent reasonable views of the future.*

*Mineral Reserves are sub-divided in order of increasing confidence into Probable and Proved Mineral Reserves. For each category of Mineral Reserve, the confidence levels in the modifying factors should be disclosed.*

*The term 'economically mineable' implies that extraction of the Mineral Reserve has been demonstrated as viable and justifiable under a defined set of realistically assumed modifying factors. What constitutes the term 'realistically assumed' will vary with the type of deposit, level of study that has been carried out, and financial criteria of the reporting entity. Deriving a Mineral Reserve without a mine design or mine plan through a process of factoring of the Mineral Resource is unacceptable.*

*If there is doubt about what should be reported, it is better to provide too much information rather than too little.*

*Any adjustment to the data for the purpose of making the Mineral Reserve estimate, for example by cutting or factoring grades or any other modifying factor, should be clearly described in the Public Report.*

*The Code does not imply that an economic operation must have Proved Mineral Reserves. Situations may arise in which Probable Mineral Reserves alone may be sufficient to justify extraction, as for example with some alluvial tin, diamond or gold deposits. This is a matter for judgement by the Competent Person.*

- 33. A 'Probable Mineral Reserve' is the economically mineable material derived from a Measured or Indicated Mineral Resource or both. It is estimated with a lower level of confidence than a Proved Mineral Reserve. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-Feasibility Study for a project or a Life of Mine Plan for an operation must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.**
- 34. A 'Proved Mineral Reserve' is the economically mineable material derived from a Measured Mineral Resource. It is estimated with a high level of confidence. It includes diluting and contaminating materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Pre-Feasibility Study for a project or a Life of Mine Plan for an operation must have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal, environmental, social and governmental factors. Such modifying factors must be disclosed.**
35. The categorization of a Mineral Reserve is governed by the relevant level of confidence of the Mineral Resource and the modifying factors and must be made by the Competent Person.

*The Code provides for a direct relationship between the criteria applied to Indicated Mineral Resources and Probable Mineral Reserves and between the criteria applied to Measured Mineral Resources and Proved Mineral Reserves. In other words, the level of geoscientific confidence for Probable Mineral Reserves is similar to that required for the determination of Indicated Mineral Resources. The level of geoscientific confidence for Proved Mineral Reserves is similar to that required for the determination of Measured Mineral Resources. Inferred Mineral Resources are always additional to Mineral Reserves and should be quoted as such.*

*The Code also provides for a relationship between Measured Mineral Resources and Probable Mineral Reserves. This is to cover the situation in which uncertainties associated with any of the modifying factors considered when converting Mineral Resources to Mineral Reserves result in a lower degree of confidence in the Mineral Reserves than in the corresponding Mineral Resources. Such a conversion would not imply a reduction in the level of geoscientific knowledge or confidence.*

*A Probable Mineral Reserve derived from a Measured Mineral Resource may be converted to a Proved Mineral Reserve if the uncertainties in the modifying factors are reduced. No amount of confidence in the modifying factors for conversion of a Mineral Resource into a Mineral Reserve can override the upper level of confidence that exists in the Mineral Resource. Under no circumstances can an Indicated Mineral Resource be converted direct to a Proved Mineral Reserve (see Figure 1).*

*Application of the category of Proved Mineral Reserves implies the highest degree of confidence in the estimate, with consequent expectations in the minds of the readers of the report. These expectations must be borne in mind when categorising a Mineral Resource as measured.*

36. Mineral Reserve estimates are not precise calculations, and tonnages and grades must be expressed so as to convey the order of accuracy of the estimates by rounding off to appropriately significant figures.

*Rounding off must convey the uncertainties in estimation.*

*In order to emphasize the imprecise nature of a Mineral Reserve estimate, the final results should always be referred to as an estimate, not a calculation.*

37. Public Reports of Mineral Reserves must not contain combined Proved and Probable Mineral Reserves unless the relevant figures for each of the categories are also provided. Reports must not present mineral contents unless corresponding tonnages and grades are given.

*Mineral Reserves may incorporate diluting and contaminating uneconomic and waste material that is not part of the original Mineral Resource. It is essential to bear in mind this fundamental difference between Mineral Resources and Mineral Reserves. Caution must be exercised if attempting to draw conclusions from a comparison of the two.*

*Public Reporting of tonnages and grades outside the categories covered by the Code is not permitted, although the figures may be useful to a company in its internal calculations and evaluations.*

38. When revised Mineral Resource and Mineral Reserve statements are publicly reported, they must be reconciled with previous statements. A detailed account of differences between the figures is not essential, but sufficient comment should be made to enable significant variances to be understood by the reader.
39. In situations in which figures for both Mineral Resources and Mineral Reserves are reported, the Public Report must include a statement that clearly indicates whether the Mineral Resources are inclusive of, or additional to those Mineral Resources that have been modified to produce Mineral Reserves.

*In some situations, there are reasons for reporting Mineral Resources inclusive of Mineral Reserves. In other situations, there are reasons for reporting Mineral Resources additional to Mineral Reserves. It must be made clear which form of reporting has been adopted. Appropriate forms of clarifying statements may be:*

*'The Measured and Indicated Mineral Resources are inclusive of those modified to produce Mineral Reserves' or 'The Measured and Indicated Mineral Resources are additional to Mineral Reserves.'*

*In the first example, if any Mineral Resources have not been modified to produce Mineral Reserves for economic or other reasons, the relevant details of these unmodified Mineral Resources should be included in the Public Report. This is to help the reader judge the likelihood of the unmodified Measured and Indicated Mineral Resources eventually being converted to Mineral Reserves.*

*For reasons stated in the first guideline of Clause 37 and in this paragraph, the reported Mineral Reserve figures cannot be added to the reported Mineral Resource figures. The resulting total is misleading and is capable of being misunderstood or, more seriously, misused to give a false impression of a company's prospects.*

*When reporting Mineral Reserves, a sensitivity analysis should be conducted.*

*The disclosure of commodity price and other financial assumptions used for this analysis is recommended.*

40. The above clauses apply equally to low-grade mineralization, often intended for stockpiling and treatment towards the end of the life of the mine.

