THE CBRR GUIDE FOR REPORTING EXPLORATION INFORMATION, MINERAL RESOURCES AND MINERAL RESERVES

Prepared by the Comissão Brasileira de Recursos e Reservas—CBRR

2022 EDITION

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FOREWORD

The Brazilian Commission for Resources and Reserves (CBRR—Comissão Brasileira de Recursos e Reservas) was established in 2015, conceived as an initiative from three of the most important and representative associations within the Brazilian mineral sector: the Associação Brasileira de Empresas de Pesquisa Mineral (ABPM—Brazilian Association of Mineral Exploration Companies), Agência para o Desenvolvimento e Inovação do Setor Mineral Brasileiro (ADIMB—Agency for Mineral Development and Innovation of the Brazilian Mining Sector) and Instituto Brasileiro de Mineração (IBRAM—Brazilian Mining Institute). The CBRR is constituted as a private non-profit organization focusing on establishing, sponsoring and managing efforts to promote and develop the Brazilian mineral sector. Initiatives include best global engineering and geology practices, exploration, mineral resources and reserves reporting guidelines in accordance with the CRIRSCO standards and management of the certification process and database for the registration of Qualified Professionals in Brazil. The first version of the CBRR Guide was promulgated on November 30, 2015, when the CBRR and Brazil were accepted as the ninth country and representative organization of CRIRSCO.

The CRIRSCO International Reporting Template (IRT) for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves integrates the minimum standards adopted in national/regional reporting codes and standards worldwide with recommendations and interpretative guidelines. In this edition of the “CBRR Guide,” the terms and definitions are aligned with the IRT as revised in November 2019. Therefore, with the exception of the ESG chapter (see the comment below), the definitions presented here are identical to, or not materially different from, the definitions published by the IRT.

The 2022 edition of the CBRR Guide provides reinforcement of and more details about environmental, social performance and governance (ESG) practices. The dedicated chapter is based on PERC Reporting Standard 2021, published by the Pan-European Reserves and Resources Reporting Committee, a member of the CRIRSCO family.

CONTENTS

1. INTRODUCTION

Format

Code

1.1 This edition of the CBRR Guide follows the same formatting as the CRIRSCO International Reporting CBRR Guide (IRT), in which definitions are provided as numbered clauses in **bold** typeface and clearly identified as definitions.

1.2 The definitions are a core element of the CBRR Guide and are common to all other national or regional codes and standards based on the IRT.

1.3 Defined terms, where referred to in other definitions, are underlined.

1.4 Other mandatory elements of the CBRR Guide are identified in normal typeface and as numbered clauses.

1.5 The guidelines and further interpretation of the definitions and mandatory clauses are placed after the respective CBRR Guide items in *italic* typeface and clearly identified. They provide readers with assistance and guidance in interpreting the application of the definitions and clauses in the CBRR Guide.

1.6 Throughout the CBRR Guide, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the industry. To avoid unnecessary duplication, the generic terms are listed in Appendix 1 together with other terms that may be regarded as synonymous for the purposes of the CBRR Guide.

Guidance

The use of a particular term in this CBRR Guide does not imply that it is preferred or necessarily the ideal term in all circumstances. Different terms may be used in particular regions, countries or industry sectors. A typical example is "mining" referred to as "quarrying" when stone and aggregates are involved. When developing national codes or standards, those drafting the document should use the language that will be most familiar to the mining sector in that location.

Code

1.7 Appendices 3 to 7 provide further guidance on the application of the CBRR Guide to the reporting of specific commodities or situations.

1.8 Table 1 provides, in a summary form, a list of the criteria that must be considered when preparing reports on Exploration Information, Mineral Resources and Mineral Reserves. Some jurisdictions require comments to be made on all the sections of Table 1 on an "if not, why not" basis.

Guidance

"If not why not" means that each item listed in the relevant section of Table 1 must be discussed or the Qualified Professional must explain why it has been omitted.

Code

1.9 Table 1 is included in the CBRR Guide as an example of best practice. Requirements: Transparency, materiality and competence are overriding principles that determine which information should be publicly reported. The Qualified Professional must provide sufficient comment on all matters that may affect a reader's understanding or interpretation of the results or estimates being reported.

1.10 Table 2 and Appendix 1 include additional guidance.

2. SCOPE

Application

Code

2.1 The CBRR Guide applies to all solid mineral raw materials for which Public Reporting of Exploration Information, Mineral Resources and Mineral Reserves is required by any relevant regulatory authority.

Definition

2.2 **A Mineral is any substance, extracted for value, occurring naturally in or on the Earth, in or under water or in tailings, residues or stockpiles, having been formed by or subjected to a geological process but excluding water, oil and gas.**

Code

2.3 The definition of mineral is broad; therefore, the CBRR Guide is applicable to a diverse range of commodities for which Public Reporting of Exploration Information, Mineral Resources and Mineral Reserves is required by a relevant regulatory authority, including but not limited to:

- Metalliferous minerals;
- Coal;
- Diamonds and other gemstones;
- Industrial minerals;
- Cement feed materials and construction raw materials;
- Dimension, ornamental and decorative stone
- Other mineral raw materials; and
- Mineralized fill, remnants, pillars, low-grade mineralization, stockpiles, dumps and tailings (remnant materials).

2.4 In addition, the principles of the CBRR Guide are applicable to:

- Oil shales, oil sands and other energy minerals extracted by mining;
- Metallic or non-metallic minerals extracted by solution mining methods; and
- Minerals extracted from liquid brines.

Principles

Code

2.5 The main principles governing the operation and application of the CBRR Guide are transparency, materiality and competence.

2.6 ***Transparency*** requires the reader of a Public Report to be provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not to be misled by this information or by the omission of material information that is known to the Qualified Professional.

2.7 ***Materiality*** requires that a Public Report contains all the relevant information that investors and their professional advisers would reasonably require, and reasonably expect to find in a Public Report, for the purpose of making a reasoned and balanced judgment regarding the Exploration Information, Mineral Resources and/or Mineral Reserves being reported. Where relevant information is not supplied, an explanation must be provided to justify its exclusion.

2.8 ***Competence*** requires a Public Report to be based on work that is the responsibility of a suitably qualified and experienced professional (referred to herein as a Qualified Professional), who is a member of a professional organization (PO) with an enforceable code of ethics and a disciplinary process that includes the power to suspend or expel members.

Public Reports

Definition

2.9 **Public Reports are reports prepared for the purpose of informing investors or potential investors and their advisers about Exploration Information, Mineral Resources or Mineral Reserves. They include but are not limited to annual and quarterly company reports, media releases, information memoranda, technical papers, website postings and public presentations.**

Code

2.10 Public Reports include but are not limited to company annual reports, quarterly reports and other reports to regulatory authorities or as required by law.

2.11 The reporting and disclosure requirements addressed in the CBRR Guide apply equally to all publicly released company information in the form of postings on company websites and social media, press releases and briefings for shareholders, stockbrokers and investment analysts.

2.12 The CBRR Guide also applies to any reporting of Exploration Information and/or Mineral Resources and Mineral Reserves and made publicly available for other purposes, such as those contained in:

- Environmental statements;
- Information memoranda;
- Expert reports; and

- Technical papers.

Guidance

Of particular concern should be postings made using social media from which it may be inferred that the information being released comprises a Public Report.

Note that any or all such Public Reports may also be issued for the purpose of satisfying regulatory requirements.

Code

2.13 For companies issuing annual reports, or other periodic summary reports, all material information relating to exploration, Mineral Resources and Mineral Reserves should be included.

2.14 In cases in which summary information is presented, the Public Report must clearly state that the information is a summary, and a reference must be provided giving the source and location of the CBRR Guide-compliant Public Reports or Public Reporting on which the summary is based.

2.15 The Public Report must include sufficient context and cautionary language to allow a reasonable investor to understand the nature, importance and limitations of the data, interpretations and conclusions summarized in the report.

Guidance

It is recognized that companies can be required to issue reports in more than one regulatory jurisdiction, with compliance standards that may differ from those in this CBRR Guide. It is recommended that such reports include a statement alerting the reader to this situation.

References made in the CBRR Guide to "documentation" mean internal company documents prepared as a basis for, or to support, a Public Report.

It is recognized that documentation prepared by Qualified Professionals (refer to Clause 3.6) for internal company or similar non-public purposes may not necessarily comply with the definitions, requirements and guidance contained in the CBRR Guide. In such situations, it is recommended that the document includes a prominent statement to this effect. This will make it less likely that non-compliant documentation will be used to compile Public Reports.

While every effort has been made within the CBRR Guide to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists regarding the appropriate form of disclosure. On such occasions, users of the CBRR Guide and those compiling reports to comply with the national/regional codes and standards based on the CBRR Guide should be guided by its intent, which is to provide a minimum standard for Public Reporting.

The estimation of Mineral Resources and Mineral Reserves is inherently subject to some 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 only represent a small part of a mineral deposit. The uncertainty in the

estimates should be discussed in the documentation and, where material, in Public Reports and reflected in the appropriate choice of Mineral Reserve and Mineral Resource categories.

A Public Report should be adequately supported by legible text, figures, tables, sections and maps to demonstrate competence by conveying material information in a transparent manner. Figures of any type should contain appropriate explanatory information in the form of titles and/or captions and legends.

The consideration of the environmental, social performance and governance (ESG) context and factors should include established global principles, standards and guidelines, such as, but not limited to:

- *Organisation for Economic Co-operation and Development (OECD): Due Diligence Guide for Responsible Business Conduct;*
- *International Finance Corporation (IFC): Performance Standards on Environmental and Social Sustainability;*
- *EP Association: The Equator Principles;*
- *International Council on Mining and Metals (ICMM): "10 Principles";*
- *Voluntary Principles of Security and Human Rights (voluntaryprinciples.org);*
- *United Nations Guiding Principles on Business and Human Rights;*
- *United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) and other relevant UN guidelines;*
- *Global Reporting Initiative (GRI) and Global Industry Standard on Tailings Management (globaltailingsreview.org).*

Code

2.16 The CBRR Guide does not cover valuation or appraisal from a business perspective. It provides for the description of Exploration Information and estimates of Mineral Resources and Mineral Reserves that may be used by others to prepare subsequent valuations or appraisals.

Reporting General

Code

2.17 Public Reports concerning a company's Exploration Information, Mineral Resources and/or Mineral Reserves must include a description of the style and nature of mineralization.

2.18 Any relevant information concerning a mineral deposit including material changes to the Mineral Resources or Mineral Reserves that could materially influence the economic value of the deposit must be disclosed.

2.19 Table 1 must be considered persuasive in determining and documenting relevant information that is material.

2.20 The effective date of a Mineral Resource and Mineral Reserve statement must be shown.

2.21 A company's economic interest in a project must be declared.

2.22 Where Mineral Resources and Mineral Reserves are estimated for multiple properties, they may be aggregated for reporting purposes, particularly if the properties are located in close proximity or their products are sent to common treatment plants or markets. The principles of transparency and materiality govern aggregation for reporting purposes.

2.23 Where multiple ownership is involved, the proportion of the reported Mineral Resources and reserves in which the company has an interest must be made clear.

3. COMPETENCE AND RESPONSIBILITY

Code

3.1 A Public Report concerning a company's Exploration Information, Mineral Resources and/or 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 information and supporting documentation prepared by or under the direction of and signed by a Qualified Professional.

3.2 Documentation detailing Exploration Information, Mineral Resource and Mineral Reserve estimates, on which a Public Report on Exploration Information, Mineral Resources and Mineral Reserves is based, must be prepared by, or under the direction of, and signed by, a Qualified Professional. The documentation must provide a fair representation of the Exploration Information; Mineral Resources or Mineral Reserves being reported.

3.3 A company issuing a Public Report shall make publicly available the name(s) of the Qualified Professional(s). This information must include whether the Qualified Professional is a full-time employee of the company and, if not, name the Qualified Professional's employer and the relationship with the company. Any potential for a conflict of interest between the Qualified Professional and a related party must be disclosed. Any other relationship between the Qualified Professional and the company must be disclosed.

3.4 The issue of a Public Report requires the written consent of the Qualified Professional(s), prior to release of the report, for the form and context in which it appears.

3.5 The company must provide the Qualified Professional(s) with the company's public disclosure of information prepared by the Qualified Professional(s) and seek approval for its context and the use of the Qualified Professional's name in connection with that disclosure. Reasonable time must be allowed for the Qualified Professional(s) to review the public disclosure prior to making their decision.

Definition

3.6 **A Qualified Professional is a mineral industry professional registered with the Brazilian Commission of Resources and Reserves (CBRR) or a member of a recognized professional organization (RPO) that has enforceable disciplinary processes, including the power to suspend or expel members.**

A Qualified Professional registered with the CBRR must have at least 10 (ten) years of professional experience and a minimum of 5 (five) years of relevant experience in the style of mineralization and type of deposit under consideration and in the activity that that person is

undertaking, including at least 3 (three) years in a position of responsibility.

Guidance

The term "position of responsibility" means that the individual is depended on for significant participation, management and decision making relevant to their respective area of technical competency. Position of responsibility does not necessarily imply a managerial, hierarchical position or corporate interest. Managerial, hierarchical positions or corporate interest cannot be recognized automatically as "positions of responsibility."

Qualified Professionals' Experience

Code

3.7 If the Qualified Professional is preparing a report on Exploration Information, their relevant experience must be in exploration.

3.8 If the Qualified Professional is estimating or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources.

3.9 If the Qualified Professional is estimating or supervising the estimation of Mineral Reserves, their relevant experience must be in the estimation, assessment, evaluation and economic extraction of Mineral Reserves.

Guidance

The key qualifier in the definition of a Qualified Professional is the word "relevant." Determination of what constitutes relevant experience can be a difficult area, and common sense has to be exercised. For example, in estimating Mineral Resources for vein gold mineralization, experience in a high-nugget, vein-type mineralization, such as tin or uranium, will probably be relevant, whereas experience in massive base metal deposits may not be.

As a second example, to qualify as a Qualified Professional in the estimation of Mineral Reserves for alluvial gold deposits, considerable experience in the evaluation and economic extraction of this type of mineralization is needed. This is due to the characteristics of gold in alluvial systems, the particle sizing of the host sediment and the low grades involved. Experience with placer deposits containing minerals other than gold may not necessarily provide appropriate relevant experience.

The key word "relevant" also means that it is not always necessary for a person to have five years' experience in each and every type of deposit to act as a Qualified Professional if that person has relevant experience in other deposit types. For example, a person with (say) 20 years' experience in estimating Mineral Resources for a variety of metalliferous hard-rock deposit types may not require five years' specific experience in (say) porphyry copper deposits to act as a Qualified Professional.

Relevant experience in the other deposit types could count toward the required experience in relation to porphyry copper deposits.

In addition to experience in the style of mineralization, a Qualified Professional taking responsibility for the compilation of Exploration Information and/or Mineral Resource estimates should have sufficient experience in the sampling and analytical techniques relevant to the deposit under consideration to be aware of problems that could affect the reliability of data. Some appreciation of processing and beneficiation applicable to that deposit type is also important.

Qualified Professionals' Responsibilities

Code

3.10 The Qualified Professional must provide explanatory comment on the material assumptions underlying the declaration of Exploration Information, Mineral Resources or Mineral Reserves.

3.11 In particular, the Qualified Professional, when considering materiality as defined in Clause 2.7, must include explicit comment on all aspects with which an investor or advisor would reasonably expect to be provided. This includes but is not limited to any aspect that would influence the public perception or value of the subject matter.

3.12 The Qualified Professional must be satisfied that:

- their work has not been unduly influenced by the organization, company or person commissioning the report or a report that may become a Public Report;
- all assumptions are documented;
- adequate disclosure is made of all material aspects that an informed reader may require to make a reasonable and balanced judgment thereof; and
- should have visited the property that is the subject of the Public Report if accessible and/or have visited sample preparation facilities, analytical laboratories and metallurgical testing laboratories as appropriate. Additional visits may be needed at a frequency that is appropriate to the Qualified Professional's view of the risks, opportunities and level of work being completed.

