

# THE SOUTH AFRICAN CODE FOR THE REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES

## (THE SAMREC CODE)

### 2016 EDITION

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## GLOSSARY OF TERMS

Audit	A systematic and detailed examination of the Mineral Resource and Mineral Reserve, processes of estimation (including geological, geotechnical and other models), assumptions and conclusions undertaken in order to validate the appropriateness of the various components that contribute to the estimates of the Mineral Resource and Mineral Reserve. An Audit includes a detailed examination of the base data and validation of the Mineral Resources and Reserves estimates. When compliance with the SAMREC Code is declared and signed off, the audit must have been conducted by a Competent Person.
The Companies Act	The Companies Act No. 71 of 2008 of the Republic of South Africa, as amended, or any law that may wholly or in part replace it from time to time.
Competent Person's Report (CPR)	A report on the technical aspects of a project or mine prepared by a Competent Person (CP). The contents are determined by the nature/status of the project/mine being reported and may include a techno-economic model as appropriate for the level of study.
Dilution /Contamination	Low or zero grade (waste) material that is mined during the course of mining operations and thereby forms part of the Mineral Reserve
Effective Date	The date of the most recent scientific or technical information included in the technical report
Historical Estimate	An estimate of the quantity, grade, or metal or mineral content of a deposit that an issuer has not verified as a current Mineral Resource or Mineral Reserve. The estimate predates the issuing of the Code and/or was prepared before the issuer acquiring, or entering into an agreement to acquire, an interest in the property that contains the deposit.
Kimberlite Indicator Minerals (KIMs), Diamond Indicator Minerals (DIMs)	Garnet, chrome spinel, ilmenite and chrome diopside having the requisite chemical and physical properties that distinguish them from otherwise similar minerals found in non-diamond associated rock types.
Life of Mine Plan	A design and financial/economic study of an existing operation in which appropriate assessments have been made of existing geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational and all other Modifying Factors, which are considered in

## GLOSSARY OF TERMS

	sufficient detail to demonstrate that continued extraction is reasonably justified. Refer to Table 2 for guidance.
Licence, Permit, Right, Lease or similar entitlement	Any form of licence, permit, right or lease, 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/tenure of the minerals.
Material	Circumstances are considered material if omission or misstatement of the associated factor, constituent or information could influence the economic decisions of users. As a rule of thumb, this difference would normally be equal to or exceed 10%.
Material Information	Material information is any information relating to the business and affairs of a company that results in or would reasonably be expected to result in a significant change in the market price or value of any of the company's assets. Material information consists of both material facts and material changes related to the business and affairs of a company.
Microdiamonds	Diamonds typically less than 0.5 mm that are recovered from samples by total liberation. Microdiamonds are used to understand and predict the diamond size distribution in primary diamond deposits.
Mineable	Those parts of the orebody, both economic and uneconomic, that can be extracted during the normal course of mining.
Mine Design	A framework of mining components and processes taking into account such aspects as mining methods used, access to the orebody, personnel and material handling, ventilation, water, power, and other technical requirements, such that mine planning can be undertaken.
Mine Planning	Production planning and scheduling, within the Mine Design, taking into account such aspects as geological structures and Mineralisation and associated infrastructure and other constraints.
Mineral Deposit (or Deposit)	A mass of naturally occurring mineral material, usually of economic interest, without regard to mode of origin. No commercial value is implied.
Mineral Occurrence	Any solid mineral of potential economic interest in any

## GLOSSARY OF TERMS

	concentration found in bedrock or as float; especially a valuable (or potentially valuable) mineral in sufficient concentration to suggest further exploration.
Mineralisation	A concentration (or occurrence) of material of possible economic interest, in or on the Earth's crust, for which quantity and quality cannot be estimated with sufficient confidence to be defined as a Mineral Resource. Mineralisation is not classified as a Mineral Resource or Mineral Reserve and can only be reported under Exploration Results. The data and information relating to it must be sufficient to allow a considered and balanced judgement of its significance.
mineralisation	The process or processes by which a mineral or minerals are introduced into rock, resulting in a potentially valuable deposit. It is a general terms, incorporating various types, e.g. fissure filling, impregnation, replacement, etc.
Ore Reserve	Although the term Mineral Reserve is used throughout this Code, it is recognised 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.
Residue / low grade stockpile / tailings	Material resulting from mining or processing operations.
Review	A systematic and detailed inspection or examination of any element of the Mineral Resource and/or Mineral Reserve estimation process undertaken in order to validate adherence to standards and procedures, identify material errors and/or omissions or improvements. A review might include a detailed examination of the base data. When compliance with the SAMREC Code is declared, the review must have been conducted by a Competent Person.
Recognised Professional Organisation (RPO)	<p>A RPO must:</p> <ol style="list-style-type: none"> <li>1. Be a self-regulatory organisation 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 organisation;</li> <li>4. Have disciplinary powers, including the power to suspend or expel a member; and</li> </ol>

## GLOSSARY OF TERMS

	5. Have been accepted by SSC Committee as an RPO.
SAMREC	The South African Mineral Resource Committee
SAMVAL Committee	The South African Mineral Asset Valuation Committee
significant project	An exploration or mineral development project that has or could have a significant influence on the market value or operations of the listed company, and/or has specific prominence in Public Reports and announcements.
SSC Committee	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 Geomatics Council (SAGC), the Institute of Mine Surveyors of Southern Africa (IMSSA), the Association of Law Societies of South Africa, the General Council of the Bar of South Africa, the Department of Mineral Resources (DMR), the JSE Limited (JSE), the Council for Geoscience, the Banking Association of South Africa, Directorate of Mineral Economics/Minerals Bureau, the Chamber of Mines of South Africa (CoM), South African Institute of Chartered Accountants (SAICA) and the Investment Analysts Society of South Africa (IAS).

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, IMSSA and SAGC, and it is binding on members of these organisations. For background information and the history of the development of the Code, please refer to the SAMREC Code, March 2000. A second edition of the SAMREC code was issued in 2007 with an amendment being issued in 2009. This 2016 edition supersedes the previous editions of the Code.

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 definitions for the reporting of Mineral Resources and Mineral Reserves.

As a result of the CRIRSCO/ICMM 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 standard definitions published in the CRIRSCO Reporting Template 2013.



## INTRODUCTION

- 2 The Code is applicable to the reporting of all styles of solid mineralisation or economic deposit. Certain commodities, namely coal, diamonds/gemstones and industrial minerals, have specific additional reporting requirements and these are dealt with from Clause 48 onwards. The Code does not apply to oil, gas or water. The South Africa Oil and Gas Code (SAMOG) is applicable for oil and gas.

In this third edition of the SAMREC Code, which supersedes all previous editions, the Code is presented predominantly in normal typeface. **Definitions are highlighted in bold text in orange boxes and form part of the Code.** *Guidelines are in italics in grey boxes and are placed after the respective Code clauses to provide assistance and guidance to readers when interpreting the Code.*

The SSC recognises 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 ([www.samcode.co.za](http://www.samcode.co.za)) from time to time, after due process has been followed.

## 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 which are 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.

<b>Definition</b>	<b>Public Reports are reports prepared for the purpose of informing investors or potential investors and their advisers on Exploration Results, Mineral Resources or Mineral Reserves. They include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations.</b>
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These Public Reports may be in printed or electronic media (including social media) and will include JSE circulars, reports as required by the Companies Act, reports for other regulatory authorities or as required by law.

<p><b>Guidance</b></p>	<p><i>For companies issuing annual reports or other summary reports, all material information relating to Exploration Results, Mineral Resources and Mineral Reserves shall be included. Where a summary is presented, it should be clearly stated that it is a summary, with a reference attached giving the location of the Public Reports or Public Reporting as reported under the Code 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.</i></p> <p><i>A company's direct economic interest in the operation / project should be declared and the basis for the determination should be disclosed.</i></p> <p><i>It is recognised 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 company documents or Competent Persons' Reports prepared as a basis for, or in support of, a Public Report. It is recognised that situations may arise in which such supporting documentation, prepared by Competent Persons for company or other private use, may not specifically be prepared in terms of the guidelines of the Code. In such situations, it is recommended that the documentation should include a prominent statement to this effect.</i></p> <p><i>Public Reporting refers to any documentation which may find its way into the public domain. It refers not only to reporting or documentation by companies listed on a Securities Exchange, but also includes documents compiled by/for private companies or individuals. While every effort has been made within the Code to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists as to the appropriate form of disclosure. On such occasions, users of the Code and those compiling reports to comply with the Code should be guided by its intent, which is to provide a minimum standard for Public Reporting and the guidelines of materiality, transparency and competence, and to ensure that such reporting contains all information which stakeholders, interested parties, investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making of a reasoned and balanced judgment regarding the Exploration Results, Mineral Resources or Mineral Reserves being reported.</i></p> <p><i>Estimation of Mineral Resources and Mineral Reserves is inherently subject to some level of uncertainty and inaccuracy. Considerable skill and experience may be needed to interpret pieces of information, such as geological maps and analytical results based on samples that commonly represent only a small part of a mineral deposit. The uncertainty in the estimates should be discussed in documentation or Competent Persons' Reports and, where material, in Public Reports, and reflected in the appropriate choice of Mineral Reserve and Mineral Resource categories.</i></p>
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- 4 The Code takes into account issues of a global nature while addressing certain circumstances unique to South Africa. The following principles must 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.

**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.

<b>Guidance</b>	<i>The Competent Person should not remain silent on any issue for which the presence or absence of comment could impact the public perception or value of the deposit.</i>
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**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.

<b>Guidance</b>	<i>The author of the Public Report should be satisfied that: his/her work has not been unduly influenced by the organisation, company or person commissioning a report or any report that may be deemed a Public Report; that 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.</i>
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- 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, residue or low grade stockpiles, and having been formed by or subjected to a geological process and including sand, stone, rock, gravel, clay, soil and any mineral occurring in stockpiles or in residue deposits but excluding water, oil and gas.

- 6 Table 1 provides a list of the main criteria that must be considered and reported upon when reporting on Exploration Results, Mineral Resources and Mineral Reserves

In the context of complying with the principles of the Code, comments relating to the items in the relevant sections of Table 1 shall be provided on an 'if not, why not' basis within the Competent Person's Report. The compilation of Table 1 must be undertaken for (i) the first-time declaration of Exploration Results, a Mineral Resource or a Mineral Reserve, and (ii) in instances where these items have materially changed from when they were last Publicly Reported for significant projects. Reporting on an 'if not, why not' basis ensures that it is clear to an investor or other stakeholders whether items have been considered and deemed of low consequence or are not yet addressed or resolved.

<b>Guidance</b>	<p><i>For the purposes of the Code the phrase ‘if not, why not’ means that each item listed in the relevant section of Table 1 should be discussed, and if it is not discussed then the Competent Person should explain why it has been omitted from the documentation.</i></p> <p><i>A material change could be a change in the estimated tonnage or grade or in the classification of the Mineral Resource or Mineral Reserve. A material change in relation to a significant project should be considered by taking into account all of the relevant circumstances, including the understanding of the deposit and the style of mineralisation, Modifying Factors etc. This includes considering whether the change in estimates is likely to have a material effect on the price or value of the mineral asset or of the company.</i></p> <p><i>Additional disclosure is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results; for example, poor sample recovery, poor repeatability of assay or laboratory results, etc.</i></p> <p><i>By reporting Exploration Results, Mineral Resources and/or Mineral Reserves in terms of the guidelines of the Code or where reference is made to the Code, whether reported publicly or not, the Competent Person takes full responsibility for the declaration. In these instances, a report detailing all aspects of the work shall be prepared that should be available, if requested. The report cannot be reasonably withheld and should be made available within a timeframe relevant to the immediate situation.</i></p>
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## 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.

Where announcements by companies reference the SAMREC Code, the announcement must be approved in writing in advance of publication by the relevant Competent Person.

9	<b>Definition</b>	A 'Competent Person' is a person who is registered with SACNASP, ECSA or SAGC, or is a Member or Fellow of the SAIMM, the GSSA, IMSSA or a Recognised Professional Organisation (RPO). These organisations have enforceable disciplinary processes including the powers to suspend or expel a member. A complete list of recognised organisations will be promulgated by the SSC from time to time. The Competent Person must comply with the provisions of the relevant promulgated Acts.
10	<b>Definition</b>	A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person 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.

<p><b>Guidance</b></p>	<p><i>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 mineralisation, experience in high-nugget, vein-type mineralisation 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 mineralisation, 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.</i></p> <p><i>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.</i></p> <p><i>In addition to experience in the style of mineralisation, 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.</i></p> <p><i>If a lead Competent Person is appointed, 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, who may be Competent Persons in their own right, is acceptable and that the constituent parts of the report have been signed off by such contributors.</i></p> <p><i>The lead Competent Person reporting on Exploration Results or 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.</i></p> <p><i>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 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 Mineral Resource data, another for the Mineral Resource estimation process, another for the mining study, and the lead Competent Person acting as project leader should accept overall responsibility for the report.</i></p> <p><i>A site visit to or inspection of the mineral property being evaluated should be undertaken by the Competent Person(s) and appropriate member(s) of the team. If a site visit is not undertaken, the reasons should be given, which may include non-materiality. Where work was undertaken prior to the inspection, a declaration by the Competent Person that the work has been validated and the information can be relied on, should be made.</i></p>
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- 11 Complaints made in respect of a Public Report of a Competent Person will be subject to the complaints procedures of the SSC.

