PERC
PAN-EUROPEAN RESERVES + RESOURCES REPORTING COMMITTEE

PERC REPORTING STANDARD 2021

Pan-European Standard for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves

www.percstandard.org



The Pan-European Reserves and Resources Reporting Committee (PERC asbl)

approved and published 1 October 2021

The Geological Society
serving science & profession

Institute of Geologists of Ireland

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Institute of Materials, Minerals & Mining

FAMMP

IMEB
Iberian Mining Engineers Board

Member of

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PERC asbl no. 0.521-825-257 registered in Brussels
7 March 2013

FOREWORD

The Pan European Reserves and Resources Reporting Committee (PERC) Standard for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (further referred to as the 'PERC Reporting Standard') sets out the minimum standards, additional guidelines and recommendations for the Public Reporting of Exploration Results (including Exploration Targets), Mineral Resources and Mineral Reserves.

Improved corporate governance and stock exchange regulation demand best practices in Mineral Resource Management and Public Reporting Standards. The PERC Reporting Standard is aligned with the CRIRSCO International Reporting Template for the Public Reporting of Exploration Targets, Exploration Results, Mineral Resources and Mineral Reserves, November 2019 (the 'CRIRSCO International Reporting Template 2019') developed by the Committee for Mineral Reserves International Reporting Standards (CRIRSCO).

To promote the consistency and best practice in minerals reporting in Europe, all of the PERC participating organisations, namely: the Institute of Materials, Minerals, and Mining (IOM3); the Institute of Geologists of Ireland (IGI); the Geological Society of London (GSL); the Fennoscandian Association for Metals and Minerals Professionals (FAMMP); the European Federation of Geologists (EFG); and the Iberian Mining Engineers Board (IMEB) promote the use of the PERC Reporting Standard. Members of these organisations who are involved in preparing information to support Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves must use the definitions, principles and guidance defined in the PERC Reporting Standard, regardless of whether or not they are acting as a Competent Person. In several cases, the use of the PERC Reporting Standard has been adopted as a specific requirement of the professional organisation's code of conduct.

The 2021 edition of the PERC Reporting Standard supersedes all previous editions of the reporting codes and reporting standards, including The Reporting Code, the IMM Reporting Code, the PERC Code, the PERC Standard 2013, the PERC Reporting Standard 2017, and the Recommended Rules for Public Reporting of Exploration Results, Surveys, Feasibility Studies and Estimates of Mineral Resources and Mineral Reserves in Sweden, Finland and Norway 2012 ('the Fennoscandian Review Board (FRB) Standards'). The 2021 edition of the PERC Reporting Standard is aligned with the November 2019 version of the CRIRSCO International Reporting Template.

The 2021 edition of the PERC Reporting Standard was initially approved at the PERC Annual General Meeting held on 7th May 2021 and was officially issued on 1st October 2021, following final review and editing. To allow existing users time to adapt to the 2021 edition, PERC has agreed to allow for a transition period up to the end of 2022, during which the PERC Reporting Standard 2017 may continue to be used.

From the 1st January 2023, usage of only the PERC Reporting Standard 2021 will be permitted for the Public Reporting of Exploration Results (including Exploration Targets), Mineral Resources and Mineral Reserves.

DEFINITIONS

CRIRSCO Standard Definitions

The CRIRSCO (Committee for Mineral Reserves International Reporting Standards) International Reporting Template (the 'CRIRSCO International Reporting Template 2019') has sixteen standard Definitions. As a member of CRIRSCO, PERC uses Definitions that are identical to or not materially different from these standard Definitions [*Clause numbers and page numbers have hyperlinks*].

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APPENDICES and TABLES

1.INTRODUCTION

Format and Structure

1.1. **In this edition of the PERC Reporting Standard, Definitions are provided as numbered Clauses in a bold typeface with orange highlighting. All defined terms are Capitalised.**

The Definitions are a core element of the PERC Reporting Standard and are common to all national or regional reporting codes and reporting standards, based on the CRIRSCO International Reporting Template.

Defined terms, where referred to in other Definitions, are underlined.

1.2. The PERC Reporting Standard's mandatory 'code' elements are identified as numbered Clauses in normal typeface.

1.3. *The guidance and further interpretation of the Definitions and mandatory Clauses are placed after the respective code elements in italic typeface and grey highlighting. The guidelines provide assistance and guidance to readers for interpreting the application of the Definitions and Clauses in the PERC Reporting Standard.*

1.4. **Appendices 1 to 8** provide further guidance on applying the PERC Reporting Standard to reporting specific commodities or commodity groups.

1.5. **Appendix 9** defines the conditions for disclosing estimates previously reported under a classification system other than defined by the PERC Reporting Standard, or by person(s) other than the Competent Person (see Clause 3.2).

1.6. Throughout the PERC Reporting Standard, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the Minerals (see Clause 2.3) industry. The generic terms are listed in **Appendix 10,** together with other terms that may be regarded as synonymous, for the purposes of the PERC Reporting Standard.

Guidance	*The use of a particular term in the PERC Reporting Standard does not imply that it is preferred or necessarily the ideal term in all circumstances. Different terms may be used in particular countries or for particular industry sectors. A typical example is where 'mining' is referred to as 'quarrying' when stone and aggregates are involved.*

1.7. **Appendix 11** provides a prototype certificate for a Competent Person to declare compliance with all requirements of the PERC Reporting Standard.

1.8. Table 1 provides, in a summary form, a list of the criteria that must be considered when preparing Public Reports on Exploration Results, Mineral Resources and Mineral Reserves (see Clauses 5.1, 6.1, 7.1). Comments must be provided for all relevant sections of Table 1 on an 'if not, why not' basis.

Guidance	*Table 1 applies to all declarations compliant with the PERC Reporting Standard. 'If not, why not' means that each item listed in the relevant section of Table 1 must be discussed, or else the Competent Person(s) must explain why it has been omitted.'* *Table 1 is a high-level checklist of reporting and assessment criteria to be used as a reference by those preparing Competent Persons Reports on Exploration Results, Mineral Resources and Mineral Reserves. In the context of complying with the principles of the PERC Reporting Standard, comment on the relevant sections of Table 1 must be provided on an 'if not, why not' basis within the Competent Person's Report. This approach ensures that it is clear to the reader of the Competent Persons Report whether items have been considered and deemed to be of low consequence or have yet to be addressed or resolved.* *However, the Table 1 checklist is not expected to be completed for all shorter types of Public Reports that are a summary of or are based on information or estimates in an existing detailed Competent Persons Report.*

1.9. **Table 2** provides guidance on the relevance and expected level of detail of the Table 1 sections for different Technical Study types (see Clauses 8.3, 8.6, 8.7).

2.SCOPE

Application

2.1. The PERC Reporting Standard sets out the minimum required standards and additional recommendations and guidelines for the Public Reporting (see Definition of Public Report in Clause 2.11) of Exploration Results, Mineral Resources and Mineral Reserves.

2.2. PERC Reporting Standard applies to all solid Mineral raw materials for which Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves is required by any relevant regulatory authority.

2.3.

Definition	**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 excludes water, oil and gas.**

Guidance	*As a general statement, a Mineral deposit is understood to be a natural accumulation of Minerals or a combination of Minerals in the Earth's crust, in the form of one or several bodies of economic interest, which can be extracted at the present time, or in the future.*

2.4. The Definition of Mineral is broad, and therefore the PERC Reporting Standard applies to a diverse range of commodities, or commodity groups, for which Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves is required by a relevant regulatory authority, including but not limited to:

- Metalliferous Minerals;
- Mineralised fill, remnants, pillars, low-grade Mineralisation, stockpiles, dumps and tailings;
- Coal;
- Diamonds and other Gemstones;
- Industrial Minerals, Cement Feed Materials and Construction Raw Materials;
- Dimension Stone, Ornamental Stone and Decorative Stone;
- Oil Shales, Oil Sands and Other Energy Minerals extracted by mining methods;
- Metallic or non-metallic Minerals extracted by solution mining methods;
- Mining Waste and Other Waste Materials of Potential Economic Value ('Waste Materials').

2.5. In addition, the principles of the PERC Reporting Standard apply to the assessment and reporting of:

- Other Mineral raw materials; and
- Minerals extracted from liquid brines.

Principles

2.6. The principles governing the operation and application of the PERC Reporting Standard are Transparency, Materiality, Competence, and Accountability.

2.7. **Transparency** requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, to understand the Public Report and not be misled.

2.8. **Materiality** requires that a Public Report contains all relevant information which investors or potential investors and their professional advisers would reasonably require and reasonably expect to find in a Public Report to make a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources and Mineral Reserves being reported. For information to be considered material, it could, if omitted or misstated, influence the economic decisions of investors or potential investors and their professional advisers. Material information would include a change in, or a constituent of, a particular factor that may be regarded in the circumstances as being material.

2.9. **Competence** requires that a Public Report is based on work that is the responsibility of a suitably qualified and experienced person (referred to herein as the Competent Person, see Clause 3.2) who is a professional member, registrant or licensee of a Recognised Professional Organisation (RPO) in the list of professional organisations accredited by PERC, with an enforceable code of ethics and a disciplinary process, which includes the powers to suspend or expel a member.

Guidance	*Competence requires that the person performing a specific activity should: have the ability to perform the activity;*

2.10. **Accountability** requires that the *Competent Person(s)* named in a Public Report is an (are) individual(s) who is (are) identified in the Public Report as accepting responsibility for the information on which the Public Report is based. The *Competent Person(s)* must be entitled to act in the capacity stated in the Public Report, and must recognise that they are responsible for ensuring that their activities comply with the legal and regulatory requirements relevant to such Public Reporting.