If some portion of stope-fill or stockpile, dumps, remnants, pillars and tailings is currently sub-economic, but there is a reasonable expectation that it will become economic, then this material may be classified as a Mineral Resource. If technical and economic studies have demonstrated that economic extraction could be reasonably justified under realistically assumed conditions, then the material may be classified as a Mineral Reserve.

If there are no reasonable prospects for the economic extraction of a particular portion of the above-mentioned material, then this material cannot be classified as either Mineral Resources or Mineral Reserves. Mineralized remnants, shaft pillars and mining pillars that are not potentially mineable must not be included in Mineral Resource and Mineral Reserve statements.

For clarity of understanding, the tonnage and grade estimates of such material must be itemized separately as Mineral Resources or Mineral Reserves in Public Reports, although they may be aggregated in total Mineral Resource and Mineral Reserve figures.

## REPORTING OF COAL EXPLORATION RESULTS, COAL RESOURCES AND COAL RESERVES

41. This part of the Code addresses matters specific to the Public Reporting of Coal Resources and Coal Reserves. Clauses 1 to 40 of this Code also apply to the Public Reporting of Coal Resources and Coal Reserves, unless otherwise stated in this part of the Code. However, the term 'Coal' should replace the terms 'Mineral' and 'Ore'; 'coal deposit' should replace 'mineralization'; and 'coal quality' should replace 'grade and mineral content' throughout both Code and guidelines. For Coal Reserves, all references to 'metallurgical' modifying factors should be replaced by 'coal processing' modifying factors.

42. Amendment to Clause 6.

The South African Guide to the Systematic Evaluation of Coal Resources and Coal



Reserves (SANS 10320:2004) provides the main criteria that should be considered when preparing reports on Coal Resources and Coal Reserves. The reader is referred to the South African Guide to the Systematic Evaluation of Coal Resources and Coal Reserves for the definition of the relevant terms and for the methods used in the evaluation of coal deposits. Any reference to Table 1 in the Code should be substituted by a reference to the Guide mentioned above. The evaluation criteria need not be discussed in a Public Report unless they materially affect estimation or classification of the Coal Resources and Coal Reserves. However, changes in economic or political factors alone may be the basis for significant changes in Coal Reserves and should be reported accordingly.

#### 43. Replacement of Figure 1

Public Reports on Coal Resources and Coal Reserves must use only the terms set out in Figure 2. Any reference to 'Figure 1' in the Code must be substituted by a reference to 'Figure 2'.

#### 44. Amendment to Clause 22

**An 'Inferred Coal Resource' is that part of a Coal Resource for which volume or tonnage and coal quality can be estimated only with a low level of confidence. It is inferred from geological evidence and sampling and assumed physical continuity with or without coal quality continuity. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill-holes, information that is limited or of uncertain quality and reliability.**

The level of confidence is usually insufficient to justify a Pre-feasibility Study.

#### 45. Amendment to Clause 24

**An 'Indicated Coal Resource' is that part of a Coal Resource for which tonnage, densities, shape, physical characteristics and coal quality can be estimated with a moderate level of confidence. It is based on information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are appropriate to confirm physical continuity, while the locations are too widely or inappropriately spaced to confirm the continuity of the coal quality. However, such locations are spaced closely enough for such continuity to be assumed.**

The level of confidence should be sufficient to support a decision on whether a Pre-feasibility Study or Feasibility Study is warranted.

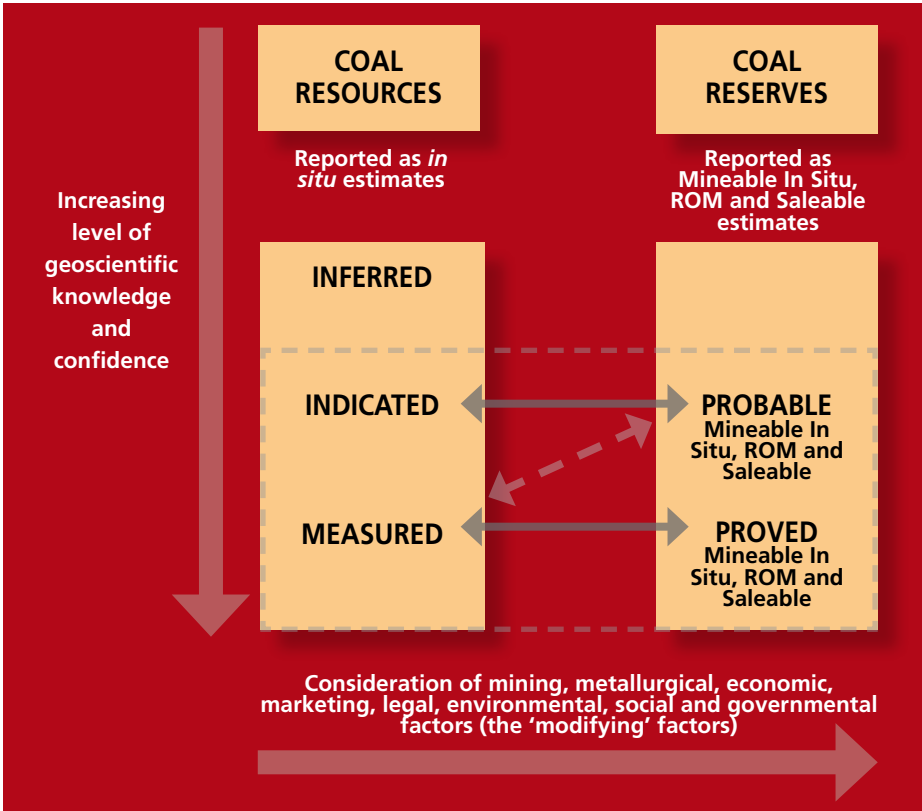


Figure 2: Relationship between Coal Resources and Coal Reserves

46. Amendment to Clause 25

A 'Measured Coal Resource' is that part of a Coal Resource for which tonnage, densities, shape, physical characteristics and coal quality can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm physical and coal quality continuity.

47. Addition to Clause 33.

A Probable Coal Reserve may be demonstrated to be economically mineable by a Pre-Feasibility Study.