Guidance

As a general guide, persons being called upon to act as Qualified Professionals should be clearly satisfied in their own minds that they could face their peers and demonstrate competence in the commodity, type of deposit and situation under consideration. If doubt exists, the person should either seek opinions from appropriately experienced colleagues or decline to act as a Qualified Professional.

The estimation of Mineral Resources may be a team effort (for example, involving one person or team collecting the data and another person or team preparing the estimate). The estimation of Mineral Reserves is very commonly a team effort involving several technical disciplines. Where there is a clear division of responsibility within a team, each Qualified Professional and their contribution should be identified and responsibility accepted for that contribution.

If only one Qualified Professional signs the Mineral Resource or Mineral Reserve documentation, that person is responsible and accountable for the entire documentation under the CBRR Guide. In this situation, the Qualified Professional accepting overall responsibility for a Mineral Resource or Mineral Reserve estimate and supporting documentation prepared in whole or in part by others should be satisfied that the work of the other contributors is acceptable.

Complaints made in respect of the professional work of a Qualified Professional will be dealt with under the disciplinary procedures of the CBRR or the organization to which the Qualified Professional belongs. Such procedures may vary from country to country.

A Qualified Professional who is a member of the organization should submit a report to a specific stock exchange using the applicable code or standard, providing that the Qualified Professional meets the requirement of relevant experience as included in the definition in paragraph 3.6 or as specified by any relevant regulatory authority or NRO (National Reporting Organization).

4. REPORTING TERMINOLOGY

Defined Terms

Code

4.1 The CBRR Guide's standard definitions for the defined terms should be considered in conjunction with Figure 1.

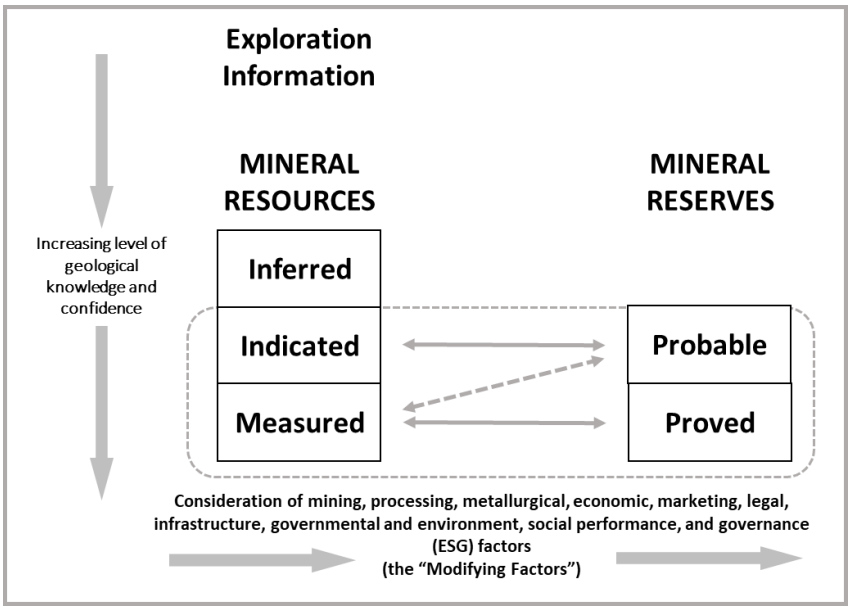

Figure 1. General relationship between Exploration Information, Mineral Resources and Mineral Reserves

4.2 In Figure 1, the defined terms are:

- Exploration Information
- Mineral Resources
- Inferred Mineral Resources
- Indicated Mineral Resources
- Measured Mineral Resources
- Modifying Factors
- Mineral Reserves
- Probable Mineral Reserves
- Proved Mineral Reserves

4.3 The categories shown in Figure 1 must be used to report Exploration Information, Mineral Resources and Mineral Reserves.

Exploration information is a generic expression to represent graphically the set of defined terms **Exploration Targets** (Clause 5.1) and **Exploration Results** (Clause 5.7). These terms cannot be part of a formal declaration of Mineral Resources or Mineral Reserves.

4.4 The relationships between some of the defined terms are considered in the guidance below. The defined terms are described further in this and subsequent sections.

4.5 Mineral Resource estimates must have reasonable prospects for eventual economic extraction.

4.6 Mineral Reserve estimates must be supported by pre-feasibility or feasibility studies that show their technical and economic viability.

Guidance

A life-of-mine plan of at least pre-feasibility level can be used in an operating mine where no significant capital expenditure is required.

Measured Mineral Resources may be converted into either Proved Mineral Reserves or Probable Mineral Reserves. The Qualified Professional may convert Measured Mineral Resources into Probable Mineral Reserves because of uncertainties associated with some or all of the Modifying Factors, which are taken into account in the conversion from Mineral Resources into Mineral Reserves. This relationship is shown by the broken arrow in Figure 1.

Modifying Factors

Definition

4.7 **Modifying Factors are considerations used to convert Mineral Resources into Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social performance and governance (ESG) and governmental factors.**

Code

4.8 The effect of any modifying factor on the likely viability of a project and/or on the estimation and classification of the Mineral Reserves must be fully explained.

4.9 Refer also to the requirements for reporting Mineral Reserves contained in Clauses 7.1 to 7.23.

Guidance

Figure 1 sets out the framework for classifying tonnage and grade estimates to reflect different levels of geological confidence and different degrees of technical and economic evaluation.

Estimates of Mineral Resources can be based mainly on geological information with some input from other disciplines.

Mineral Reserves, which are a modified sub-set of the indicated and Measured Mineral Resources (shown within the dotted outline in Figure 1), require consideration of the Modifying Factors affecting extraction and should in most instances be estimated with input from a range of disciplines.

Although the trend of the broken arrow includes a vertical component, it does not, in this instance, imply a reduction in the level of geological knowledge or confidence. A Measured Mineral Resource may be converted into a Probable Mineral Reserve when the confidence in any of the Modifying Factors is less than the level of geological knowledge or confidence. In such a situation, these Modifying Factors should be fully explained.

5. REPORTING OF EXPLORATION INFORMATION

Exploration Target

Definition

5.1 **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 mineralization for which there has been insufficient exploration to estimate Mineral Resources.**

Code

5.2 It is recognized that it is common practice for an entity to comment on and discuss its exploration strategy in terms of the target size and type. Any such information relating to the Exploration Target size must not be expressed in a way that could be confused as an estimate of Mineral Resources or Mineral Reserves.

5.3 Any statement referring to the potential quantity and grade of the target must be expressed as a range and must include a detailed explanation of the basis for the assumptions made and procedures used to estimate the range of tonnage and grade or quality and extent.

5.4 There must also be a proximate statement that the potential quantity and grade are conceptual in nature, that there has been insufficient exploration to define a Mineral Resource and that it is uncertain whether further exploration will result in the determination of a Mineral Resource.

5.5 The detailed explanation of the basis for the statement of a target must specifically discuss the geological setting and exploration strategy, the exploration activity already completed and the presence or absence of the following attributes:

- an analogous deposit with a similar geological setting;
- mineralized outcrops and assays;
- surface geochemical and physical sampling results;
- surface and subsurface geophysical survey results; and
- drill holes, test pits and underground workings.

5.6 Proposed exploration activities designed to test the validity of an Exploration Target should be detailed and include the time frame within which they are expected to be completed, and material ESG threats and opportunities must be taken into consideration at this early stage.

Guidance

Descriptions of Exploration Targets or exploration potential in Public Reports should be expressed so as not to misrepresent them as an estimate of Mineral Resources or Mineral Reserves.

Exploration Results

Definition

5.7 **Exploration Results include data and information generated by mineral exploration programs that might be of use to investors but that do not form part of a declaration of Mineral Resources or Mineral Reserves.**

Code

5.8 Reporting of Exploration Results is common in the early stages of exploration, when the quantity of data available is generally not sufficient to allow any reasonable estimates of tonnage and grade to be made. Examples include discovery outcrops, single drill hole intercepts or the results of geophysical surveys and metallurgical test work.

5.9 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 mineralization.

Guidance

It should be made clear in Public Reports that contain Exploration Results that it is inappropriate to use such information to derive estimates of tonnage and grade or quality (because, if there were sufficient information to do so, the resulting estimates would have been quoted).

It is recommended that such reports carry a continuing statement along the following lines:

> *The information provided in this report/statement/release constitutes Exploration Results. It is inappropriate for the reader to use the information presented to derive estimates of tonnage and grade or quality.*

Code

5.10 Public Reports of Exploration Results must contain sufficient information to allow a considered and balanced judgment of their significance.

5.11 Reports must include relevant information, such as the exploration context, type and method of sampling, relevant sample intervals and locations, distribution, dimensions and relative location of all relevant assay data, methods of analysis, data aggregation methods and land tenure status plus information on any of the other criteria listed in Table 1 that are material to an assessment.

5.12 Public Reports of Exploration Results must not be presented so as to imply unreasonably that potentially economic mineralization has been discovered. If true widths of mineralization are not reported, an appropriate qualification must be included in the Public Report.

5.13 Where assay and analytical results are reported, one of the following methods must be used, selected as the most appropriate by the Qualified Professional:

- by listing all the results, along with sample intervals (or size, in the case of bulk samples); or

- by reporting weighted average grades of mineralized zones, indicating clearly how the grades were calculated.

5.14 Clear diagrams and maps designed to represent the geological context must be contained in the report. These must include, but not be limited to, a plan view of drill hole collar locations and appropriate sectional views.

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

Guidance

While it is not necessary to report all assays or drill holes, it is a requirement that sufficient information about the omitted data is provided so that a considered and balanced judgment can be made by the reader of the report. Where reports of Exploration Results do not include all drill holes or all intersections of drill holes, the Qualified Professional must provide an explanation of why this information is not considered relevant or why it has not been provided.

As required under Clause 2.9, the Qualified Professional must not "remain silent" on any issue for which the presence or absence of comment could affect the public perception or value of the mineral occurrence. For significant projects, the reporting of all criteria in sections 1 and 2 of Table 1 on an "if not, why not" basis is required, preferably as an appendix to the Public Report.

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 or poor repeatability of assay or laboratory results.

6. REPORTING OF MINERAL RESOURCES

Definition

6.1 **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 or quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred Mineral Resources, Indicated Mineral Resources and Measured Mineral Resources.

Code

6.2 All reports of Mineral Resources must satisfy the requirement that there are reasonable prospects for eventual economic extraction (i.e., more likely than not), regardless of their classification.

6.3 Estimates of non-economic mineralization (where there are no reasonable prospects for eventual economic extraction) do not qualify as Mineral Resources (or Mineral Reserves) under the definitions of this CBRR Guide.

Guidance

The term "reasonable prospects for eventual economic extraction" implies a judgment (albeit preliminary) by the Qualified Professional in respect of all the Modifying Factors. In other words, a Mineral Resource is not an inventory of all mineralization drilled or sampled, regardless of the cut-off grade, likely mining dimensions, location or continuity. It is a realistic inventory of mineralization, which, under assumed and justifiable technical, economic and ESG conditions, may, in whole or in part, become economically extractable.

Any material assumptions made in determining the "reasonable prospects for eventual economic extraction" should be clearly stated, discussed and justified in the Public Report.

The interpretation of the word "eventual" in this context may vary depending on the commodity or mineral involved.

Any adjustment made to the data for making the Mineral Resource estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

The term "Mineral Resource" covers mineralization, including dumps and tailings, which has been identified and estimated through exploration and sampling and within which Mineral Reserves may be defined by the consideration and application of Modifying Factors.

One of the approaches that is becoming increasingly widespread in the industry is the use of mine-planning tools (a mathematical pit or conceptual stopes design) to constrain the measured, indicated and inferred resources that could support mining, processing and future development cost estimates. If necessary, viable beneficiation process(es) should be identified to meet the criteria for reasonable prospects. Economic criteria should be applied in a similar manner to all classes of Mineral Resources (measured, indicated and inferred). Any material assumptions made in determining the "reasonable prospects for eventual economic extraction" should be documented and clearly stated in the Public Report.

The interpretation of the word "eventual" in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron ore, bauxite and other bulk minerals or commodities, it may be reasonable to envisage "eventual economic extraction" as covering time periods in excess of 50 years. However, for many gold deposits, the application of the concept would be restricted normally to perhaps 10 to 15 years and frequently to much shorter periods of time.

Any adjustment made to the data for the purpose of making the Mineral Resource estimate, such as cutting or factoring grades, should be clearly stated and described in the Public Report.

Estimates of Mineral Resources may be declared after the reconciliation adjustment with production data ("call factors"). The nature and impact of such adjustments, if applied, should be clearly described.

Certain reports (e.g., inventory reports, exploration reports to the government and other similar reports that are not intended primarily for providing information for investment purposes) may require full disclosure of all mineralization, including some material that does not have reasonable prospects for eventual economic extraction. Such estimates of mineralization would not qualify as Mineral Resources or Mineral Reserves under the definitions included in the CBRR Guide.

Inferred Mineral Resources

Definition

6.4 **An Inferred Mineral Resource is that part of a Mineral Resource for which the 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.

An inferred resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted into a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.

Code

6.5 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.

6.6 In circumstances in which the estimation of the Inferred Mineral Resource is presented on the basis of extrapolation beyond the nominal sampling spacing and taking into account the style of mineralization, the report must contain sufficient information to inform the reader of:

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

Guidance

The inferred 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 and/or grade continuity to be interpreted with confidence.

Commonly, it would be reasonable to expect that the majority of Inferred Mineral Resources would be upgraded to Indicated Mineral Resources with continued exploration. However, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur.

Code

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

Guidance

Confidence in the estimate is usually not sufficient to allow the results of the application of technical and economic parameters to be used for planning. For this reason, there is no direct link from an inferred resource to any category of Mineral Reserves (see Figure 1). Caution should be exercised if Inferred Mineral Resources are considered in technical and/or economic studies. Inferred Mineral Resources may be considered for mine designs used to estimate Mineral Reserves. However, inferred material should not be reported as Mineral Reserves and should be treated as waste in the economic analysis. The manner in which Inferred Mineral Resources are used in mine designs to estimate Mineral Reserves and the effect on the resulting Mineral Reserves should be estimated and the attendant risks disclosed.

Indicated Mineral Resources

Definition

6.8 **An Indicated Mineral Resource is that part of a Mineral Resource for which the 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.**

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.

An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource and may only be converted into a Probable Mineral Reserve.

Code

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

Guidance

Mineralization may be classified as an Indicated Mineral Resource when the nature, quality, amount and distribution of data are such as to allow confident interpretation of the geological framework and to assume continuity of mineralization.

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

Measured Mineral Resources

Definition

6.10 **A Measured Mineral Resource is that part of a Mineral Resource for which the 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 the final evaluation of the economic viability of the deposit.**

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.

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 into a Proved Mineral Reserve or a Probable Mineral Reserve.

Code

6.11 A Measured Mineral Resource requires an understanding of the geology, mineralogy, mineability and amenability to processing of the mineral deposit.

Guidance

Mineralization may be classified as a Measured Mineral Resource when the nature, quality, amount and distribution of data are such as to leave no reasonable doubt, in the opinion of the Qualified Professional determining the Mineral Resource, that the tonnage and grade of the mineralization can be estimated to within close limits and that any variation from the estimate would be unlikely to affect the potential economic viability significantly.

This category requires a high level of confidence in, and understanding of, the geology and the controls of the mineral deposit.

Confidence in the estimate is sufficient to allow the application of technical and economic parameters and to enable an evaluation of economic viability with a high level of confidence.

Selection of the Mineral Resource Reporting Category

Code

6.12 The choice of the appropriate category of Mineral Resource depends on the quantity, distribution and quality of data available and the level of confidence attached to those data.

6.13 The appropriate Mineral Resource category must be determined by a Qualified Professional.

Guidance

Mineral Resource classification is a matter for skilled judgment, and Qualified Professionals should take into account those items in Table 1 that relate to confidence in Mineral Resource estimation.