Guidance	*Accountability requires that the person performing a specific activity should:* • *Have the ability to perform the activity;* • *Accept responsibility for doing the activity; and* • *Have the authority to perform the activity in accordance with company procedures and any external legal or regulatory*

	requirements. *The principles of Transparency and Accountability require that any conflict of interest, actual or potential, should be declared (for example, if the Competent Person is an employee of the company or reporting entity, or is a member of a consulting firm whose principal income is from the reporting entity).*

Public Reports

2.11.

Definition	**Public Reports are reports prepared for the purpose of informing investors or potential investors and their professional advisers on Exploration Results (including Exploration Targets), 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.**

Guidance	*Public Reporting refers to the release of a Public Report, and the two terms can be used interchangeably.*

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

2.13. The Public Reporting and disclosure requirements addressed in the PERC Reporting Standard apply equally to all publicly released company information in the form of postings on company websites, social media, press releases and briefings for shareholders, stockbrokers and investment analysts.

Guidance	*The language used in Public Reports of Exploration Results, Mineral Resources, and Mineral Reserves should be balanced and not exaggerate the meaning of the Exploration Results, Mineral Resources, or Mineral Reserves. For example, not every project or operation can be "world-class".*

2.14. The PERC Reporting Standard applies to the Public Reporting of Exploration Results, Mineral Resources, and Mineral Reserves made publicly available for other purposes, such as those contained in:

- Information memoranda;
- Expert reports;
- Technical papers; and
- Any other published materials, such as websites, social media posts, or company annual reports.

Guidance	*Of particular concern should be postings made using social media, where it may be inferred by the reader that the information being released*

	constitutes a Public Report.

2.15. For companies issuing annual reports, or other periodic summary reports, all material information, including commodity pricing, relating to Exploration Results, Mineral Resources and Mineral Reserves, must be included.

2.16. In cases where summary information is presented, the Public Report must clearly state that the information is a summary. A reference must be provided, giving the source and location of the PERC Reporting Standard-compliant Public Report(s) or Public Reporting on which the summary is based.

2.17. The Public Report must include sufficient context and cautionary language to allow investors or potential investors and their professional advisers to understand the nature, importance, and limitations of the data, interpretations, and conclusions summarised in the Public Report.

2.18. The Public Report must include a description of the context and factors relevant to the scope of the Public Report and in respect of all Modifying Factors (as defined in Clause 4.8). Such a description must consider legal requirements of the applicable jurisdiction, including regulatory requirements of stock exchanges; financial and other applicable regulatory authorities.

2.19. Reference in the PERC Reporting Standard to 'documentation' is to internal company documents prepared as a basis for, or to support, a Public Report.

Guidance	*It is recognised that companies can be required to issue reports into more than one regulatory jurisdiction, with compliance standards that may differ from the PERC Reporting Standard. It is recommended that such reports include a statement alerting the reader to this situation.* *It is recognised that documentation prepared by Competent Person(s) for internal company or similar non-public purposes may not necessarily comply with the Definitions, requirements, and guidance in the PERC Reporting Standard. In such situations, it is recommended that the documentation include a prominent statement to this effect to make it less likely that non-compliant documentation will be used to compile Public Reports.* *While every effort has been made within the PERC Reporting Standard to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists regarding the appropriate form of the disclosure. On such occasions, users of the PERC Reporting Standard should be guided by its intent to provide a minimum standard for Public Reporting.* *Estimation of Mineral Resources and Mineral Reserves is inherently subject to some level of uncertainty and inaccuracy. Considerable skill and experience may be needed to interpret 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 the Mineral*

	Resource and Mineral Reserve 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.*

2.20. The PERC Reporting Standard does not cover valuation or appraisal from a business economic or financial perspective. The PERC Reporting Standard provides for the reporting of Exploration Results, Mineral Resource and Mineral Reserve estimates that others may use to prepare subsequent valuations or appraisals.

Reporting General

2.21. Public Reports concerning a company's or reporting entity's Exploration Results, Mineral Resources and Mineral Reserves must include a description of the geological style and nature of the mineralisation.

2.22. 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 Mineral deposit, must be disclosed.

2.23. Table 1 determines and documents the minimum requirements for material information.

2.24. The effective date of a Mineral Resource and Mineral Reserve statement must be declared in the Public Report.

2.25. The company's or reporting entity's economic interest in a project or operation must be declared in the Public Report.

2.26. Where a Mineral deposit has multiple owners, the proportion of the reported Mineral Resources and Mineral Reserves in which the company and reporting entity has an interest must be made clear.

2.27. Where Mineral Resources and Mineral Reserves are estimated for multiple properties, they may be aggregated for reporting purposes 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.

2.28. Public Reports of Exploration Results must include some consideration of the prospects for future economic extraction.

2.29. Public Reports, which include estimates of Mineral Resources, must include a positive assessment of the reasonable prospects of eventual economic extraction. A clear description of the assumptions that have been made to reach such conclusions, sufficient for a reader to decide that the prospects are indeed realistic, must be provided.

2.30. Public Reports, which include estimates of Mineral Reserves, must have an assessment demonstrating that extraction could reasonably be justified at the time of

reporting. A clear description of the assumptions that have been made to reach such conclusions, sufficient for a reader to decide that extraction is justified, must be provided.

Guidance	*It follows (from 2.28, 2.29 and 2.30) that relevant Modifying Factors should be considered at every stage in a project or operation. For example, in initial decision-making for an exploration project, the location (perhaps in a National Park(in some jurisdictions), a war zone, or other sensitive areas) may significantly affect the prospects for eventual economic extraction, as also would the potential environmental impact of the exploration itself or the subsequent mine development.* *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 periods in excess of 50 years. However, for most smaller deposits, application of the concept would typically be restricted to perhaps 10 to 15 years, and frequently to much shorter periods. In all cases, the considered time frame should be disclosed and discussed by the Competent Person.*

2.31. All Public Reports of Exploration Results, Mineral Resources and Mineral Reserves must include the consideration and reporting of the environmental, social performance (including health and safety), and governance (ESG) context and factors that could have a material effect on the outcome of the project or operation.

Guidance	*Consideration of the environmental, social performance (including health and safety), and governance (ESG) context and factors should include consideration of 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;* • *The 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**).*

Risks and Uncertainties

2.32. Public Reports concerning a company's or reporting entity's Exploration Results, Mineral Resources and Mineral Reserves must make readers aware of any risks and uncertainties that may impact the reliability of the data, interpretations, and estimates presented.

2.33. Consideration of risks and uncertainties must include identifying events or situations that may have a negative effect (threat) or positive effect (opportunity) on anticipated outcomes.

2.34. The Competent Person(s) must assess the relative importance of the risks and highlight any such risks that may have a material effect on the published estimates of Mineral Resources and Mineral Reserves, or the anticipated project or operation outcomes.

2.35. Public Reports that present the results of Technical Studies must include details of any risk assessments carried out, including planned risk management actions.

2.36. Where a Public Report is being issued to support a request for funding for further exploration or development work, the Public Report must make it apparent what effect, if any, the proposed work programme would have in mitigating the effects of the identified threats and realising the benefits of the identified opportunities.

Guidance	*Stock exchanges and financial regulators are putting an increasing emphasis on the disclosure of risks and uncertainties associated with financial reporting by businesses, including: financial, legal, technical, reputational, and ESG. Risks disclosed involve those pertinent to all relevant aspects of an asset or business that can be estimated within reasonable bounds. Uncertainties associated with all Modifying Factors should be considered when reporting Mineral Resources and Mineral Reserves.* *To ensure that the risks and uncertainties associated with the estimation of Mineral Resources and Mineral Reserves, and the prediction of financial outcomes for mining projects or operations, are not overlooked, such aspects should be presented clearly and transparently in Public Reports.* *For many people, the term risk relates only to potential issues that could have a negative impact on outcomes. However, in the context of assessing Mineral projects, consideration of uncertainties that could positively impact outcomes is often of equal importance. In general, as a project proceeds from exploration through evaluation to construction and operation, the emphasis changes from the main focus on opportunities in the exploration stage to a greater focus on threats at the operational stage.* *It is the responsibility of the Competent Person(s) to identify and assess risk and uncertainty factors related to the matters being presented in any Public Report, particularly any which may have a material effect on estimates or predicted outcomes (e.g. development timelines).*

3.COMPETENCE AND RESPONSIBILITY

Competent Person

3.1. A Public Report concerning a company's or reporting entity's Exploration Results, Mineral Resources and Mineral Reserves is the responsibility of the company or reporting entity, acting through its Board of Directors.

3.2. ***Definition***	**A Competent Person is a Minerals industry professional, defined as a professional member, registrant or licensee of *a* Recognised Professional Organisation (RPO) in the list of professional organisations accredited by PERC, with enforceable disciplinary processes, including the powers to suspend or expel a member.** **A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of Mineral deposit under consideration and in the activity which that person is undertaking.**

Guidance	*The Definition of 'Competent Person' is subject to any additional restrictions or conditions that may be required by any relevant regulatory authority, National Reporting Organisation (NRO), PERC Participating Organisation (PO), or Recognised Professional Organisation (RPO).* *PERC maintains a list of RPOs, including minimum required membership classes, which is updated from time to time and can be found on and downloaded from the PERC website at http://www.percstandard.org.*

3.3. A Public Report must be based on and fairly reflect the information and supporting documentation on Exploration Results, Mineral Resources and Mineral Reserves prepared by, or under the direction of and signed by a Competent Person(s).