48. Addition to Clause 34

A Proved Coal Reserve may be demonstrated to be economically mineable by a Feasibility Study or actual mining activity.

**49. A 'Mineable In Situ Coal Reserve' is the tonnage and coal quality, at specified moisture content, contained in coal seams, or sections of seams, that are proposed for mining, adjusted by the application of the geological loss factors. Sufficient information must be available to enable conceptual or detailed mine planning, and such mine planning must have been undertaken.**

The assessments must demonstrate that at the time of reporting, extraction is reasonably justified. Mineable In Situ Coal Reserve estimates must be quoted separately for surface and underground extraction, and an outline of the proposed mining method must be provided. Mineable In Situ Coal Reserves are subdivided in order of increasing confidence into Probable Mineable In Situ Coal Reserve and Proved Mineable In Situ Coal Reserve categories.

**50. A 'Run of Mine' (ROM) Coal Reserve is the tonnage and coal quality of Mineable In Situ Coal Reserves that are expected after all geological losses, mining losses, mining dilution, contamination and moisture-content factors have been applied.**

The assessments must demonstrate that at the time of reporting extraction is reasonably justified. ROM Coal Reserves are subdivided in order of increasing confidence into Probable ROM Coal Reserves and Proved ROM Coal Reserves. The ROM Coal Reserves must be reported.

**51. A 'Saleable Coal Reserve' is the tonnage and coal quality that will be available for sale, either in the raw ROM state at a specified moisture content or after beneficiation of the ROM Coal Reserves has produced materials at specified qualities, moisture contents and size ranges.-**

The assessment must demonstrate that at the time of reporting, the marketing of products is reasonably justified. The basis of the predicted yield to achieve the Saleable Coal Reserve must be stated. For raw ROM products, the practical product yield is typically 100%.

Saleable Reserves are subdivided in order of increasing confidence into Probable

Saleable Coal Reserve and Proved Saleable Coal Reserve categories. The Saleable Coal Reserves must be reported.

52. The appropriate coal quality must be reported for all Coal Resource and Coal Reserve categories. The basis of reporting of the coal quality parameters must be reported, as for example on an air-dry basis, dry basis, etc. Where applicable Saleable Coal Reserves should be subdivided into the relevant coal product types.

The quality of the coal should be expressed according to parameters relevant to specific applications e.g. steam coal, types of metallurgical coal, etc. The selection of parameters is the responsibility of the Competent Person and would include quality parameters such as ash, volatile matter, sulphur, coking properties, calorific value, etc.

Refer to the South African Guide to the Systematic Evaluation of Coal Resources and Coal Reserves for additional guidelines.

53. Amendment to Clause 40:

The Code applies to the reporting of all potentially economic coal deposits including coal in pillars and remnants discard and reject coal in stockpiles, dumps and tailings for which there are reasonable and realistic prospects for eventual economic extraction of Coal Resources and for justifiable economic extraction of Coal Reserves. Unless otherwise specified, Clauses 1 to 40 of the Code (including Figure 2 and SANS 10320:2004 guideline) apply.

Discard and Reject Coal from a future coal processing plant or mining operations may be reported as an additional product in the Saleable Coal Reserve category only if economic extraction is justified.

## REPORTING OF DIAMOND EXPLORATION RESULTS, DIAMOND RESOURCES AND DIAMOND RESERVES

54. This part of the Code addresses matters specific to the Public Reporting of Diamond Exploration Results, Diamond Resources and Diamond Reserves. Clauses 1 to 40 of this Code also apply to the Public Reporting of Diamond Exploration Results, Diamond Resources and Diamond Reserves, unless otherwise stated in this part of the Code. The term 'Diamond' should replace the term 'Mineral' and 'grade

and average diamond value' should replace 'grade and mineral content' wherever applicable.

55. The following characteristics of diamond deposits are different from those of typical metalliferous and coal deposits, and they emphasize the need for a Diamond specific Code.
- The low diamond content of primary and placer diamond deposits and their variability
  - The particulate nature of diamonds
  - The specialized field of diamond valuation
  - The relationship between average diamond value and the underlying diamond size distribution
  - The widely differing nature of diamondiferous deposits and their associated forms of mineralization and the estimation relevant to these.

56 Amendment to Clause 6

Table 1 provides a list of the main criteria that should be considered and reported, if relevant, when reporting Diamond Exploration Results, Diamond Resources and Diamond Reserves. Table 1 contains a set of definitions and guidelines to be used in Public Reports on Diamond Resources and Diamond Reserves; it represents a general guide for the evaluation of diamondiferous deposits.

57 Amendment to Clause 17

For diamond deposits and resources, the term 'quality' must not be used as a substitute for 'grade.' The use of 'grade' helps avoid confusion with diamond quality.

58 Amendment to Clause 21

**A diamond exploration target is a concentration (or occurrence) of diamond mineralization of possible economic interest, in or on the Earth's crust.**

Portions of a diamond exploration target that do not have reasonable and realistic prospects for eventual economic extraction must not be included in a Diamond Resource.

Estimates of quantity based on limited information and analogies with known deposits of similar geological character may be possible but are inadequate for classification as Inferred Mineral Resources.

## 59. Amendment to Clause 22

**An 'Inferred Diamond Resource' is that part of a Diamond Resource for which tonnage or volume, grade and average diamond value can be estimated only with a low level of confidence. It is inferred from geological evidence and assumed geological and grade continuity and when the diamond parcel is too small to be a reasonable representation of the diamond assortment. It is based on information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes, information that may be limited or of uncertain quality and reliability.**

## 60 Amendment to Clause 24

**An 'Indicated Diamond Resource' is that part of a Diamond Resource for which tonnage and volume, densities, shape, physical characteristics, grade and average diamond value can be estimated with a reasonable level of confidence. It is based on information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are too widely or inappropriately spaced to confirm geological and grade continuity but are spaced closely enough for continuity to be assumed, and sufficient diamonds have been recovered to allow a reasonable estimate of average diamond value.**

## 61 Amendment to Clause 25

**A 'Measured Diamond Resource' is that part of a Diamond Resource for which tonnage and volume, densities, shape, physical characteristics, grade and average diamond value can be estimated with a high level of confidence. It is based on detailed and reliable information from exploration, sampling and testing of material gathered from locations such as outcrops, trenches, pits, workings and drill holes. The locations are spaced closely enough to confirm geological and grade continuity and sufficient diamonds have been recovered to allow a confident estimate of average diamond value.**

## 62 Amendment to Clause 28

The average diamond grade and value must not be reported without specifying the anticipated Bottom Cut-off Screen Size.