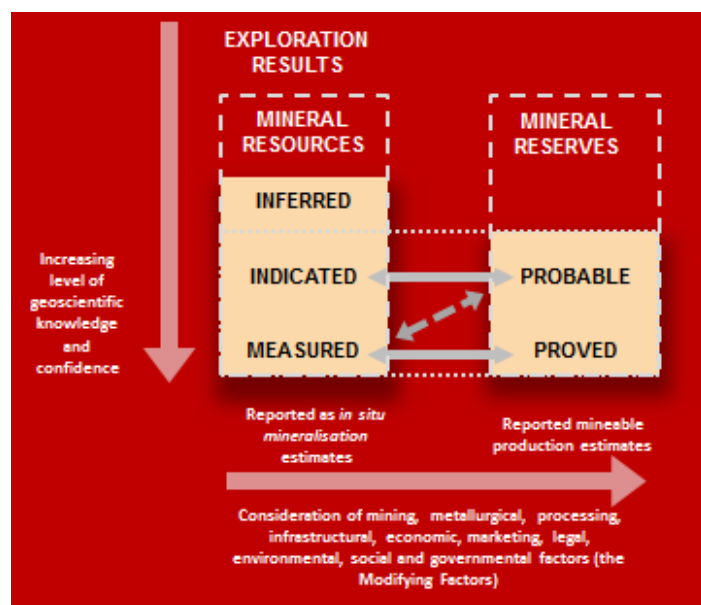
## REPORTING TERMINOLOGY

- 12 Public Reports dealing with Exploration Results, Mineral Resources and Mineral Reserves shall use only the terms Proved or Probable Mineral Reserves, Measured, Indicated or 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.

<b>Definition</b>	<b>Modifying Factors are considerations used to convert Mineral Resources to Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.</b>
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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 must be fully explained.



**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 mineralisation.
- 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 48 to 59, which contain amendments and additions that take precedence over all common clauses.
- 16 When reporting on commodity-specific requirements for Diamond Resources and Diamond Reserves (or Gemstone Resources and Gemstone Reserves), use must be made of Clauses 60 to 72, which contain amendments and additions that take precedence over all common clauses.
- 17 When reporting on commodity-specific requirements for Industrial Minerals, use must be made of Clause 73, which contains amendments and additions that take precedence over all common clauses.
- 18 When reporting of Exploration Results, Mineral Resources or Mineral Reserves for polymetallic deposits in terms of metal equivalents, use must be made of Clause 74, which contains amendments and additions that take precedence over all common clauses.
- 19 Throughout the Code, where appropriate, 'quality' may be substituted for 'grade' while '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

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<b>Definition</b>	<b>Exploration Results include data and information generated by mineral exploration programmes that might be of use to investors but which do not form part of a declaration of Mineral Resources or Mineral Reserves</b>
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Exploration Results may not be part of a formal declaration of Mineral Resources or Mineral Reserves, and must not be presented in a way that unreasonably implies the discovery of potentially economic Mineralisation.

Exploration Results must include relevant data and information relating to the mineral property – both positive and negative.

Exploration data and information may include survey, geological, geophysical, geochemical, sampling, drilling, trenching, analytical testing, assaying, mineralogical, metallurgical and other information, where available. At least some physical evidence of assumed continuity of the Mineralisation on the property of interest must be presented by the Competent Person.

Historical data and information may also be included if, in the considered opinion of the Competent Person, it is relevant and reliable, giving reasons for such conclusions.

The data and information may be derived from adjacent or nearby properties if the Competent Person can provide justification of continuity for such an association. The actual data and/or information must be appropriately described and presented where not already in the public domain.

<b>Guidance</b>	<p><i>Balanced reporting is required. Reporting of selected results/data/information such as isolated assays, isolated drill-holes, assays of panned concentrates or supergene-enriched soils or surface samples, without placing them into perspective, is therefore unacceptable. When assay and analytical results are reported, one of the following methods, selected as the most appropriate by the Competent Person, should 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 mineralised zones, indicating clearly how the grades were estimated.</i></p> <p><i>If true widths of Mineralisation are not reported, an appropriate qualifying statement should be included in the Public Reports.</i></p>
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## REPORTING OF EXPLORATION TARGETS

21

<b>Definition</b>	<b>An Exploration Target is a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade or quality, relates to mineralisation for which there has been insufficient exploration to estimate Mineral Resources.</b>
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It is recognised that a company may comment on and discuss its Exploration Target in terms of size and type. However, any such comment in a Public Report must comply with the following requirements.

An Exploration Target is a concept of mineralisation with respect to type, quantity and quality, which would be of interest to an exploration or mining company. There must be a likelihood that this exploration target occurs in an area of geological prospectivity for that commodity and mineralisation type. An Exploration Target need not represent any discovered Mineralisation, nor does it imply reasonable prospects for possible economic extraction.

Any such information relating to an Exploration Target must, however, be expressed so that it cannot be misrepresented or misconstrued as an estimate of a Mineral Resource or Mineral Reserve. The terms Resource or Reserve must not be used in this context. Details of the Exploration Target may not appear in any tabulation of Mineral Resources or be included in a Scoping Study, Pre-Feasibility or Feasibility study.

<b>Guidance</b>	<i>When discussing Exploration Targets, the Competent Person should clearly describe the rationale for such selection, including the geological model on which it is based, as well as justification for any statements of conceptual quantity and quality. In addition, the intended exploration work programme to explore for the target should be included, detailing the extent of the proposed exploration activities, the planned timeframe and the anticipated costs. Public Reporting of an Exploration Target shall not be done unless supported by exploration. Without an explicit exploration work programme on a specific mineral property held by the Company, public reporting of an Exploration Target should be regarded as being solely speculative.</i>
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'Mineralisation' as used in the Code, is defined as a concentration (or occurrence) of material of possible economic interest, in or on the Earth's crust, for which quantity and quality cannot be estimated with sufficient confidence to be defined as a Mineral Resource.

Mineralisation is not classified as a Mineral Resource or Mineral Reserve and can only be reported under Exploration Results. The data and information relating to it must be sufficient to allow a considered and balanced judgement of its significance.

- 22 Any information relating to Exploration Results, Exploration Targets or Mineralisation must not be expressed or misrepresented as an estimate of Mineral Resource or Mineral Reserve. The term Mineral Resource(s) or Mineral Reserves(s) must not be used in this context. Any statement referring to potential quantity, quality and content, as appropriate, must be substantiated and include a detailed explanation of the basis for the statement and a proximate statement, with the same prominence, 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 could result in the determination of a Mineral Resource.

A cautionary statement may not be by way of a footnote and a general disclaimer elsewhere in the disclosure document will not satisfy this requirement.

<b>Guidance</b>	<i>'Same prominence' is defined as the same font type and size, and 'proximate location' is defined as the cautionary statement being included in the same paragraph as or immediately following the reported Exploration Results.</i>
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Where the statement includes information relating to ranges of tonnages and grades these must be represented as approximations. The explanatory text must include a description of the process used to determine the grade and tonnage ranges used to describe the Exploration Target or Mineralisation.

<b>Guidance</b>	<p><i>Any statement referring to quantity and quality should reflect the lack of reliable data. The conceptual nature of the statement should be expressed either through the use of 'order of magnitude', including appropriate descriptive terms (such as 'approximately', 'in the order of', etc.), or as 'ranges', which is defined as the variation between the lowest and highest relevant Exploration Results – the use of ranges in this context has no statistical relevance.</i></p> <p><i>Appropriate rounding should be used to express the level of uncertainty of the estimates. By way of example, 'approximately one to two million tonnes at a grade of 3-5% Cu' or 'an Exploration Target of more than 100 million tonnes of coal in excess of 16 MJ/kg for power generation markets' would be acceptable, but not '2 ±0.2 million tonnes'. When estimates are quoted, statements of both quantity and quality should be provided. It is not permissible to quote one without the other.</i></p> <p><i>Estimates of potential quantity and quality should, preferably, be made in terms of volume (or area) and not tonnage. If, however, target tonnages are reported then the preliminary estimates, or basis of assumptions, made for bulk density should be stated.</i></p>
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- 23 Given the level of uncertainty surrounding the supporting data, the tonnage or grade of Mineralisation or an Exploration Target must not be reported as a 'headline statement' in a Public Report.

If Mineralisation or an Exploration Target is shown pictorially (for instance as cross-sections or maps) or with a graph, it must be accompanied by text that meets the requirements above (Clauses 21 and 22).

A Public Report that includes Mineralisation or an Exploration Target must be accompanied by a Competent Person's statement taking responsibility for the form and context in which the Mineralisation or Exploration Target appears in the Report.

## REPORTING OF MINERAL RESOURCES

24	<p><b>Definition</b> A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade or quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.</p>
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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.

Any Mineralisation that does not have demonstrated reasonable prospects for eventual economic extraction may not be included in a Mineral Resource. The Competent Person must disclose and discuss the parameters used to support the concept of 'eventual'.

Geological evidence and knowledge required for the estimation of Mineral Resources must include sampling data of a type, and at spacings, appropriate to the geological, chemical, physical, and mineralogical complexity of the mineral occurrence, for all classifications of Inferred, Indicated and Measured Mineral Resources.

A Mineral Resource cannot be estimated in the absence of sampling information.

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

<b>Guidance</b>	<p><i>The term Mineral Resource covers in-situ Mineralisation as well as residues, low grade stockpiles or tailings that have been identified and estimated through exploration or assessment and sampling and from which Mineral Reserves may be derived by the application of Modifying Factors.</i></p> <p><i>A Mineral Resource is not an inventory of all Mineralisation drilled or sampled, regardless of cut-off grades, likely mining dimensions, location or continuity. It is a record of Mineralisation that, at the time of reporting and under assumed and justifiable technical and economic conditions, might become economically</i></p>
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*extractable. Any Mineralisation that does not qualify as a Mineral Resource should not be described as such. Certain reports (e.g. exploration/prospecting reports to Government and other similar reports not intended primarily for providing information for investment purposes) may require full disclosure of all Mineralisation, including some material that does not have reasonable prospects for eventual economic extraction. Such estimates of Mineralisation would not qualify as Mineral Resources or Mineral Reserves in terms of the SAMREC Code.*

*Reasonable prospects for eventual economic extraction should be demonstrated through the application of an appropriate consideration of the potential viability of Mineral Resources. Such a consideration should include a reasoned assessment of the geological, mining engineering, processing, metallurgical, legal, infrastructural, environmental, marketing, socio-political and economic assumptions which, in the opinion of the Competent Person, are likely to influence the prospect of economic extraction. All of the issues listed in Table 1, under 'Reasonable prospects for eventual economic extraction' should be discussed at the level appropriate for the specific investigation.*

*If criteria such as deleterious minerals or physical properties are of more relevance than the composition of the bulk mineral itself, then they should be reported accordingly.*

*The determination of reasonable prospects for eventual economic extraction should be based on the principle of reasonableness, and should be justifiable and defensible. The assumptions used to test for reasonable prospects should be reasonable and within known/assumed tolerances or have examples of precedence. These assumptions should be applied at an appropriate and reasonable scale, and may differ from those used for conversion of Mineral Resources to Mineral Reserves and should be appropriate to the definition of Mineral Resources in terms of precision, accuracy, degree of confidence and variability.*

*Where untested practices are applied in the determination of 'reasonable prospects', the use of the proposed practices for reporting of the Mineral Resource should be justified by the Competent Person in the Public Report.*

*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 a life of mine of 50 years or more. However for other deposits, application of the concept would normally be restricted to a life of mine of perhaps 20 to 30 years and frequently much shorter periods.*

*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. Should part or all of the anticipated mining take place after the tenement has expired, it should be stated in the Public Report.*

*Where considered appropriate by the Competent Person, Mineral Resource estimates may include Mineralisation below the selected cut-off grade to ensure that the Mineral Resource consists of bodies of Mineralisation of adequate*



	<i>grade, quality, 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 (in addition to cut-off grades, Mineral Resources can also be defined by geological constraints, which may include, but are not limited to, structure, stratigraphic boundaries, or geometallurgical/mineralogical constraints). Documentation of Mineral Resource estimates should clearly define any such inclusions, and Public Reports should include commentary on the matter, if considered material.</i>
25	<p><b>Definition</b></p> <p><b>An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.</b></p> <p><b>An Inferred Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve.</b></p> <p><b>It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.</b></p>

Where the Mineral Resource being reported is predominantly an Inferred Mineral Resource, sufficient supporting information must be provided to enable the reader to evaluate and assess the risk associated with the reported Mineral Resource.

An Inferred Mineral Resource can be based on interpolation between widely spaced data where there is reason to expect geological continuity of Mineralisation. The extent of extrapolation outside of the nominal drill or sampling grid spacing must be justified. The report must contain sufficient information to inform the reader of:

- The maximum distance that the Mineral Resource is extrapolated beyond the sample points;
- The proportion of the Mineral Resource that is based on extrapolated data;
- The basis on which the Mineral Resource is extrapolated to these limits; and
- A diagrammatic representation of the Inferred Mineral Resource showing clearly the extrapolated part of the estimated Resource.

<b>Guidance</b>	<p><i>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.</i></p> <p><i>While it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur.</i></p>
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- 26 It is accepted that mine design and planning may include a proportion of Inferred Mineral Resources. If this category is considered in mine design, mine 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 a mine plan exists and a statement of Mineral Reserves that states 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 if included in the Life of Mine Plan.

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

27	<p><b>Definition</b></p> <p><b>An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.</b></p> <p><b>Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.</b></p>
	<p><b>Guidance</b></p> <p><i>An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted to a Probable Mineral Reserve. An Indicated Mineral Resource has a higher level of confidence than that applying to an Inferred Mineral Resource.</i></p> <p><i>A deposit or part of a deposit may be classified as an Indicated Mineral Resource when the nature, quality, amount and distribution of data are such as to allow the Competent Person determining the Mineral Resource to confidently interpret the geological framework and to assume physical and grade continuity of Mineralisation. Confidence in the estimate is sufficient to allow the appropriate application of technical and economic parameters to prepare incremental mine plans and production schedules and to enable an evaluation of economic viability. Overall confidence in the estimates is high, while local confidence is reasonable. The Competent Person should recognise the importance of the Indicated Mineral Resource category in the advancement of the feasibility of the project.</i></p> <p><i>An Indicated Mineral Resource estimate should be of sufficient quality to support detailed technical and economic studies leading to Probable Mineral Reserves which can serve as the basis for development decisions. It is imperative that data exists in the area of the Indicated Mineral Resource.</i></p>

28	<b>Definition</b>	<p><b>A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.</b></p> <p><b>Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.</b></p> <p><b>A Measured Mineral Resource has a higher level of confidence than that applying to either an Indicated Mineral Resource or an Inferred Mineral Resource. It may be converted to a Proved Mineral Reserve or to a Probable Mineral Reserve.</b></p>
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Depending upon the level of confidence in the various Modifying Factors it may be converted to a Proved Mineral Reserve (high confidence in Modifying Factors), Probable Mineral Reserve (some uncertainty in Modifying Factors) or may not be converted at all (low or no confidence in some of the Modifying Factors; or no plan to mine, e.g. pillars in an underground mine or outside economic pit limits).