In deciding between Measured Mineral Resources and Indicated Mineral Resources, Qualified Professionals may find it useful to consider, in addition to the phrases in the two definitions relating to geological and grade continuity in Clauses 6.8 and 6.10, the phrase in the guideline to the definition of Measured Mineral Resources:

> *… any variation from the estimate would be unlikely to affect potential economic viability significantly.*

In deciding between Indicated Mineral Resources and Inferred Mineral Resources, Qualified Professionals may wish to take into account, in addition to the phrases in the two definitions in Clauses 6.4 and 6.9

relating to geological and grade continuity, the guideline to the definition of Indicated Mineral Resources:

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

This contrasts with the guideline to the definition of Inferred Mineral Resources:

> *Confidence in the estimate of Inferred Mineral Resources is usually not sufficient to allow the results of the application of technical and economic parameters to be used for planning*

and

> *Caution should be exercised if this category is considered in technical and economic studies.*

The Qualified Professional should take into consideration issues of the style of mineralization, scale and cut-off grade when assessing geological and grade continuity.

Code

6.14 Public Reports of Mineral Resources must specify one or more of the categories “Inferred,” “Indicated” and “Measured.”

6.15 Categories must not be reported in a combined form unless details for the individual categories are also provided.

6.16 Mineral Resources must not be reported in terms of contained metal or mineral content unless corresponding tonnages and grades are also presented.

6.17 Mineral Resources must not be aggregated with Mineral Reserves.

6.18 Public reporting of tonnage and grade outside the categories covered by the CBRR Guide is not permitted.

6.19 The words “ore” and “reserves” must not be used in stating Mineral Resource estimates (except in the context of common usage such as “iron ore,” etc.) as the terms imply technical feasibility and economic viability and are only appropriate when all the relevant modifying factors have been considered.

6.20 Reports and statements should continue to refer to the appropriate category or categories of Mineral Resources until technical feasibility and economic viability have been established.

6.21 In a Public Report of a Mineral Resource for a project material to the company, when reporting for the first time or when those estimates have materially changed from when they were last reported, a brief summary of the information in the relevant sections of Table 1 must be provided. Alternatively, if a particular criterion is not relevant or material, a disclosure

that it is not relevant or material and a brief explanation of why this is the case must be provided.

Accuracy of Estimates

Code

6.22 Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results.

6.23 The reporting of tonnage and grade figures should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures and, in the case of Inferred Mineral Resources, by qualification with terms such as “approximately.”

Guidance

In most situations, rounding to the second significant figure should be sufficient. For example, 10,863,000 tonnes at 8.23 percent should be stated as 11 million tonnes at 8.2 percent.

There will be occasions, however, when rounding to the first significant figure may be necessary to convey properly the uncertainties in estimation. This would usually be the case with Inferred Mineral Resources.

To emphasize the imprecise nature of a Mineral Resource estimate, the result should always be referred to as an estimate and not as a calculation.

Qualified Professionals are encouraged, where appropriate, to discuss the relative accuracy and/or confidence of the Mineral Resource estimates. The statement should specify whether it relates to global (whole of the resource) or local estimates (a subset of the resource for which the accuracy and/or confidence might differ from those of the whole of the resource) and, if local, state the relevant tonnage or volume. Where a statement of the relative accuracy and/or confidence is not possible, a qualitative discussion of the uncertainties should be provided (refer to Table 1).

7. REPORTING OF MINERAL RESERVES

Definition

7.1 **A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource.**

It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at the pre-feasibility or feasibility level as appropriate that include the application of Modifying Factors.

Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.

The reference point at which Mineral Reserves are defined, usually the point at which the ore is delivered to the processing plant, must be stated. It is important that, in all situations in which the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed about what is being reported.

Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proved Mineral Reserves.

Code

7.2 Mineral Reserves are those portions of indicated and Measured Mineral Resources that, after the application of all the relevant Modifying Factors, result in an estimated tonnage and grade that, in the opinion of the Qualified Professional making the estimates, can be the basis of a viable project.

7.3 Studies at the Pre-Feasibility or Feasibility level, as appropriate, will have been carried out prior to the determination of the Mineral Reserves.

7.4 The study will have determined a mine plan that is technically achievable and economically viable and from which the Mineral Reserves can be derived.

7.5 When reporting Mineral Reserves, information on all Modifying Factors must be included in Public Reports.

Guidance

The term "economically mineable" implies that the extraction of the Mineral Reserve has been demonstrated to be viable under reasonable financial assumptions. What constitutes "reasonable financial assumptions" will vary with the type of deposit, the level of study that has been carried out and the financial criteria of the individual company.

For this reason, there can be no fixed definition of the term "economically mineable." However, it is expected that companies will attempt to achieve an acceptable return on capital invested and that the returns to investors

in the project will be competitive with alternative investments of comparable risk.

Technical studies can determine a mine plan that is technically achievable and economically viable and from which the Mineral Reserves can be derived. Exploration Targets and Inferred Mineral Resources must be excluded from the demonstration of economic viability to support the declaration of a Mineral Reserve.

The term "Mineral Reserves" need not necessarily signify that extraction facilities are in place or operative or that all necessary approvals or sales contracts have been received. It does signify that there are reasonable expectations of such approval or contracts. The Qualified Professional should report any material or unresolved matter that is dependent on a third party on which extraction is contingent.

Code

7.6 In jurisdictions where the mineral rights are not held by the state, for a Mineral Reserve to be declared, it is required that the legally enforceable mineral title is controlled by the company at the time of determination. If the company is leasing or sub-leasing the mineral, the lease or sub-lease should be from an entity that has control of the necessary mineral title.

Guidance

If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.

Any adjustment made to the data for the purpose of making the Mineral Reserve estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

Probable Mineral Reserves

Definition

7.7 **A Probable Mineral Reserve is the economically mineable part of an indicated, and in some circumstances a Measured Mineral Resource.**

The confidence in the Modifying Factors applying to a Probable Mineral Reserve is lower than that applying to a Proved Mineral Reserve.

Code

7.8 A Probable Mineral Reserve has a lower level of confidence than a Proved Mineral Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.

Guidance

Situations may arise in which Probable Mineral Reserves alone may be sufficient to justify extraction, for example with some alluvial tin, diamond or gold deposits. This is a matter for judgment by the Qualified Professional.

Proved Mineral Reserves

Definition

7.9 **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.**

Code

7.10 A Proved Mineral Reserve represents the highest confidence category of reserve estimate.

Guidance

The style of mineralization or other factors could mean that Proved Mineral Reserves are not achievable in some deposits.

Qualified Professionals should be aware of the consequences of declaring material to be in the highest confidence category before satisfying themselves that all of the relevant resource parameters and Modifying Factors have been established at a similarly high level of confidence.

Selection of the Mineral Reserve Reporting Category

Code

7.11 The choice of the appropriate category of Mineral Reserve is determined primarily by the relevant level of confidence in the Mineral Resource and after considering any uncertainties in the Modifying Factors.

7.12 The allocation of the appropriate category must be made by the Qualified Professional.

Guidance

The CBRR Guide provides for a direct relationship between Indicated Mineral Resources and Probable Mineral Reserves and between Measured Mineral Resources and Proved Mineral Reserves. In other words, the level of geological confidence for Probable Mineral Reserves is similar to that required for the determination of Indicated Mineral Resources. The level of geological 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.

The CBRR Guide also provides for a two-way relationship between Measured Mineral Resources and Probable Mineral Reserves. This is to cover a situation in which uncertainties associated with any of the Modifying Factors considered when converting Mineral Resources into Mineral Reserves may result in a lower degree of confidence in the Mineral Reserves than in the corresponding Mineral Resources. Such a conversion would not imply a reduction in the level of geological knowledge or confidence.

A Probable Mineral Reserve derived from a Measured Mineral Resource may be converted into a Proved Mineral Reserve if the uncertainties in the Modifying Factors are removed. No amount of confidence in the Modifying

Factors for the 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 into a Proved Mineral Reserve (see Figure 1).

The application of the category of Proved Mineral Reserves implies the highest degree of confidence in the estimate, with consequent expectations in the minds of the readers of the report. These expectations should be borne in mind when categorizing a Mineral Resource as measured.

Refer also to the guidelines in Clauses 6.12 and 6.13 regarding the classification of Mineral Resources.

Code

7.13 Public Reports of Mineral Reserves must specify one or both of the categories “Proved” and “Probable.”

7.14 Categories must not be reported for a combined proved and Probable Mineral Reserve unless the relevant figures for each of the categories are also provided.

7.15 Reports must not present metal or mineral content figures unless corresponding tonnage and grade figures are also given.

7.16 Mineral Reserves must not be aggregated with Mineral Resources.

7.17 Public reporting of tonnage and grade outside the categories covered by the CBRR Guide is not permitted.

Guidance

Mineral Reserves may incorporate material (dilution) that is not part of the original Mineral Resource. It is essential that this fundamental difference between Mineral Resources and Mineral Reserves is borne in mind and caution is exercised if attempting to draw conclusions from a comparison of the two.

When revised Mineral Reserve and Mineral Resource statements are publicly reported, they should be accompanied by reconciliation with previous statements. A detailed account of the differences between the figures is not essential, but sufficient comment should be made to enable significant changes to be understood by the reader.

Code

7.18 In situations in which figures for both Mineral Resources and Mineral Reserves are reported, a statement must be included in the report that clearly indicates whether the Mineral Resources are inclusive of or additional to the Mineral Reserves.

7.19 Mineral Reserve estimates must not be added to Mineral Resource estimates to report a single combined figure.

Guidance

There are reasons for reporting Mineral Resources inclusive of Mineral Reserves in some situations and Mineral Resources exclusive of Mineral Reserves in other situations. It must be made clear which form of reporting has been adopted. Appropriate forms of clarifying statements may be:

> *The measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Mineral Reserves*

or

> *The measured and Indicated Mineral Resources are additional to or exclusive of the Mineral Reserves.*

In the former case, if any measured and Indicated Mineral Resources have not been modified to produce Mineral Reserves for economic or other reasons, the relevant details of the unmodified Mineral Resources should be included in the report. This is to assist the reader of the report in making a judgment about the likelihood of the unmodified measured and Indicated Mineral Resources eventually being converted into Mineral Reserves.

Inferred Mineral Resources are by definition always additional to Mineral Reserves.

For the reasons stated in the guidelines to Clauses 7.11 and 7.12, and in this guideline, the reported Mineral Reserve figures must not be added to the reported Mineral Resource figures. The resulting total is misleading and is capable of being misunderstood or of being misused to give a false impression of a company's prospects.

Code

7.20 If re-evaluation indicates that any part of the Mineral Reserves is no longer viable, such Mineral Reserves must be reclassified as Mineral Resources and removed from the Mineral Reserve statements. When justifiable, they must also be removed from the Mineral Resources statements.

Guidance

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 or when the company management has made a deliberate decision to operate on a non-economic basis. Examples of such situations might be commodity price fluctuations expected to be of a short duration, a mine emergency of a non- permanent nature, a transport strike and so on.

Code

7.21 In a Public Report of a Mineral Reserve for a project material to the company, when reporting for the first time or when the estimates have materially changed from when they were last reported, a brief summary of the information in the relevant sections of Table 1 must be provided.

Alternatively, if a particular criterion is not relevant or material, a disclosure that it is not relevant or material and a brief explanation of why this is the case must be provided.

7.22 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.

Modifying Factors and assumptions applied to the Inferred Mineral Resources must reflect a risk analysis taking into account their lower geological knowledge and confidence.

A LoMP must be economically viable without Inferred Mineral Resources to support the declaration of Mineral Reserves.

Where a material amount of mining in the LoMP includes Inferred Mineral Resources, a comparison of the results with and without these Inferred Mineral Resources must be shown, and the rationale (including a risk assessment) behind their inclusion must be explained and the proportion of Inferred Resources included in the LoMP reported.

Guidance

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 declares that Inferred Mineral Resources have been used is issued.

A Life of Mine Plan (LoMP) must be economically viable without Inferred Mineral Resources to support the declaration of Mineral Reserves.

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 (including a risk assessment) behind their inclusion must be explained and the proportion of inferred resources included in the LoMP reported.

The Modifying Factors and assumptions applied to the Inferred Mineral Resources must reflect a risk analysis taking into account their lower geological knowledge and confidence.

Accuracy of Estimates

Code

7.23 Mineral Reserve estimates are not precise calculations. The reporting of tonnage and grade figures should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures. Refer also to the guidelines for Clause 6.23.

Guidance

To emphasize the imprecise nature of a Mineral Reserve, the result should always be referred to as an estimate and not a calculation.

Qualified Professionals should, where appropriate, discuss the relative accuracy of and/or confidence in the Mineral Reserve estimates.

The statement should specify whether it relates to global (whole of the reserve) or local estimates (a subset of the reserve for which the accuracy and/or confidence might differ from the whole of the reserve) and, if local, state the relevant tonnage or volume.

Where a statement of the relative accuracy and/or confidence is not possible, a qualitative discussion of the uncertainties should be provided (refer to Table 1, Table 2 and the guidelines for Clauses 6.9 and 6.11).

8. TECHNICAL STUDIES

Code

8.1 Public Reports may include, but need not be limited to, information included in or supported by:

- Scoping studies
- Pre-feasibility studies
- Feasibility studies

8.2 Guidelines on the requirements for Scoping, Pre-Feasibility and Feasibility Studies are included in Table 2.

Scoping Study

Definition

8.3 **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 reasonably be justified.**

Code

8.4 A Scoping Study must not be used as the basis for the estimation of Mineral Reserves.

8.5 If the outcome of a Scoping Study is partially supported by Inferred Mineral Resources, the Public Report must state the proportion and relative sequencing of the Inferred Mineral Resources within the Scoping Study.

8.6 For all scoping studies, the company must include a cautionary statement in the same paragraph as or immediately following the disclosure of the Scoping Study.

Guidance

An example cautionary statement follows:

> *The Scoping Study referred to in this report is based on low-level technical and economic assessments and is insufficient to support the estimation of Mineral Reserves or to provide assurance of an economic development case at this stage or to provide certainty that the conclusions of the Scoping Study will be realized.*

In discussing "reasonable prospects for eventual economic extraction" in Clause 6.2, an assessment (albeit preliminary) is required of all matters likely to influence the prospect of economic extraction, including the approximate Modifying Factors by the Qualified Professional. While a Scoping Study may provide the basis for that assessment, the CBRR Guide

does not require a Scoping Study to have been completed to report a Mineral Resource.

A Scoping Study is commonly the first economic evaluation of a project undertaken and may be based on a combination of directly gathered project data together with assumptions borrowed from similar deposits or operations to the case envisaged.

Scoping studies are also commonly used by companies for comparative and planning purposes. The reporting of the general results of a Scoping Study should be undertaken with care to ensure that there is no implication that Mineral Reserves have been established or that economic development is assured.

In this regard, it is appropriate to indicate the Mineral Resource inputs in the Scoping Study and the processes applied, but it is not appropriate to report the diluted tonnes and grade as if they were Mineral Reserves.

While initial mining and processing cases may have been developed during a Scoping Study, they must not be used to allow a Mineral Reserve to be declared.

Pre-Feasibility Study

Definition

8.7 **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 at which 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 that are sufficient for a Qualified Professional, acting reasonably, to determine whether all or part of the Mineral Resource may be converted into a Mineral Reserve at the time of reporting. A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.**

Guidance

As required in Clause 8.7 and 8.8, formal assessment of all Modifying Factors is necessary to determine how much of the available measured and Indicated Mineral Resources can be converted into Mineral Reserves.

A Pre-Feasibility Study will consider the application and description of all the Modifying Factors (as outlined in Table 1, Section 4) to demonstrate economic viability and to support a Mineral Reserve in a Public Report.

The Pre-Feasibility Study will identify the preferred mining, processing and infrastructure requirements and capacities but will not yet finalize these matters. Detailed assessments of environmental and socio-economic impacts and requirements will also be well advanced.