3.4. Documentation detailing Exploration Results, Mineral Resource and Mineral Reserve estimates, on which a Public Report on Exploration Results, Mineral Resources and Mineral Reserves is based, must be prepared by, or under the direction of, and signed by, a Competent Person(s). The documentation must provide a fair representation of the Exploration Results, Mineral Resources or Mineral Reserves being reported.

Guidance	*Documentation is understood to be written, or graphical information that includes the detailed justification (raw data and interpretation) for a Public Report but is not in itself part of the Public Report.*

3.5. A company or reporting entity issuing a Public Report must disclose the name(s) of the Competent Person(s), including whether the Competent Person(s) are full-time employee(s) of the company, and, if not, the Competent Person's employer's name and any associated relationship with the company or reporting entity.

3.6. Any potential conflict of interest between the Competent Person(s) and any party related directly or indirectly to the company or reporting entity must be disclosed.

3.7. The issuing of a Public Report requires the written consent of the named Competent Person(s), before the release of the Public Report, to agree to the form and context in which the information presented in the Public Report appears.

3.8. The company or reporting entity must provide to the Competent Person(s) the company's or reporting entity's public disclosure of information prepared by the Competent Person(s) and seek approval from the Competent Person(s) as to the form and content of the release and the use of the Competent Person's name in connection with that disclosure. A reasonable time must be allowed for the Competent Person(s) to review the public disclosure before making their decision.

Competent Person's Experience

3.9. If the Competent Person is preparing a Public Report on Exploration Results (including Exploration Targets), the relevant experience must be in exploration.

3.10. If the Competent Person is estimating or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources.

3.11. If the Competent Person is estimating or supervising the estimation of Mineral Reserves, the relevant experience must be in the estimation, assessment, evaluation and economic extraction of Mineral Reserves.

Guidance	*The key qualifier in the Definition of a Competent Person is the word 'relevant'. Determining what constitutes relevant experience can be a problematic area, and common sense has to be exercised.* *For example, in estimating Mineral Resources for vein gold mineralisation, experience in a high-nugget, vein-type mineralisation such as tin, uranium etc., will probably be relevant, whereas experience in massive base metal deposits may not be.* *As a second example, to qualify as a Competent Person in the estimation of Mineral Reserves for alluvial gold deposits, considerable experience in the evaluation and economic extraction of this type of mineralisation would be needed. Experience with placer deposits containing Minerals other than gold may not necessarily constitute the relevant experience required.* *The key word 'relevant' also means that it is not always necessary for a person to have five years' experience in a particular type of Mineral deposit to act as a Competent Person, if that person has relevant experience in other Mineral deposit types.* *For example, a person with (say) 20 years' experience in estimating Mineral Resources for a variety of different metalliferous hard-rock Mineral deposit types may not require five years of specific experience in (say) porphyry copper deposits to act as a Competent Person. Relevant experience in the other Mineral deposit types could count towards the required experience in*

	relation to porphyry copper deposits. *In addition to experience in the style of mineralisation, a Competent Person taking responsibility for the compilation of Exploration Results and Mineral Resource estimates should have sufficient experience in the sampling and analytical techniques relevant to the Mineral deposit type under consideration to be aware of problems that could affect the reliability of data, including some appreciation of the processing and beneficiation applicable to that Mineral deposit type.*

Competent Person's Responsibilities

3.12. The Competent Person(s) must provide explanatory comment on the material assumptions underlying the declaration of Exploration Results (including Exploration Targets), Mineral Resources or Mineral Reserves.

3.13. In particular, the Competent Person(s) must include commentary on all material aspects that an investor or potential investor and their professional advisers would reasonably expect to be provided, which would include, but not be limited to any aspect that would influence public perception of the value of the Mineral deposit.

3.14. The Competent Person(s) must be satisfied that their work has not been unduly influenced by the organisation, company, reporting entity or person commissioning the Public Report or a report containing information that may be used in a Public Report.

Guidance	*As a general guide, persons being called upon to act as a Competent Person must be satisfied in their own minds that they could face their peers and demonstrate competence in the commodity, type of Mineral deposit and situation under consideration. If doubt exists, the person either should seek opinions from appropriately experienced colleagues or decline to act as a Competent Person.* *Complaints made in respect of a Competent Person's professional work will be dealt with under the disciplinary procedures of the Recognised Professional Organisation of which the Competent Person is a member or registrant or licensee.*

3.15. If a team prepares a Public Report on Exploration Results, Mineral Resources or Mineral Reserves, that team must be led by an experienced Competent Person (Lead Competent Person).

3.16. Members of a team preparing a Public Report on Exploration Results, Mineral Resources or Mineral Reserves may be specialists in technical or professional fields for which the Competent Person Definition in Clause 3.2 is not applicable. In such cases, the Lead Competent Person must be satisfied with and be accountable for each of those specialists' qualifications and relevant experience.

Guidance	*If a Lead Competent Person is appointed, it is essential that the Lead Competent Person accepts overall responsibility for a report on Exploration*

	Results, Mineral Resources or Mineral Reserves that has been prepared in whole or in part by others is satisfied that the work of the other contributors, who may be Competent Persons in their own right, is acceptable and that the constituent parts of the report have been signed off by such contributors. *The Lead Competent Person must satisfy themselves that the work of other contributors, who are not necessarily members of a Professional Organisation, is acceptable.*

3.17. If the Competent Person, or a member of a team led by the Lead Competent Person, is estimating or supervising the estimation, assessment or evaluation of any Modifying Factors, the relevant experience of the Competent Person(s) or each team member must be in the field that is relevant to those Modifying Factors on which they are reporting, to the extent justified by the degree of detail required for the Public Report, or other documentation being prepared.

4.REPORTING TERMINOLOGY

Defined Terms

4.1. Figure 1 sets out the framework for classifying tonnage and grade or quality estimates to reflect different levels of geological confidence, confidence in the Modifying Factors, and different degrees of technical and economic evaluation.

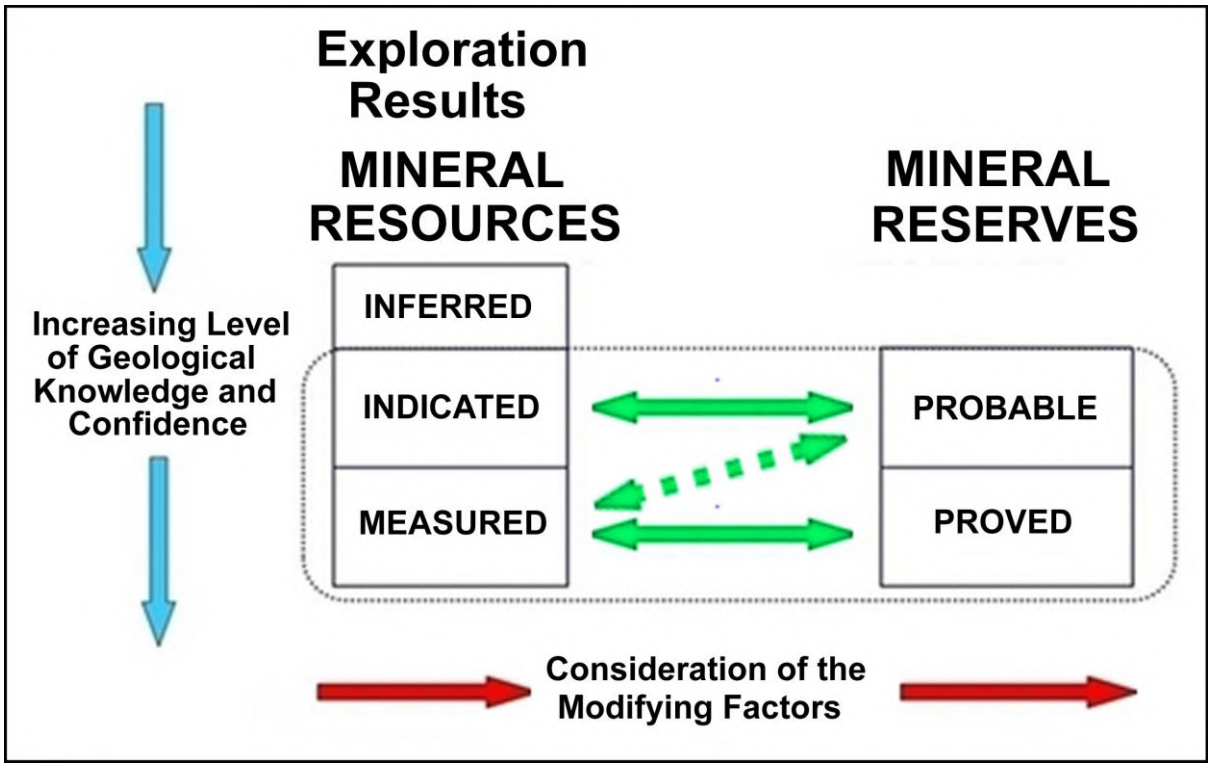

Figure 1 The general relationship between Exploration Results, Mineral Resources and Mineral Reserves

4.2. The CRIRSCO Standard Definitions used for the defined reporting terminology categories must be considered in conjunction with Figure 1.

In Figure 1 the defined reporting terminology categories are:

- Exploration Results
- 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 Results, Mineral Resources and Mineral Reserves.

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

4.5. Exploration Results must have reasonable prospects of being used to estimate a Mineral Resource following further exploration.

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

4.7. Mineral Reserve estimates must be supported by a Pre-Feasibility Study or Feasibility Study (see Clauses 8.6 and 8.7) that demonstrate the project or operation's technical and economic viability, and that at the time of reporting, that **extraction could reasonably be justified.**

Guidance	*A **Life of Mine Plan** (LoMP) (see definition in Appendix 10) of at least Pre-Feasibility Study level can be used to support the declaration of a Mineral Reserve in an operating mine where there is no significant capital expenditure required.*

Modifying Factors

4.8.