<b>Guidance</b>	<p><i>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 Mineralisation 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 mineralisation.</i></p> <p><i>A Measured Mineral Resource estimate should be of sufficient quality to support detailed technical and economic studies leading to Mineral Reserves which can serve as the basis for major development decisions.</i></p>
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- 29 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.

<b>Guidance</b>	<p><i>Mineral Resource classification is a matter for skilled judgement and a Competent Person should take into account those items in Table 1 that relate to confidence in Mineral Resource estimation.</i></p> <p><i>In many cases it will be understood that overall tonnages, densities, shapes, physical characteristics, grades or qualities and mineral contents can be estimated with higher levels of confidence, and local tonnages, densities, shapes, physical characteristics, grades or qualities and mineral contents can be estimated only with lower levels of confidence, insufficient for detailed mine planning.</i></p> <p><i>The Competent Person should take into consideration issues of the style of mineralisation and cut-off grade when assessing geological and grade continuity for the purposes of classifying the Mineral Resource.</i></p> <p><i>Cut-off grades chosen for the estimation should be realistic in relation to the style of mineralisation and the anticipated mining and metallurgical development options.</i></p>
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- 30 The Mineral Resource statement is a summary report of the Mineral Resource estimates, with key assumptions used in their derivation as per the guidelines in Table 1. Details regarding Exploration Targets, Exploration Results or Mineralisation may not be included in Mineral Resource statements.
- 31 Public Reports of Mineral Resources must specify one or more of the categories of 'Inferred', 'Indicated' or 'Measured'. Reports must not contain Mineral Resource information combining two or more of the categories unless information for the individual categories is also provided.

Mineral Resources must not be aggregated with Mineral Reserves. This is not to be confused with inclusive reporting of Mineral Reserves.

<b>Guidance</b>	<p><i>Estimates of tonnage and grade outside of the categories covered by the Code may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports is not permitted.</i></p> <p><i>Mineral Resource estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Mineral Resources and the nature of the adjustment or modification described.</i></p>
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- 32 A Mineral Resource must not be reported in terms of contained mineral content (or metal equivalents) unless corresponding tonnages and grades of individual elements (and recoveries) are also reported.
- 33 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. Reports and statements must continue to refer to the appropriate category or categories of Mineral Resources until technical feasibility and economic viability have been established. If re-evaluation indicates that the Mineral Reserve is no longer viable, the Mineral Reserves must be reclassified as Mineral Resources or removed from Mineral Resource/Reserve statements.

<b>Guidance</b>	<i>It is not intended that reclassification from Mineral Reserves to Mineral Resources or vice versa should be applied as a result of changes expected to be of a short term or temporary nature. Examples of such situations might be commodity price fluctuations expected to be of short duration, mine emergencies of a non-permanent nature, transport strike, etc.</i>
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- 34 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.

<b>Guidance</b>	<p><i>Rounding off should convey the uncertainties in estimation.</i></p> <p><i>In order to emphasise 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'.</i></p> <p><i>Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Mineral Resource estimates with consideration of at least sampling, analytical and estimation errors. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).</i></p>
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## REPORTING OF MINERAL RESERVES

35	<p><b>Definition</b></p> <p><b>A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource.</b></p> <p><b>It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.</b></p> <p><b>The reference point at which Mineral Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.</b></p>
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Mineral Reserves are reported as inclusive of diluting and contaminating 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.

<p><b>Guidance</b></p>	<p><i>Commodity prices and exchange rates used for Mineral Reserve estimation should be disclosed.</i></p> <p><i>For commodities traded on metal exchanges, reasonable forward-looking prices should be used. Such prices should be based on historic price averages and should be disclosed. However, for commodities not traded on metal exchanges, it is recognised that disclosure of a specific price may put a company at a competitive disadvantage, and this should be stated.</i></p> <p><i>When commodity prices are disclosed, disclosure can be as a single price estimate equal to that used for Mineral Reserve determination, or as a range of prices within which no material change in Mineral Reserves would occur.</i></p> <p><i>Whether or not the commodity prices used to estimate Mineral Reserves are published, the method used to determine those prices should be disclosed.</i></p> <p><i>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.</i></p> <p><i>Mineral Reserves are subdivided 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.</i></p> <p><i>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 and application of the requirements of a Pre-feasibility or Feasibility Study. What constitutes the term ‘realistically assumed’ will vary with the type of deposit, the level of study that has been</i></p>
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|    | <p>carried out, and the economic 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.</p> <p>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 applying any other modifying factor, should be clearly described in the Public Report.</p> <p>When reporting Mineral Reserves, a sensitivity analysis should be conducted. The disclosure of commodity price and other economic assumptions used for this analysis is recommended</p> <p>The Code does not imply that an economic operation should 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.</p> |
| 36 | <p><b>Definition</b> A Probable Mineral Reserve is the economically mineable part of an Indicated, and in some circumstances, a Measured Mineral Resource.</p> <p>The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.</p>   |
| 37 | <p><b>Definition</b> A Proved Mineral Reserve is the economically mineable part of a Measured Mineral Resource. A Proved Mineral Reserve implies a high degree of confidence in the Modifying Factors.</p>  |
- 38 The categorisation 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.



<b>Guidance</b>	<p><i>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.</i></p> <p><i>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 a Mineral Resource to a Mineral Reserve result in a lower degree of confidence in the Mineral Reserve than in the corresponding Mineral Resource. Such a conversion would not imply a reduction in the level of geoscientific knowledge or confidence.</i></p> <p><i>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 directly to a Proved Mineral Reserve (Figure 1).</i></p> <p><i>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 Public Report. These expectations should be borne in mind when categorising a Mineral Resource as Measured.</i></p>
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- 39 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...

<b>Guidance</b>	<p><i>Rounding off should convey the uncertainties in estimation.</i></p> <p><i>In order to emphasise the imprecise nature of a Mineral Reserve estimate, the final results should always be referred to as an estimate, not a calculation</i></p>
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- 40 Public Reports of Mineral Reserves must not contain combined Proved and Probable Mineral Reserves unless the relevant information for each of the categories is also provided. Reports must not present mineral contents unless corresponding tonnages and grades are given. Reporting using metal equivalents must be in accordance with Clause 74.

<b>Guidance</b>	<p><i>Mineral Reserves may incorporate diluting and contaminating 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 should be exercised if attempting to draw conclusions from a comparison of the two.</i></p> <p><i>Public Reporting of tonnages and grades outside the categories covered by the Code is not permitted, although the information may be useful to a company in its internal evaluations.</i></p>
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- 41 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 must be made to enable material variances to be understood by the reader.
- 42 In situations in which 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.

<b>Guidance</b>	<p><i>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 should be made clear which form of reporting has been adopted. Appropriate forms of clarifying statements may be:</i></p> <p><i>‘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’.</i></p> <p><i>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.</i></p> <p><i>For reasons stated in the first guideline of Clause 40 and in this paragraph, the reported Mineral Reserve cannot be added to the reported Mineral Resource. 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.</i></p>
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- 43 The above clauses apply equally to low-grade Mineralisation, often intended for stockpiling and treatment towards the end of the life of the mine.

If some portion of stope-fill or stockpile, residue or low grade stockpiles, 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. Mineralised 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 itemised separately as Mineral Resources or Mineral Reserves in Public Reports, although they may be aggregated in total Mineral Resources and total Mineral Reserves.

## TECHNICAL STUDIES

- 44 A mining project typically passes through exploration, Mineral Resource estimation and design phases; each of which involves rapidly escalating levels of investment. Each phase requires an increasing level of economic and technical assessment with increasing levels of confidence for the project design, scheduling, costs and risks; to justify progression of the project to the next investment level.

<b>Guidance</b>	<p><i>Table 2 provides guidance in terms of the level of Technical Studies.</i></p> <p><i>The Code does not require that a full Feasibility Study has to be undertaken to convert Mineral Resources to Mineral Reserves, but it does require that at least a Pre-Feasibility Study or Life of Mine Plan will have been carried out to determine that the mine plan/production profile is technically achievable and economically viable, and that material Modifying Factors have been considered to an appropriate level of confidence.</i></p> <p><i>During early exploration, some level of economic analysis may be carried out by a company on exploration data which might not include Mineral Resource estimates to assess the potential for the project to proceed to the next phase of exploration. These analyses are considered to be a part of the exploration programme planning and are solely for internal company decision-making purposes. They are not for public disclosure.</i></p>
45 <b>Definition</b>	<p><b>A Scoping Study is an order of magnitude technical and economic study of the potential viability of Mineral Resources that includes appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably justified.</b></p>

<p><b>Guidance</b></p>	<p><i>The accuracy of a Scoping Study should be informed by Table 2 and assumptions based on industry benchmarks, vendor productivity information and the experience of the Competent Person.</i></p> <p><i>If Inferred Mineral Resources are used the required disclosure as set out in Clause 26 of the Code should be applied and the entity should include a proximate cautionary statement with the same prominence, such as:</i></p> <p><i>'The Scoping Study referred to in this report is based on preliminary technical and economic assessments. It is preliminary in nature, and includes Inferred Mineral Resources which are insufficient to provide certainty that the conclusions of the Scoping Study will be realised.'</i></p> <p><i>A Scoping Study may not include historical estimates, Exploration Results, Exploration Targets or Mineralisation.</i></p> <p><i>A Scoping Study should include appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary for the Competent Person to demonstrate, at the time of reporting, whether or not the project is potentially viable and if it can be reasonably justified to recommend proceeding to a Pre-Feasibility Study.</i></p> <p><i>Although initial mining and metallurgical plans may have been developed during a Scoping Study, the Scoping Study may not be used as the basis for the estimation of Mineral Reserves.</i></p>
<p>46 <b>Definition</b></p>	<p><b>A Pre-Feasibility Study is a comprehensive study of a range of options for the technical and economic viability of a mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Mineral Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study</b></p>
<p><b>Guidance</b></p>	<p><i>The purpose of the Pre-Feasibility Study (PFS) is to provide information to justify the decision to proceed to a Feasibility Study, to continue data collection and assessment, or to abandon the project. It is the lowest acceptable level of study for the conversion of Mineral Resources to Mineral Reserves.</i></p> <p><i>The accuracy of the inputs to a PFS should be informed by Table 2 and derived from vendor budget quotes for major items combined with current cost database, benchmarking against similar projects with current or similar site labour costs, scale of operations and productivities etc.</i></p> <p><i>A PFS may include Measured and Indicated Mineral Resources, or a combination of these. If Inferred Mineral Resources are used the required disclosure as set out in Clause 26 of the Code should be applied. No part of an</i></p>

	<i>Inferred Mineral Resource may contribute to a Mineral Reserve. Historical estimates, Exploration Results, Exploration Targets and Mineralisation may not be included in a PFS.</i>
47	<p><b>Definition</b> <b>A Feasibility Study is a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable Modifying Factors together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may 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 confidence level of the study will be higher than that of a Pre-Feasibility Study</b></p> <p><b>Guidance</b> <i>The accuracy of the inputs for a Feasibility Study (FS) should be informed by Table 2 and should be derived from multiple vendor quotes for major items combined with a current cost database, current site labour costs, site specific productivities, detailed materials cost to site, etc.</i></p>

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

- 48 This part of the Code addresses matters specific to the Public Reporting of Coal Resources and Coal Reserves. Clauses 1 to 47 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' must replace the terms 'Mineral' and 'Ore'; 'coal deposit' must replace 'mineralisation'; 'coal quality' must replace 'grade'; and 'yield' must replace 'mineral content' throughout both the Code and the guidelines. For Coal Reserves, all references to 'metallurgical' Modifying Factors must be replaced by 'coal processing' Modifying Factors.
- 49 Addition to Clause 6.
- 'The Systematic Evaluation of Coal Deposits, Coal Exploration Results, Inventory Coal, Coal Resources and Coal Reserves' (SANS 10320) provides the methodologies and definitions of the relevant terms that must be considered when preparing reports on Coal Resources and Coal Reserves.
- 50 Replacement of Figure 1 with Figure 2, which is Coal-specific
- Public Reports of Coal Exploration Results, 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'.