## TABLE 1: CHECKLIST AND GUIDELINE OF REPORTING AND ASSESSMENT CRITERIA

Table 1 is a high-level checklist of reporting and assessment criteria to be used as a reference by those preparing reports on Exploration Results, Mineral Resources and Mineral Reserves. The checklist is not prescriptive and, as always, relevance and materiality are the overriding principles that determine what information should be publicly reported. It is, however, important to report all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported.

The evaluation and reporting of mineral projects and forward looking mine plans or statements from ongoing operations are expressions of judgment predicated on knowledge and experience. Such evaluations and reports are more than arbitrary determinations; they seek to facilitate valuations as a consequence of method. The methods employed should be scientifically valid, tested, using accepted scientific definitions of terms and procedures, and best suited to the making of reliable estimates for the project in question.

It is the responsibility of the Competent Person to consider all the criteria listed below and which additional criteria should apply to the study of a particular project or operation. The relative importance of the criteria will vary with the particular project and the legal and economic conditions pertaining at the time of determination.

Publicly reported information should be sufficient to enable an informed reader to make a reasonable and balanced assessment of the significance of this information. It is, however, important to report any matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources or Mineral Reserves.

## T1. GENERAL

### ASSESSMENT CRITERION: *T 1.1 Purpose of Report*

#### EXPLORATION RESULTS (A)

- (i) The report should have a title page and a table of contents that includes figures and tables.
- (ii) State for whom the report was prepared, whether it was intended as a full or partial evaluation or other purpose, what work was conducted, effective date of report, and what work remains to be done.
- (iii) The Competent Person should state whether the document is SAMREC compliant. If a reporting code other than SAMREC has been used, the Competent Person should include an explanation of the differences.

#### MINERAL RESOURCES (B)

See 1.1 A (i) to (iii).

#### MINERAL RESERVES (C)

See 1.1 A (i) to (iii).



**ASSESSMENT CRITERION: T 1.2 Project outline****EXPLORATION RESULTS (A)**

- (i) Give a brief description of the scope of project (i.e. whether in preliminary sampling, advanced exploration, conceptual, pre-feasibility, or feasibility phase, Life of Mine plan for an ongoing mining operation or closure). This should include a description of the geological setting, deposit type, commodity, area of project, back-ground, and business arrangement.

**MINERAL RESOURCES (B)**

See 1.2 A.

- (i) Brief description of key technical factors that have been considered.

**MINERAL RESERVES (C)**

See 1.2 A.

- (i) Brief description of mining, processing and other key technical factors.

**ASSESSMENT CRITERION: T 1.3 History****EXPLORATION RESULTS (A)**

- (i) State historical background to the project and adjacent areas concerned, including known results of previous exploration and mining activities (type, amount, quantity and development work), previous ownership and changes thereto.
- (ii) Reference all information used from other sources.

**MINERAL RESOURCES (B)**

See 1.3 A (i) and (ii).

- (i) Discuss known or existing historical Mineral Resource estimates and performance statistics to actual production for past and current operations, including the reliability of these and how they relate to the SAMREC Code.
- (ii) Previous successes or failures should be referred to transparently with reasons why the project should now be considered potentially economic.

**MINERAL RESERVES (C)**

See 1.3 B.

- (i) Discuss known or existing historical Mineral Reserve estimates and performance statistics to actual production for past and current operations, including the reliability of these and how they relate to the SAMREC Code.

**ASSESSMENT CRITERION: T 1.4 Key plan, maps and diagrams****EXPLORATION RESULTS (A)**

- i) Include and reference a location or index map and more detailed maps showing all important features described in the text, including all relevant cadastral and other infrastructure features. If adjacent or nearby properties have an important bearing on the report, then their location and common mineralized structures should be included on the maps. Reference all information used from other sources. All maps, plans and sections noted in this checklist should be legible and include a legend, coordinates, system of coordinates, scale bar and north arrow.
- (ii) Diagrams or illustrations should be legible, annotated and summarized.

**MINERAL RESOURCES (B)**

See 1.4 A (i) and (ii).

**MINERAL RESERVES (C)**

See 1.4 (i) and (ii).

**ASSESSMENT CRITERION: T 1.5 Project location and description****EXPLORATION RESULTS (A)**

- (i) Description of location (country, province, and closest town/city, coordinate systems and ranges, etc.).
- (ii) In respect of each property, diagrams, maps and plans should be supplied demonstrating the location of prospecting/mining rights, any historical and current workings, any exploration, and all principal geological features.

**MINERAL RESOURCES (B)**

See 1.5 A (i) and (ii).

**MINERAL RESERVES (C)**

See 1.5 A (i) and (ii).

**ASSESSMENT CRITERION: T 1.6 Topography and climate****EXPLORATION RESULTS (A)**

- (i) All relevant issues relating to the mineral project should be stated, such as the topography and climate, noting any conditions that may affect possible mining activities.
- (ii) A general topo-cadastral map should be available to support the above statement.

**MINERAL RESOURCES (B)**

See 1.6 A (i) and (ii).

- (i) Topo-cadastral map in sufficient detail to support the assessment of eventual economics. Known associated climatic risks should be stated.

**MINERAL RESERVES (C)**

- (i) Detailed topo-cadastral map. Where applicable aerial surveys should be checked with ground controls and surveys, particularly in areas of rugged terrain, dense vegetation or high altitude.