The Pre-Feasibility Study will highlight areas that require further refinement within the final study stage.

Feasibility Study

Definition

8.8 **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.**

Code

8.9 It is not essential to have undertaken a full Feasibility Study to convert Mineral Resources into Mineral Reserves. It is, however, necessary for at least a Pre-Feasibility Study to have been carried out that will have determined a mine plan that is technically achievable and economically viable and for material Modifying Factors to have been considered.

Guidance

Terms such as "bankable Feasibility Study" and "definitive Feasibility Study" are noted as being equivalent to a Feasibility Study as defined in this clause.

A Feasibility Study is of a higher level of confidence than a Pre-Feasibility Study and normally contains mining, infrastructure and process designs completed with sufficient rigor to serve as the basis for an investment decision or to support project financing. Social, environmental and governmental approvals, permits and agreements will be in place or will be approaching finalization within the expected development time frame.

The Feasibility Study will contain the application and description of all the Modifying Factors (as outlined in Table 1, section 5) in a more detailed form than in the Pre-Feasibility Study and may address implementation issues such as detailed mining schedules, construction ramp up and project execution plans.

9. REPORTING OF METAL EQUIVALENTS

Code

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

9.2 The following minimum information must accompany any Public Report that includes reference to metal equivalents to conform to the principles of transparency and materiality, as set out in Clauses 2.6 and 2.7:

- Individual grades for all metals included in the metal equivalent calculation;
- Assumed commodity prices for all metals. The actual assumed prices should be disclosed. 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, sufficient information must be disclosed, perhaps in narrative rather than numerical form, for investors to understand the methodology used to determine these prices;
- Assumed beneficiation recoveries for all metals and discussion of the basis on which the assumed recoveries are derived (metallurgical test work, detailed mineralogy, similar deposits, etc.);
- A clear statement that it is the company's opinion that all the elements included in the calculation of metal equivalents have reasonable potential to be recovered and sold; and
- The calculation formula used.

9.3 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 behind the choice of another metal must be included in the report.

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

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

10. COMMODITY PRICING AND MARKETING

Code

10.1 The commodity prices and sales volume expectations used for the determination of Mineral Resources and Mineral Reserves must be based on forward-looking estimates reflecting the company's reasonable and supportable short- and long-term expectations as indicated by the available evidence, which may include consensus forecasts, three-year trailing averages, sales contracts or other price analyses (see Clauses 10.4 and 10.5 below for cases in which public disclosure is not appropriate).

Guidance

The basis for the selected prices and sales volumes should be supported by appropriate documentation.

The Qualified Professional should ascertain that these prices and volumes are consistent with the sales agreements and marketing determinations or forecasts.

Under certain circumstances, it may be appropriate to use different prices for estimating Mineral Resources and Mineral Reserves.

For current mining operations, the price and volume profile used for Mineral Resource and Mineral Reserve estimation may reflect the current market conditions for short-term forecasts, while trending over time upward or downward toward the long-term price and volume estimates based on the company's expectations.

For Mineral Reserves that are expected to be produced beyond the validity of short-term forecasts, the company should use long-term price and volume expectations.

For commodities sold under existing contracts, Mineral Reserves should be determined based on contract terms.

For Mineral Reserves for which the production would extend beyond the quantities specified in the existing contracts, reasonable and supportable assumptions should be made to determine the likelihood of contract renewal and the prices applicable to the estimation and reporting of these Mineral Resources and Mineral Reserves.

Code

10.2 To demonstrate the economic feasibility of a Mineral Reserve, the estimated prices, combined with the Modifying Factors, must be applied only to Measured and Indicated Mineral Resources.

Guidance

Mineral Reserves are the economically mineable part of a Measured or Indicated Mineral Resource; hence, appropriate assessments should demonstrate at the time of reporting that extraction is reasonably justified. This requires assumptions to be made concerning the price of the commodity or product that will be sold when the mine is in production.

Mineral Reserves are estimated and published to supply information concerning the value of the deposit and the risk that may be associated with its development.

Mineral Reserves are used by a company, in conjunction with Mineral Resources, for short-term, long-term and strategic planning. They play a critical role in accounting, including impairment testing, fair value accounting, calculation of depreciation, depletion and accumulated retirement obligation provision rates.

To supply information consistent with the company's plans and financial reporting, the commodity prices used for the determination of Mineral Reserves should be based on forward-looking estimates reflecting the company's reasonable expectations as supported by all the available evidence.

Most commodities, whether sold using publicly quoted prices (e.g., base metals and precious metals) or under long-term contracts (e.g., coal and iron ore), experience long-term price cycles. Price expectations should reflect current prices as well as long-term trends. Overly optimistic or pessimistic price and volume expectations could result in significant over- or underestimation of Mineral Reserves. It is the responsibility of the company and the Qualified Professional to determine whether the prices used for Mineral Reserve estimation are reasonable and supportable, given all the available information.

During periods of low prices, a mining company may choose to temporarily curtail operations and conserve the mineral asset until the prices recover. When such actions are taken, Public Reports should be updated to reflect the new information. In such circumstances, previously published Mineral Reserves may not have to be reclassified provided that, in the opinion of the company and the Qualified Professional, higher future prices can be reasonably and supportably assumed and it can reasonably be expected that operations will resume.

The documentation supporting the company's expectations should include a comparison of prices with historical and current prices and forward curves, contracts and market considerations, currency exchange rates where applicable, third-party sources and supplemental information.

Code

10.3 Disclosure in Public Reports of the commodity prices and sometimes also the costs (including other Modifying Factors) used for Mineral Reserve estimation is generally required.

10.4 In the absence of applicable securities or other laws to disclose prices, there may be cases, such as when a product is sold under a long-term

contract, the terms of which are confidential, in which there are valid commercial reasons for non-disclosure of prices.

10.5 Similarly, when disclosure of the long-term price and/or cost assumptions used in the estimation would be detrimental to the company's business, such as when bidding for sales contracts or property acquisitions or negotiating agreements with third parties, non-disclosure may be justifiable.

Guidance

Whenever prices and/or costs are not disclosed, the reasons should be documented and the commodity price and/or cost information should nevertheless be available for review by auditors or regulators if required.

Even when commodity prices and/or costs are excluded from a Public Report, a description of the methodology used to determine the prices and/or costs should be disclosed. Such disclosure should be in a form that helps the audience of the Public Report to form an opinion that the prices and/or costs used represent reasonable views of future prices and/or costs.

The exceptions to disclosure of commodity prices and/or costs are subject to, and overruled by, any obligations imposed by applicable securities or other laws.

11. PERMITTING AND LEGAL REQUIREMENTS

Code

11.1 For the declaration of Mineral Reserves, there must be no known material obstacles to mining arising from the failure to obtain relevant permits.

11.2 There must be a reasonable expectation by the Qualified Professional, often through reliance on legal and permitting experts, that all permits, ancillary rights (including water or other property rights) and authorizations required for mining and, to the extent applicable, processing and marketing can be obtained in a timely fashion and maintained for ongoing operations.

11.3 The company must complete a review of all legal and permitting requirements and document the findings. Local environmental laws and processes must be taken into account.

11.4 To demonstrate the reasonable expectation that all permits, ancillary rights and authorizations can be obtained, the company must show an understanding of the procedures to be followed to obtain such permits, ancillary rights and authorizations. Earlier success in obtaining the necessary permits can be used to document the likelihood of future success.

11.5 If permits are required, but there is no defined procedure to obtain such permits, reasonable expectation of success may be difficult to support. Information that materially increases or decreases the risk that the necessary legal rights or permits will be obtained must be disclosed.

11.6 It is recognized that the legal and permitting environment may change over time and that such changes could have an impact on Mineral Reserve estimation. If it is determined that obstacles arise or are eliminated, the Mineral Reserve estimates must be adjusted accordingly.

Guidance

It is recognized that some permits cannot be obtained until after a Mineral Reserve has been declared. There might be sound business reasons why the obtaining of some permits should be postponed.

It is also recognized that waiting for all permits to be on hand could result in critical information not being released to the investors in a timely fashion; therefore, it is recommended that disclosure of material information occurs prior to obtaining permits as appropriate. Documentation should include a brief description of the title, claim, lease or option under which the company has the right to hold or operate the property, indicating any conditions that the company must meet to obtain or retain the property.

If held by leases or options, the expiry dates of such leases or options should be stated. If an extension of leases or options will be needed to mine the Mineral Reserves, there should be a reasonable expectation that such an extension will be granted.

Code

11.7 Royalty terms and clawback rights of former claim/land holders must be disclosed.

11.8 Information relating to the review of legal and permitting issues must be documented either in full or by reference. The information may remain confidential to the company. However, when required, it may be released to regulators or auditors on a confidential basis.

12. ENVIRONMENTAL, SOCIAL PERFORMANCE AND GOVERNANCE CONSIDERATIONS

Code

12.1 Public Reports must discuss the environmental, social performance and governance (ESG) and health and safety context and aspects of the project or operation that could materially affect the project during development and operations and after closure. These ESG aspects include those that affect shareholders' and stakeholders' assessments and decisions, employees and contractors and the obtaining and maintaining of environmental permits from regulatory bodies and a social license from host communities and potentially affected neighbors. Where cultural, religious or other rights of communities are potentially affected by the proposed mineral exploration or exploitation, measures to enable their "free prior and informed consent" (FPIC) need to be considered and described.

12.2 The assessment of the reasonable prospects of eventual economic extraction of Mineral Resources and **reasonable justification for the extraction** of Mineral Reserves at the time of Public Reporting must include written consideration of the direct and indirect environmental costs of extraction, processing and end-use in terms of environmental degradation, ecological diversity, cultural destruction or climate change.

Guidance

ESG refers to three principal themes: environment, social performance and governance; ESG is inclusive of all aspects of sustainability and license to operate relevant to the success or failure of a mineral project or operation.

Environment comprises the ability of the environment to maintain itself with minimal impacts on the local flora and fauna;

Social performance across the "whole of site" incorporates evidence of effective stakeholder engagement, how social impacts are mitigated and managed, how expectations of shared value are managed through local procurement and hiring (local content) and health and safety implications; and

Governance includes both external governance exercised by governmental or regulatory authorities and internal corporate governance. External governance, including regional and national authorities and regulatory bodies that administer permits and regulatory requirements, should also be considered. Governance at the corporate level includes tax transparency, board diversity, shareholder rights and relationships with regulatory bodies.

Health and safety aspects sit within ESG as they include aspects of environmental protection and control, community and employee well-being and the governance structures in place to facilitate effective health and safety performance.

Historical performance and legacy issues associated with a project or operation, especially related to obligations or commitments made to stakeholders and unfulfilled, can present a material risk.

The Qualified Professional(s) should include available relevant information on the changing internal and external contexts of a project or operation, including environmental, social performance and governance Modifying Factors related to the project or operation.

The ESG aspects and risks associated with a project or operation should be clearly described, together with the management plan and resulting anticipated impact.

ESG aspects and risks are expected to change as a project develops, with more information becoming available. The level of detail presented should be commensurate with the project's stage of development, and gaps should be identified and disclosed. Records of stakeholder engagement and grievances received and managed should be kept from the outset and disclosed.

Changes in ESG aspects may contribute to or become material changes that significantly affect the project timeline and/or cost.

From the outset of a project, it is essential to understand the ESG context, which should include the communities that are potentially affected by the project, existing land use and any seasonality considerations, potentially affected watersheds and relevant receptors of air quality and noise pollution, proximity to protected areas of environmental, biodiversity or cultural value/significance and any cumulative effects resulting from nearby existing or planned mines or infrastructure projects. Modifying Factors depend on this understanding, and there should be a demonstrable link between context and factors.

Depending on the stage of the project, the following should be considered:

- *a summary of the results of any environmental studies and a discussion of any known environmental issues that could exert a material impact on the estimates of Mineral Resources or Mineral Reserves;*
- *requirements and plans for waste and tailings disposal, including compliance with all relevant tailings management standards and regulations, and site monitoring both during operations and after mine closure;*
- *water management issues, including not only water used in or disposed of from mining operations but also the continuity and quality of water supplies to host communities;*
- *project permitting requirements, the status of any permit*

applications and any known requirements for post-performance or reclamation bonds;

- *a discussion of any potential social or community-related requirements and plans for the project and the status of any negotiations or agreements with local communities;*
- *a discussion of mine closure (remediation and reclamation) requirements and costs;*
- *the characterization of stakeholders, defined as individuals and entities with an interest in, affected by or able to affect the project;*
- *a review of stakeholder engagements, commitments made, grievances received and issues resolved;*
- *a review of local procurement and recruitment from within the project area of influence;*
- *a review of any potential human rights issues;*
- *social media presence directly by the project or by other parties about the project;*
- *workforce and affected community safeguarding requirement concerning health and safety considerations;*
- *capital or operating requirements for handling hazardous minerals or reagents as well as other health and industrial hygiene risks;*
- *any savings in energy usage or other reduction of consumption reflected directly in the economic outcome of the project.*

TABLE 1—CHECKLIST OF ASSESSMENT AND DECLARATION CRITERIA

Table 1 is a checklist and guideline that those preparing reports on mineral Exploration Information, Mineral Resources and Mineral Reserves should use as a reference. The checklist is not prescriptive, and, as always, relevance and materiality are overriding principles that determine what information should be publicly reported. It is important, however, 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 Information or an estimate of Mineral Resources and/or Mineral Reserves.

Mineral Resource and Mineral Reserve estimates seek to impart confidence as a consequence of the method and the data. The methods employed should be valid, be tested, use accepted definitions of terms and procedures and be best suited to the making of reliable estimates for the project in question. The evaluation and supporting documentation should consider all the criteria listed below and such additional criteria that may be viewed as significant. When considering the criteria outlined below, material items that are not applied should be accompanied by a clear explanation in the documentation of why they have been excluded or a statement that the work is incomplete.

It is the responsibility of the Qualified Professional to determine which criteria listed below and which additional criteria should apply to the study of a particular project. The reported information should be sufficient to enable an intelligent layman or his professional advisor(s) to make a reasonable and balanced assessment of the significance of this information.

In some cases, it will be appropriate for a Public Report to exclude some commercially sensitive information. A decision to exclude commercially sensitive information is a decision for the company issuing the Public Report, and such a decision should be made in accordance with any relevant regulations in that jurisdiction. In cases in which commercially sensitive information is excluded from a Public Report, the report should provide summary information (for example the methodology used to determine economic assumptions of which the numerical value is commercially sensitive) and the context for informing investors or potential investors and their advisors.

The order and grouping of criteria in Table 1 reflect the normal systematic approach to the exploration and estimation of resources and reserves. The table should be approached from left to right. In other words, the criteria in the first column, Exploration Information, should also be applied when reporting Mineral Resources and Mineral Reserves. Similarly, the additional criteria in the Mineral Resources column also apply to the reporting of Mineral Reserves.

When compiling a Public Report dealing with coal, diamonds, industrial and construction minerals and dimension stone, there are specific matters that must be considered. Appendices 4 to 7 of the CBRR Guide address these specific commodities. Sections 10–13 of Table 1 also include items that may be specific to those commodities and therefore have been placed within Appendices 4 to 7 where relevant.

The assessment criteria for Mineral Resources would normally apply to scoping studies, and the assessment criteria for Mineral Reserves would normally apply to pre-feasibility and feasibility studies.