51 Amendment to Clause 25

<b>Definition</b>	An 'Inferred Coal Resource' is that part of a Coal Resource for which quantity and coal quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply but not verify geological and grade or quality continuity. An Inferred Coal Resource has a lower level of confidence than that applying to an Indicated Coal Resource and must not be converted to a Coal Reserve. It is reasonably expected that the majority of Inferred Coal Resources could be upgraded to Indicated Coal Resources with continued exploration
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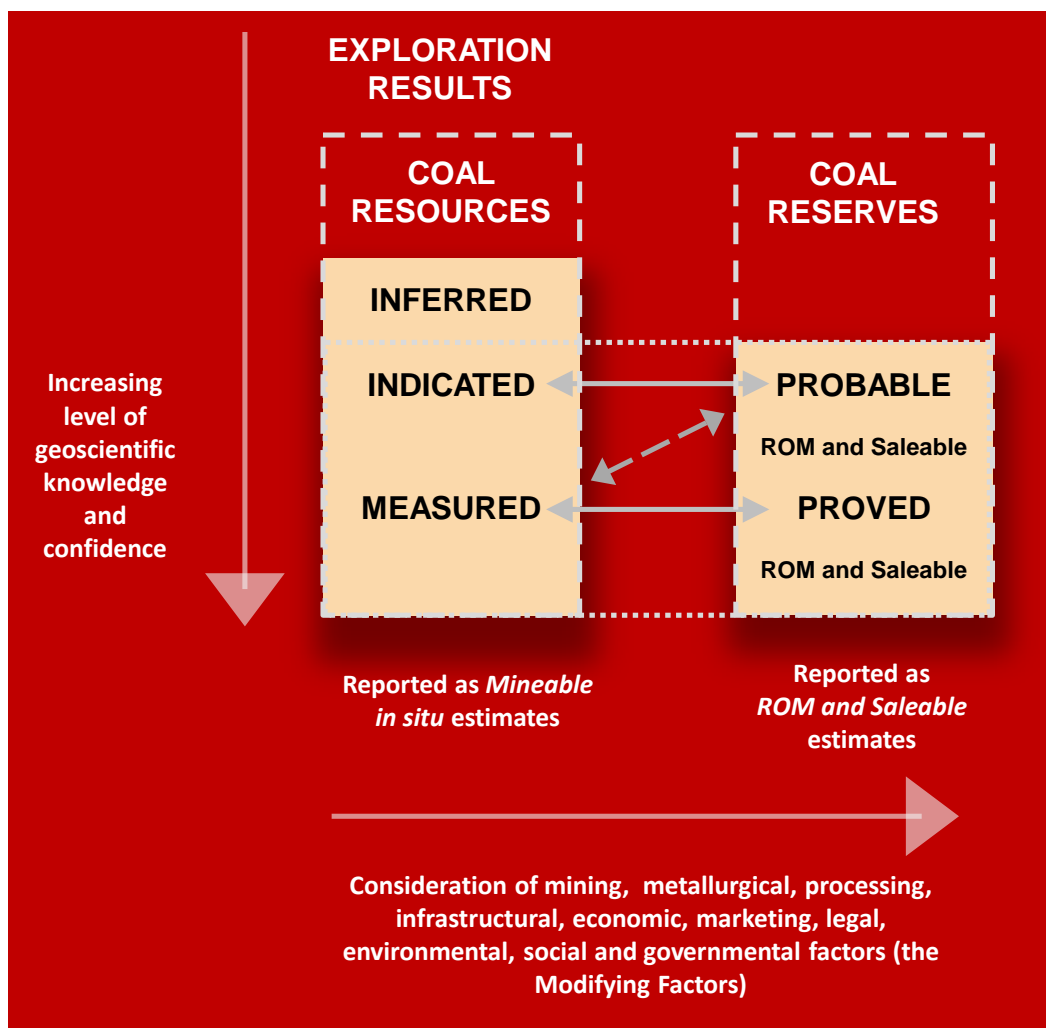
Although it would be reasonable to expect that the majority of Inferred Coal Resources would upgrade to Indicated Coal Resources with continued exploration, due to the uncertainty of Inferred Coal Resources it must not be assumed that such upgrading will always occur.

52 Amendment to Clause 26

<b>Definition</b>	<p>An 'Indicated Coal Resource' is that part of a Coal Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.</p> <p>Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade or quality continuity between points of observation.</p> <p>An Indicated Coal Resource has a lower level of confidence than that applying to a Measured Coal Resource and may only be converted to a Probable Coal Reserve.</p>
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53



**Figure 2: Relationship between Coal Resources and Coal Reserves**

54 Amendment to Clause 27

<b>Definition</b>	<p>A 'Measured Coal Resource' is that part of a Coal Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.</p> <p>Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.</p> <p>A Measured Coal Resource has a higher level of confidence than that applying to either an Indicated Coal Resource or an Inferred Coal Resource. It may be converted to a Proved Coal Reserve or to a Probable Mineral Reserve.</p>
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## 55 Addition to Clause 24

<b>Definition</b>	A 'Mineable Tonnes In Situ Coal Resource' is the tonnage and coal quality, at a specified moisture content, contained in the coal seam or section of the seams, which is proposed to be mined at the theoretical mining height, adjusted by the geological loss factors and de-rating for previous mining activities, with respect to a specific mining method and after the relevant minimum and maximum mineable thickness cut-offs and relevant coal quality cut-off parameters have been applied.
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Mineable Tonnes In Situ (MTIS) Coal Resources are subdivided in order of increasing geoscientific knowledge and confidence into Inferred, Indicated or Measured categories.

The MTIS Coal Resource must be reported.

56 <b>Definition</b>	A 'Run of Mine' (ROM) Coal Reserve is the tonnage and coal quality, at a specified moisture content, contained in the coal seam or section of the coal seam, at the practical mining height, which is expected to be recovered after all geological losses, mining losses, dilution, contamination and moisture correction factors have been applied.
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ROM Coal Reserves is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors, and such studies and assessments must demonstrate that at the time of reporting extraction and marketing of the saleable products derived from the ROM Coal Reserves could reasonably be justified.

The ROM Coal Reserve must be reported separately for surface mining operations and for underground mining operations. The ROM Coal Reserve is subdivided in order of increasing confidence into Probable ROM Coal Reserve and Proved ROM Coal Reserve categories.

For each category of ROM Coal Reserve, the confidence levels in the Modifying Factors must be disclosed.

The ROM Coal Reserve must be reported.

57 <b>Definition</b>	A 'Saleable Coal Reserve' is the tonnage and coal quality derived from the ROM Coal Reserve that will be available for sale, either as a raw ROM coal product at a specified moisture content or after beneficiation of the ROM Coal Reserve by coal processing operations has produced coal products at specified qualities, size ranges and moisture contents.
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Saleable Coal Reserves are defined by studies at Pre-Feasibility or Feasibility level, as appropriate, that include application of Modifying Factors, and such studies and assessment must demonstrate that at the time of reporting, the extraction and marketing of the saleable products is commercially justified. The predicted practical yield and basis of the predicted yield to achieve the Saleable Coal Reserve must be stated.

The Saleable Coal Reserve must be subdivided into the relevant coal product types. The Saleable Reserve is subdivided in order of increasing confidence into Probable Saleable Coal Reserve and Proved Saleable Coal Reserve categories.

For each category of Saleable Coal Reserve, the confidence levels in the Modifying Factors must be disclosed.

The Saleable Coal Reserve must be reported.

- 58 The 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.

The quality of the coal must be expressed according to parameters relevant to specific applications of coal products e.g. steam coal, types of metallurgical coal, etc.

- 59 Addition to Clause 43:

Low grade coal stockpiles anticipated from a future mining and coal processing operation in a defined Life of Mine Plan may be reported as a Coal Resource if there are reasonable prospects of eventual economic extraction.

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

**(also applies to other GEMSTONES, as applicable)**

- 60 This part of the Code addresses matters specific to the Public Reporting of Diamond Exploration Results, Diamond Resources and Diamond Reserves. Clauses 1 to 47 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' must replace the term 'Mineral' and 'grade and average diamond value' must replace 'grade and mineral content' wherever applicable. In this part of the Code. References to diamonds can equally be applied to other gemstones, unless otherwise stated.

The following (Clauses 60 to 72) are amendments to the Code to be applied in the case of diamond (and other gemstone) projects. Where Clauses 1 to 47 have not been specifically amended, the original Clauses are still applicable, simply substituting 'Diamond' (or other gemstone) for 'Mineral' where appropriate.

Figure 1 must be replaced with Figure 3, which is diamond-specific

Public Reports of Diamond Resources and Diamond Reserves must use only the terms set out in Figure 3. Any reference to 'Figure 1' in the Code must be substituted by a reference to 'Figure 3'.

The SAMREC Guideline Document for the Reporting of Diamond Exploration Results, Diamond Resources and Diamond Reserves (and other Gemstones, where Relevant) ('SAMREC Diamond Guidelines'), as updated from time to time, provides the methodologies and definitions of the relevant terms that shall be considered when preparing reports on Diamond Resources and Diamond Reserves.

Supplementary guidelines are available in the 'Guidelines for the Reporting of Diamond Exploration Results' issued by the Diamond Exploration Best Practices Committee established by the Canadian Institute of Mining, Metallurgy and Petroleum. This, and other industry guidelines on the estimation and reporting of Diamond Resources and Reserves, may be useful but will not, under any circumstances, override the provisions and intentions of the SAMREC Code and the SAMREC Diamond Guidelines.

- 61 A Diamond Resource estimate shall identify separate geological domains where applicable. For each geological domain, a size frequency distribution, grade and diamond value estimate must be established, and a bottom size cut-off shall be stated. Reports of diamonds recovered from sampling programmes must describe the nature of the sample, how the sample was taken and the method used to recover diamonds from the sample. The mass of diamonds recovered may only be omitted from the report when the diamonds are considered to be too small to be of

commercial significance.

A Diamond Resource or Diamond Reserve shall not be stated without an estimate of the average diamond value/revenue, which shall be based on a complete run-of-mine, or representative bulk-sample, parcel of diamonds that has been recovered from the project property.

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

Mineral chemistry does not provide direct grade or diamond value information, and shall not be used to infer these parameters for Diamond Resource estimation purposes.

- 62 Any valuation of a parcel of diamonds shall be based on a sales document or a report from a demonstrably reputable and qualified expert whose qualifications, credentials, affiliations and independence/non-independence must be presented.
- 63 Where the valuation is used in the estimation of Diamond Resources or Diamond Reserves, the valuation shall be based on a parcel representative of the size and assortment of the diamond populations in the deposit. The Competent Person shall explain the rationale behind the parcel size that has been used in the estimation of value for the Diamond Resource or Diamond Reserve and the level of confidence in the estimate.
- 64 The minimum representative size of the valuation parcel depends on the characteristic stone distribution and quality of stones in the deposit. For all valuations (irrespective of Diamond Resource classification), associated diamond size frequency distributions shall be provided, along with a discussion of the relevant applicable parcel size.
- 65 Amendment to Clauses 20 to 22
- For diamond exploration programmes, Exploration Targets, Mineralisation, Diamond Resources and Reserves, the term 'quality' must not be used as a substitute for 'grade.' The use of 'grade' and 'value' helps avoid confusion with diamond quality, which is one aspect of the diamond assortment.
- 66 Amendment to Clause 21

<b>Definition</b>	<b>A 'Diamond Exploration Target' is a statement, or estimate, of the exploration potential of a diamond deposit in a defined geological setting.</b>
<b>Guidance</b>	<i>For example this may refer to a kimberlite target, a particular river or stretch of river, a stratigraphically defined sedimentary unit or sequence, or an area of marine deposits, which is considered to have diamond potential.</i>

'Diamond Mineralisation', as used in the Code, is defined as a concentration (or occurrence) of diamonds of possible economic interest, in or on the Earth's crust, for which quantity and quality cannot be estimated with sufficient confidence to be defined as a Diamond Resource.



Portions of a Diamond Exploration Target or Diamond Mineralisation that do not have demonstrated reasonable prospects for eventual economic extraction must not be included in a Diamond Resource.

67 Amendment to Clause 24

<b>Definition</b>	A 'Diamond Resource' is a concentration or occurrence of diamonds of economic interest in or on the Earth's crust in such form, quantity (volume/tonnage), grade and value that there are reasonable prospects for eventual economic extraction. The location, quantity, grade, value, continuity and other geological characteristics of a Diamond Resource are known, or estimated from specific geological evidence, sampling and knowledge interpreted from an appropriately constrained and portrayed geological model. Diamond Resources are subdivided, and must be so reported, in order of increasing confidence in respect of geoscientific evidence into Inferred, Indicated or Measured categories.
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Any Diamond Mineralisation that does not have demonstrated reasonable prospects for eventual economic extraction may not be included in a Diamond Resource.

68 Amendment to Clause 25

<b>Definition</b>	<p>An 'Inferred Diamond Resource' is that part of a Diamond Resource for which quantity, grade and average diamond value are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to imply, but not verify, geological and grade continuity.</p> <p>An Inferred Diamond Resource has a lower level of confidence than that applying to an Indicated Diamond Resource and must not be converted to a Diamond Reserve. It is reasonably expected that the majority of Inferred Diamond Resources could be upgraded to Indicated Diamond Resources with continued exploration.</p>
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The diamond parcel may be too small to be a reasonable representation of the diamond assortment.

69 Amendment to Clause 26

<b>Definition</b>	<p>An 'Indicated Diamond Resource' is that part of a Diamond Resource for which quantity, grade, or value, density, shape and physical characteristics of the deposit are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.</p> <p>Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade continuity between points of observation.</p> <p>An Indicated Diamond Resource has a lower level of confidence than that applying to a Measured Diamond Resource and may only be converted to a Probable Diamond Reserve.</p>
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The sampling and/or testing locations may be too widely or inappropriately spaced to confirm geological and grade continuity but are spaced closely enough for continuity to be assumed, and sufficient diamonds must have been recovered to allow a reasonable estimate of average diamond value (c.f. Clause 65).

70 Amendment to Clause 27

<b>Definition</b>	<p><b>A 'Measured Diamond Resource' is that part of a Diamond Resource for which quantity, grade or value, density, shape, and physical characteristics of the deposit are estimated with sufficient confidence to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.</b></p> <p><b>Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade continuity between points of observation.</b></p> <p><b>A Measured Diamond Resource has a higher level of confidence than that applying to either an Indicated Diamond Resource or an Inferred Diamond Resource. It may be converted to a Proved Diamond Reserve or to a Probable Diamond Reserve.</b></p>
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The sampling and/or testing 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.

71 Amendment to Clause 36

<b>Definition</b>	<p><b>A 'Probable Diamond Reserve' is the economically mineable part of an Indicated, and in some circumstances, a Measured Diamond Resource.</b></p> <p><b>The confidence in the Modifying Factors applying to a Probable Diamond Reserve is lower than that applying to a Proved Diamond Reserve</b></p>
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There must be a high degree of confidence in the diamond revenue model if a Probable Diamond Reserve is declared.

72 Amendment to Clause 37

<b>Definition</b>	<p><b>A 'Proved Diamond Reserve' is the economically mineable part of a Measured Diamond Resource. A Proved Diamond Reserve implies a high degree of confidence in the Modifying Factors</b></p>
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There must be high degree of confidence in the diamond revenue model if a Measured Diamond Reserve is declared.