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

Guidance	*Governance factors and Regulatory factors are defined in Appendix 10.*

4.9. The conversion of Mineral Resources to Mineral Reserves requires the consideration of the Modifying Factors. The estimation of Mineral Reserves must include consideration of all relevant Modifying Factors with input from a range of disciplines.

4.10. The effect of any Modifying Factor on the likely viability of a project or operation and/or on the estimation and classification of the Mineral Reserves must be fully documented and explained.

4.11. The use of Modifying Factors may be mandated by applicable legislation or regulations, and the detailed requirements of legislation or regulations must be followed and identified in Public Reports.

Guidance	*Mineral Resources can be estimated mainly based on geological information with input from other disciplines on relevant matters, including Modifying Factors.*

	Measured Mineral Resources may convert to either Proved Mineral Reserves or Probable Mineral Reserves. The Competent Person may convert Measured Mineral Resources to Probable Mineral Reserves because of uncertainties associated with some or all of the Modifying Factors, which are considered in the conversion from Mineral Resources to Mineral Reserves. The broken arrow in Figure 1 shows this relationship. *Measured Mineral Resources may be converted to Probable Mineral Reserves when the confidence in any Modifying Factor is less than the level of geological knowledge or confidence. 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.*

5.REPORTING OF EXPLORATION RESULTS

All Reports of Exploration Results

5.1.	***Definition***	**Exploration Results include data and information generated by Mineral exploration programmes that might be of use to investors or potential investors and their professional advisers, but which do not form part of a declaration of Mineral Resources or Mineral Reserves.**

Guidance	*PERC interprets the definition "Exploration Results include data and information generated by mineral exploration programmes…" to mean that it includes both:* • *Exploration Results per se (i.e. exploration data and other results specifically collected during exploration activities); and* • *information generated or gathered, often from the interpretation of the Exploration Results, which may include Exploration Targets (see definition in Clause 5.12).* *The PERC Reporting Standard 2021 views Exploration Targets as falling within the general definition of Exploration Results, and requires that when reporting Exploration Targets, they should be linked to the associated Exploration Results.*

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

5.3. Exploration Results must not be part of a formal declaration of Mineral Resources or Mineral Reserves. The Exploration Results must not be presented in a way that unreasonably implies the discovery of potentially economic mineralisation. Public Reports of Exploration Results must not be presented to imply unreasonably that potentially economic mineralisation has been discovered.

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

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

5.5. Public Reports and associated documentation must include relevant information such as exploration context, type and method of sampling, appropriate sample intervals and locations, distribution, dimensions and relative location of all relevant assay data,

methods of analysis, data aggregation methods, land tenure status, plus information on any of the other criteria listed in Table 1 that are material to the assessment.

Guidance	*It is recommended that such Public Reports have a proximate 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 for deriving estimates of tonnage and grade or quality".*

5.6. If true widths of mineralisation are not reported, an appropriate qualification must be included in the Public Report.

5.7. Where assay and analytical results are reported, they must be reported using one of the following methods, selected as the most appropriate by the relevant Competent Person, either:

- by listing all results, along with sample intervals (or size, in the case of bulk samples); or
- by reporting weighted average grades or quality of mineralised zones, indicating clearly how the grades or quality were calculated.

5.8. Clear diagrams and maps designed to represent the geological context must be included in the Public Report and associated documentation. These must include but not be limited to a plan view of drill hole collar locations and appropriate sectional views.

5.9. 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.

5.10. 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 the reader can make a considered and balanced judgement of the Public Report. Where Public Reports of Exploration Results do not include all drill holes or all intersections of drill holes, the Competent Person(s) must explain why this information is not considered relevant or why it has not been provided.

Guidance	*As required under Clause 3.13, the Competent Person(s) must not 'remain silent' on any issue for which the presence or absence of comment could impact the public perception or value of the Mineral deposit.* *Additional disclosure is essential where inadequate or uncertain data affect the reliability of or confidence in a statement of Exploration Results; for example, poor sample recovery, poor repeatability of assay or laboratory results, etc.*

5.11. When reporting on Exploration Results for a Project, some initial consideration must be given to the prospects for future economic extraction.

Guidance	*Preliminary Modifying Factors, including material ESG threats and*

	opportunities, should be taken into consideration at this early stage. If there are known issues related to the preliminary Modifying Factors, particularly ESG aspects, that could represent significant threats or opportunities with respect to the prospects for future economic extraction, these issues may be material information and should be discussed in the Public Report.

Reports that include Exploration Targets

5.12.

Definition	**An Exploration Target is a statement or estimate of the exploration potential of a Mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade or quality, relates to mineralisation for which there has been insufficient exploration to estimate Mineral Resources.**

Guidance	*"Exploration Target" is a reserved term with a specific meaning when undertaking the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves, and cannot be used in any other context.* *An Exploration Target should have a clear concept of the type of mineralisation and a prior indication of the area's prospectivity (e.g. some positive soil samples, anomalous rock samples, geophysical anomalies or historical boreholes drilled with indications of mineralisation or alteration) before an Exploration Target is Publicly Reported.* *Exploration Targets are normally Reported Publicly following an earlier exploration phase and the prior or simultaneous Public Reporting of Exploration Results.* *Exploration Targets are typically defined after a discovery hole has been drilled, or outcrops have been extensively sampled, or encouraging geophysical anomalies have been identified on the ground, which should provide some sense of the geometric scale of the Exploration Target.* *The Competent Person(s) should refrain from conceptualising an Exploration Target that has little or no basis in fact, and that is only used for speculative and potentially misleading reporting purposes.*

5.13. It is recognised that it may be common practice for a company or reporting entity to comment on and discuss its exploration strategy in terms of target size and type. Any such information relating to Exploration Targets must not be expressed in a way that could be interpreted as an estimate of Mineral Resources or Mineral Reserves.

5.14. The Competent Person must state the level of prior exploration work (by the company or reporting entity or by others) that has been undertaken prior to the Public Reporting of an Exploration Target and must state the associated Exploration Results that relate to the Publicly Reported Exploration Target.

5.15. Any statement referring to potential quantity and grade or quality of the Exploration Target must be expressed as a range. The Competent Person must include a detailed explanation of the basis for the assumptions made in the Public Report, the

procedures used to estimate the range of tonnage and grade or quality, and the extent of the Exploration Target.

5.16. There must also be a proximate statement in the Public Report that the potential quantity and grade or quality of the Exploration Target is conceptual, that there has been insufficient exploration to define a Mineral Resource, and that it is uncertain if further exploration will result in the determination of a Mineral Resource.

5.17. The detailed explanation of the basis for the statement of an Exploration Target must specifically discuss the geological setting and exploration strategy, any exploration activity already completed and the presence or lack of the following attributes:

- mineralised outcrops and assays;
- surface geochemical and physical sampling results;
- surface and subsurface geophysical survey results; and
- drill holes, test pits, and underground workings.

5.18. The proposed exploration activities designed to test the validity of an Exploration Target must be detailed and must include the budget and timeframe within which the exploration activities are expected to be completed.

5.19. An Exploration Target may only be quoted if the associated Exploration Results show some prospects for future economic extraction. Therefore preliminary Modifying Factors, including material ESG threats and opportunities, must be considered at this early stage.

Guidance	*Statements of Exploration Targets should not include components in which known Modifying Factors might constitute fatal flaws in developing a future project or operation (e.g. located in a UNESCO World Heritage Site, National Park (in some jurisdictions), or under a major city).*

6.REPORTING OF MINERAL RESOURCES

Mineral Resources

6.1.	***Definition***	**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 subdivided in order of increasing geological confidence into Inferred, Indicated and Measured categories.**

6.2. All Public 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 the Mineral Resource classification.

6.3. Estimates of non-economic mineralisation (where there are no reasonable prospects for eventual economic extraction) do not qualify as Mineral Resources (or Mineral Reserves) under the Definitions of the PERC Reporting Standard and must not be reported in Public Reports.

6.4. All Public Reports of Mineral Resources must include consideration and reporting of ESG context and factors that could influence reasonable prospects for eventual economic extraction.

Guidance	*The term 'reasonable prospects for eventual economic extraction' implies a judgement (albeit preliminary) by the Competent Person(s) regarding all Modifying Factors. Interpretation of the word 'eventual' in this context may vary depending on the commodity or Mineral involved.* *In other words, a Mineral Resource is not an inventory of all mineralisation drilled or sampled, regardless of cut-off grade or quality, likely mining dimensions, location or continuity. The Mineral Resource is an estimate of mineralisation, 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' must be clearly stated, discussed and justified in any Public Report and supporting documentation.* *Any adjustments made to the data to make the Mineral Resource estimate, such as cutting or factoring grades or qualities, should be clearly stated and described in the Public Report.* *The term Mineral Resource covers any Minerals which have been identified and estimated through exploration and sampling and within which Mineral*

	Reserves may be defined following the consideration and application of Modifying Factors. *Certain specific reports (e.g., inventory reports, exploration reports to government and other similar reports not intended primarily for providing information for investment purposes) may require full disclosure of all mineralisation, including some material that does not have reasonable prospects for eventual economic extraction. Such mineralisation estimates would not qualify as Mineral Resources or Mineral Reserves under the Definitions in the PERC Reporting Standard. If the report or documentation is not to be published, then the United Nations Framework Classification may provide the required categories*

Inferred Mineral Resources

6.5.	***Definition***	**An Inferred Mineral Resource is that part of a Mineral Resource for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling.** **Geological evidence is sufficient to imply but not verify geological and grade or quality continuity.** **An Inferred Mineral Resource has a lower level of confidence than that applying to an Indicated Mineral Resource and must not be converted to a Mineral Reserve. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to Indicated Mineral Resources with continued exploration.**

6.6. 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.