TABLE 1—CHECKLIST OF ASSESSMENT AND REPORTING CRITERIA

			Exploration Information	Mineral Resources	Mineral Reserves
Introduction					
Introduction	General	(i)	The terms of reference or scope of work.		
		(ii)	The Qualified Professional's relationship to the issuer of the report, if any.		
		(iii)	A statement for whom the report was prepared, whether it was intended as a full or partial evaluation or other purpose, the work conducted, the effective date of the report and the remaining work.		
		(iv)	Sources of information and data contained in the report or used in its preparation, with citations if applicable, and a list of references.		
		(v)	A title page and a table of contents that includes figures and tables.		
		(vi)	An executive summary, which briefly summarizes important information in the Public Report, including the property description and ownership, geology and *mineralization*, the status of exploration, development and operations, Mineral Resource and Mineral Reserve estimates and the Qualified Professional's conclusions and recommendations. If Inferred Mineral Resources are used, a summary valuation with and, if practical, without the inclusion of such Inferred Mineral Resources. The executive summary should contain sufficient detail to allow the reader to understand the essentials of the project.		
		(vii)	A declaration from the Qualified Professional stating whether "the declaration has been made in terms of the guidelines of the CBRR Guide." If a reporting code other than the CBRR Guide has been used, an explanation of the differences.		
		(viii)	Diagrams, maps, plans, sections and illustrations, which are dated, legible and prepared at an appropriate scale to distinguish important features. Maps including a legend, author or information source, coordinate system and datum, a scale in bar or grid form and an arrow indicating north. Reference to a location or index map and more detailed maps showing all the important features described in the text, including all the relevant cadastral and other infrastructure features.		
		(ix)	The units of measurement, currency and relevant exchange rates.		
		(x)	The details of the personal inspection of the property by each Qualified Professional or, if applicable, the reason why a personal inspection has not been completed.		
		(xi)	If the Qualified Professional is relying on a report, opinion or statement of another expert who is not a Qualified Professional, then a disclosure of the date, title and author of the report, an opinion or statement, the qualifications of the other expert, the reason for the Qualified Professional relying on the other expert, any significant risks and any steps the Qualified Professional took to verify the information provided.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 1: Project Outline					
1.1	Location	(i)	A description of the location and map (country, province and closest town/city, coordinate systems and ranges, etc.).		
		(ii)	A country profile, with information relating to the project host country that is pertinent to the project, including relevant applicable legislation, environmental and social context, etc. An assessment, at a high level, of relevant technical, environmental and associated climatic risks and social, economic, political and other key risks.		
		(iii)	A general topographic map.	A topographic map in sufficient detail to support the assessment of eventual economics.	A detailed topographic map, with applicable aerial surveys checked with ground controls and surveys, particularly in areas of rugged terrain, dense vegetation or a high altitude.
1.2	Property description	(i)	A brief description of the scope of the project (i.e., whether in the early exploration stage, advanced exploration, scoping, pre-feasibility or Feasibility Study, life-of-mine plan for an ongoing mining operation or closure).		
		(ii)	A description of the topography, elevation, drainage and vegetation, means and ease of access to the property, proximity of the property to a population center and nature of transport, climate, known associated climatic and seismic risks, length of the operating season and, to the extent relevant to the mineral project, 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 (noting any conditions that may affect possible prospecting/mining activities).		
1.3	Adjacent properties	(i)	Details of relevant adjacent properties. The inclusion on the maps of the location and common mineralized structures in adjacent or nearby properties with an important bearing on the report. Reference to all information used from other sources.		
1.4	History	(i)	The historical background to the project and adjacent areas concerned, including known results of previous exploration and mining activities (type, amount, quantity and development work), previous ownership and changes thereto.		
		(ii)		Previous successes or failures referred to transparently with reasons why the project should now be considered potentially economic.	
		(iii)		Known or existing historical Mineral Resource estimates and performance statistics from actual production for past and current operations.	
		(iv)			Known or existing historical Mineral Reserve estimates and performance statistics of actual production for past and current operations.
1.5	Legal aspects and permitting	A statement from the Qualified Professional on the confirmation of the legal tenure, including a description of:			
		(i)	The nature of the issuer's rights (e.g., prospecting and/or mining) and the right to use the surface of the properties to which these rights relate. The date of expiry and other relevant details.		
		(ii)	The principal terms and conditions of all existing agreements and details of those still to be obtained (such as, but not limited to, concessions, partnerships, joint ventures, access rights, leases, historical and cultural sites, wilderness or national park and environmental settings, royalties, consents, permission, permits or authorizations).		
		(iii)	The security of the tenure held at the time of reporting or that is reasonably expected to be granted in the future along with any known impediments to obtaining the right to operate in the area. Details of applications that have been made. See Clause 7.1 for declaration of a Mineral Reserve.		
		(iv)	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)	A statement relating to governmental/statutory requirements and permits as may be required, have been applied for, have been approved or can reasonably be expected to be obtained. A review of risks that permits will not be received as expected and the impact of delays to the project.		
1.6	Royalties	(i)	The royalties or streaming agreements that are payable in respect of each property.		
1.7	Liabilities	(i)	Any liabilities, including rehabilitation guarantees, that are pertinent to the project. A description of the rehabilitation liability, including, but not limited to, legislative requirements, assumptions and limitations.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 2: Geological Setting, Deposit and Mineralization					
2.1	Geological setting, deposit and mineralization	(i)	The regional geology.		
		(ii)	The project geology including the deposit type, geological setting and style of mineralization.		
		(iii)	The geological model or concepts being applied in the investigation and on the basis of which the exploration program is planned, along with a description of the inferences and assumptions made from this model.		
		(iv)	Data density, distribution and reliability and whether the quality and quantity of information are sufficient to support statements, made or inferred, concerning the deposit.		
		(v)	Significant minerals present in the deposit, their frequency, size and other characteristics, including a discussion of minor and gangue minerals where these will have an effect on the processing steps and the variability of each important mineral within the deposit.		
		(vi)	Significant mineralized 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 mineralization together with a description of the type, character and distribution of the mineralization.		
		(vii)	The existence of reliable geological models and/or maps and cross-sections that support interpretations.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 3: Exploration and Drilling, Sampling Techniques and Data					
3.1	Exploration	(i)	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, mineralization, hydrology, geophysical, core/rock imaging, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content, bulk samples, etc.). Data sets with all relevant metadata, such as unique sample number, sample mass, collection date, spatial location, etc.		
		(ii)	The primary data elements (observation and measurements) used for the project and a description of the management and verification of these data or the database. A description of the following relevant processes: acquisition (capture or transfer), validation, integration, control, storage, retrieval and backup processes. If data are not stored digitally, a presentation of hand-printed tables with well-organized data and information.		
		(iii)	An acknowledgment and appraisal of data from other parties and reference to all data and information used from other sources.		
		(iv)	The distinction between the data/information from the property under discussion and those derived from surrounding properties.		
		(v)	The methods for collar and down-hole surveys, techniques and expected accuracy of the data as well as the grid system used.		
		(vi)	A discussion on the sufficiency of the data spacing and distribution to establish the degree of geological and grade continuity appropriate for the estimation procedure(s) and classifications applied.		
		(vii)	A presentation of representative models and/or maps and cross-sections or other two- or three-dimensional illustrations of results showing the location of samples, accurate drill hole collar positions, down-hole surveys, exploration pits, underground workings, relevant geological data, etc.		
		(viii)	The geometry of the mineralization with respect to the drill hole angle because of the importance of the relationships between mineralization widths and intercept lengths. Justification if only down-hole lengths are reported.		
3.2	Drilling techniques	(i)	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 the core is oriented and, if so, by what method, etc.).		
		(ii)	The geological and geotechnical logging of core and chip samples relative to the level of detail required to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.		
		(iii)	The nature of logging (qualitative or quantitative) and the use of core imaging methods (or trenches, channel, etc.).		
		(iv)	The total length and percentage of the relevant intersections logged.		
		(v)	The results of any downhole surveys of the drill hole.		
3.3	Sample method, collection, capture and storage	(i)	A description of the nature and quality of the sampling (e.g., cut channels, random chips or specific specialized industry standard measurement tools appropriate to the minerals under investigation, such as a down-hole gamma probe or handheld or fixed-position XRF instruments, etc.), without these examples limiting the broad meaning of the sampling.		
		(ii)	A description of the sampling processes, including sub-sampling stages, to maximize the representativity of the samples, whether the sample sizes are appropriate to the grain size of the material being sampled and any sample compositing.		
		(iii)	A description of each data set (e.g., geology, grade, density, quality, geo-metallurgical characteristics etc.), sample type, sample-size selection and collection methods.		
		(iv)	The nature of the geometry of the mineralization with respect to the drill hole angle (if known). The orientation of sampling to achieve unbiased sampling of possible structures, considering the deposit type. The intersection angles. The down-hole lengths if the intersection angle is not known.		
		(v)	A description of the retention policy and storage of physical samples (e.g., core, sample reject, etc.).		
		(vi)	A description of the method of recording and assessing core and chip sample recoveries and the results assessed, measures taken to maximize sample recovery and ensure the representative nature of the samples, 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.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 3: Exploration and Drilling, Sampling Techniques and Data (continued)					
		(vii)	The cutting of a drill-core sample, e.g., whether it was split or sawn and whether a quarter, half or full core was submitted for analysis. Non-core sampling, e.g., whether the sample was riffled, tube sampled, rotary split, etc.; whether it was sampled wet or dry; the impact of the water table or flow rates on the recovery and introduction of sampling biases or contamination from above. The impact of variable hole diameters, e.g., by the use of a caliper tool.		
3.4	Sample preparation and analysis	(i)	The identity of the laboratory(s) and its accreditation status and registration number. The steps taken by the Qualified Professional to ensure that the results from a non-accredited laboratory are of an acceptable quality.		
		(ii)	The analytical method, its nature, the quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.		
		(iii)	A description of the process and method used for sample preparation, sub-sampling and size reduction and the likelihood of inadequate or non-representative samples (i.e., improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.).		
3.5	Sampling governance	(i)	The governance of the sampling campaign and process to ensure the quality and representativity 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)	The measures taken to ensure the sample security and the chain of custody.		
		(iii)	The validation procedures used to ensure the integrity of the data, e.g., transcription, input or other errors, between their initial collection and their future use for modeling (e.g., geology, grade, density, etc.).		
		(iv)	The audit process and frequency (including dates of the audits) and disclosure of any material risks identified.		
3.6	Quality control/ quality assurance	(i)	The verification techniques (QA/QC) for the field sampling process, e.g., the level of duplicates, blanks, reference material standards, process audits, analysis, etc.		
		(ii)	Indirect methods of measurement (e.g., geophysical methods), with attention given to the confidence of interpretation.		
		(iii)	Reference to measures taken to ensure sample representativity and the appropriate calibration of any measurement tools or systems used.		
		(iv)	QA/QC procedures used to check that databases augmented with “new data” have not disturbed previous versions containing “old” data.		
3.7	Bulk density	(i)	The method of bulk density determination with reference to the frequency of measurements and the size, nature and representativeness of the samples.		
		(ii)	Preliminary estimates or basis of assumptions made for bulk density.		
		(iii)	The representativity of bulk density samples.		
		(iv)	The measurement of bulk density for bulk material using methods that adequately account 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)	The location of individual samples (including a map).		
		(ii)	The size of samples, spacing/density of samples recovered and whether the sample sizes and distribution are appropriate for the grain size of the material being sampled.		
		(iii)	The method of mining and treatment.		
		(iv)	The degree to which the samples are representative of the various types and styles of mineralization and the mineral deposit as a whole.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 4: Estimation and Reporting of Exploration Information and Mineral Resources					
4.1	Geological model and interpretation	(i)	The nature, detail and reliability of geological information with which lithological, structural, mineralogical, alteration or other geological, geotechnical and geo-metallurgical characteristics were recorded.		
		(ii)	The geological model, construction technique and assumptions that form the basis for the Exploration Information or Mineral Resource estimate.		
		(iii)	The sufficiency of the data density to assure continuity of mineralization and geology and the provision of an adequate basis for the estimation and classification procedures applied.		
		(iv)	A discussion of the extent to which the interpretation is based on data or on assumptions and whether consideration was given to alternative interpretations or models.		
		(v)	Any obvious geological, mining, metallurgical, processing, environmental, social, infrastructural, legal and economic factors that could have a significant effect on the prospects of any possible Exploration Target or deposit.		
		(vi)		Geological data that could materially influence the estimated quantity and quality of the Mineral Resource.	
		(vii)		Consideration given to alternative interpretations or models and their possible effect (or potential risk), if any, on the Mineral Resource estimate.	
		(viii)		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 modeling techniques	(i)	A detailed description of the estimation techniques and assumptions used to determine the grade and tonnage ranges for Exploration Targets.		
		(ii)		The nature and appropriateness of the estimation technique(s) applied and the key assumptions, including the 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)		Assumptions and justification of the correlations made between variables.	
		(iv)		Any relevant specialized computer program (software) used (with the version number) together with the parameters used.	
		(v)		The processes of checking and validation, the comparison of model information with sample or composite data and the use of reconciliation data and whether the Mineral Resource estimate takes account of such information.	
		(vi)		The assumptions made regarding the estimation of any co-products, by-products or deleterious elements.	

			Exploration Information	Mineral Resources	Mineral Reserves
Section 4: Estimation and Reporting of Exploration Information and Mineral Resources (Continued)					
4.3	Reasonable prospects for eventual economic extraction	(i)		The geological parameters, including (but not limited to) volume/tonnage, grade and value/quality estimates, cut-off grades, strip ratios and upper- and lower-screen sizes.	
		(ii)		The engineering parameters, including the mining method, processing, geotechnical, hydrogeological and metallurgical) parameters, including assumptions made to mitigate the effect of deleterious elements. Dilution and mining recovery factors that might be applicable to convert in situ Mineral Resources into Mineral Reserves.	
		(iii)		The infrastructure, including, but not limited to, power, water and site access.	
		(iv)		The legal, governmental, permitting and statutory parameters.	
		(v)		The environmental and social (or community) parameters.	
		(vi)		The marketing parameters.	
		(vii)		The economic assumptions and parameters, including, but not limited to, commodity prices, sales volumes and potential capital and operating costs.	
		(viii)		The material risks.	
		(ix)		The parameters used to support the concept of “eventual” in the case of Mineral Resources.	
4.4	Classification criteria	(i)		The methods used as the basis for the classification of the Mineral Resources into varying confidence categories.	
		(ii)		Justification of the criteria used to classify the resource, including the relationship to cut-off grade assumptions.	
4.5	Reporting	(i)	Specific grades/qualities and widths.		
		(ii)	The reporting of low and high grades and widths, together with their spatial location, to avoid misleading reporting of Exploration Results.		
		(iii)	A statement on whether grades are regional averages or whether they are selected individual samples taken from the property under discussion.		
		(iv)		The detail of open pit, underground, residue stockpile, remnants, tailings and existing pillars or other sources in a Mineral Resource statement.	
		(v)		A comparison with the previous Mineral Resource estimates, with an explanation of the reason for material changes. A comment on any historic trends (e.g., global bias).	
		(vi)		The basis for the estimate and, if not 100%, the attributable percentage relevant to the entity commissioning the report.	
		(vii)	The basis of equivalent metal formulae.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 5: Technical Studies					
5.1	Introduction	(i)	Not applicable to Exploration Results or Exploration Targets	The level of study—scoping, pre-feasibility, feasibility or ongoing life of the mine.	
		(ii)			A summary table of the Modifying Factors used to convert the Mineral Resource into a Mineral Reserve.
5.2	Mine design	(i)		Assumptions regarding mining methods and parameters when estimating Mineral Resources.	
		(ii)			All Modifying Factors and assumptions made regarding mining methods, minimum mining dimensions (or pit shell) and internal and, if applicable, external planned and unplanned mining dilution and mining losses used for the techno-economic study and signed off, such as the mining method, mine design criteria, infrastructure, capacities, production schedule, mining efficiencies, grade control, geotechnical and hydrological considerations, closure plans and personnel requirements.
		(iii)		Mineral Resource models used in the study.	
		(iv)	Not applicable to Exploration Results or Exploration Targets	The basis of the cut-off grade(s).	The basis of (the adopted) cut-off grade(s) or quality parameters applied, including metal equivalents if relevant.
		(v)			The mining method(s) to be used.
		(vi)		Preliminary considerations for pit slopes and other optimization parameters.	For open-cut mines, a discussion of the pit slopes, slope stability and strip ratio.
		(vii)		Preliminary considerations for underground optimization parameters.	For underground mines, a discussion of the mining method, geotechnical considerations, mine design characteristics and ventilation/cooling requirements.
		(viii)		Description, to the extent known, of the mining rate, geotechnical and hydrogeological conditions, dilution and mine recovery.	A discussion of the mining rate, equipment selected, grade control methods, geotechnical and hydrogeological considerations, health and safety of the workforce, staffing requirements, dilution and recovery.
		(ix)		Optimization methods, if completed.	The optimization methods and software used in planning, including a discussion of the constraints.