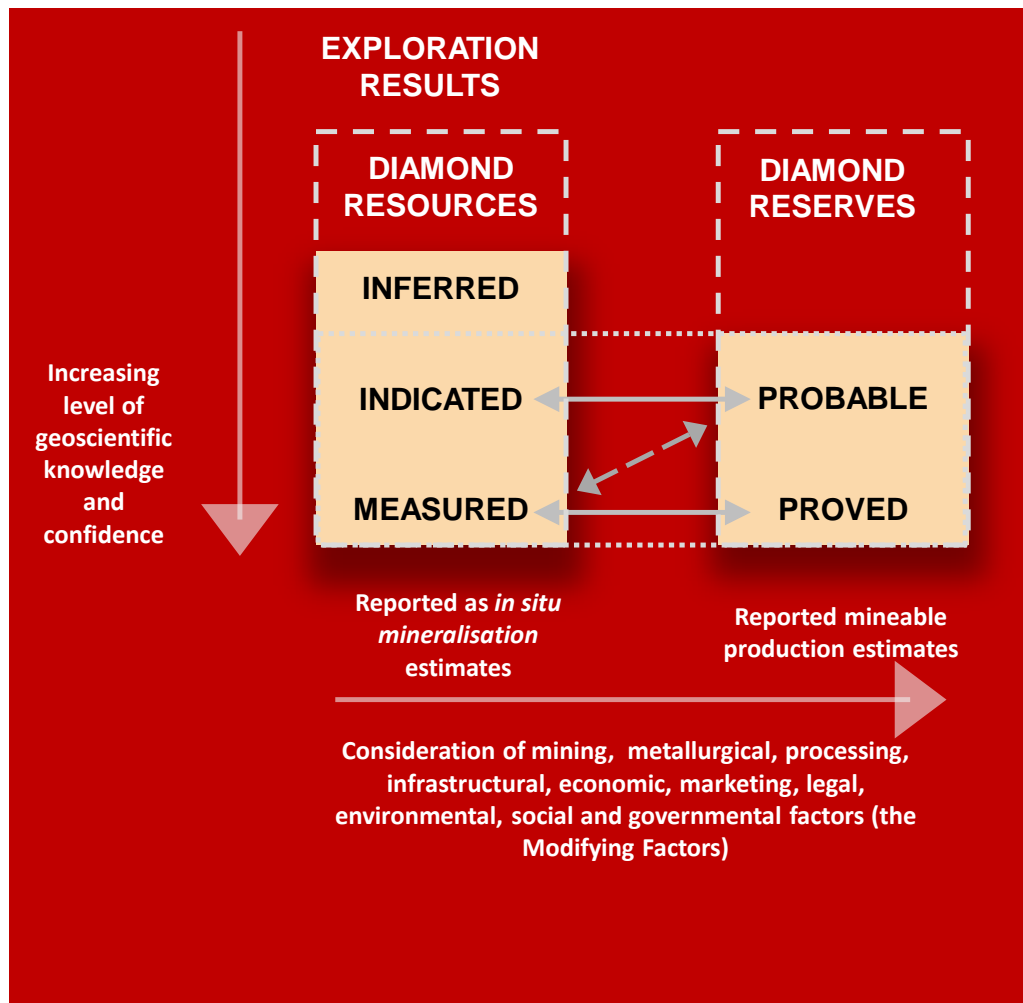


Figure 3: Relationship between Diamond Resources and Diamond Reserves

# REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR INDUSTRIAL MINERALS

- 73 Industrial minerals are covered by the SAMREC Code if they meet the criteria set out in Clauses 5 and 6 of the Code. For the purpose of the SAMREC Code, industrial minerals can be considered to cover commodities such as kaolin, phosphate, limestone, talc, etc.

For minerals that are defined by a specification, the Mineral Resource or Mineral Reserve estimation must be reported in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals.

<b>Guidance</b>	<p><i>When reporting information and estimates for industrial minerals, the key principles and purpose of the SAMREC Code apply and should be borne in mind. Assays may not always be relevant, and other quality criteria may be more applicable. If criteria such as deleterious minerals or physical properties are of more relevance than the composition of the bulk mineral itself, then they should be reported accordingly.</i></p> <p><i>The factors underpinning the estimation of Mineral Resources and Mineral Reserves for industrial minerals are the same as those for other commodities/deposit types covered by the SAMREC Code. It may be necessary, prior to the reporting of a Mineral Resource or Mineral Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability. For some industrial minerals, it is common practice to report the saleable product rather than the 'as-mined' product, which is traditionally regarded as the Mineral Reserve. If the saleable product is reported, it should be in conjunction with, not instead of, reporting of the Mineral Reserve. However, it is recognised that commercial sensitivities may not always permit this style of reporting. It is important that, in all situations where the saleable product is reported, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.</i></p> <p><i>Some industrial mineral deposits may be capable of yielding products suitable for more than one application and/or specification. If considered material by the Competent Person, such multiple products should be quantified either separately or as a percentage of the deposit.</i></p>
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## REPORTING OF METAL EQUIVALENTS

- 74 The reporting of Exploration Results, Mineral Resources or Mineral Reserves for polymetallic deposits in terms of metal equivalents (a single equivalent grade of one major metal) must show details of all material factors contributing to the net value derived from each constituent.

The following minimum information must accompany any Public Report that includes reference to metal equivalents, in order to conform to the principles of Transparency, Materiality and Competence, as set out in Clause 4:

- Individual grades for all metals included in the metal equivalent calculation;
- Commodity prices adjusted for smelter/refinery terms for all metals (Public Reports should include the actual assumed prices. It is not sufficient to refer to a spot price without disclosing the price used in calculating the metal equivalent. However, where the actual prices used are commercially sensitive, the Competent Person must disclose sufficient information, perhaps in narrative rather than numerical form, for investors to understand the methodology it has used to determine these prices);
- Metallurgical recoveries for all metals and discussion of the basis on which the assumed recoveries are derived (smelter/refinery recoveries, metallurgical testwork, detailed mineralogy, similar deposits, etc.);
- A clear statement that it is the Competent Person's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold; and
- The calculation formula used.

In most circumstances, the metal chosen for reporting on an equivalent basis should be the one that contributes most to the metal equivalent calculation. If this is not the case, a clear explanation of the logic of choosing another metal must be included in the Public Report.

Estimates of metallurgical recoveries for each metal must be used to calculate meaningful metal equivalents.

Reporting on the basis of metal equivalents is not appropriate if metallurgical recovery information is not available or cannot be estimated with reasonable confidence.

<b>Guidance</b>	<i>For many projects at the Exploration Results stage, metallurgical recovery information may not be available or able to be estimated with reasonable confidence. In such cases reporting of metal equivalents may be misleading and metal equivalents shall not be reported.</i>
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<b>SAMREC TABLE 1</b>	
<b>PRELUDE</b>	
<b>Table 1 is applicable to all declarations in terms of the guidelines of the SAMREC Code</b>	
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.	
In the context of complying with the principles of the Code, comment on the relevant sections of Table 1 must be provided on an 'if not, why not' basis within the Competent Person's Report and must be provided where required according to the specific requirements of Clauses 6, 31 and 34. This is to ensure that it is clear to the reader whether items have been considered and deemed to be of low consequence or have yet to be addressed or resolved.	
Transparency, competency and materiality are overriding principles that determine what information should be publicly reported. The Competent Person must provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported.	
The order and grouping of criteria in Table 1 reflect the normal systematic approach to exploration and evaluation. The table should be approached from left to right. In other words, criteria in the first column, Exploration Results, should be considered to apply also when reporting Mineral Resources and Mineral Reserves. Similarly, additional criteria in the Mineral Resources column apply also to Mineral Reserves reporting. Some criteria apply to only Exploration Results, Mineral Resources or Mineral Reserves.	
Identify the units of measure, currency and relevant exchange rates	

SAMREC TABLE 1				
Exploration Results		Mineral Resources		Mineral Reserves
Section 1: Project Outline				
1.1	Property Description	(i)	Brief description of the scope of project (i.e. whether in preliminary sampling, advanced exploration, scoping, pre-feasibility, or feasibility phase, Life of Mine plan for an ongoing mining operation or closure).	
		(ii)	Describe (noting any conditions that may affect possible prospecting/mining activities) topography, elevation, drainage, fauna and flora, the means and ease of access to the property, the proximity of the property to a population centre, and the nature of transport, the climate, known associated climatic risks and the length of the operating season and to the extent relevant to the mineral project, the sufficiency of surface rights for mining operations including the availability and sources of power, water, mining personnel, potential tailings storage areas, potential waste disposal areas, heap leach pad areas, and potential processing plant sites.	
		(iii)	Specify the details of the personal inspection on the property by each CP or, if applicable, the reason why a personal inspection has not been completed.	
1.2	Location	(i)	Description of location and map (country, province, and closest town/city, coordinate systems and ranges, etc.).	
		(ii)	Country Profile: describe information pertaining to the project host country that is pertinent to the project, including relevant applicable legislation, environmental and social context etc. Assess, at a high level, relevant technical, environmental, social, economic, political and other key risks.	
		(iii)	Provide a general topocadastral map	Provide a Topo-cadastral map in sufficient detail to support the assessment of eventual economics. State the known associated climatic risks.
1.3	Adjacent Properties	(i)	Discuss details of relevant adjacent properties 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.	
1.4	History	(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.	

SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
Section 1: Project Outline			
1.4	History	(ii) Present details of previous successes or failures with reasons why the project may now be considered potentially economic.	
		(iii) Discuss known or existing historical Mineral Resource estimates and performance statistics on actual production for past and current operations.	
		(iv) Discuss known or existing historical Mineral Reserve estimates and performance statistics on actual production for past and current operations.	
1.5	Legal Aspects and Permitting	Confirm the legal tenure to the satisfaction of the Competent Person, including a description of the following:	
		(i) Discuss 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. Disclose the date of expiry and other relevant details.	
		(ii) Present 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 authorisations).	
		(iii) Present 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. State details of applications that have been made.	
		(iv) Provide a statement of any legal proceedings for example; land claims, that may have an influence on the rights to prospect or mine for minerals, or an appropriate negative statement.	
		(v) Provide a statement relating to governmental/statutory requirements and permits as may be required, have been applied for, approved or can be reasonably be expected to be obtained.	
1.6	Royalties	(i) Describe the royalties that are payable in respect of each property.	

SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
Section 1: Project Outline			
1.7	Liabilities	(i)	Describe any liabilities, including rehabilitation guarantees that are pertinent to the project. Provide a description of the rehabilitation liability, including, but not limited to, legislative requirements, assumptions and limitations.

SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
Section 2: Geological Setting, Deposit, Mineralisation			
2.1	Geological Setting, Deposit, Mineralisation	(i)	Describe the regional geology.
		(ii)	Describe the project geology including deposit type, geological setting and style of mineralisation.
		(iii)	Discuss the geological model or concepts being applied in the investigation and on the basis of which the exploration program is planned. Describe the inferences made from this model.
		(iv)	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 Mineralisation.
		(v)	Discuss the significant minerals present in the deposit, their frequency, size and other characteristics. Includes minor and gangue minerals where these will have an effect on the processing steps. Indicate the variability of each important mineral within the deposit.
		(vi)	Describe the significant mineralised zones encountered on the property, including a summary of the surrounding rock types, relevant geological controls, and the length, width, depth, and continuity of the mineralisation, together with a description of the type, character, and distribution of the mineralisation
		(vii)	Confirm that reliable geological models and / or maps and cross sections that support interpretations exist.

**SAMREC TABLE 1**

			Exploration Results	Mineral Resources	Mineral Reserves
<b>Section 3: Exploration and Drilling, Sampling Techniques and Data</b>					
3.1	Exploration	(i)	Describe the data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e. geological observations, remote sensing results, stratigraphy, lithology, structure, alteration, mineralisation, hydrology, geophysical, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content, bulk samples etc.). Confirm that data sets include all relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc.		
		(ii)	Identify and comment on the primary data elements (observation and measurements) used for the project and describe the management and verification 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. It is assumed that data are stored digitally but hand-printed tables with well organized data and information may also constitute a database.		
		(iii)	Acknowledge and appraise data from other parties and reference all data and information used from other sources.		
		(iv)	Clearly distinguish between data / information from the property under discussion and that derived from surrounding properties		
		(v)	Describe the survey methods, techniques and expected accuracies of data. Specify the grid system used.		
		(vi)	Discuss whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the estimation procedure(s) and classifications applied.		
		(vii)	Present representative models and / or maps and cross sections or other two or three dimensional illustrations of results, showing location of samples, accurate drill-hole collar positions, down-hole surveys, exploration pits, underground workings, relevant geological data, etc		
		(viii)	Report the relationships between mineralisation widths and intercept lengths. The geometry of the mineralisation with respect to the drill hole angle is particularly important. If it is not known and only the down-hole lengths are reported, confirm it with a clear statement to this effect (e.g. 'down-hole length, true width not known').		
3.2	Drilling Techniques	(i)	Present the type of drilling undertaken (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Banka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).		



SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
Section 3: Exploration and Drilling, Sampling Techniques and Data			
3.2	Drilling Techniques	(ii)	Describe whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, technical studies, mining studies and metallurgical studies.
		(iii)	Describe whether logging is qualitative or quantitative in nature; indicate if core photography. (or costean, channel, etc) was undertaken
		(iv)	Present the total length and percentage of the relevant intersections logged.
		(v)	Results of any downhole surveys of the drill hole to be discussed.
		(i)	Describe the nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.
3.3	Sample method, collection, capture and storage	(ii)	Describe the sampling 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. Indicate whether sample compositing has been applied.
		(iii)	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
		(iv)	Report the geometry of the mineralisation with respect to the drill-hole angle. State whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. State if the intersection angle is not known and only the downhole lengths are reported.
		(v)	Describe retention policy and storage of physical samples (e.g. core, sample reject, etc.)
		(vi)	Describe the method of recording and assessing core and chip sample recoveries and results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples and whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 3: Exploration and Drilling, Sampling Techniques and Data				
3.3	Sample method, collection, capture and storage	(vii)	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.	
3.4	Sample Preparation and Analysis	(i)	Identify the laboratory(s) and state the accreditation status and Registration Number of the laboratory or provide a statement that the laboratories are not accredited.	
		(ii)	Identify the 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.	
		(iii)	Describe 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.)	
3.5	Sampling Governance	(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)	Describe the measures taken to ensure sample security and the Chain of Custody.	
		(iii)	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.)	
		(iv)	Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified.	
3.6	Quality Control/Quality Assurance	(i)	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.	