6.7. In circumstances where the estimation of the Inferred Mineral Resource uses extrapolation beyond the nominal sampling spacing, the Public Report must contain sufficient information, taking into account the style of mineralisation, to inform the reader of:

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

Guidance	*The Inferred Mineral Resources category is intended to cover situations where a Mineral concentration or occurrence has been identified, and limited measurements and sampling have been completed, but where the data are insufficient to allow the geological continuity and/or grade*

	continuity and/or quality continuity to be interpreted with confidence. *Commonly, it would be reasonable to expect that most of the Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration. However, due to the uncertainty of Inferred Mineral Resources, it cannot be assumed that such upgrading would always occur.*

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

Guidance	*Confidence in an Inferred Mineral Resource estimate is usually not sufficient to allow the results of the application of technical, economic and ESG parameters to be used for planning purposes. For this reason, there is no direct link from an Inferred Mineral Resource to any category of Mineral Reserves (see Figure 1).* *Caution should be exercised if an Inferred Mineral Resource estimate is considered in Technical Studies.*

Indicated Mineral Resources

6.9.	***Definition***	**An Indicated Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.** **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 to a Probable Mineral Reserve.**

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

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

Measured Mineral Resources

6.11.

Definition	**A Measured Mineral Resource is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit.** **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. A Measured Mineral Resource may be converted to a Proved Mineral Reserve or to a Probable Mineral Reserve.**

6.12. A Measured Mineral Resource requires written confirmation in the Public Report that the geology, mineralogy, mineability, amenability to processing, and other relevant Modifying Factors have been considered.

Guidance	*A Mineral Resource 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 Competent Person(s) determining the Mineral Resource, that the tonnage and grade or quality of the mineralisation can be estimated to within close limits, and that any variation from the estimate would be unlikely to affect the potential economic viability significantly.* *A Measured Mineral Resource requires a high level of confidence in and understanding of the geology of the Mineral deposit.* *Competent Person(s) should be aware of the consequences of declaring material of the highest confidence category before satisfying themselves that all of the relevant Mineral Resource parameters required to support assessment of the Modifying Factors have been established at a similarly high level of confidence.*

Selection of Mineral Resource Reporting Category

6.13. A Competent Person(s) must determine the appropriate Mineral Resource category. The choice of the appropriate category of Mineral Resource depends upon the quantity, distribution and quality of data available and the level of confidence attached to those data.

Guidance	*Mineral Resource classification is a matter for professional judgement, and Competent Person(s) should consider those items in Table 1, which relate to confidence in Mineral Resource estimation.* *In deciding between Measured Mineral Resources and Indicated Mineral*

Resources, Competent Person(s) may find it helpful to consider, in addition to the phrases in the two Definitions relating to "geological and grade or quality continuity" in Clauses 6.11 and 6.9, respectively, the phrase in the guideline for 6.12 for 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, Competent Person(s) may take into account, in addition to the phrases in the two Definitions in Clauses 6.9 and 6.5, respectively, relating to "geological and grade or quality continuity", the guideline for 6.10 for Indicated Mineral Resources:

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

which contrasts with the guideline for 6.8 for Inferred Mineral Resources:

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

and

> *"Caution should be exercised if an Inferred Mineral Resource estimate is considered in Technical Studies".*

The Competent Person(s) should consider issues of the style of mineralisation, scale and cut-off grade or quality when assessing geological continuity and grade or quality continuity.

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

6.15. Categories of Mineral Resources 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 or quality outside the categories covered by the PERC Reporting Standard 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.

6.20. Public Reports and documentation must 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 or operation that is material to the company or reporting entity, when reporting for the first time, or when Mineral

Resource estimates have materially changed from when they were last reported, a summary of the information in the relevant sections of Table 1 must be provided on an 'if not, why not' basis.

Accuracy of Estimates

6.22. Mineral Resource estimates are not precise calculations. Reporting of tonnage and grade or quality estimates must 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	*Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the Mineral deposit and on the available sampling results* *In most situations, rounding to the second significant figure should be sufficient. For example, 10,863,000 tonnes at 8.23 per cent should be stated as 11 million tonnes at 8.2 per cent.* *However, there will be occasions when rounding to the first significant figure may be necessary to properly convey the uncertainties in estimation, particularly with Inferred Mineral Resources.* *To emphasise the imprecise nature of a Mineral Resource estimate, the result should always be referred to as an estimate, not a calculation.* *Competent Person(s) 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 (the whole of a Mineral Resource) or local estimates (a subset of the Mineral Resource for which the accuracy and/or confidence might differ from the whole of the Mineral 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

Mineral Reserves

7.1.	***Definition***	**A Mineral Reserve is the economically mineable part of a Measured Mineral Resource and/or Indicated Mineral Resource.** **A Mineral Reserve includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at a Pre-Feasibility Study or Feasibility Study level, as appropriate, that include 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 where the Mineral is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.** **Mineral Reserves are subdivided in order of increasing confidence into Probable and Proved categories.**

Guidance	*For operating mines, a Life of Mine Plan (LoMP) of at least an equivalent level to a Pre-Feasibility Study should be an acceptable alternative document to a Pre-Feasibility Study*

7.2. Mineral Reserves are those portions of Indicated Mineral Resources and Measured Mineral Resources which, after the application of all relevant Modifying Factors, result in an estimated tonnage and grade or quality which, in the opinion of the Competent Person(s) making the estimates, can be the basis of a viable project or operation.

7.3. Studies to Pre-Feasibility Study or Feasibility Study level must have been carried out before the determination of the Mineral Reserves.

7.4. The Technical Study must have determined a mine plan that is technically achievable and economically justified based on reasonable financial assumptions and from which the Mineral Reserves can be derived.

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

Guidance	*What constitutes 'reasonable financial assumptions' should be expected to vary with the type of deposit, the level of Technical Study that has been carried out, and the financial criteria of the individual company or reporting entity.* *For this reason, there can be no fixed definition for the term 'economically justified'. However, it is expected that companies should attempt to achieve*

	an acceptable return on the capital invested, and that the returns to investors in the project should be competitive with alternative investments of comparable risk. *The term 'Mineral Reserves' need not necessarily signify that extraction facilities are in place or operative or that all necessary approvals have been finalised or sales contracts have been agreed. It does signify that there are reasonable expectations of such approvals or contracts. The Competent Person(s) should report any material or unresolved matter dependent on a third party.*

7.6. All Public Reports of Mineral Reserves must include the consideration and reporting of ESG context and factors that could influence the conclusion that extraction could reasonably be justified at the time of reporting.

7.7. In jurisdictions where the Mineral rights are not held by the State, for a Mineral Reserve to be declared, it is required that the company or reporting entity controls legally enforceable Mineral title at the time of determination. If the company or reporting entity is leasing or sub-leasing the Mineral, the lease or sub-lease must be from an entity controlling 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 than too little.* *Any adjustment made to the data for the purpose of making the Mineral Reserve estimate should be clearly stated and described in the Public Report.* *It should be noted that the PERC Reporting Standard does not imply that an economically viable project should have Proved Mineral Reserves. Situations may arise where Probable Mineral Reserves alone may be sufficient to reasonably justify extraction, such as with some alluvial tin, diamond, or gold deposits. Identification of such situations is a matter of judgement by the Competent Person(s).*

Probable Mineral Reserves

7.8.

Definition	**A Probable Mineral Reserve is the economically mineable part of an Indicated Mineral Resource, 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.**

7.9. A Probable Mineral Reserve has a lower level of confidence than a Proved Mineral Reserve, but the estimate is sufficiently reliable to serve as the basis for a decision on the exploitation of the Mineral deposit.

Proved Mineral Reserves

7.10.

Definition	**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.**

7.11. A Proved Mineral Reserve represents the highest confidence category of Mineral Reserve estimate. It implies a high degree of confidence in the geological factors and a high degree of confidence in the Modifying Factors.

Guidance	*The style of mineralisation or other factors could mean that Proved Mineral Reserves are not achievable in some Mineral deposits.* *Competent Person(s) should be aware of the consequences of declaring material of the highest confidence category before satisfying themselves that all relevant Mineral Resource parameters and all Modifying Factors have been established at a high level of confidence.*

Selection of Mineral Reserves Reporting Categories

7.12. The choice of the appropriate categories of Mineral Reserves must be determined primarily by the appropriate level of confidence in the Mineral Resource and after considering the degree of confidence or any uncertainties in the Modifying Factors.

7.13. The allocation of the appropriate categories of Mineral Reserves must be made by the relevant Competent Person(s).

7.14. An Indicated Mineral Resource must not be converted directly to a Proved Mineral Reserve.

Guidance	*The PERC Reporting Standard provides 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 to determine Indicated Mineral Resources. The level of geological confidence for Proved Mineral Reserves is similar to that required to determine Measured Mineral Resources. Inferred Mineral Resources are always additional to Mineral Reserves.* *The PERC Reporting Standard also provides for a two-way relationship between Measured Mineral Resources and Probable Mineral Reserves. This two-way relationship covers a situation where uncertainties associated with any of the Modifying Factors considered when converting Mineral Resources to 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 to a Proved Mineral Reserve if the uncertainties in the Modifying Factors are removed. On the other hand, a high degree of confidence in the Modifying Factors used for converting a Mineral Resource to a Mineral Reserve cannot override a lower level of confidence in the Mineral Resource estimate. Under no circumstances can an Indicated Mineral Resource be converted directly to a Proved Mineral Reserve (see Figure 1). *The use of the category of Proved Mineral Reserves implies the highest degree of confidence in the estimate, with consequent expectations in the minds of the readers of the Public Report. These expectations should also be borne in mind when categorising a Mineral Resource as a Measured Mineral Resource.* *Refer also to the guidelines at Clauses 6.13 regarding the classification of Mineral Resources*

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

7.16. Categories must not be reported in a combined Proved and Probable Mineral Reserve unless the relevant figures for each category are also provided.