			Exploration Information	Mineral Resources	Mineral Reserves
Section 5: Technical Studies (Continued)					
5.3	Metallurgical and testwork	(i)	Not applicable to Exploration Results or Exploration Targets	The source of the samples, the representativeness of the potential feed and the techniques used to obtain the samples, laboratory and metallurgical testing techniques.	
		(ii)			The basis for assumptions or predictions regarding metallurgical amenability and any preliminary mineralogical test work should already have been undertaken.
		(iii)		The possible processing methods and any processing factors that could have a material effect on the likelihood of eventual economic extraction. The appropriateness of the processing methods for the style of mineralization.	The processing method(s), equipment, plant capacity, efficiencies and personnel requirements.
		(iv)			The nature and amount of metallurgical test work undertaken and the recovery factors used. A detailed flow sheet/diagram and a mass balance, especially for multi-product operations from which the saleable materials are priced for different chemical and physical characteristics.
		(v)		A full definition of the minerals, or at least the assays, to ensure that the process is suitable and that any contaminants/pollutants/possible by-products are recognized and that suitable process steps have been included in the flow sheet.	Assumptions or allowances made for deleterious elements, 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)		Disclosure of whether the metallurgical process is well-tested technology or novel in nature and, if novel, justification for its use in Mineral Reserve estimation and a description of the risks and the test work designed to mitigate the risk.	
5.4	Infrastructure	(i)	Not applicable to Exploration Results or Exploration Targets	Comment regarding the current state of infrastructure or the ease with which the infrastructure can be provided or accessed and its effect on the reasonable prospects for eventual economic extraction.	
		(ii)		Preliminary consideration and site plans, if available.	Demonstration that the necessary facilities have been allowed for (which may include, but not be limited to, the processing plant, tailings dam, leaching facilities, waste dumps, road, pipeline, rail or port facilities, water and power supply, offices, housing, security, resource sterilization testing, etc.). The provision of detailed maps showing the locations of facilities.
		(iii)		Preliminary consideration for logistics.	A statement showing that all the necessary logistics have been considered.

			Exploration Information	Mineral Resources	Mineral Reserves
Section 5: Technical Studies (Continued)					
5.5	Environmental, social performance and governance	(i)		General: - Confirm that the company or reporting entity has addressed the host country's environmental legal compliance requirements and any mandatory and/or voluntary standards or guidelines to which it subscribes; - 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; - Identify and discuss any sensitive areas that may affect the project as well as any other environmental factors, including interested and affected parties (I&APs) and/or studies that could have a material effect on the likelihood of eventual economic extraction. Discuss the possible means of mitigation. - Identify any legislated social management programs that may be required and discuss their content and status. 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.	
		(ii)	Context: The project context determined and described, including the following aspects: • The locality's physical geography, centers of population, economic and cultural characteristics; • Existing land and natural resource use for economic, cultural, recreational and conservation purposes (inclusive of environmental and cultural sites of interest); • Existing or historical industrial development and associated infrastructure, including mining and quarrying, in the region; • Local governance structures and administrative bodies and their roles and responsibilities in relation to permitting and regulations;. • Site access routes and any potential impact on the environment or local communities; • Provision of energy for activities (e.g., off-grid renewable energy or sourced directly from the local non-renewable power grid with plans for decarbonization for future projects if possible)		
		(iii)	• High-level assessment of the level of water stress (e.g., potential for drought, flooding and impact on water quality) • High-level assessment of biodiversity (e.g., endangered species known in the area)	• Associated environmental and seasonal constraint/control/consent measures/Modifying Factors described • Identification of potential climate-associated risks and impacts • Social economic and cultural constraint/control/consent measures/Modifying Factors described • Any sensitive areas that may affect the project as well as any other environmental factors, including interested and affected parties (I&APs) and/or studies that could have a material effect on the likelihood of eventual economic extraction. • The management of project waste and anticipated requirements for large-scale infrastructure for mine waste in the future, including but not limited to waste dumps and tailings dams.	
		(iv)	Permits and permission: Identification of the necessary permits that will be required and their status and, where not yet obtained, and confirmation that there is a reasonable basis to believe that all permits required for the project will be obtained in a timely manner. Also include any records of penalties/fines or revoked permits complete with the rationale.		
		(v)	• Liabilities: Describe any known rehabilitation activities, liability and/or compliance costs	Describe the best cost estimate for closure inclusive of environmental, social, material remaining liability and compliance costs. • Provide a description of the mechanisms in place to address unplanned closure. • If appropriate, describe the bonding obligations in place to ensure that these liabilities can be funded on a qualitative and quantitative basis.	
		(vi)	Description of stakeholder group characteristics. Records of community and stakeholder relationships: Records kept of all engagements with all stakeholders from the outset of the project; A grievance and/or complaints procedure established, stakeholders' issues and concerns recorded and tracked until resolved.		
		(vii)		A data management system implemented to record and track engagements; provisions made for vulnerable and/or underrepresented stakeholder groups, the presence, or not, of indigenous people, whether free prior and informed consent (FPIC) is triggered and how is this managed	
		(viii)	Health and safety protocols and procedures required for Exploration Target definition inclusive of evidence of adherence to them and ongoing health and safety record.	Health and safety procedures and protocols, including community safety and security, across the exploration program, inclusive of evidence of adherence to them and the ongoing health and safety record	
		(ix)	Opportunities for contributing to the local economy identified and utilized where appropriate.	Legislated and/or voluntary social development programs that may be required and their content and status.	

			Exploration Information	Mineral Resources	Mineral Reserves
Section 5: Technical Studies (Continued)					
5.5	Environmental, social performance and governance (continued)	(x)		The material socio-economic and cultural impacts that need to be managed and, where appropriate, the associated costs.	
		(xi)	• Commitment to Good International Industry Practices (GIIPs): transparency, diversity and commitment to the ESG rules described • Corporate commitment to the social performance described/provided Corporate commitment to the environmental stewardship described/provided	• A description of how corporate compliance is assured and verified • Demonstrable commitment to the GIIPs: transparency, diversity and commitment to the ESG rules described • Demonstrable commitment to the social performance described • Demonstrable commitment to the environmental stewardship described.	
		(xii)	• Integrated risk management: a description of the identified potential Modifying Factors and the management actions taken to manage them where appropriate	• A description of the proposed mitigation plans for identified Modifying Factors and the management actions taken to manage them where appropriate. • A description of any additional risks that may affect the long-term future of the project, even if not deemed to be material at the current time. • A description of how the risk assessment process outlined here is integrated with the overall risk management framework for the company as a whole.	
5.6	Market studies and economic criteria	(i)	Not applicable to Exploration Results or Exploration Targets	Technical and economic factors likely to influence the prospect of economic extraction. Refer to Clauses 6.1 to 6.23	Valuable and potentially valuable product(s), including suitability of products, co-products and by products for the market.
		(ii)			The product to be sold, customer specifications, testing and acceptance requirements. The existence of a ready market for the product and whether contracts for the sale of the product are in place or expected to be readily obtained. Price and volume forecasts and the basis for the forecast.
		(iii)			The economic criteria used for the study, such as capital and operating costs, exchange rates, revenue/price curves, royalties and streaming agreements, cut-off grades and reserve pay limits.
		(iv)			A summary description of, source of and confidence in the 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.
		(v)			The assumptions made concerning the production cost, including transportation, treatment, penalties, exchange rates, marketing and other costs. Allowances should be made for the content of deleterious elements and the cost of penalties.
		(vi)			Allowances made for royalties and streaming agreements payable, both to the Government and to private entities.
		(vii)			The ownership, type, extent and condition of plant and equipment that are significant for the existing operation(s).
		(viii)			Environmental, social and labor costs.
5.7	Risk analysis	(i)	Not applicable to Exploration Results or Exploration Targets	An assessment of technical, environmental, social, economic, political and other key risks to the project. • Actions that will be taken to mitigate and/or manage the identified risks.	

			Exploration Information	Mineral Resources	Mineral Reserves
Section 5: Technical Studies (Continued)					
5.8	Economic analysis	(i)	Not applicable to Exploration Results or Exploration Targets	The basis on which the reasonable prospects for eventual economic extraction have been determined. Any material assumptions made in determining the “reasonable prospects for eventual economic extraction.”	The inclusion of any inferred resources in the pre-feasibility and feasibility studies’ economic analysis. The sensitivity to the inclusion of any inferred resources.
		(ii)			An economic analysis of the project that includes an after-tax cash flow forecast on an annual basis using Mineral Reserves or Mineral Resources OR an annual production schedule for the life of the project, which has been used at the relevant level of pre-feasibility or Feasibility Study. Accounting for royalties and streaming agreements.
		(iii)			A discussion of the net present value (NPV), internal rate of return (IRR) and payback period of capital.
		(iv)			Sensitivity or other analysis using variants in the commodity price, grade, capital and operating costs or other significant parameters, as appropriate, and a discussion of the impact of the results.

			Exploration Information	Mineral Resources	Mineral Reserves
Section 6: Estimation and Reporting of Mineral Reserves					
6.1	Estimation and modeling techniques	(i)		A description of the Mineral Resource estimate used as a basis for the conversion into a Mineral Reserve.	
		(ii)			A comparison between two possibilities, one with the inclusion of Inferred Mineral Resources and one without, in such a way as to avoid misleading the investors. The quantum of the Inferred Mineral Resources included and the sensitivity of the inclusion in the study.
		(iii)			A Mineral Reserve statement in sufficient detail indicating whether the mining is open pit or underground plus the source and type of mineralization, domain or ore body, surface dumps, stockpiles and all other sources.
		(Iv)			Reconciliation of historic reliability and reconciliation of the performance parameters, assumptions and Modifying Factors. A comparison with the previous reserve quantity and qualities, if available. Where appropriate, any historic trends (e.g., global bias).
6.2	Classification criteria	(i)			The criteria and methods used as the basis for the classification of the Mineral Reserves into varying confidence categories, which should be based on the Mineral Resource category and include consideration of the confidence in all the Modifying Factors.
6.3	Reporting	(i)			The proportion of Probable Mineral Reserves, which have been derived from Measured Mineral Resources (if any), including the reason(s) thereof.
		(ii)			The inclusion in a Mineral Reserve statement of the detail of open pit, underground, residue stockpile, remnants, tailings and existing pillars or other sources.
		(iii)			A comparison with the previous Mineral Reserve estimates. Any historical trends (e.g., global bias).
		(iv)		The inclusion or exclusion of Mineral Resources in Mineral Reserves.	

			Exploration Information	Mineral Resources	Mineral Reserves
Section 7: Risks, Audits and Reviews					
7.1	Risk analysis	(i)	Generally not applied. High-level risk and opportunities reviewed.	Sufficient risk assessment completed to confirm reasonable prospects of eventual economic extraction. Resource enhancement opportunities.	Project technical, social, environmental and economic risk in the form of a risk register describing the likelihood of occurrence and cost. A description of the actions that will be taken to mitigate risk. No known significant risk of project failure. Future options to enhance the project value.
7.2	Audits and reviews	(i)	Type of review/audit (e.g., independent, external), area (e.g., laboratory, drilling, data, environmental compliance, etc.) and date and name of the reviewer(s) together with their recognized professional qualifications. The level of review/audit (desk-top, on-site comparison with standard procedures or endorsement in which the auditor/reviewer has checked the work to the extent that they stand behind it as if it were their own work).		
		(ii)	The level and conclusions of relevant audits or reviews. Significant deficiencies and remedial actions required.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 8: Other Relevant Information					
8.1	Other relevant information	(i)	Other relevant and material information not discussed elsewhere.		

			Exploration Information	Mineral Resources	Mineral Reserves
Section 9: Qualified Professional					
9.1	Qualification of Qualified Professional(s) and key technical staff	(i)	The full name of the Qualified Professional, their registration number at the CBRR or the registration number and name of the professional organization (PO or RPO) of which the Qualified Professional(s) is (are) a member. The relevant experience of the Qualified Professional(s) and other key technical staff who prepared and who are responsible for the Public Report.		
9.2	Reliance on other experts	(ii)	Reliance on experts applies to information in areas in which the experience of the Qualified Professional is insufficient. If this is the case, disclosure of: - the source of the information relied upon, including the date, title and author of any report, opinion or statement; - the extent of reliance; - the portions of the Public Report to which the reliance applies; - consent of the expert for the information contained in portions of the Public Report to which the reliance applies.		
9.3	Relationship to the issuer	(ii)	The Qualified Professional's relationship to the issuer of the report, if any.		
9.4	Certificate of the Qualified Professional(s)	(iii)	The inclusion of the certificate of the Qualified Professional (see Appendix 2). Such a certificate should include the date of sign-off and the effective date of the report.		

TABLE 2—GUIDELINE FOR TECHNICAL STUDIES

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

Scoping studies, pre-feasibility studies and feasibility studies (and on-going life-of-mine studies) analyze 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.

If considered appropriate, the Qualified Professional may use the International Guide 47R-11 for the Mining and Mineral Processing Industries (as amended) of the Association for the Advancement of Cost Engineers (AACE) or other internationally recognized and accepted guidelines.

TABLE 2—GUIDELINE FOR TECHNICAL STUDIES			
Item	**Scoping Study**	**Pre-Feasibility Study**	**Feasibility Study**
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	3-monthly to annual	Monthly for much of the payback period
Mineral processing	Metallurgical test work	Preliminary options	Detailed and optimized
Permitting (water, power, mining, prospecting and environmental)	Required permitting listed	Preliminary applications submitted	Authorities engaged and applications submitted
Social license 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

Item	Scoping Study	Pre-Feasibility Study	Feasibility Study
Basis of Capital Estimates			
Civil/structural, architectural, piping/HVAC, electrical, instrumentation, construction labor, construction labor productivity, material volumes/amounts, material/equipment, pricing, infrastructure	Order of magnitude based on historical data or factoring. Engineering < 5% complete.	Estimated from historical factors or percentages and vendor quotes based on material volumes. Engineering at 5–25% complete.	Detailed from engineering at 20% to 50% complete, estimated material take-off quantities and multiple vendor quotations
Contractors	Included in the unit cost or as a percentage of the total cost	Percentage of direct cost by area for contractors; historical 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
Owner's costs	Factored, benchmark, database or historical estimate	Budgeted quotes on key parameters and estimates from experience, factored from a similar project	Detailed estimate
Environmental compliance/ closure cost	Factored from a historical estimate	Estimate from experience, factored from a similar project	Estimate prepared from the detailed zero-based budget for design engineering and specific permit requirements
Escalation	Not considered	Based on the entity's current budget percentage	Based on the cost area with risk
Accuracy range (order of magnitude)	± 25–50%	± 15–25%	± 10–15%
Contingency range (allowance for items not specified in the scope that will be needed)	± 30%	15–30%	10%–15% (actual to be determined based on risk analysis)

Item	Scoping Study	Prefeasibility Study	Feasibility Study
Basis of Operating Costs			
Operating costs	Order of magnitude based on historic data or factoring	Estimated from historical factors or percentages and vendor quotes based on material volumes	Detailed estimates
Operating quantities	General	Specific estimates with some factoring	Detailed estimates
Unit costs	Based on historical data for factoring	Estimates for labor, 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—GENERIC TERMS AND EQUIVALENTS

Throughout the CBRR Guide, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the industry. To avoid unnecessary duplication, the generic terms are listed below together with other terms that may be regarded as synonymous for the purposes of this document.