**ASSESSMENT CRITERION: T 1.7 Legal aspects and tenure****EXPLORATION RESULTS (A)**

The legal tenure should be verified to the satisfaction of the Competent Person, including a description of:

- (i) The nature of the issuer's rights (e.g. prospecting and/or mining) and the right to use the surface of the properties to which these rights relate;
- (ii) The principal terms and conditions of all existing agreements, and details of those still to be obtained, (such as, but not limited to, concessions, partnerships, joint ventures, access rights, leases, historical and cultural sites, wilderness or national park and environmental settings, royalties, consents, permission, permits or authorizations)
- (iii) The security of the tenure held at the time of reporting or that is reasonably expected to be granted in the future along with any known impediments to obtaining the right to operate in the area; and
- (iv) A statement of any legal proceedings that may have an influence on the rights to prospect or mine for minerals, or an appropriate negative statement.

**MINERAL RESOURCES (B)**

See 1.7 A.

**MINERAL RESERVES (C)**

See 1.7 A

## T2. PROJECT DATA

### ASSESSMENT CRITERION: T 2.1 Data management and database

#### EXPLORATION RESULTS (A)

- (i) Identify and comment on the primary data elements (observation and measurements) used for the project and describe the management of these data or the database. This should describe the following relevant processes: acquisition (capture or transfer), validation, integration, control, storage, retrieval and backup processes. Final verification of data, including QA/QC processes should also be part of the database. It is assumed that data are stored digitally but hand-printed tables with well organized data and information may also constitute a database.

#### MINERAL RESOURCES (B)

See 2.1 A (i).

- (i) Identify and comment on interpreted data elements derived from primary data (modelled or analyzed) and used for the project, and describe the management of these data or the database.

#### MINERAL RESERVES (C)

See 2.1 B.

- (i) Identify and comment on interpreted and planned data elements derived from modelled data and used for the project plans, and describe the management of these data or the database.

**ASSESSMENT CRITERION: T 2.2 Spatial data****EXPLORATION RESULTS (A)**

- (i) Describe the survey methods, techniques and expected accuracies of spatial data.
- (ii) Representative models and/or maps and cross sections or other two or three dimensional illustrations of results should exist, showing location of samples, accurate drill-hole collar positions, down-hole surveys, exploration pits, underground workings, relevant geological data, etc

**MINERAL RESOURCES (B)**

See 2.2 A (i) and (ii).

**MINERAL RESERVES (C)**

See 2.2 A (i) and (ii).



**ASSESSMENT CRITERION: T 2.3 Geological data****EXPLORATION RESULTS (A)**

- (i) Describe the data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e. stratigraphy, lithology, structure, alteration, mineralization, hydrology, geophysical, geochemical, petrography, mineralogy, geochronology, etc.).
- (ii) Acknowledge and appraise data from other parties and reference all data and information used from other sources.

**MINERAL RESOURCES (B)**

See 2.3 A (i) and (ii).

- (i) Discuss geological data that could materially influence the estimated quantity and quality of the Mineral Resource.

**MINERAL RESERVES (C)**

See 2.3 B

- (i) Discuss geological data that could materially influence the estimated quantity and quality of the Mineral Reserve.

**ASSESSMENT CRITERION: T 2.4 Specific gravity and bulk tonnage data****EXPLORATION RESULTS (A)**

- (i) If target tonnage ranges are reported then the preliminary estimates or basis of assumptions made for bulk density or specific gravity(s) must be stated.
- (ii) Specific gravity samples must be representative of the material for which a grade range is reported.

**MINERAL RESOURCES (B)**

See 2.4 A (i) and (ii).

- (i) Describe the method of bulk-density / specific-gravity determination with reference to the frequency of measurements, the size, nature and representativeness of the samples.
- (ii) The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the deposit.
- (iii) Discuss assumptions for bulk density estimates used in the evaluation process of the different materials

**MINERAL RESERVES (C)**

See 2.4 B (i) to (iii).

- (i) Include bulk densities for materials mined additional to the Mineral Resource to the same order of accuracy (such as waste, stripping and dilution material).

**ASSESSMENT CRITERION: T 2.5 General data**

**EXPLORATION RESULTS (A)**

- (i) All relevant general data should be discussed with reference to the nature, level of detail and confidence.

**MINERAL RESOURCES (B)**

**MINERAL RESERVES (C)**

**T 3. SAMPLING****ASSESSMENT CRITERION: T 3.1 Sampling governance****EXPLORATION RESULTS (A)**

- (i) Discuss the governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading, selective losses or contamination, core/hole diameter, internal and external QA/QC, and any other factors that may have resulted in or identified sample bias.
- (ii) State whether sample recoveries have been properly recorded and results assessed. In particular, state whether a relationship exists between sample recovery and grade, and sample bias (e.g. preferential loss/gain of fine/coarse material).

**MINERAL RESOURCES (B)****MINERAL RESERVES (C)****ASSESSMENT CRITERION:*****T 3.2 Sample method, collection, validation, capture and storage*****EXPLORATION RESULTS (A)**

- (i) Appropriately describe each data set (e.g. geology, grade, density, quality, diamond breakage, geo-metallurgical characteristics etc.), sample type, sample-size selection and collection methods. Data sets should include all

### EXPLORATION RESULTS (A)

relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc.

- (ii) Demonstrate that adequate field sampling process verification techniques (QA/QC) have been applied, e.g. the level of duplicates, blanks, reference material standards, process audits, analysis, etc. If indirect methods of measurement were used (e.g. geophysical methods), these should be described, with attention given to the confidence of interpretation.
- (iii) If the geometry of the mineralization with respect to the drill-hole angle is known, its nature should be reported. If it is not known and only the down-hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').
- (iv) Describe the validation procedures used to ensure the integrity of the data, e.g. transcription, input or other errors, between its initial collection and its future use for modelling (e.g. geology, grade, density, etc.)
- (v) Describe retention policy and storage of physical samples (e.g. core, sample reject, etc.)
- (vi) Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified. relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc.

### MINERAL RESOURCES (B)

See 3.2 A (i) to (vi).

- (i) Where mineral processing or metallurgical testing analyses have been carried out (bulk-sampling / trial mining), include the results of the testing, details of the testing methods and procedures, and a discussion of whether the samples are representative.

### MINERAL RESERVES (C)

See 3.2 B.