7.17. Public Reports must not present metal or Mineral content figures unless corresponding tonnage and grade figures are also given.

7.18. Estimates of Mineral tonnages and grade or quality must be included in a Public Report only within the Mineral Resources or Mineral Reserves categories defined by the PERC Reporting Standard.

7.19. Mineral Reserves may incorporate additional material (dilution or contamination) that is not part of the original Mineral Resource.

Guidance	*When Mineral Reserves incorporate additional material 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 comparing the two categories.* *When revised Mineral Reserve and Mineral Resource statements are Publicly Reported, they should be accompanied by reconciliation with previous statements. A detailed account of differences between the figures is not essential, but sufficient comment should be made to enable significant changes to be understood by the reader.*

7.20. In situations where figures for both Mineral Resources and Mineral Reserves are reported, a statement must be included in the Public Report, which clearly indicates whether the Measured Mineral Resources and Indicated Mineral Resources are inclusive of, or additional to, the Mineral Reserves. The Competent Person(s) must make clear which form of reporting has been adopted.

Guidance	*In some situations, there are reasons for reporting Mineral Resources, inclusive of those Mineral Resources converted to Mineral Reserves, and in other situations for reporting Mineral Resources exclusive of those Mineral Resources converted to Mineral Reserves.* *Appropriate forms of clarifying statements as required by Clause 7.20 may be:* *"The Measured Mineral Resources and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Mineral Reserves.", or* *"The Measured Mineral Resources and Indicated Mineral Resources are additional to or exclusive of the Mineral Reserves."* *In the former case, if any Measured Mineral Resources 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 Public Report. This additional explanation is required to assist the reader of the Public Report in judging the likelihood of the unmodified Measured Mineral Resources and Indicated Mineral Resources being eventually converted to Mineral Reserves.* *Inferred Mineral Resources are, by definition, always additional to any Mineral Resources converted/modified to Mineral Reserves.*

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

7.22. If re-evaluation indicates that any part of the Mineral Reserves is no longer viable, such Mineral Reserves must be re-classified as Mineral Resources, if relevant, and removed from the Mineral Reserves statement.

Guidance	*It is not intended that re-classification from Mineral Reserves to Mineral Resources or vice versa should be applied due to changes expected to be short-term or temporary, or where the company's or reporting entity's 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 short duration, mine emergency of a non-permanent nature, transport strike, etc.*

7.23. In a Public Report of a Mineral Reserve for a project or operation that is material to the company or reporting entity, when reporting for the first time, or when the Mineral Reserve estimates have materially changed from when they were last reported, a summary of the information in the relevant sections of Table 1 must be provided on an 'if not, why not' basis.

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

7.25. It is accepted that mine design and planning in a LoMP may include a proportion of Inferred Mineral Resources. If the Inferred Mineral Resource category is considered in the 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 Technical Studies must be stated.

7.26. A LoMP must be economically viable without any Inferred Mineral Resources included in the mine plan to support the declaration of Mineral Reserves. Where a material amount of production in the LoMP is based on 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. The proportion of Inferred Resources included in the LoMP must be reported, and a proximate statement that "*Only Probable Mineral Reserves and Proved Mineral Reserves have been used to establish the economic viability of the mine design in Technical Studies*" must be included.

Accuracy of Estimates

7.27. Mineral Reserve estimates are not precise calculations. Reporting of tonnage and grade or quality figures must reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures.

Guidance	*To emphasise the imprecise nature of a derived Mineral Reserve result, the result should always be referred to as an estimate, not as a calculation.* *Competent Person(s) should, where appropriate, discuss the relative accuracy and confidence of the Mineral Reserve estimates.* *The statement about relative accuracy and confidence should specify whether it relates to global estimates (the whole of the Mineral Reserve) or local estimates (a subset of the Mineral Reserve for which the accuracy and confidence might differ from the whole of the Mineral Reserve), and, if local, state the relevant tonnage or volume.* *Where a statement of the relative accuracy and confidence is not possible, a qualitative discussion of the uncertainties should be provided (refer to Table 1, Table 2 and the guidelines at 6.13 and 6.22).*

8.TECHNICAL STUDIES

Technical Study

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

- Scoping Studies
- Pre-Feasibility Studies
- Feasibility Studies

8.2. The requirements for a Scoping, Pre-Feasibility and a Feasibility Study are included in Table 2.

Scoping Study

8.3.

Definition	**A Scoping Study is an order of magnitude technical and economic study of the potential viability of Mineral Resources that includes appropriate assessments of realistically assumed Modifying Factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting that progress to a Pre-Feasibility Study can be reasonably justified.**

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 anticipated relative scheduling of the Inferred Mineral Resources within the Scoping Study.

For all Scoping Studies, the company or reporting entity 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 Public Report is based on low-level technical and economic assessments and is insufficient to support 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 realised." In discussing 'reasonable prospects for eventual economic extraction' at Clause 6.2 (also refer to the guidance at 6.4), an assessment (albeit preliminary) is required of all matters likely to influence the prospects of economic extraction, including the approximate Modifying Factors, by the Competent Person(s). While a Scoping Study may provide the basis for that assessment, the PERC Reporting Standard does not require a Scoping Study to have been

	completed to Publicly Report a Mineral Resource. Scoping Studies are commonly the first economic evaluation of a project undertaken and may be based on a combination of directly gathered project data and assumptions borrowed from similar deposits or operations appropriate to the case envisaged. Scoping Studies are also commonly used by companies for comparative and planning purposes. Reporting the general results of a Scoping Study should be undertaken with care to ensure 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 to the Scoping Study, the processes applied, and the Modifying Factors considered. However, it is not appropriate to Publicly Report the diluted tonnes and grade or quality as if they were Mineral Reserves. While initial mining and processing cases may have been developed during a Scoping Study, it should be recognised that these are insufficiently justified to allow a Mineral Reserve to be declared.

Pre-Feasibility Study

8.6.	***Definition***	**A Pre-Feasibility Study is a comprehensive study of a range of options for the technical and economic viability of a Mineral project that has advanced to a stage where a preferred mining method, in the case of underground mining, or the pit configuration, in the case of an open pit, is established and an effective method of Mineral processing is determined. It includes a financial analysis based on reasonable assumptions on the Modifying Factors and the evaluation of any other relevant factors which are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be converted to a Mineral Reserve at the time of reporting.** **A Pre-Feasibility Study is at a lower confidence level than a Feasibility Study.**

Guidance	*As required in Clause 7.1, a formal assessment of all Modifying Factors is required to determine how much available Measured Mineral Resources and Indicated Mineral Resources can be converted to Mineral Reserves.* *A Pre-Feasibility Study should consider the application and description of all Modifying Factors (as outlined in Table 1) to demonstrate economic viability and support Mineral Reserves in a Public Report.* *The Pre-Feasibility Study should identify the preferred mining, processing, and infrastructure requirements and capacities, but will not yet have finalised these matters. Detailed assessments of environmental and socio-economic impacts and requirements should also be well advanced.* *The Pre-Feasibility Study should highlight areas that require further*

	refinement within the final Feasibility Study stage.

Feasibility Study

8.7.	***Definition***	**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 Feasibility 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 Mineral project.** **The confidence level of the Feasibility Study will be higher than that of a Pre-Feasibility Study.**

8.8. It is not required that a full Feasibility Study has been undertaken to convert Mineral Resources to Mineral Reserves. It is, however, necessary that at least a Pre-Feasibility Study must be carried out to determine that a mine plan and process flowsheet is technically achievable, environmentally and socially acceptable, and economically viable, and that all material Modifying Factors have been considered.

Guidance	*The use of obsolete terms such as 'Bankable Feasibility Study' (BFS) and 'Definitive Feasibility Study' (DFS) should be avoided but, if used, are noted as being equivalent to a Feasibility Study as defined in Clause 8.7.* *A Feasibility Study is of a higher level of confidence than a Pre-Feasibility Study. It would typically contain mining, infrastructure and process designs completed with sufficient rigour to serve as the basis for an investment decision or support project financing. All relevant social, environmental and governmental approvals, permits, and agreements should be in place or should be approaching finalisation within the expected development timeframe.* *The Feasibility Study should contain the application and description of all Modifying factors (as outlined in Table 1) 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 OR COMBINED GRADES

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

Guidance	*For example, in the context of rare earth elements quoted as total rare earth elements (TREE) or total rare earth element oxides (TREO), the values of different elements may vary by many orders of magnitude.*

9.2. The following minimum information must accompany any Public Report that includes reference to metal equivalents to conform to the principles of Transparency, Materiality, Competence and Accountability:

- individual grades for all metals included in the metal equivalents calculation;
- assumed commodity prices for all metals. 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 or potential investors and their professional advisers to understand the methodology used to determine these prices;
- assumed beneficiation recoveries for all metals and a 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 or reporting entity's opinion that all the elements included in the metal equivalents calculation have a reasonable potential to be recovered and sold; and
- the calculation formula used.