Generic Term	Synonyms or Similar Terms	Intended Generalized Meaning
Beneficiation	Processing, preparation, concentration, smelting and refining	The physical and/or chemical separation of constituents of interest from a larger mass of material. The methods employed to prepare a final marketable product from material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting, smelting and refining.
Clawback rights		A financial or other benefit that is given but is later taken back under defined circumstances.
Qualified Professional	Competent Person/ Qualified Person	Refer to CBRR Guide Clause 3.6 for the definition of a Qualified Professional.
Cut-off grade	Product specifications	The lowest grade, or quality, of mineralized material that qualifies as economically mineable and available in a given deposit. May be defined on the basis of economic evaluation or on physical or chemical attributes that define an acceptable product.
Diamond	Gemstones	Diamonds and other gemstones with the same characteristics.
Environmental, social performance and governance (ESG)	ESG considerations/ performance/factors, sustainability, health and safety	Environmental, social and corporate governance (ESG) refer to the three central factors in assessing the sustainability and societal considerations of a project or operation. Investors and financiers increasingly use these criteria to determine the potential financial performance of a company.
Grade	Quality, assay, analysis (value)	Any physical or chemical measurement of the characteristics of the material of interest in samples or products. Note that the term quality has a special meaning for diamonds and other gemstones.
Life-of-mine plan (LoMP)		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 sufficient detail (to the pre-feasibility level) to demonstrate that continued extraction is reasonably justified. Refer to Table 2 for guidance.
Mineral Reserves	Ore reserves	“Mineral” is preferred under the CBRR Guide but “ore” is in common use and is generally acceptable. Other descriptors can be used to clarify the meaning, e.g., coal reserves or diamond reserves.

Generic Term	Synonyms or Similar Terms	Intended Generalized Meaning
Mineralization	Type of deposit, ore body, style of mineralization	Any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralization might occur, whether by class of deposit, mode of occurrence, genesis or composition.
Mining	Quarrying	All activities related to the extraction of metals, minerals and gemstones from the earth, whether on the surface or underground and by any method (e.g., quarries, open cast, open cut, solution mining, dredging, etc.).
Proved	Proven	The highest confidence category of Mineral Reserve estimates.
Recovery	Yield	The percentage of material of initial interest that is extracted during mining and/or processing. A measure of mining or processing efficiency.
Tonnage	Quantity, volume	An expression of the amount of material of interest irrespective of the units of measurement (which should be stated when figures are reported).

APPENDIX 2—CERTIFICATE OF QUALIFIED PROFESSIONAL

This Certificate of Qualified Professional is given only as a guide to the Qualified Professional, pursuant to the requirements of Clause 3.6.

Certificate of Qualified Professional

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

1. My name is [Qualified Professional'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 "Qualified Professional" as defined in the CBRR Guide.
6. [Work undertaken or services rendered].
7. [Site inspection details].
8. [Details of aspects of this report for which the QP 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 Qualified Professional's/author's view.
11. I verify that the report is based on, and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Information, Mineral Resources and/or Mineral Reserves (*select as appropriate*).
12. I have read the CBRR Guide and the Report has been prepared in accordance with the guidelines of the CBRR.
13. I am independent/not independent of [name of issuer].
14. 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 **OR** I have no conflicts of interest in respect of the issuer [name of issuer] or the project/mine.
15. 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.
16. I consent to the release of the report and this consent statement by the directors of [name of reporting issuer]

Dated at [place] and [date].

[Signed]

[Name of Qualified Professional]

[#CBRR]

APPENDIX 3—REPORTING OF MINERALIZED FILL, PILLARS, LOW-GRADE MINERALIZATION, STOCKPILES, DUMPS AND TAILINGS

Code

A3-1 The CBRR Guide applies to the reporting of all potentially economic mineralized material. This can include mineralized fill, remnants, pillars, low-grade mineralization, stockpiles, dumps and tailings (remnant materials) where there are reasonable prospects for eventual economic extraction in the case of Mineral Resources and where extraction is reasonably justifiable in the case of Mineral Reserves.

A3-2 Unless otherwise stated, all other clauses of the CBRR Guide (including Figure 1) apply.

A3-3 Table 1, as part of the CBRR Guide, should be considered persuasive when reporting on mineralized fill, remnants, pillars, low-grade mineralization, stockpiles, dumps and tailings.

A3-4 Any mineralized material, as described in this Appendix, can be considered to be similar to in situ mineralization for the purposes of reporting Mineral Resources and Mineral Reserves. Judgments about the mineability of such mineralized material should be made by professionals with relevant experience.

A3-5 If there are no reasonable prospects for the eventual economic extraction of all or part of the mineralized material described in this Appendix, then this material cannot be classified as either Mineral Resources or Mineral Reserves.

A3-6 If some portion of the mineralized material 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.

A3-7 If technical and economic studies have demonstrated that economic extraction could reasonably be justified under realistically assumed conditions, then the material may be classified as a Mineral Reserve.

Guidance

The above clauses apply equally to low-grade in situ mineralization, sometimes referred to as "mineralized waste" or "marginal grade material" and often intended for stockpiling and treatment toward the end of the mine's life.

For clarity of understanding, it is recommended that the tonnage and grade estimates of such material be itemized separately in Public Reports, although they may also be aggregated with the total Mineral Resource and Mineral Reserve figures.

Stockpiles are defined to include both surface and underground stockpiles, including broken ore in stopes, and can include ore currently in the ore storage system.

Mineralized material in the course of being processed (including leaching), if reported, should be reported separately.

APPENDIX 4—REPORTING OF COAL EXPLORATION RESULTS, RESOURCES AND RESERVES

Code

A4-1 The clauses in this appendix address matters that relate specifically to the Public Reporting of coal Exploration Results, coal resources and coal reserves.

A4-2 Unless otherwise stated, all other clauses of the CBRR Guide (including Figure 1) apply.

A4-3 Table 1, as part of the CBRR Guide, should be considered persuasive when reporting on coal resources and reserves.

Guidance

For the purposes of Public Reporting, the requirements for coal are generally similar to those for other commodities, with the replacement of terms such as "mineral" with "coal" and "grade" with "quality."

Code

A4-4 The terms '"Mineral Resource(s)" and "Mineral Reserve(s)," and the subdivisions of these as defined above, also apply to coal reporting, but, if preferred by the reporting company, the terms "coal resource(s)" and "coal reserve(s)" and the appropriate subdivisions may be substituted.

A4-5 "Marketable coal reserves," representing a beneficiated or otherwise enhanced coal product for which modifications due to processing have been considered in addition to mining factors such as dilution, may be publicly reported in conjunction with, but not instead of, reports of coal reserves.

A4-6 The basis of the predicted yield to achieve marketable coal reserves should be stated.

A4-7 Reference to all coal products and properties must not be made until specific properties are demonstrated by analytical results for samples from the deposit.

TABLE 1 — SECTION 10			Exploration Information	Mineral Resources	Mineral Reserves
Section 10: Reporting for Coal Resources and Coal Reserves					
10.1	Specific reporting for coal	(i)	Appendix 4 of the CBRR Guide provides additional criteria for reporting on coal deposits.		
		(ii)	Guidance is available in relevant national standards for the reporting of coal Exploration Results, coal resources and coal reserves.		
10.2	Geological setting, deposit, mineralization	(i)	The project geology, including the coal deposit type, geological setting and coal seams/zones present.		
		(ii)	The structural complexity, physical continuity, coal rank and qualitative and quantitative properties of the significant coal seams or zones on the property.		
10.3	Drilling techniques	(i)	Core recoveries and method of calculation.		
10.4	Relative density to replace bulk density	(i)	The apparent relative density or true relative density of the coal seam(s) determined using coal samples from borehole cores with recognized standard laboratory methods or commonly used procedures. 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) should be stated.		
10.5	Bulk sampling and/or trial mining	(i)	The purpose or aim of the bulk sampling program, the size of samples and the spacing/density of the samples recovered. The applicability of bulk sampling or large-diameter core samples to provide representative samples for tests. Comparison of the results obtained from bulk sampling versus exploration sampling.		
10.6	Reasonable prospects for eventual economic extraction	(i)	The basis on which reasonable prospects for eventual economic extraction have been determined. Any material assumptions made in determining the “reasonable prospects for eventual economic extraction.”		
10.7	Coal resource and reserve reporting	(i)		The appropriate coal quality for all coal resource and reserve categories. 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.).	
		(ii)		A coal resource only includes the coal seam(s) above the minimum thickness cut-off and the coal quality cut-off(s).	The reserves may be reported as ROM tonnages and coal quality and also as the saleable products’ tonnages and coal quality.
		(iii)		The reporting basis with particular reference to moisture and relative density.	

APPENDIX 5—REPORTING OF DIAMOND AND OTHER GEMSTONE EXPLORATION INFORMATION, MINERAL RESOURCES AND MINERAL RESERVES

Code

A5-1 The clauses in this Appendix address matters that relate specifically to the Public Reporting of Exploration Information, Mineral Resources and Mineral Reserves for diamonds and other gemstones.

A5-2 Unless otherwise stated, Clauses 1 to 12 of the CBRR Guide (including Figure 1) apply.

A5-3 Table 1, as part of the CBRR Guide, should be considered persuasive when reporting Exploration Information, Mineral Resources and Mineral Reserves for diamonds and other gemstones.

Guidance

For the purposes of Public Reporting, the requirements for diamonds and other gemstones are generally similar to those for other commodities, with the replacement of terms such as "mineral" with "diamond" and "grade" with "grade and average diamond value." The term "quality" should not be substituted for "grade" since, in diamond deposits, these have distinctly separate meanings.

A number of characteristics of diamond deposits are different from those of, for example, typical metalliferous and coal deposits and require special consideration. These include the generally low mineral content and variability of primary and placer deposits, the particulate nature of diamonds, the specialized requirement for diamond valuation and the inherent difficulties and uncertainties in the estimation of diamond resources and reserves.

Code

A5-4 Reports of diamonds recovered from sampling programs must provide material information relating to the basis on which the sample is taken, the method of recovery and the recovery of the diamonds.

A5-5 The weight of diamonds recovered may only be omitted from the report when the diamonds are considered to be too small to be of commercial significance. This lower cut-off size should be stated.

Guidance

The stone size distribution and price of diamonds and other gemstones are critical components of the resource and reserve estimates. At an early exploration stage, sampling and delineation drilling will not usually provide this information, which relies on large-diameter drilling and, in particular, bulk sampling.

To demonstrate that a resource has reasonable prospects for eventual economic extraction, some appreciation of the likely stone size distribution and price is necessary, however preliminary. To determine an inferred resource in simple, single-facies or single-phase deposits, such information may be

obtainable through representative large-diameter drilling. More often, some form of bulk sampling, such as pitting and trenching, is employed to provide larger sample parcels.

To progress to an indicated resource, and from there to a probable reserve, it is likely that much more extensive bulk sampling will be needed to determine the stone size distribution and value fully. Commonly, such bulk samples are obtained through underground development designed to obtain sufficient diamonds to enable a confident estimate of the price.

In complex deposits, it may be very difficult to ensure that the bulk samples taken are truly representative of the whole deposit. The lack of direct bulk sampling and the uncertainty in demonstrating the spatial continuity of size and price relationships should be persuasive in determining the appropriate resource category.

Code

A5-6	Where diamond resource or diamond reserve grades (carats per tonne) are based on correlations between the frequency of occurrence of micro-diamonds and that of commercial-sized stones, this must be stated, the reliability of the procedure must be explained and the cut-off size sieve for micro-diamonds must be reported.
A5-7	Where the sample results (size–frequency distributions for types of stones) or prices have been adjusted to produce a “model” different from the actual distribution and value of a bulk sample, a comparison must be made of the actual and model size–frequency distributions and prices.
A5-8	For Public Reports dealing with diamond or other gemstone mineralization, it is a requirement for any reported valuation of a parcel of diamonds or gemstones to be accompanied by a statement verifying the independence of the valuation.
A5-9	The valuation must be based on a report from a demonstrably reputable and qualified expert.
A5-10	If a valuation of a parcel of diamonds is reported, the weight in carats and the lower cut-off size of the contained diamonds must be stated and the value of the diamonds must be given in US dollars per carat.
A5-11	Where the valuation is used in the estimation of diamond resources or diamond reserves, the valuation must be based on a parcel representative of the size, shape and color distributions of the diamond population in the deposit.
A5-12	Diamond valuations should not be reported for samples of diamonds processed using total liberation methods.

TABLE 1—SECTION 11			Exploration Information	Mineral Resources	Mineral Reserves
Section 11: Reporting of Diamonds and Gemstones					
11.1	Specific reporting for diamonds and gemstones	(i)	The criteria applicable to diamond deposits are also applicable to other gemstone deposits.		
		(ii)	Appendix 5 provides additional criteria for reporting on diamonds and other gemstones.		
11.2	Geological setting, deposit and *mineralization*	(i)	The nature of the source of the diamonds, including the rock type and geological environment.		
11.3	Sampling of diamond projects	(i)	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)	The sample size, distribution and representativity.		
		(iii)	The type of sample facility, treatment rate and accreditation.		
		(iv)	Sample size reduction, bottom and top screen sizes and any re-crush.		
		(v)	The sample processes (e.g., DMS, grease, X-ray, hand-sorting, etc.).		
		(vi)	The process efficiency, tailings auditing and granulometry.		
		(vii)	The laboratory used, type of process for micro-diamonds and accreditation. Reports of microdiamond recoveries should specify both the number of stones recovered and the top and bottom screen or crushing sizes used in the recovery process.		
		(viii)	Reports of kimberlitic indicator minerals (KIMs), such as chemically/physically distinctive garnet, ilmenite, chrome spinel and chrome diopside, should be prepared by a suitably qualified laboratory, which should be identified.		
		(ix)	Reports of recoveries of diamonds or KIMs from all samples accompanied by details of the sampling parameters used, type of sample (stream sediment, soil, bulk, rock, etc.) as well as sample size, sample frequency, representativity and screen parameters are required.		
		(x)	Relevance of major and trace element chemistry of any kimberlitic indicator minerals recovered. Relevant peer-reviewed published research articles referenced when reporting the interpretation of mineral chemistry data for diamond exploration projects. NOTE: Mineral chemistry does not provide direct grade or diamond value information and may not be used to infer these parameters for Mineral Resource estimation purposes.		
		(xi)	Where diamonds have been recovered, details of the form, shape, color and size of the diamonds and, where relevant, the nature of the source of the diamonds.		
11.4	Bulk Sampling and/or trial-mining	(i)	Relevant tabulated results, including (but not limited to) the volume of the sample, number of individual diamonds, total number of carats, sample grade and diamond value (it is not possible to evaluate the diamond quality from microdiamonds).		
		(ii)	Micro and macro diamond sample results per geological domain.		
		(iii)	Stone size and stone number distribution.		
		(iv)	The lower cut-off size should be stated.		
		(v)	A carat (diamond) is defined as one fifth of a gram (0.2 g)—often described as a metric carat. Any deviation from this standard should be explained in detail. The sample grade is used in the context of carats per units of mass, area or volume. The sample grade above the specified lower cut-off sieve size should be reported as carats per dry metric tonne and/or carats per 100 dry metric tonnes. For placer deposits, sample grades quoted in carats per tonne or carats per m^3 are acceptable. In the marine placer environment, diamond reserve grades are, typically, reconciled on a per m^2 basis.		