**ASSESSMENT CRITERION: T 3.3 Sample preparation****EXPLORATION RESULTS (A)**

- (i) Describe the location and accreditation of the laboratory or facility, summarizing the process and method used for sample preparation, sub-sampling and size reduction, and likelihood of inadequate or non-representative samples (i.e. improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.)
- (ii) For all sample types the nature, quality, verification and appropriateness of the sample-preparation technique should be discussed.
- (iii) If a drill-core sample is taken, state whether it was split or sawn and whether quarter, half or full core was submitted for analysis. If a non-core sample, state whether the sample was riffled, tube sampled, rotary split etc. and whether it was sampled wet or dry.
- (iv) Describe the quality control and quality assurance procedures adopted for all processes, including sub-sampling stages to maximize representivity of samples. This should include whether sample sizes are appropriate to the grain size of the material being sampled.
- (v) Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified

**MINERAL RESOURCES (B)**

See 3.3 A (i) to (v)

**MINERAL RESERVES (C)**

See 3.3 A (i) to (v)

**ASSESSMENT CRITERION: T 3.4 Sample analysis****EXPLORATION RESULTS (A)**

- (i) Identify the laboratory(s) and analytical method. Discuss the nature, quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.
- (ii) State the accreditation status and Registration Number of the laboratory. Laboratories should be appropriately accredited. If not, this fact should be disclosed.
- (iii) Discuss the nature of quality control procedures adopted and quality assurance thereof (e.g. reference material, standards, blanks, duplicates, external / referee laboratory checks) and state whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.
- (iv) Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified.

**MINERAL RESOURCES (B)**

See 3.4 A (i) to (iv).

**MINERAL RESERVES (C)**

See 3.4 B.

## T 4. INTERPRETATION/MODELLING

### ASSESSMENT CRITERION: T 4.1 Geological model and interpretation

#### EXPLORATION RESULTS (A)

- (i) Briefly describe the regional geology.
- (ii) Describe the geological model, level of investigation (e.g. conceptual, pre-feasibility etc.) and inferences made from this model.
- (iii) Discuss data density, distribution and reliability and whether the quality and quantity of information are sufficient to support statements, made or inferred, concerning the exploration target or deposit.
- (iv) Reliable geological models and/or maps and cross sections that support interpretations should exist.

#### MINERAL RESOURCES (B)

See 4.1 B (i) to (iv).

- (i) Describe the geological model, construction technique and assumptions. Discuss the sufficiency of data density to assure continuity of mineralization and geology and provide an adequate basis for the estimation and classification procedures applied.
- (ii) Describe the thoroughness (precision and accuracy) with which lithological, structural, mineralogical, alteration or other geological, geotechnical and geo-metallurgical characteristics were recorded.
- (iii) Discuss whether consideration was given to alternative interpretations or models and their possible effect (or potential risk) if any, on the Mineral Resource estimate.
- (iv) Discuss geological discounts (e.g. magnitude, per reef, domain, etc.), applied in the model, whether applied to mineralized and/or un-mineralized material (e.g. potholes, faults, dykes, etc).

#### MINERAL RESERVES (C)

See 4.1 B (i) to (iv).



**ASSESSMENT CRITERION: T 4.2 Estimation and modelling techniques****EXPLORATION RESULTS (A)**

- (i) If an exploration target or deposit is reported, then the estimation techniques used to determine the grade and tonnage ranges should be described in detail.

**MINERAL RESOURCES (B)**

- (i) Describe the determination of and estimation techniques applied to volume, density, grade, size distribution, value, geotechnical, geo-hydrological, geo-metallurgical or other appropriate models (e.g. section, polygon, inverse distance, geo-statistical or other method) should be stated and justified, together with key assumptions and implications thereof, including any adjustments made to data (i.e. compositing, grade cutting / capping), sample spacing, estimation unit size (block size), selective mining units, reconciliation, domaining and maximum distance of extrapolation from data points.
- (ii) Describe assumptions and justification of correlations made between variables.
- (iii) Discuss the block or grid cell size in relation to the average sample spacing and any assumptions behind modelling of selective mining units (and non-linear estimation techniques if used).
- (iv) Any relevant specialized computer program (software) used should be named (with the version number) together with a reference to where all the original files are stored for this specific model.
- (v) State the processes of checking and validation, the comparison of model information to sample data and use of reconciliation data, and whether the Mineral Resource estimate takes account of such information.
- (vi) Describe the assumptions made regarding the estimation of any by-products or deleterious elements.

**MINERAL RESERVES (C)**

See 4.2 B (i) to (vi).

## T 5. TECHNO-ECONOMIC STUDY (INCLUDING MODIFYING FACTORS)

### ASSESSMENT CRITERION: *T 5.1 Governmental*

#### EXPLORATION RESULTS (A)

- (i) A statement should be provided to the effect that such governmental requirements as may be required have been approved.

#### MINERAL RESOURCES (B)

See 5.1 A (i).

#### MINERAL RESERVES (C)

See 5.1 A (i).

**ASSESSMENT CRITERION: T 5.2 Environmental****EXPLORATION RESULTS (A)**

- (i) Describe any obvious environmental factors that could have a significant effect on the prospects of any possible exploration target or deposit.

**MINERAL RESOURCES (B)**

- (i) The necessary permits have been obtained, or there is reasonable basis to believe that all permits required for the project can be obtained.
- (ii) Describe any environmental factors that could have a material effect on the likelihood of eventual economic extraction. Discuss possible means of mitigation.

**MINERAL RESERVES (C)**

See 5.2 B (i) and (ii).

- (iii) A statement should be provided to the effect that all necessary permits have been approved
- (iv) Describe future yearly environmental liabilities / compliance methods and costs, including reclamation and closure and their planned funding.
- (v) Refer to Environmental Impact Study.

**ASSESSMENT CRITERION: T 5.3 Social****EXPLORATION RESULTS (A)****MINERAL RESOURCES (B)****MINERAL RESERVES (C)**

- (i) A statement should be provided to the effect that mandatory social-management programmes, if any, have been approved.

**ASSESSMENT CRITERION: T 5.4 Mining****EXPLORATION RESULTS (A)**

- (i) Describe any obvious mining factors that could have a significant effect on the prospects of any possible exploration target or deposit.

**MINERAL RESOURCES (B)**

See 5.4 A (i).