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 of choosing another metal must be included in the Public Report.

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

9.5. Public Reporting based on metal equivalents must not be done if metallurgical recovery test information is unavailable or cannot be estimated with reasonable confidence.

10. COMMODITY PRICING AND MARKETING

10.1. Commodity prices and sales volume expectations used to determine Mineral Resources and Mineral Reserves must be based on forward-looking estimates reflecting the company's or reporting entity's reasonable short-term and long-term expectations supported by the available evidence. The evidence may include consensus forecasts, three-year trailing averages, sales contracts, or other price analyses. This information must be disclosed, except in the special cases as identified in Clauses 10.4 or 10.5 following.

Guidance	*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 production profile used for Mineral Resources and Mineral Reserves estimation may reflect current market conditions for short-term forecasts, while trending upward or downward toward the long-term price and production estimates, based on the company's or reporting entity's expectations.*

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

Guidance	*Mineral Reserves are estimated and published to supply information concerning the value of the Mineral deposit and the risk associated with its development.* *Estimates of Mineral Reserves and Mineral Resources are used by the company or reporting entity 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.* *Most commodities experience long-term price cycles, whether sold using publicly quoted prices (e.g. base metals and precious metals) or under a long-term contract (e.g., coal and 'iron ore'). Overly optimistic or pessimistic price and production expectations could result in significant over or underestimation of Mineral Reserves. It is the responsibility of the company or reporting entity and the Competent Person(s) to determine whether the prices used for Mineral Reserve estimation are reasonable and supportable, given all available information.* *During periods of low prices, a mining company may temporarily curtail operations and conserve the Mineral asset until prices recover. In such circumstances, previously published Mineral Reserves may not have to be reclassified, provided that, in the opinion of the company or reporting entity and the Competent Person(s), higher future prices can be reasonably assumed, and it can reasonably be expected that operations would resume.* *The Public Reports and documentation supporting the company's expectations should include: 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.

10.3. Disclosure in Public Reports of the commodity prices and, where practicable, the costs (including other Modifying Factors) used for Mineral Reserve estimation are generally required.

10.4. In the absence of applicable securities or other laws to disclose prices and costs, there may be cases, such as when a product is sold under a long-term contract, the terms of which are confidential, where there are valid commercial reasons for non-disclosure of prices.

10.5. Similarly, where disclosure of the long-term price and cost assumptions used in the estimation would be detrimental to the company's or reporting entity's business, such as when bidding for sales contracts, 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 costs are excluded from a Public Report, a description of the methodology used to determine the prices and costs should be disclosed. Such disclosure should be in a form that helps the reader of the Public Report form an opinion that the prices and costs used represent reasonable views of future prices and costs.* *Exceptions to the disclosure of commodity prices and costs are subject to and overruled by any obligations imposed by laws or applicable securities regulations.*

11. PERMITTING AND LEGAL REQUIREMENTS

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

11.2. The Competent Person(s) must have a reasonable expectation that, often through reliance on legal and permitting experts, all permits, ancillary rights (including water or other property rights) and any authorisations 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 or reporting entity must complete a review of all legal and permitting requirements and document the findings.

Guidance	*Local environmental laws, social laws and permitting processes must be taken into account.*

11.4. The company or reporting entity must demonstrate a reasonable expectation that all permits, ancillary rights and authorisations can be obtained and must show an understanding of the procedures required to obtain such permits, ancillary rights and authorisations.

Guidance	*Demonstrating earlier success in obtaining the necessary permits can be used as supporting information to document the likelihood of future success, subject to the qualification that the previous permitting should not be for a different Mineral or in a different jurisdiction.*

11.5. If permits are required, but there are no defined procedures to obtain such permits, it may be difficult to establish a reasonable expectation of success. Information that materially increases or decreases the risk that the necessary legal rights or permits would eventually be obtained must be disclosed.

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

Guidance	*It is recognised that some permits cannot be obtained until after a Mineral Reserve has been declared. There might also be sound business reasons why obtaining some permits should be postponed.* *It is also recognised that waiting for all permits to be on hand could result in critical information not being released to the investors. Therefore, it is recommended that it may be appropriate to disclose material information before obtaining the permits.* *Public Reports and documentation should include a brief description of the title, claim, lease or option under which the company or reporting entity has the right to hold or operate the property, indicating any conditions that the company or reporting entity 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 is needed to mine the Mineral Reserves, there should be a reasonable expectation that such extension will be granted.

11.7. Royalty terms and clawback rights of former claim/landholders must be disclosed. Royalties payable to the state must also be disclosed, including the legal basis under which they are payable.

11.8. Information relating to the review of legal and permitting issues must be fully documented. This information may be required to remain confidential to the company or reporting entity. However, regulators or auditors may require it to be released to them on a confidential basis.

12. ENVIRONMENTAL, SOCIAL & GOVERNANCE CONSIDERATIONS

12.1. Public Reports must discuss the environmental, social (including health and safety), governance aspects (ESG) of the project or operation that could materially affect the project during development, operations and after closure.

Guidance	*ESG refers to three principal themes: Environmental, Social (including Health and Safety) and Governance; ESG includes all aspects of sustainability and licence to operate relevant to the success or failure of a Minerals project or operation.* *The ESG aspects of a project or operation affect shareholder and stakeholder assessments and decision making, employees and contractors; obtaining and maintaining environmental permits from regulatory bodies, and a social licence to operate from host communities and potentially affected neighbours.* *Environmental comprises the ability of the environment to maintain itself with minimal impacts to the local flora and fauna. The environment also includes ecosystem services that cover how the plants and animals mesh together to form habitats and support the broader ecological systems we depend on.* *Social Performance across a 'whole of site' incorporates evidence of effective stakeholder engagement, how social impacts are mitigated and managed, how expectations for shared value are managed through development projects, local procurement and hiring (local content), and health and safety implications;* *Health and Safety aspects sit within ESG (under Social). Health and Safety include aspects of community and employee well-being, environmental protection and control, and the governance structures to facilitate effective health and safety performance.* *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. Governance at a corporate level includes tax transparency, board diversity, shareholder rights and the relationship with regulatory bodies; and* *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 Competent Person(s) should include available relevant information on the changing internal and external context for a project or operation, including environmental, social and governance Modifying Factors related to the project or operation.* *ESG aspects and risks associated with a project or operation should be clearly described, together with the management controls/measures/*

systems 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, with gaps 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 project timeline and/or cost.

From the outset of a project, it is essential to understand the ESG context, which should include the communities potentially affected by the project, existing land use and any seasonality considerations, potentially affected watersheds, relevant receptors of air quality and noise pollution; proximity to sensitive or protected areas of environmental, biodiversity of cultural value/significance and any cumulative effects resulting from nearby existing or planned mines or infrastructure projects. The Modifying Factors depend on the understanding of ESG, 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 materially impact the estimates of Mineral Resources or Mineral Reserves;*
- *project permitting requirements, and the status of any permit applications;*
- *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, water stewardship and catchment management;*
- *requirements and plans for waste and tailings disposal, including compliance with applicable tailings management standards and regulations, and monitoring both during operations and post mine closure;*
- *environmental and social monitoring programmes for all stages of the project's life through to post-closure;*
- *social or community-related requirements and plans for the project, and the status of any negotiations or agreements with the local communities;*
- *characterisation of stakeholders, or Interested and Affected Parties (I&AP), defined as individuals and entities with interest in, affected by, or able to affect, the project;*
- *stakeholder engagements, commitments made, grievances received, and issues resolved;*
- *any potential human rights issues;*
- *social media presence directly by the project or by other parties about the project;*

	• *workforce and affected community safeguarding requirements concerning health and safety considerations;* • *review of local procurement and recruitment from within the project area of influence;* • *capital or operating requirements for handling hazardous Minerals or reagents, as well as other health and safety, and industrial hygiene risks;* • *any savings in energy usage, water usage or other reduction of consumption reflecting directly in the economic outcome of the project;* • *a discussion of mine closure (remediation and reclamation) requirements and costs; and* • *any known requirements to post-performance or reclamation bonds;*

12.2. The assessment of the reasonable prospects of eventual economic extraction of Mineral Resources and that extraction could reasonably be justified for Mineral Reserves at the time of Public Reporting must include a written consideration of the direct and indirect environmental and social cost of extraction, processing, and end-use in terms of environmental degradation, ecological diversity, cultural destruction or climate change

12.3. Where communities' cultural, religious, or other rights are potentially affected by proposed Mineral exploitation, measures to enable their 'Free Prior and Informed Consent' (FPIC) must be considered and described.

APPENDIX 1
REPORTING OF MINERALISED FILL, PILLARS, LOW-GRADE MINERALISATION, LEACH PADS, STOCKPILES, DUMPS AND TAILINGS

A1-1. The PERC Reporting Standard applies to the Public Reporting of all potentially economic mineralised material, which can include mineralised fill, remnants, pillars, low-grade mineralisation, stockpiles, dumps and tailings where there are reasonable prospects for eventual economic extraction in the case of Mineral Resources, and where a Pre-Feasibility Study or Feasibility Study demonstrates that, at the time of reporting, extraction could reasonably be justified in the case of Mineral Reserves.

A1-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A1-3. Table 1, as part of the PERC Reporting Standard, must be considered when reporting on mineralised fill, remnants, pillars, low-grade mineralisation, leach pads, stockpiles, dumps and tailings.

A1-4. Any mineralised material as described in this Appendix can be considered similar to in situ mineralised material for the purposes of reporting Mineral Resources and Mineral Reserves. Judgements about the mineability of such mineralised material must be made by Competent Persons or professionals with the relevant experience, under the leadership of the Lead Competent Person.