TABLE 1—SECTION 11			Exploration Information	Mineral Resources	Mineral Reserves
Section 11: Reporting of Diamonds and Gemstones (Continued)					
11.5	Estimation and modeling techniques	(i)	Estimation techniques (including geostatistical estimation, where relevant) used to determine the volume/tonnage, grade and value data applicable to the deposit type.		
		(ii)	Applicable volumes, grades and values expressed in ranges (with appropriate clarifiers to denote lack of data reliability).		
		(iii)	If grades are reported, then it should be stated clearly whether these are regional averages, based on microdiamond assessment or KIM analyses, or whether they are selected individual samples taken from the property under discussion.	The basis for grade estimation for diamond resources should be from bulk sampling or large-diameter drilling (or extrapolated from microdiamond data) derived from the property itself.	The basis for grade estimation for diamond reserves should be from bulk sampling and/or trial mining.
		(iv)	If grades are reported, then it should be stated clearly whether these are regional averages or whether they are selected individual samples taken from the property under discussion.		
		(v)	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.		
		(vi)	The volume, grade and value estimation (including geostatistical, where relevant) and interpolation techniques applied and their applicability to the deposit type.		
		(vii)	Reports of diamond properties should specify the number and total weight (in carats) of the diamonds recovered. The weight of diamonds recovered may only be omitted from the report when the diamonds are less than 0.5 mm in size (i.e., when the diamonds recovered are microdiamonds).		
11.6	Resource/ reserve classification criteria	(i)		A diamond resource/reserve should not be reported in terms of diamond content unless corresponding tonnages/volumes, grades and values are also reported. The average diamond grade and value should not be reported without specifying the applicable bottom cut-off screen size.	
		(ii)		In addition to the general requirements to assess volume and density, there may be a need to relate stone frequency (stones per cubic meter, per tonne or per square meter) to stone size (carats per stone) to derive a grade (carats per cubic meter, per tonne or per square meter). The elements of uncertainty in these estimates should be considered and the diamond resource classification developed accordingly.	
		(iii)		Present aspects of: - Micro and macro diamond sample results per domain, - Global sample grade per geological domain and local block estimates in the case of indicated resources, - Spatial structure analysis and grade distribution, - Stone size and number distribution, - Effect on sample grade with a change in the bottom cut-off screen size.	
		(iv)		Sample grade - The sample grade above the specified lower cut-off sieve size as carats per dry metric tonne and/or carats per 100 dry metric tonnes. - For alluvial deposits, sample grades quoted in carats per (100) square meters or carats per (100) cubic meters are acceptable and should be accompanied by a volume to weight basis for calculation, where relevant. - Adjustments made to the size distribution for sample plant performance and performance on a commercial scale. - The total number of diamonds and the total weight of diamonds greater than the specified and reported bottom cut-off sieve size. - The weight of diamonds may only be omitted when the diamonds are considered too small to be of commercial significance. - This lower cut-off size should be stated.	

TABLE 1—SECTION 11			Exploration Information	Mineral Resources	Mineral Reserves
Section 11: Reporting of Diamonds and Gemstones (Continued)					
11.6 (continued)	Resource/ reserve classification criteria (continued)	(v)		Value - Diamond valuation is a highly specialized process and is only possible for parcels containing appropriate numbers of macro-diamonds. - It is not possible to evaluate diamond quality from microdiamonds. - The classification of diamonds as, for example, gem, or near gem and industrial, should be made by recognized experts. - Valuations should not be reported for samples of diamonds processed using the total liberation method, which is commonly used for processing kimberlite exploration samples. - The number of stones and the total number of carats used in the grade and value estimation should be disclosed and accompanied by a discussion of the validity of these data. - The accreditation of the valuer should be disclosed. Valuations of partial parcels of diamonds should not be used as a basis for the estimation of average revenue from a diamond deposit. - Details of the parcel valued, number of stones, carats and size distribution using a standard progression of sieve sizes for each identified geological domain. - The average valuation per sieve size. - An estimation of value with size. - An assessment of diamond breakage. - The average USD/carat and/or USD/tonne value with a change in the bottom cut-off. - The minimum parcel size for representative valuation. - Has a strict bottom cut-off been applied or does the modeled value include incidental diamonds below the bottom cut-off? - The basis for the price (e.g., dealer buying price, dealer selling price, etc.) should also be stated.	
11.7	Security and integrity of sampling	(i)	Whether samples were sealed after excavation and the chain of custody from the source to the reporting of results.		
		(ii)	Security standards in the sampling plant and recovery sections of bulk-sampling/trial-mining programs for macro diamonds.		
		(iii)	The valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones.		
		(iv)	Core samples washed prior to treatment for micro-diamonds and use of diamond drill bits.		
		(v)	Audit samples treated at alternative facilities.		
		(vi)	Results of tailings checks.		
		(vii)	Recovery of tracer monitors used in sampling and treatment.		
		(viii)	Geophysical (logged) density and particle density.		
		(ix)	Cross-validation of sample weights, wet and dry, with hole volume and density and moisture factor.		

APPENDIX 6—REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR INDUSTRIAL MINERALS, CEMENT FEED MATERIALS AND CONSTRUCTION RAW MATERIALS

Code

A6-1 The clauses in this Appendix address matters that relate to the Public Reporting of industrial minerals, cement feed materials and construction raw materials of all forms that are generally sold on the basis of their product specifications and market acceptance.

A6-2 Unless otherwise stated, Clauses 1 to 12 of the CBRR Guide (including Figure 1) apply.

A6-3 Table 1, as part of the CBRR Guide, should be considered persuasive when reporting Exploration Results, Mineral Resources and Mineral Reserves for industrial minerals, cement feed materials and construction raw materials.

A6-4 When reporting information and estimates for industrial minerals, cement feed materials and construction raw materials, all of the key principles and the purpose of the CBRR Guide apply. Chemical analyses may not always be relevant, and other quality and performance characteristics may be more applicable and acceptable as the basis of the reporting.

A6-5 Some industrial mineral, cement feed materials and construction raw material deposits may be capable of yielding products that are suitable for more than one application and/or specification. If considered material by the Qualified Professional, such multiple products should be quantified either separately or as a percentage of the bulk of the deposit.

A6-6 Unless it is a specific aspect of their instructions to reflect the range of product mixes and target markets for the deposit, the Qualified Professional should normally report the reserves and resources within the framework of an existing mining plan or established set of product and market assumptions and objectives.

A6-7 If there is potential for ancillary products, or mining or process waste, to be sold off-site for subsidiary uses in addition to the planned sales of primary products (i.e., other uses for non-saleable quarry production, such as secondary aggregate or engineering or other fill), the Qualified Professional should reflect this in their report and comment on any significant implications (e.g., reductions in the amount of non-saleable material that could otherwise be used as a restoration material).

A6-8 The factors underpinning the estimation of Mineral Resources and Mineral Reserves for industrial minerals, cement feed materials and construction raw materials are the same as those for other deposit types covered by the CBRR Guide. 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.

A6-9 For industrial minerals, cement feed materials and construction raw materials, it is common practice to report the saleable (or useable) product rather than the “as-mined” product as it is recognized that commercial sensitivities may not permit the publication of Mineral Resources and reserves in the latter format, which is the preferred style of reporting within the CBRR Guide.

A6-10 It is important that, in all situations in which the saleable or usable product is reported, a clarifying statement is included to ensure that the reader is fully informed about what is being reported.

A6-11 Reports should make clear the 'permitted' or 'non-permitted' status of the resources and reserves, and, in addition, reserves particularly should only be quoted where the operator has legal control.

Guidance

It should be noted that many of the Modifying Factors are more relevant to industrial minerals, cement feed materials and construction raw materials than to metalliferous minerals. Specifically the legal control may be more important, as well as the permitting status, due to the local nature of the planning process for non - strategic and non - government owned minerals.

Code

A6-12 Mineral Reserves and Mineral Resources of industrial minerals, cement feed materials and construction raw materials serving localized or regional markets may be reported on an aggregated basis or on an appropriately defined geographical basis to reflect the particular economic constraints of the deposits being reported without divulging commercially sensitive information.

A6-13 In certain cases, commercial sensitivity may prevent the publication of detailed information and data associated with Mineral Resources and reserves of industrial minerals, cement feed materials and construction raw materials, and, in such cases, this should be clearly justified in the report (prepared either for an individual site or on an aggregated basis).

TABLE 1—SECTION 12		Exploration Information	Mineral Resources	Mineral Reserves
Section 12: Reporting of Industrial Minerals, Cement Feed Materials and Construction Raw Materials				
12.1	Specific reporting of industrial minerals, cement feed materials and construction raw materials	(i)	Appendix 6 provides additional criteria for reporting on industrial mineral, cement feed material and construction raw material deposits.	
		(ii)	The exploration or geologically specific specialized industry techniques appropriate to the minerals under investigation.	
		(iii)	The nature and quality of sampling or specific specialized industry standard measurement tools appropriate to the minerals under investigation.	
		(iv)	Appropriate saleable product qualities. The basis for reporting (physical or chemical parameters, air-dried basis, dry basis, etc.). Deleterious chemical elements or physical parameters.	
		(v)	Assumptions regarding, in particular, extraction methods, infrastructure, processing, environmental and social parameters. Where no mining-related assumptions have been made, this should be explained.	
		(vi)	Marketing parameters, customer specifications, testing and acceptance requirements.	
		(vii)	The nature, amount and representativeness of completed metallurgical/processing studies, which form the basis for the various saleable materials that may be priced for different chemical and physical characteristics.	
		(viii)	Where the reference point is a saleable product, a clarifying statement is included to ensure that the reader is fully informed about what is being reported.	

APPENDIX 7—REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR DIMENSION, ORNAMENTAL AND DECORATIVE STONE

Code

A7-1 The clauses in this Appendix address matters that relate to the Public Reporting of dimension, ornamental and decorative stone of all forms that are generally sold on the basis of their technical (geological/mining) product specifications, quality and market acceptance.

A7-2 Unless otherwise stated, Clauses 0 to 12 of the CBRR Guide (including Figure 1) apply.

A7-3 Table 1, as part of the CBRR Guide, should be considered persuasive when reporting Exploration Results, Mineral Resources and Mineral Reserves for dimension, ornamental and decorative stone.

Guidance

"Dimension stone" is a technical/commercial term that includes all natural stones that can be quarried in blocks of different dimensions and processed by cutting or splitting and that possess the technical and esthetic properties required for their use in the building and construction industries.

In both mining methods and fields of application, dimension stone is distinct from any other material derived from natural rocks (such as aggregates, cement materials, crushed stone, etc.). Whilst other materials are almost exclusively used for load-bearing and filling functions and are largely utilized in public works, dimension stone materials offer special qualitative features, which mean they can be used for different purposes and they can perform both structural and decorative architectural functions.

In general, dimension stones can be quarried in regular and/or unshaped blocks by using different mining methods (drilling and splitting, diamond wire and diamond chain-saw cutting) and processed (cut, polished and subjected to other surface treatments) to produce semi-finished products (slabs) and finished products (tiles and cut-to-size products).

Code

A7-4 Chemical analyses may not always be relevant to material evaluation, at least during the exploration–evaluation phases. Where necessary, chemical analysis is used to verify the presence of possible minerals and related alteration that could produce important quality defects in finished products.

A7-5 Chemical/compositional analysis may also identify mineral components and/or assemblages and is used to predict the future technical requirements of the quarrying–processing equipment and related tools.

A7-6 Qualitative and esthetic qualities (color, grain, texture and their regularity in distribution) and/or their structural performance characteristics (compression and

flexural strength, abrasion resistance, porosity, ability to be polished, radioactivity content, etc.) may be more important for the market and applicable and acceptable as the basis of the reporting.

A7-7 Many dimension stone deposits may be capable of yielding different products (different materials and/or different market grades within the same material), suitable for the production of more than one finished or semi-finished product and for more than one final application and/or specification. They are often sold at different prices in the market.

A7-8 If considered material by the Qualified Professional, estimates for such multiple products should be included either separately or as percentages of the bulk of the deposit.

A7-9 Unless it is a specific aspect of their instructions to reflect the range of product mixes and target markets for the deposit, the Qualified Professional should normally report the resources and reserves within the framework of an existing mining plan and/or Feasibility Study or an established set of products and market assumptions and objectives.

A7-10 If there is potential for ancillary products or by-products, or for quarrying or processing waste to be reutilized or to be sold off-site for subsidiary uses, in addition to the planned sales of the primary products as described above (e.g., aggregate, sand and powder as industrial mineral, building and paving stone, etc.), the Qualified Professional should reflect this in the report and comment on any significant implications (e.g., a reduction in the amount of non-saleable material, the minimization of waste and related lower waste management costs and environmental impact).

Guidance

The factors underpinning the estimation of Mineral Resources and Mineral Reserves for dimension stones are often not the same as those for other deposit types covered by the CBRR Guide.

It may be necessary, prior to the reporting of Mineral Resources and Mineral Reserves, to take particular account of certain particular key characteristics/features of the target material specific to dimension stone.

These may include the final-product specifications, the proximity to markets, the type, structure and demand of the markets (which differ widely by area) and, excluding some very well-established materials, possible changes in market requirements and general product marketability.

These may also depend mainly on the market quality of the target material (color, grain, texture and regularity in distribution). A correct professional evaluation of the market quality, made by the Qualified Professional in different ways, is the key to evaluating the final product's marketability and is a key modifying factor in the definition of Mineral Reserves for dimension stone.

In the report, the Qualified Professional should explain in detail the method utilized for the market quality evaluation of the target dimension stones and, in the case of the market, the references cited, together with the documents referenced or used.

Sometimes, otherwise non-saleable materials are sent off-site as mining waste or as other materials of potential economic value.

Care should be taken to ensure that such materials are not "double counted" by being included as Mineral Reserves and resources at both the site of production and the site of reception, where they are considered as useable products (with or without further processing to make them marketable).

Code

A7-11 In contrast to industrial minerals, cement feed materials and construction raw materials (Appendix 6), for which it is common practice to report the saleable (or useable) product rather than the "as-mined" product, for dimension stone production, the raw block or "as-mined" product is usually reported in all its forms, shapes and dimensions. These are also factors that drive the market and the success of a dimension stone project.

A7-12 The Public Report may contain either the geological or the commercial name of the target dimension stones. In any case, an explanation of these terms should be included in the report.

A7-13 Other industry guidelines on the estimation and reporting of dimension stones may be useful but will under no circumstances override the provisions and intention of this CBRR Guide for Public Reporting.

A7-14 Many of the Modifying Factors are more relevant and specific to dimension stones than to metalliferous minerals. In particular, the legal control of resources and reserves may be very important as well as the permitting or consenting status due to the local nature and often simple structure of the planning process for non-strategic and non-government-owned minerals.

Guidance

Reports should make clear the "permitted" or "non-permitted" status of the resources and reserves; in addition, reserves particularly should only be quoted when the operator has legal control.

Code

A7-15 Mineral Reserves and Mineral Resources of dimension stone deposits with the same material and owned by the same company, potentially serving localized/domestic or regional markets, may be reported on an aggregated basis on an appropriately defined geographical basis to reflect the particular economic constraints of the deposits being reported without divulging commercially sensitive information.

A7-16 In certain cases, commercial sensitivity may prevent the publication of detailed information and data associated with Mineral Resources and reserves of dimension stone deposits, and, in such cases, this should be clearly justified in the report (prepared either for an individual site or on an aggregated basis).

TABLE 1—SECTION 13		Exploration Information	Mineral Resources	Mineral Reserves
Section 13: Reporting of Dimension, Ornamental and Decorative Stone				
13.1	Specific reporting of dimension, ornamental and decorative stone	(i)	Appendix 7 provides additional criteria for reporting on dimension, ornamental and decorative stone.	
		(ii)	The exploration or geologically specific specialized industry techniques appropriate to the stone under investigation.	
		(iii)	The nature and quality of sampling or specific specialized industry standard measurement tools appropriate to the stone under investigation.	
		(iv)	The appropriate saleable product qualities reported, including their *color*, grain, texture and regularity in distribution. The basis for reporting (physical or chemical parameters, compression and flexural strength, abrasion resistance, porosity, polishability, etc.) should be reported. The reporting of deleterious chemical elements, radioactivity or physical parameters is required.		
		(v)	State assumptions regarding, in particular, extraction methods, infrastructure, processing, environmental and social parameters. Where no mining-related assumptions have been made, this should be explained.	
		(vi)	Discuss and justify the marketing parameters, customer specifications, testing and acceptance requirements.	
		(vii)	Discuss the nature, amount and representativeness of processing studies completed, which form the basis for the various saleable materials that may be priced for different chemical and physical characteristics.	
		(viii)	Where the reference point is a saleable product, a clarifying statement is included to ensure that the reader is fully informed about what is being reported.	