- (i) State the level of the techno / economic study – whether conceptual, pre-feasibility, feasibility or ongoing Life of Mine or strategic business plans.
- (ii) Disclose all assumptions made regarding possible mining methods, minimum mining dimensions (or pit shell) and internal and, if applicable, external) mining dilution.
- (iii) It may not always be possible to make assumptions regarding mining methods and parameters when estimating Mineral Resources. Where no mining assumptions have been made, this should be explained.

**MINERAL RESERVES (C)**

See 5.4 B (i) to (iii).

- (i) State what resource models have been used in the study.
- (ii) State and justify all modifying factors and assumptions made regarding mining methods, minimum mining dimensions (or pit shell) and internal and, if applicable, external) mining dilution used for the techno-economic study and signed-off, such as mining method, mine design criteria, infrastructure, capacities, production schedule, mining efficiencies, grade control, geotechnical and hydrological considerations, closure plans, and personnel requirements.
- (iii) Optimization methods used in planning, list of constraints (practicality, plant, access, exposed reserves, stripped reserves, bottlenecks, draw control).

**ASSESSMENT CRITERION: T 5.5 Treatment / Processing****EXPLORATION RESULTS (A)**

- (i) Describe any obvious processing factors that could have a significant effect on the prospects of any possible exploration target or deposit.

**MINERAL RESOURCES (B)**

- (i) Discuss the level of study, possible processing methods and any processing factors that could have a material effect on the likelihood of eventual economic extraction.
- (ii) The basis for assumptions or predictions regarding metallurgical amenability and any preliminary mineralogical test work should already be carried out.
- (iii) It may not always be possible to make assumptions regarding metallurgical processes and parameters when reporting Mineral Resources. Where no assumptions have been made, this should be explained.

**MINERAL RESERVES (C)**

- (i) Describe and justify the processing method(s) to be used, equipment, plant capacity, efficiencies, and personnel requirements.
- (ii) Discuss the nature, amount and representativeness of metallurgical test work undertaken and the recovery factors used. A detailed flow sheet / diagram and a mass balance should exist, especially for multi-product operations from which the saleable materials are priced for different chemical and physical characteristics.
- (iii) State what assumptions or allowances have been made for deleterious elements and the existence of any bulk-sample or pilot-scale test work and the degree to which such samples are representative of the ore body as a whole.
- (iv) The tonnages and grades reported as Mineral Reserves must be in respect of material delivered to the processing facility.

**ASSESSMENT CRITERION: T 5.6 Infrastructure****EXPLORATION RESULTS (A)****MINERAL RESOURCES (B)****MINERAL RESERVES (C)**

- (i) Report in sufficient detail to demonstrate that the necessary facilities have been allowed for (which may include, but not be limited to, processing plant, tailings dam, leaching facilities, waste dumps, road, rail or port facilities, power supply, offices, housing, security, resource sterilization testing etc.). Detailed maps showing locations of facilities should exist. Project milestones and completion dates should be stated.
- (ii) State assessment of value, ownership, type, extent and condition of plant and equipment that is significant to the existing operation(s).
- (iii) Statement showing that all necessary logistics have been considered (electricity, reagents, fuels).

**ASSESSMENT CRITERION: T 5.7 Economic criteria****EXPLORATION RESULTS (A)**

- (i) Not usually reported. If mentioned, however, factors significant to project economics should be current and based on generally accepted industry practice and experience. Assumptions should be clearly defined.

**MINERAL RESOURCES (B)**

- (i) In reporting, a Mineral Resource should meet the minimum requirement of 'reasonable prospects for eventual economic extraction.'
- (ii) State and define the reasonable and realistic assumptions / parameters (albeit preliminary, e.g. cut-off grade, cut-off screen size, product price or other criteria) used to assess eventual likelihood of economic extraction.
- (iii) These assumptions and factors should be reasonably developed and based on generally accepted industry practice and experience. If appropriate, state the level of study.
- (iv) If applied, the basis of equivalent metal formulae should be reported.
- (v) Resource sensitivity – detailed description of method used and results obtained.

**MINERAL RESERVES (C)**

- (i) For Mineral Reserves, parameters should be detailed with engineering completed to a pre-feasibility study level as defined in the SAMREC code.
- (ii) State, describe and justify all economic criteria that have been used for the study such as capital and operating costs, exchange rates, revenue / price curves, royalties, cut-off grades, reserve pay limits.
- (iii) Summary description of method used to estimate the commodity price profiles used for cut-off grade calculation, economic analysis and project valuation, including applicable taxes, inflation indices and exchange rates.



- (iv) The tonnages and grades reported as Mineral Reserves must be in respect of material delivered to the processing facility.
- (iv) Demonstrate that the product price assumptions are reasonable and supportable. Justify assumptions made concerning production cost and value of product. Consider transportation, treatment, penalties, exchange rates, marketing and other costs.
- (v) Allowances should be made for royalties payable, both to Government and private.
- (vi) Resource / Reserve sensitivity – detailed description of method used and results obtained.

### **ASSESSMENT CRITERION: T 5.8 Marketing**

#### **EXPLORATION RESULTS (A)**

- (i) Describe the valuable and potentially valuable product(s) including suitability of products to market.

#### **MINERAL RESOURCES (B)**

See 5.8 A (i)

#### **MINERAL RESERVES (C)**

- (i) *Describe product to be sold. Discuss whether there exists a ready market for the product and whether contracts for the sale of the product are in place or expected to be readily obtained*

## T 6. RISK ANALYSIS

### EXPLORATION RESULTS (A)

- (i) Generally not applied

### MINERAL RESOURCES (B)

- (i) Report any risk assessment completed to support the reasonable prospect of eventual economic extraction and disclose any material risks identified.

### MINERAL RESERVES (C)

- (i) Report a detailed assessment of technical, economic, political and other key risks to the project. Describe actions that will be taken to mitigate and/or manage the identified risks.

## T 7. RESOURCE AND RESERVE CLASSIFICATION CRITERIA

### EXPLORATION RESULTS (A)

- (i) For exploration targets and deposits, specific quantities and grades / qualities should be reported in ranges, the basis of which should be explained.