SAMREC TABLE 1				
	Exploration Results	Mineral Resources	Mineral Reserves	
Section 3: Exploration and Drilling, Sampling Techniques and Data				
3.7	Bulk Density	(i)	Describe the method of bulk density determination with reference to the frequency of measurements, the size, nature and representativeness of the samples.	
		(ii)	If target tonnage ranges are reported state the preliminary estimates or basis of assumptions made for bulk density.	
		(iii)	Discuss the representivity of bulk density samples of the material for which a grade range is reported.	
		(iv)	Discuss the adequacy of the methods of bulk density determination for bulk material with special reference to accounting for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the deposit.	
3.8	Bulk-Sampling and/or trial-mining	(i)	Indicate the location of individual samples (including map).	
		(ii)	Describe the size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.	
		(iii)	Describe the method of mining and treatment.	
		(iv)	Indicate the degree to which the samples are representative of the various types and styles of mineralisation and the mineral deposit as a whole.	

**SAMREC TABLE 1**

			<b>Exploration Results</b>	<b>Mineral Resources</b>	<b>Mineral Reserves</b>
<b>Section 4: Estimation and Reporting of Exploration Results and Mineral Resources</b>					
4.1	Geological model and interpretation	(i)	Describe the geological model, construction technique and assumptions that forms the basis for the Exploration Results or Mineral Resource estimate. Discuss the sufficiency of data density to assure continuity of mineralisation and geology and provide an adequate basis for the estimation and classification procedures applied.		
		(ii)	Describe the nature, detail and reliability of geological information with which lithological, structural, mineralogical, alteration or other geological, geotechnical and geo-metallurgical characteristics were recorded.		
		(iii)	Describe any obvious geological, mining, metallurgical, environmental, social, infrastructural, legal and economic factors that could have a significant effect on the prospects of any possible exploration target or deposit.		
		(iv)		Discuss all known geological data that could materially influence the estimated quantity and quality of the Mineral Resource.	
		(v)		Discuss whether consideration was given to alternative interpretations or models and their possible effect (or potential risk) if any, on the Mineral Resource estimate.	
		(vi)		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).	
4.2	Estimation and modelling techniques	(i)	Describe in detail the estimation techniques and assumptions used to determine the grade and tonnage ranges.		

**SAMREC TABLE 1**

SAMREC TABLE 1			Exploration Results	Mineral Resources	Mineral Reserves
Section 4: Estimation and Reporting of Exploration Results and Mineral Resources					
4.2	Estimation and modelling techniques	(ii)		Discuss the nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values (cutting or capping), compositing (including by length and/or density), domaining, sample spacing, estimation unit size (block size), selective mining units, interpolation parameters and maximum distance of extrapolation from data points.	
		(iii)		Describe assumptions and justification of correlations made between variables.	
		(iv)		Provide details of any relevant specialized computer program (software) used, with the version number, together with the estimation parameters used.	
		(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 co-products, by-products or deleterious elements.	
4.3	Reasonable and realistic prospects for eventual economic extraction	(i)		Disclose and discuss the geological parameters. These would include (but not be limited to) volume / tonnage, grade and value / quality estimates, cut-off grades, strip ratios, upper- and lower- screen sizes.	
		(ii)		Disclose and discuss the engineering parameters. These would include mining method, dilution, processing, geotechnical, geohydraulic and metallurgical parameters.	
		(iii)		Disclose and discuss the infrastructure, including, but not limited to, power, water, site-access.	
		(iv)		Disclose and discuss the legal, governmental, permitting, statutory parameters.	
		(v)		Disclose and discuss the environmental and social (or community) parameters.	
		(vi)		Disclose and discuss the marketing parameters.	



SAMREC TABLE 1				
Exploration Results		Mineral Resources		Mineral Reserves
Section 4: Estimation and Reporting of Exploration Results and Mineral Resources				
4.3	Reasonable and realistic prospects for eventual economic extraction	(vii)		Disclose and discuss the economic assumptions and parameters. These factors will include, but not limited to, commodity prices and potential capital and operating costs
		(viii)		Discuss any material risks
		(ix)		Discuss the parameters used to support the concept of "eventual"
4.4	Classification Criteria	(i)		Describe criteria and methods used as the basis for the classification of the Mineral Resources into varying confidence categories.
4.5	Reporting	(i)		Discuss the reported low and high-grades and widths together with their spatial location to avoid misleading the reporting of Exploration Results, Mineral Resources or Mineral Reserves.
		(ii)		Discuss whether the reported grades are regional averages or if they are selected individual samples taken from the property under discussion.
		(iii)		State assumptions regarding mining methods, infrastructure, metallurgy, environmental and social parameters. State and discuss where no mining related assumptions have been made.
		(iv)		State the specific quantities and grades / qualities which are being reported in ranges and/or widths, and explain the basis of the reporting
		(v)		Present the detail for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in the Mineral Resource statement

SAMREC TABLE 1			
	Exploration Results	Mineral Resources	Mineral Reserves
Section 4: Estimation and Reporting of Exploration Results and Mineral Resources			
4.5	Reporting	(vi)	Present a reconciliation with any previous Mineral Resource estimates. Where appropriate, report and comment on any historic trends (e.g. global bias).
		(vii)	Present the defined reference point for the tonnages and grades reported as Mineral Resources. State the reference point if the point is where the run of mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.
		(viii)	If the CP is relying on a report, opinion, or statement of another expert who is not a CP, disclose the date, title, and author of the report, opinion, or statement, the qualifications of the other expert and why it is reasonable for the CP to rely on the other expert, any significant risks and any steps the CP took to verify the information provided.
		(ix)	State the basis of equivalent metal formulae, if applied.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 5: Technical Studies				
5.1	Introduction	(i)	<p>Technical Studies are not applicable to Exploration Results</p>	State the level of study – whether prefeasibility, feasibility or ongoing Life of Mine. The Code requires that a study to at least a Pre-Feasibility level has been undertaken to convert Mineral Resource to Mineral Reserve. Such studies will have been carried out and will include a mine plan or production schedule that is technically achievable and economically viable, and that all Modifying Factors have been considered.
		(ii)		Provide a summary table of the Modifying Factors used to convert the Mineral Resource to Mineral Reserve for Pre-feasibility, Feasibility or on-going life-of-mine studies.
5.2	Mining Design	(i)	Technical Studies are not applicable to Exploration Results	State assumptions regarding mining methods and parameters when estimating Mineral Resources or explain where no mining assumptions have been made.

SAMREC TABLE 1			
	Exploration Results	Mineral Resources	Mineral Reserves
Section 5: Technical Studies			
5.2 Mining Design		(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 and mining losses 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)	State what mineral resource models have been used in the study.
		(iv)	Explain the basis of (the adopted) cut-off grade(s) or quality parameters applied. Include metal equivalents if relevant
		(v)	Description and justification of mining method(s) to be used.
		(vi)	For open-pit mines, include a discussion of pit slopes, slope stability, and strip ratio.
		(vii)	For underground mines, discussion of mining method, geotechnical considerations, mine design characteristics, and ventilation/cooling requirements.

SAMREC TABLE 1					
Exploration Results		Mineral Resources		Mineral Reserves	
Section 5: Technical Studies					
5.2	Mining Design	(viii)		Discussion of mining rate, equipment selected, grade control methods, geotechnical and hydrogeological considerations, health and safety of the workforce, staffing requirements, dilution, and recovery.	
		(ix)		State the optimisation methods used in planning, list of constraints (practicality, plant, access, exposed Mineral Reserves, stripped Mineral Reserves, bottlenecks, draw control).	
5.3	Metallurgical and Testwork	(i)		Discuss the source of the sample and the techniques to obtain the sample, laboratory and metallurgical testing techniques.	
		(ii)		Explain the basis for assumptions or predictions regarding metallurgical amenability and any preliminary mineralogical test work already carried out.	
		(iii)	Discuss the possible processing methods and any processing factors that could have a material effect on the likelihood of eventual economic extraction. Discuss the appropriateness of the processing methods to the style of mineralisation.	Describe and justify the processing method(s) to be used, equipment, plant capacity, efficiencies, and personnel requirements.	

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 5: Technical Studies				
5.3	Metallurgical and Testwork	(iv)		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.
		(v)		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.
		(vi)		State whether the metallurgical process is well-tested technology or novel in nature.
5.4	Infrastructure	(i)	Technical Studies are not applicable to Exploration Results	Comment regarding the current state of infrastructure or the ease with which the infrastructure can be provided or accessed



SAMREC TABLE 1					
		Exploration Results	Mineral Resources	Mineral Reserves	
Section 5: Technical Studies					
5.4	Infrastructure	(ii)		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, water and power supply, offices, housing, security, resource sterilisation testing etc.). Provide detailed maps showing locations of facilities.	
		(iii)		Statement showing that all necessary logistics have been considered.	
5.5	Environmental and Social	(i)	<p>Confirm that the company holding the tenement has addressed the host country environmental legal compliance requirements and any mandatory and/or voluntary standards or guidelines to which it subscribes</p> <p>Identify the necessary permits that will be required and their status and where not yet obtained, confirm that there is a reasonable basis to believe that all permits required for the project will be obtained</p> <p>Identify and discuss any sensitive areas that may affect the project as well as any other environmental factors including I&amp;AP and/or studies that could have a material effect on the likelihood of eventual economic extraction. Discuss possible means of mitigation.</p> <p>Identify any legislated social management programmes that may be required and discuss the content and status of these.</p> <p>Outline and quantify the material socio-economic and cultural impacts that need to be mitigated, and their mitigation measures and where appropriate the associated costs.</p>		
		(ii)			
		(iii)			
		(iv)			
		(v)			

SAMREC TABLE 1				
Exploration Results		Mineral Resources		Mineral Reserves
Section 5: Technical Studies				
5.6	Market Studies and Economic criteria	(i)		Describe the valuable and potentially valuable product(s) including suitability of products, co-products and by products to market.
		(ii)		Describe product to be sold, customer specifications, testing, and acceptance requirements. 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. Present price and volume forecasts and the basis for the forecast.
		(iii)		State and describe 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.
		(iv)		Summary description, source and confidence of method used to estimate the commodity price/value profiles used for cut-off grade calculation, economic analysis and project valuation, including applicable taxes, inflation indices, discount rate and exchange rates.
		Technical Studies are not applicable to Exploration Results		

SAMREC TABLE 1			
	Exploration Results	Mineral Resources	Mineral Reserves
Section 5: Technical Studies			
5.6	Market Studies and Economic criteria	(v)	Present the details of the point of reference for the tonnages and grades reported as Mineral Reserves (e.g. material delivered to the processing facility or saleable product(s)). It is important that, in any situation where the reference point is different, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.
		(vi)	Justify assumptions made concerning production cost including transportation, treatment, penalties, exchange rates, marketing and other costs. Provide details of allowances that are made for the content of deleterious elements and the cost of penalties.
		(vii)	Provide details of allowances made for royalties payable, both to Government and private.
		(viii)	State type, extent and condition of plant and equipment that is significant to the existing operation(s).
		(ix)	Provide details of all environmental, social and labour costs considered
5.7	Risk Analysis	(i)	Report an assessment of technical, environmental, social, economic, political and other key risks to the project. Describe actions that will be taken to mitigate and/or manage the identified risks.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 5: Technical Studies				
5.8	Economic Analysis	(i)	<p>Technical Studies are not applicable to Exploration Results</p>	At the relevant level (Scoping Study, Pre-feasibility, Feasibility or on-going Life-of Mine), provide an economic analysis for the project that includes:
		(ii)		Cash Flow forecast on an annual basis using Mineral Reserves or an annual production schedule for the life of the project
		(iii)		A discussion of net present value (NPV), internal rate of return (IRR) and payback period of capital
		(iv)		Sensitivity or other analysis using variants in commodity price, grade, capital and operating costs, or other significant parameters, as appropriate and discuss the impact of the results.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 6: Estimation and Reporting of Mineral Reserves				
6.1	Estimation and modelling techniques	(i)		Describe the Mineral Resource estimate used as a basis for the conversion to a Mineral Reserve.
		(ii)		Report the Mineral Reserve Statement with sufficient detail indicating if the mining is open pit or underground plus the source and type of mineralisation, domain or ore body, surface dumps, stockpiles and all other sources.
		(iii)		Provide a reconciliation reporting historic reliability of the performance parameters, assumptions and modifying factors including a comparison with the previous Reserve quantity and qualities, if available. Where appropriate, report and comment on any historic trends (e.g. global bias)
6.2	Classification Criteria	(i)		Describe and justify criteria and methods used as the basis for the classification of the Mineral Reserves into varying confidence categories, based on the Mineral Resource category, and including consideration of the confidence in all the modifying factors.
6.3	Reporting	(i)		Discuss the proportion of Probable Mineral Reserves, which have been derived from Measured Mineral Resources (if any), including the reason(s) therefore.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 6: Estimation and Reporting of Mineral Reserves				
6.3	Reporting	(ii)		Present details of for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in respect of the Mineral Reserve statement
		(iii)		Present the details of the defined reference point for the Mineral Reserves. State whether the reference point is the point where the run of mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State clearly whether the tonnages and grades reported for Mineral Reserves are in respect of material delivered to the plant or after recovery.
		(iv)		Present a reconciliation with the previous Mineral Reserve estimates. Where appropriate, report and comment on any historic trends (e.g. global bias).
		(v)		Only Measured and Indicated Mineral Resources can be considered for inclusion in the Mineral Reserve.
		(vi)		State whether the Mineral Resources are inclusive or exclusive of Mineral Reserves.



SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
<b>Section 7: Audits and Reviews</b>			
7.1	Audits and Reviews	(i)	State type of review/audit (e.g. independent, external), area (e.g. laboratory, drilling, data, environmental compliance etc), date and name of the reviewer(s) together with their recognized professional qualifications.
		(ii)	Disclose the conclusions of relevant audits or reviews. Note where significant deficiencies and remedial actions are required.
<b>Section 8: Other Relevant Information</b>			
8.1		(i)	Discuss all other relevant and material information not discussed elsewhere.
<b>Section 9: Qualification of Competent Person(s) and other key technical staff. Date and Signature Page</b>			
9.1		(i)	State the full name, registration number and name of the professional body or RPO, for all the Competent Person(s). State the relevant experience of the Competent Person(s) and other key technical staff who prepared and are responsible for the Public Report.
		(ii)	State the Competent Person's relationship to the issuer of the report.
		(iii)	Provide the Certificate of the Competent Person (Appendix 2), including the date of sign-off and the effective date, in the Public Report.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 10: Reporting of for Coal Resources and Reserves				
10.1	Specific Reporting for Coal	(i)	Confirm that the reports on coal deposits take cognisance of sections 54-74 of the Code and Sections 1 - 9 of Table 1.	
		(ii)	Confirm that the Coal Exploration Results, Coal Inventory, Coal Resources and Coal Reserves are reported using the South African National Standard 10320 as the guideline	
10.2	Geological Setting, Deposit, Mineralisation	(i)	Describe the project geology including coal deposit type, geological setting and coal seams / zones present.	
		(ii)	Identify and discuss the structural complexity, physical continuity, coal rank, qualitative and quantitative properties of the significant coal seams or zones on the property.	
10.3	Drilling Techniques	(i)	Report core recoveries and method of calculation. Confirm that core recoveries in cored boreholes are in excess of 95% by length within the coal seam intersection.	
	Relative Density to replace Bulk Density	(ii)	Describe the apparent relative density or true relative density of the coal seam(s) determined on coal samples from borehole cores using recognized standard laboratory methods or commonly used procedures. State the moisture basis on which the relative density determination is based and the moisture basis on which the final density value is reported (in situ or air-dried basis).	
	Bulk-Sampling and/or trial-mining	(iii)	Describe the purpose or aim of the bulk sampling programme, the size of samples, spacing/density of samples recovered. Describe the applicability of bulk sampling or large diameter core samples towards providing representative samples for tests. Compare and comment on results obtained from bulk sampling versus exploration sampling.	
10.4	Reasonable and realistic prospects for eventual economic extraction	(i)	Confirm that an appropriate coal quality is reported for all Coal Resource categories. Present and discuss the type of analysis (e.g. raw coal, washed coal at a specific cut-point density) and the basis of reporting of the coal quality parameters (e.g. air-dried basis, dry basis, etc.).	

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 10: Reporting of for Coal Resources and Reserves				
10.5	Coal Resource Reporting	(i)	A Coal Resource only includes the coal seam(s) above the minimum thickness cut-off and the coal quality cut-off(s). Present and discuss the MTIS Coal Resource tonnage and quality.	
		(ii)	State the reporting basis for the Coal Resource statement with particular reference to moisture and relative density.	
10.6	Coal Reserve Reporting	(i)		State the reporting basis for the Coal Reserve statement with particular reference to moisture and relative density.
		(ii)		Confirm that the Coal Reserves are reported as ROM tonnages and coal quality, and also as Saleable product/s tonnages and coal quality. Present and discuss the reporting basis for the Coal Reserve statement with particular reference to moisture content and relative density.

SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
Section 11: Reporting of Diamonds and Gemstones			
This section highlights criteria that are applicable to diamond deposits and to other gemstone deposits. Reports of diamond and other gemstone properties must also take cognisance of sections 59-71 of the Code, Sections 1 - 9 of Table 1 and the Guidance notes in the SAMCODE Companion Volume. The information required in this section (Section 11) should be included with the relevant sections and should not comprise a separate chapter.			
11.1	Geological Setting, Deposit, Mineralisation	(i)	For diamond placer occurrences, describe the overburden and gravel thicknesses, as well as bedrock topography
11.2	Sampling of Diamond Projects	(i)	Describe the type of sample (outcrop, boulder, drill-core, RC drill cuttings, gravel, stream sediment or soil) and purpose (for example: RC drilling to identify gravel thickness, large diameter drilling to establish stones per unit of volume, bulk-sample, etc.)
		(ii)	Discuss sample size, distribution and representivity
		(iii)	Identify the type of sample facility, treatment rate and accreditation
		(iv)	Discuss sample size reduction, bottom and top screen sizes and any re-crush
		(v)	Discuss the sample processes (e.g. DMS, grease, X-Ray, Hand-sorting, etc.)
		(vi)	Discuss process efficiency, tailings auditing and granulometry
		(vii)	Identify the laboratory used, type of process for microdiamonds and accreditation. Reports of microdiamond recoveries should describe the extraction process, crushing methodology and the stone counts per unit weight, as a minimum.
		(viii)	State whether the reports of kimberlitic indicator minerals ("KIM's") or diamond indicator minerals ("DIM's") have been prepared by a suitably qualified laboratory which must be identified.
		(ix)	Supply details of the sampling parameters for reports dealing with recoveries of diamonds or KIM's, including, but not limited to type of sample (stream sediment, soil, bulk, rock, etc.) as well as sample size, sample frequency, representivity and screen parameters are required.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 11: Reporting of Diamonds and Gemstones				
11.2	Sampling of Diamond Projects	(x)	Discuss the relevant major and trace element chemistry of any kimberlitic indicator minerals recovered. Reference relevant peer-reviewed published research articles when reporting the interpretation of mineral chemistry data for diamond exploration projects.	
		(xi)	Provide details of the form, shape, colour and size of the diamonds recovered and, where relevant, comments regarding the nature of the source of the diamonds.	
11.3	Bulk-Sampling and/or trial-mining	(i)	Provide a table of relevant results, including (but not limited to) volume of sample, number of individual diamonds, total number of carats, sample grade, diamond value (it is not possible to evaluate diamond assortment from microdiamonds).	
		(ii)	Discuss micro- and macro- diamond sample results per geological domain.	
		(iii)	Discuss stone-size and -number distribution (Size-frequency distribution). Include the suitability of the sample size to the stage of the project and its relevance for both SFD and valuation (assortment) purposes.	
		(iv)	State the top and bottom sieve cut-off sizes.	
		(v)	Discuss diamond breakage, where relevant	
		(vi)	Define the unit of grade measure used in the document (e.g. carat per units of mass, area or volume). Where carats per unit of mass is used, include a discussion of mass to tonnage conversion.	
11.4	Estimation and Modelling Techniques	(i)	Describe in detail any estimation techniques (including geostatistical estimation, where relevant) used to determine the volume/tonnage, grade and value data, including their applicability to the deposit type.	
		(ii)	Express applicable volumes, grades and values in ranges (with appropriate clarifiers to denote lack of reliability of data). The use of "ranges" in this context has no statistical connotation	State all Diamond Reserve estimates so as to convey the order of accuracy of the estimates by rounding off to appropriately significant figures.
			State all Diamond Resource estimates so as to convey the order of accuracy by rounding off to appropriately significant figures.	

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 11: Reporting of Diamonds and Gemstones				
11.4	Estimation and Modelling Techniques	(iii)	Discuss volume/tonnage, grade and value information per identified domain (where possible, even if in a very preliminary form)	Discuss volume/tonnage, grade and value information per identified domain
		(iv)	If grades are reported then state clearly whether these are regional averages, based on microdiamond assessment. KIM analyses, or if they are selected individual samples taken from the property under discussion. The occurrence of individual diamonds or microdiamonds in surficial deposits or from inadequate samples (too small to be statistically valid) from a primary or secondary rock source would not typically qualify as an exploration target. This may not be true for marine deposits, in which case further explanation and discussion would be necessary.	State that the grades for the Diamond Reserves have been estimated from bulk-sampling and/or trial-mining
		(v)	Report all diamond values in US\$/ct. If reference is made to local currencies then provide the prevailing exchange rate as well as the effective date of the exchange rate. Also supply the date of valuation.	
		(vi)	Specify details of the type and size of individual samples (including top and bottom cut-off size, in millimetres, used in the recovery).	
		(vii)	Discuss the representivity of the type, size, number and location of the samples	



SAMREC TABLE 1			
		Exploration Results	Mineral Resources
Section 11: Reporting of Diamonds and Gemstones			
11.4	Estimation and Modelling Techniques	(viii)	Discuss geostatistical estimation (where relevant) and interpolation techniques applied and their applicability to the deposit type
		(ix)	Specify the number and total weight (in carats) of diamonds recovered. The weight of diamonds recovered may only be omitted from the report when the diamonds are less than 0.5mm in size (i.e. when the diamonds recovered are microdiamonds) or when the diamonds are below a specified commercial cut-off value, which must be specified.
		(x)	Disclose the number of stones and the total number of carats used in the SFD, grade and value estimation and discuss the validity of this data.
		(xi)	Note whether a strict lower cut-off has been applied or if the modelled results include incidental diamonds below the lower cut-off? Discuss the implications.
		(xii)	Present aspects of spatial structure analysis and grade and value distribution
		(xiii)	Present aspects of micro and macro- diamond sample results per domain
		(xiv)	Present aspects of the effect on sample grade and value with change in bottom cut off screen size.
		(xv)	Describe any adjustments made to size distribution for sample plant performance and performance on a commercial scale, where applicable.
		(xvi)	Confirm that valuations have not been reported for samples of diamonds processed using total liberation methods (which are commonly used for processing kimberlite exploration samples and which are based on microdiamonds).
		(xvii)	Justify the use of microdiamonds to extrapolate diamond value at depth through the presentation of geological and size frequency distribution models
		(xviii)	State the name, qualifications, experience and independence of the recognised expert responsible for the classification and valuation of the diamond parcel(s).

SAMREC TABLE 1			
		Exploration Results	Mineral Resources
Section 11: Reporting of Diamonds and Gemstones			
11.4	Estimation and Modelling Techniques	(xix)	For each diamond parcel valued, supply information relating to the number of stones and the carats and size distribution using a standard progression of sieve sizes or diamond mass ranges for each identified geological domain. For marine or alluvial placers the average price per average stone size may be used instead of a size distribution
		(xx)	State that the valuation is on the run-of-mine diamond parcel (i.e. not partial parcel)
		(xxi)	Define the unit of grade measure used in the resource/reserve estimation (e.g. carat per units of mass, area or volume). Where carats per unit of volume is used, include a discussion of mass to tonnage conversion.
11.5	Resource/ Reserve Classification Criteria	(i)	A Diamond Resource/Reserve must be described in terms of volume/tonnage, grade and value. A Diamond Resource/Reserve must not be reported in terms of contained diamond content unless corresponding tonnages/volumes, grades and values are also reported. The average diamond grade and value must not be reported without specifying the applicable bottom cut-off screen size.
		(ii)	Discuss issues surrounding stone frequency (stones per cubic metre, per tonne, or per square metre) and stone size (carats per stone) relating to grade (carats per cubic metre, per tonne or per square metre). Consider the elements of uncertainty in these estimates and develop the Diamond Resource classification accordingly.
		(iii)	Present relevant aspects of stone size and number distribution, including the applicability of the parcel size. Note that a Diamond Resource/Reserve may not be declared without reference to an SFD.
		(iv)	Present aspects of global sample grade per geological domain and local block estimates in the case of Indicated Resources
11.6	Audits and Reviews	(i)	State that the samples were sealed after excavation and discuss the chain of custody from source to reporting of results
		(ii)	Discuss security standards in sampling plant and recovery sections of bulk-sampling/trial-mining programmes for macrodiamonds

SAMREC TABLE 1			
		Exploration Results	Mineral Resources
Section 11: Reporting of Diamonds and Gemstones			
11.6	Audits and Reviews	(iii)	Describe the type of facility, treatment rate, and accreditation (if any) of the sample plant. It is especially important to discuss the bottom screen size, top screen size and crush parameters, in addition to the concentration methodology (e.g. pan, DMS, Optical, etc.) and the recovery technique (e.g. grease, X-ray, hand-sorting, etc.).
		(iv)	Discuss valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones;
		(v)	State whether core samples were washed prior to treatment for microdiamonds and discuss the use of diamond drill-bits
		(vi)	State whether any audit samples were treated at alternative facilities
		(vii)	Discuss QA/QC of sampling results, including the process efficiency, tailings auditing and granulometry
		(viii)	Discuss the recovery of tracer monitors used in sampling and treatment
		(ix)	Discuss geophysical (logged) density and particle density, where relevant
		(x)	Discuss cross-validation of sample weights, wet and dry, with hole volume and density, moisture factor

SAMREC TABLE 1			
Exploration Results		Mineral Resources	Mineral Reserves
Section 12: Reporting of Industrial Minerals			
12.1	Specific for Reporting of Industrial Minerals	(i)	Confirm that the reports on Industrial Mineral deposits take cognisance of Sections 80 of the Code and Sections 1 - 9 of Table 1.
		(ii)	Describe the exploration or geologically specific specialised industry techniques appropriate to the minerals under investigation
		(iii)	Describe the nature and quality of sampling or specific specialised industry standard measurement tools appropriate to the minerals under investigation
		(iv)	Describe the appropriate saleable product qualities being reported. Describe the basis for reporting (physical or chemical parameters, air-dried basis, dry basis, etc.). Reporting of deleterious chemical elements or physical parameters is required.
		(v)	State assumptions regarding in particular mining methods, infrastructure, metallurgy, environmental and social parameters. Explain where no mining related assumptions have been made.
		(vi)	Disclose and discuss the marketing parameters, customer specifications, testing, and acceptance requirements.
		(vii)	Discuss the nature, amount and representativeness of metallurgical studies completed which form the basis for the various saleable materials which may be priced for different chemical and physical characteristics.
		(viii)	Present the defined reference point of the reported tonnages and grades/qualities. Where the reference point is the point is a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State whether the tonnages and grades/qualities of the material delivered to the plant or after recovery.