### MINERAL RESOURCES (B)

- (i) Describe and justify criteria and methods used as the basis for the classification of the Mineral Resources into varying confidence categories.
- (ii) Exceptions to the above should be discussed if they are material, and detailed reports thereof should exist.
- (iii) Discuss whether account has been taken of all relevant factors, i.e. relative confidence in tonnage / grade computations, density, quality, value and distribution of primary data and information, confidence in continuity of the geological and mineralization models.
- (iv) State whether the result appropriately reflects the Competent Person's view of the deposit.

### MINERAL RESERVES (C)

- (i) Describe and justify criteria and methods used as the basis for the classification of the Mineral Reserves into varying confidence categories, which should be based on the Mineral Resource category, and include consideration of the confidence in all the modifying factors.
- (ii) Discuss the proportion of Probable Mineral Reserves, which have been derived from Measured Mineral Resources (if any), including the reason(s) therefore.
- (iii) Only Measured and Indicated Resources can be considered for inclusion in the Mineral Reserve.
- (iv) Mineral Resources classified as Inferred Resources lack the requisite degree of confidence to be converted to a Reserve.
- (v) State whether the result appropriately reflects the Competent Person's view of the deposit.

## T 8. BALANCED REPORTING

### EXPLORATION RESULTS (A)

- (i) Where comprehensive reporting of all exploration results is not practicable, representative reporting of low and high-grades and widths should be practised together with their spatial location to avoid misleading the reporting of exploration results.
- (ii) Announcements by companies should comply with the SAMREC Code, where applicable, and insofar as they relate or refer to a Competent Person's report they should:
  - (a) Be approved in writing in advance of publication by the relevant Competent Person; and
  - (b) The Competent Person's relationship to the issuer of the report, if any, should be clearly defined.
- (iii) If grades are reported then it should be stated clearly whether these are regional averages or if they are selected individual samples taken from the property under discussion.

### MINERAL RESOURCES (B)

See 8.A (i) to (iii).

- (i) Mineral Resources should be stated as inclusive or exclusive of Mineral Reserves.
- (ii) Report the Mineral Resource statements with sufficient detail indicating the source and type of mineralization, such as open pit, underground, mineralization type, facies or ore body, surface dumps, stockpiles and all other sources
- (iii) The Mineral Resource will include all remnants, stockpiles, tailings, and existing pillars where there may be reasonable and realistic prospects for eventual economic extraction. Inclusion or exclusion of existing pillars into the Mineral Resource will be determined site-by-site taking into consideration factors such as size, shape, grade, location and historical and geotechnical factors. A detailed listing of such exclusions and reasons therefore, signed by a relevant Competent Person, should exist.

- (iv) Reconciliation – Report the reliability, of the current geological and resource models, and key assumptions, including the reliability of resource classifications. This should include a comparison with the previous Resource quantity and qualities, if available. Where appropriate, report and comment on any historic trends (e.g. global bias).

### MINERAL RESERVES (C)

See 8 B (i) to (iv).

- (i) Describe the Mineral Resource estimate used as a basis for the conversion to a Mineral Reserve.
- (ii) Caution should be exercised if Inferred Resources are considered in economic studies, and if included, full disclosure and the effect on the results of the economic studies should be stated.
- (iii) A comparison between the two possibilities, the one with inclusion and the one without inclusion, should be fully explained in the Public Report in such a way so as not to mislead the investors. Inferred Mineral Resources may not be reported as Mineral Reserves.
- (iv) The Mineral Reserve Statement should be reported with sufficient detail indicating the source and type of mineralization, such as open pit, underground, mineralization type, facies or ore body, surface dumps, stockpiles and all other sources.
- (v) State the proportion of the total Reserves that is likely to be mined within the current assured tenure timeframe.
- (vi) Reconciliation - Report historic reliability and reconciliation of the performance parameters, assumptions and modifying factors. This should include a comparison with the previous Reserve quantity and qualities, if available. Where appropriate, report and comment on any historic trends (e.g. global bias)

## T 9. AUDITS AND REVIEWS

### EXPLORATION RESULTS (A)

- (i) The overall conclusions of relevant audits or reviews, with specific reference to compliance to relevant Codes, where significant deficiencies and remedial actions should be disclosed.
- (ii) State type of review (e.g. independent, external) and name of the reviewer(s) together with their recognized professional qualifications.

### MINERAL RESOURCES (B)

*See 9 A (i) and (ii).*

- (i) The material results of any audits or reviews of Mineral Resource estimates. Specific reference regarding all material deficiencies and remedial actions should be disclosed.

### MINERAL RESERVES (C)

*See 9 A (i) and (ii).*

- (i) The material results of any audits or reviews of Mineral Reserve estimates. Specific reference regarding all material deficiencies and remedial actions should be disclosed.

## T 10. OTHER CONSIDERATIONS

### EXPLORATION RESULTS (A)

- (i) Description of any other material information that is likely to prevent or facilitate the economic potential of the project.
- (ii) A glossary of terms used in the report.

### MINERAL RESOURCES (B)

*See 10 A (i) and (ii).*

- (i) Discuss possible opportunities that may affect the Mineral Resource.

### MINERAL RESERVES (C)

*See 10 A (i) and (ii).*

- (i) While any other material information or opportunities affecting the project should be discussed, no material impediments to the profitable exploration of the property should remain.

## T 11. QUALIFICATION OF COMPETENT PERSON(S) AND OTHER KEY TECHNICAL STAFF. DATE AND SIGNATURE PAGE

### EXPLORATION RESULTS (A)

- (i) State the accountable Competent Person's full name, address, registration number and name of the professional body or ROPO, on behalf of the JSE Limited, of which he or she is a member. State the relevant experience, of the Competent Person and other key technical staff who prepared and are responsible for the Public Report.
- (ii) The Competent Person's relationship to the issuer of the report, if any, should be clearly defined.
- (iii) The Public Report should include a signature page for the Competent Person to attest to its release. Such page should include the date of sign-off and the effective date of the report.

### MINERAL RESOURCES (B)

See 11 A (i) to (iii).

### MINERAL RESERVES (C)

See 11 A (i) to (iii).