SAMREC TABLE 1				
		Exploration Results	Mineral Resources	Mineral Reserves
Section 13: Reporting using Metal Equivalents				
13.1	Specific for Metal Equivalents Reporting	(i)	Confirm that reports on all deposits take cognisance of Sections 73 of the Code and Sections 1 - 9 of Table 1.	
		(ii)	Discuss and describe the basis for the grade estimation for each metal relating to the metal equivalence	
		(iii)	Disclose all economic criteria that have been used for the calculation such as exchange rates, revenue / price curves, royalties, cut-off grades, pay limits.	
		(iv)	Discuss the basis for assumptions or predictions regarding metallurgical factors such as recovery used in the metal equivalents calculation.	
		(v)	Show the calculation formula used.	

**SAMREC TABLE 2**

**PRELUDE**

This guideline to Technical Studies is provided as a guide to the compilation of the various studies relating to Mineral Resources and Mineral Reserves. It is designed to be read in conjunction with Table 1 and the Code.

Scoping Studies, Pre-Feasibility Studies, Feasibility Studies (and on-going life-of-mine studies) analyse and assess the same geological, engineering, and economic factors with increasing detail and precision. Therefore, the same criteria may be used as a framework for reporting the results of all three studies.

The criteria for Pre-Feasibility Study are considered the minimum requirements for a Life of Mine Plan.

Scoping Studies cannot convert Inferred Mineral Resources to Mineral Reserves

Technical studies may not include Exploration Targets or Mineralisation

**SAMREC TABLE 2**

<b>General</b>	<b>Scoping Study</b>	<b>Prefeasibility Study</b>	<b>Feasibility Study</b>
Resource categories	Mostly Inferred	Mostly Indicated	Measured and Indicated
Reserve categories	None	Mostly Probable	Proved and Probable
Mining method and geotechnical constraints	Conceptual	Preliminary Options	Detailed and Optimized
Mine design	None or high-level conceptual	Preliminary mine plan and schedule	Detailed mine plan and schedule
Scheduling	Annual approximation	Quarterly to annual	Monthly for much of payback period
Mineral Processing	Metallurgical test work	Preliminary Options	Detailed and Optimized
Permitting - (water, power, mining, prospecting & environmental)	Required permitting listed	Preliminary applications submitted	Authorities engaged and applications submitted
Social licence to operate	Initial contact with local communities	Formal communication structures and engagement models in place	Contracts/agreements in place with local communities and municipalities (local government)
Risk tolerance	High	Medium	Low



Capital Cost Category	Scoping Study	Prefeasibility Study	Feasibility Study
Basis of Estimate to include the following areas:			
Civil/structural, architectural, piping/HVAC, electrical, instrumentation, construction labour, construction labour productivity, material volumes/amounts, material/equipment, pricing, infrastructure	Order-of-magnitude, based on historic data or factoring. Engineering < 5% complete.	Estimated from historic factors or percentages and vendor quotes based on material volumes. Engineering at 5-20% complete.	Detailed from engineering at 20% to 50% complete, estimated material take-off quantities, and multiple vendor quotations
Contractors	Included in unit cost or as a percentage of total cost	Percentage of direct cost by area for contractors; historic for subcontractors	Written quotes from contractor and subcontractors
Engineering, procurement, and construction management (EPCM)	Percentage of estimated construction cost	Key parameters, Percentage of detailed construction cost	Detailed estimate
Pricing	FOB mine site, including taxes and duties	FOB mine site, including taxes and duties	FOB mine site, including taxes and duties
Owner's costs	Factored, benchmark, database or historic estimate	Budgeted quotes on key parameters and estimates from experience, factored from similar project	Detailed estimate
Environmental compliance / Closure Cost	Factored from historic estimate	Estimate from experience, factored from similar project	Estimate prepared from detailed zero-based budget for design engineering and specific permit requirements
Escalation	Not considered	Based on entity's current budget percentage	Based on cost area with risk
Accuracy Range (Order of magnitude)	±25-50%	±15-25%	±10-15%
Contingency Range (Allowance for items not specified in scope that will be needed)	±30%	15-30%	10% - 15% (actual to be determined based on risk analysis)

Operating Cost Category	Scoping Study	Prefeasibility Study	Feasibility Study
Basis	Order-of-magnitude, based on historic data or factoring.	Estimated from historic factors or percentages and vendor quotes based on material volumes.	Detailed estimate
Operating quantities	General	Specific estimates with some factoring	Detailed estimates
Unit costs	Based on historic data for factoring	Estimates for labour, power, and consumables, some factoring	Letter quotes from vendors; minimal factoring
Accuracy Range	±25-50%	15% - 25%	10% - 15%
Contingency Range (Allowance for items not specified in scope that will be needed)	± 25%	± 15%	± 10% (actual to be determined based on risk analysis)

## APPENDIX 1

### RECOMMENDED TABLE OF CONTENTS FOR COMPETENT PERSON'S REPORT (CPR)

This table of contents is given only as a guide to the compilation of CPRs. It is designed to incorporate all of the requirements of Table 1. This Appendix should be read in conjunction with Table 1 and the Code. It is recommended that a Public Report include a CPR or reference to where the supporting documentation can be found e.g. a website.

#### General

*The Terms of Reference or scope of work should be presented.*

*State for whom the report was prepared, whether it is intended as a full or partial evaluation or for other purpose, what work was conducted, the effective date of the report, and what work remains to be done.*

*List the sources of information and data contained in the report or used in its preparation, with citations if applicable.*

*Transparency, competency and materiality are overriding principles that determine what information should be publicly reported. The Competent Person (CP) must provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported.*

*Publicly reported information should be sufficient to enable a 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.*

*In some cases it will be appropriate for a Public Report to exclude some commercially sensitive information. A decision to exclude commercially sensitive information would be a decision for the entity issuing the Public Report. The decision must be disclosed and justification provided. In these cases, the report should provide summary information (for example, the methodology used to determine the economic assumptions where the numerical values of those assumptions are commercially sensitive) and context for the purpose of informing investors or potential investors and their advisors.*

*The Public Report should include sufficient context and cautionary language to allow a reader to understand the nature, importance, and limitations of the data, interpretations, and conclusions.*

*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.*

*The CP must state that 'the declaration has been made in terms of the guidelines of the SAMREC Code'.*

*Diagrams, maps, plans, sections and illustrations in Public Reports should be legible and prepared at an appropriate scale to distinguish important features. Maps should be dated and include a legend, author or information source, coordinate system and datum, a scale in bar or grid form, and an arrow indicating north. 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.*

## **Title Page**

*Include a title page setting out the title of the CPR, the general location of the mineral project, the name and professional designation of each CP, the effective date of the CPR and the date of signature.*

## **Executive Summary**

*Briefly summarise important information in the Public Report, including property description and ownership, geology and mineralisation, the status of exploration, development and operations, Mineral Resource and Mineral Reserve estimates, and the CP's conclusions and recommendations. If Inferred Mineral Resources are used, show the summary valuation with and without inclusion of such Inferred Mineral Resources. The Executive Summary should be sufficiently detailed so as to allow the reader to understand the essentials of the project.*

## **Table of Contents**

*Provide a table of contents listing the contents of the CPR, including figures and tables.*

# **1 Introduction**

- Terms of reference and scope of work
- Sources of information
- Units and currency
- Site inspection or Field involvement of CP
- Disclaimers and reliance on other experts or third-party information.

# **2 Project Outline**

- Property description
- Property location
- Country profile
- Legal aspects and permitting
- Royalties and liabilities.

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### **3 Accessibility, Physiography, Climate, Local Resources and Infrastructure**

- Topography, elevation, fauna and flora
- Climate
- Access
- Proximity to population centres
- General infrastructure.

### **4 Project History**

- Previous ownership
- Previous exploration and/or project/mine development (compliance or noncompliance with the SAMREC Code or other international reporting code should be presented)
- Previous Mineral Resource estimates (compliance or noncompliance with the SAMREC Code or other international reporting code should be presented)
- Previous Mineral Reserve estimates (compliance or noncompliance with the SAMREC Code or other international reporting code should be presented)
- Previous production.

### **5 Geological Setting, Mineralisation and Deposit Types**

- Geological setting
- Nature of, and controls on, mineralisation
- Geological models
- Nature of deposits on the property
- Deposit types and mineralisation.

### **6 Exploration Data/Information**

- Remote sensing data and interpretations
- Geophysics
- Mapping
- Structural studies
- Drilling
- Sampling
- Database management
- QA/QC analysis
- Survey data verification, audits and reviews
- Metallurgical sampling and testwork.

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## 7 Mineral Resource Estimates

- Estimation and modelling techniques
- Mineral Resource classification criteria
- Reasonable prospects for eventual economic extraction
- Mineral Resource statement
- Mineral Resource reconciliation.

## 8 Technical Studies (refer to Table 2)

- Geotechnical and geohydrology
- Mine design and schedule
- Metallurgical (processing/recovery)
- Project infrastructure
- Market studies and contracts
- Environmental studies
- Legal and permitting
- Taxation
- Social or community Impact
- Mine closure
- Risk assessment
- Capital and operating costs
- Economic criteria
- Economic analysis.

## 9 Mineral Reserve Estimates

- Estimation and modelling techniques
- Mineral Reserve classification criteria
- Mineral Reserve statement
- Mineral Reserve reconciliation.

## 10 Other Relevant Data and Information

- Adjacent properties
- Risk assessments.



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## 11 Interpretation and Conclusions

*Summarise the relevant results and interpretations of the information and analysis being reported. Discuss any significant risks and uncertainties that could reasonably be expected to affect the reliability or confidence in the Exploration Results, Mineral Resource or Mineral Reserve estimates, or projected economic outcomes. Discuss any reasonably foreseeable impacts of these risks and uncertainties to the project's potential economic viability or continued viability. A CPR concerning exploration information should include the conclusions of the CP.*

## 12 Recommendations

*Provide particulars of recommended work programmes and a breakdown of costs for each phase. If successive phases of work are recommended, each phase should culminate in a decision point. The recommendations should not apply to more than two phases of work. The recommendations should state whether advancing to a subsequent phase is contingent on positive results in the previous phase. In some specific cases, the CP may not be in a position to make meaningful recommendations for further work. Generally, these situations will be limited to properties under development or in production where material exploration activities and engineering studies have largely concluded. In such cases, the CP should explain why they are not making further recommendations.*

## 13 References

*Include a detailed list of all references cited in the CPR.*

## 14 Appendices

- Supporting information
- Glossary of terms
- Abbreviations
- Compliance statement and certificate of competence
- Consent form (if relevant).

### **Date and Signature Page**

*The CPR should have a signature page (at either the beginning or end of the CPR). The effective date of the CPR and date of signing should be on the signature page.*

## APPENDIX 2

### CERTIFICATE OF COMPETENT PERSON

This Certificate of Competent Person is given only as a guide to the CP. It is designed to incorporate all of the requirements of the Code.

#### **Certificate of Competent Person**

As the author of the report entitled [report title], I hereby state:-

1. My name is [Competent Person's name] and [details – position in company, company name, address].
2. [Profession and details of registration body].
3. [Qualifications]
4. [Relevant experience].
5. I am a 'Competent Person' as defined in the SAMREC Code.
6. [Work undertaken or services rendered].
7. [Site inspection details].
8. [Details of aspects of this report for which the CP is responsible].
9. I am not aware of any material fact or material change with respect to the subject matter of the Report that is not reflected in the Report, the omission of which would make the Report misleading.
10. I declare that this Report appropriately reflects the Competent Person's/author's view.
11. I am independent/not independent of [name of issuer].
12. I have read the SAMREC Code (2016) and the Report has been prepared in accordance with the guidelines of the SAMREC Code.
13. I do not have, nor do I expect to receive, a direct or indirect interest in the [project/mine details] or [name of issuer] **OR** I am an [employee/shareholder/director or other interested party] in respect of the issuer [name of issuer] or the project/mine.
14. At the effective date of the Report, to the best of my knowledge, information and belief, the Report contains all scientific and technical information that is required to be disclosed to make the Report not misleading.

Dated at [place] and [date].

[Signed] \_\_\_\_\_  
**[Name of CP]**

## APPENDIX 3

### COMPLIANCE STATEMENTS

These compliance statements are given only as a guide to the CP (delete bullet points which do not apply). They are designed to incorporate all of the requirements of the Code. For Public Reports of Exploration Targets, initial or materially changed reports of Exploration Results, Mineral Resources or Mineral Reserves:

*'The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources is based on information compiled by [insert name of Competent Person], a Competent Person who is registered with SACNASP, ECSA or SAGC, or is a Member or Fellow of the SAIMM, the GSSA, IMSSA or a Recognised Professional Organisation (RPO) included in a list of recognised organisations promulgated by the SSC from time to time (select as appropriate and insert the name of the professional organisation of which the Competent Person is a member and the Competent Person's grade of membership).'*

- *If the Competent Person is a full-time employee of the company:  
'[name of Competent Person] is a full-time employee of the [name of company].'*
- *If the Competent Person is not a full-time employee of the company:  
'[name of Competent Person] is employed by [name of Competent Person's employer].'*
- *The full nature of the relationship between the Competent Person and the reporting Company should be declared together with the Competent Person's details. This declaration should outline and clarify any issue that could be perceived by investors as a conflict of interest.*

For all reports:

*'[name of Competent Person] has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2016 Edition of the 'The South African Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. [name of Competent Person] consents to the inclusion in the report of the matters based on his (or her) information in the form and context in which it appears.'*

For any subsequent Public Report based on a previously issued Public Report that refers to those Exploration Results or estimates of Mineral Resources or Mineral Reserves:

*Where a Competent Person has previously issued the written consent to the inclusion of their findings in a report, a company re-issuing that information to the Public whether in the form of a presentation or a subsequent announcement shall, state the report name, date and reference the location of the original source Public Report for public access.*

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- *'The information is extracted from the report entitled [report title] created on [date] and is available to view on [website name]. The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Mineral Reserves, that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Competent Person's findings are presented have not been materially modified from the original market announcement.'*