A1-5. If some portion of the mineralised material is currently sub-economic, but there is a reasonable expectation that the mineralised material may become economic, this material may be classified as a Mineral Resource.

A1-6. Tonnage and grade or quality estimates of Mineral Resources of mineralised fill, remnants, pillars, low-grade mineralisation, leach pads, stockpiles, dumps and tailings must be itemised separately in Public Reports.

A1-7. Tonnage and grade or quality estimates of Mineral Reserves of mineralised fill, remnants, pillars, low-grade mineralisation, leach pads, stockpiles, dumps and tailings must be itemised separately in Public Reports.

Guidance	*The above Clauses apply equally to low grade in situ mineralisation, sometimes referred to as 'mineralised waste' or 'marginal grade material', and often intended for stockpiling and treatment towards the end of mine life.* *Stockpiles may include both surface and underground stockpiles, including broken 'ore' in stopes, and can include material currently in the 'ore' storage system.* *If Publicly Reported, mineralised material in the course of being processed (including leaching) should be reported separately.*

APPENDIX 2
REPORTING OF COAL EXPLORATION RESULTS, COAL RESOURCES AND COAL RESERVES

A2-1. The Clauses in this Appendix address matters related specifically to the Public Reporting of Coal Exploration Results, Coal Resources and Coal Reserves.

A2-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A2-3. Table 1, as part of the PERC Reporting Standard, must be considered when reporting on Coal Resources and Coal Reserves.

Guidance	*For Public Reporting purposes, the requirements for Coal are similar to those for other commodities with the replacement of terms such as 'Mineral' by 'Coal' and 'grade' by 'quality'.*

A2-4. The terms 'Mineral Resource(s)' and 'Mineral Reserve(s)', and the subdivisions of these as defined above, also apply to Coal commodity-specific Public Reporting. However, if preferred by the company or reporting entity, the terms 'Coal Resource(s)' and 'Coal Reserve(s)' and the appropriate subdivisions may be substituted.

A2-5. 'Marketable Coal Reserves', representing beneficiated or otherwise enhanced coal product where 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, Coal Reserves.

A2-6. The basis of the predicted yield to achieve Marketable Coal Reserves must be stated.

A2-7. Reference to specific Coal products and properties must not be made until analytical results have demonstrated the specific properties for samples from the Coal deposit.

APPENDIX 3
REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR DIAMONDS AND OTHER GEMSTONES

A3-1. Clauses in this Appendix address matters specifically related to the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves for Diamonds and Other Gemstones.

A3-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A3-3. Table 1, as part of the PERC Reporting Standard, must be considered when reporting Exploration Results, Mineral Resources and Mineral Reserves for Diamonds and other Gemstones.

Guidance	*For Public Reporting purposes, the requirements for Diamonds and other Gemstones are generally similar to those for other commodities with the replacement of terms such as 'Mineral' by 'Diamond' and 'grade' by 'grade and average Diamond value'. In Diamond deposits, the term 'quality' should not be substituted for 'grade,' since 'quality' is a term applied to individual stones.* *Several characteristics of Diamond deposits are different from those of, for example, metalliferous and Coal deposits, and require special consideration. These include the generally low Mineral content and variability of primary deposits and placer deposits, the particulate nature of Diamonds, the specialised requirement for Diamond valuation and the inherent difficulties and uncertainties in the estimation of Diamond Resources and Diamond Reserves.*

A3-4. Public Reports of Diamonds recovered from sampling programmes must provide material information relating to the basis on which the sample is taken, the recovery method, and the recovery percentage of the Diamonds.

A3-5. The weight of Diamonds recovered may only be omitted from the Public Report when the Diamonds are considered too small to be of commercial significance. If the weight is omitted, this lower cut-off size must be stated.

Guidance	*The stone size distribution and price of Diamonds and other Gemstones are critical components of the Diamond Resource (Gemstone Resource) and Diamond Reserve (Gemstone Reserve) estimates. Sampling and delineation drilling at an early exploration stage will not usually provide this information, which relies on large diameter drilling and, in particular, bulk sampling.* *To demonstrate that a Mineral 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 Diamond Resource in simple, single-facies or single-phase deposits, such information may be obtainable by representative large-diameter drilling. More often, some form of bulk sampling, such as pitting and trenching, would be employed to provide larger sample parcels. *To progress to an Indicated Diamond Resource, and from there to a Probable Diamond Reserve, it is likely that much more extensive bulk sampling would be needed to determine the stone size distribution and value fully. Such bulk samples would be obtained by underground development designed to obtain sufficient Diamonds to enable a confident estimate of the Diamond price.* *In complex Diamond deposits, it may be difficult to ensure that the bulk samples taken are representative of the whole deposit. The lack of direct bulk sampling and uncertainty in demonstrating spatial continuity of size and price relationships should be considered in determining the appropriate Diamond Resource category.*

A3-6. Where Diamond Resource or Diamond Reserve grades (in carats per tonne) are based on correlations between the frequency of occurrence of micro-Diamonds and of commercial size stones, this must be stated, the reliability of the procedure must be explained, and the cut-off size sieve for micro-Diamonds reported.

A3-7. Where sample results (size-frequency distributions for types of stones) have been adjusted or prices 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.

A3-8. For Public Reports dealing with Diamond or other Gemstone mineralisation, any reported valuation of a parcel of Diamonds or other Gemstones must be accompanied by a statement verifying the independence of the valuation.

A3-9. The Diamond or other Gemstone valuation must be based on documentation from a demonstrably reputable and qualified expert.

A3-10. 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.

A3-11. 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 colour distributions of the Diamond population in the deposit.

A3-12. Diamond valuations must not be reported for samples of Diamonds processed using total liberation methods.

APPENDIX 4
REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR INDUSTRIAL MINERALS, CEMENT FEED MATERIALS AND CONSTRUCTION RAW MATERIALS

A4-1. Clauses in this Appendix address matters related 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.

A4-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A4-3. Table 1, as part of the PERC Reporting Standard, must be considered when Publicly Reporting Exploration Results, Mineral Resources and Mineral Reserves for Industrial Minerals, Cement Feed Materials and Construction Raw Materials.

A4-4. Chemical analyses may not always be relevant, and other quality and materials' performance characteristics may be more applicable and acceptable as the basis of the Public Reporting.

A4-5. Some Industrial Minerals, Cement Feed Materials and Construction Raw Materials deposits may be capable of yielding products suitable for more than one application and/or specification. If considered material by the Competent Person, such multiple products must be quantified either separately or as a percentage of the bulk of the Mineral deposit.

Guidance	*Before the Public Reporting of an Industrial Mineral Resource or Industrial Mineral Reserve, it may be necessary to take account of key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability.*

A4-6. If the range of product mixes and target markets for the mineral products to be produced, from a particular Mineral deposit, are considered material by the company or reporting entity preparing the Public Report, the Competent Person(s) must report the Industrial Mineral Reserves within the framework of an existing LoMP or Feasibility Study specifically for those product mixes and target markets.

A4-7. If there is potential for ancillary products, mining waste or process waste, to be sold off-site for subsidiary uses (i.e., other uses for non-saleable quarry production, such as secondary aggregate, engineering or other fill), the Competent Person(s) must discuss this in the Public Report and comment on any significant implications.

A4-8. 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. Commercial sensitivities may not permit the publication of Industrial Mineral Resources and Industrial Mineral Reserves in the latter format.

A4-9. In all situations where the saleable or usable product is reported, a clarifying statement must be included to ensure that the reader is fully informed.

A4-10. Public Reports must make clear the 'permitted' or 'non-permitted' status of the Industrial Mineral Resources and Industrial Mineral Reserves, and, in addition, Industrial Mineral Reserves must 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.*

A4-11. Mineral Reserves and Mineral Resources of Industrial Minerals, Cement Feed Materials and Construction Raw Materials serving localised or regional markets may be reported on an aggregated basis on an appropriately defined geographical basis to reflect the particular economic constraints of the Mineral deposits being Publicly Reported, without divulging commercially sensitive information.

A4-12. In some instances, commercial sensitivity may prevent the publication of detailed information and data associated with Mineral Resources and Mineral Reserves of Industrial Minerals, Cement Feed Materials and Construction Raw Materials, and in such cases, this must be justified in the Public Report (either prepared for an individual site or on an aggregated basis).

APPENDIX 5
REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR DIMENSION STONE, ORNAMENTAL AND DECORATIVE STONE

A5-1. Clauses in this Appendix address matters related to the Public Reporting of Dimension Stone, Ornamental and Decorative Stone ('Dimension Stone') of all forms that are generally sold on the basis of technical (geological/mining) product specifications, quality and market acceptance.

A5-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A5-3. Table 1, as part of the PERC Reporting Standard, must be considered when Publicly Reporting Exploration Results, Mineral Resources and Mineral Reserves for Dimension Stone, 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 aesthetic 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 utilised mainly in public works, Dimension Stone offer special qualitative features, which mean they can be used for different purposes. They can perform both structural and decorative architectural functions.* *In general, Dimension Stone can be quarried in regular and/or unshaped blocks using different mining methods (drilling & 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).*

A5-4. Chemical analyses may not always be relevant for material evaluation, at least during the exploration and evaluation phases. Where necessary, chemical analysis and mineralogical analysis are used to verify the presence of possible Minerals and related alteration that could produce important quality defects on finished products.

A5-5. Chemical/compositional analysis may also identify Mineral components and/or assemblages used to predict the future technical requirements of the quarrying-processing equipment and related tools.

A5-6. Qualitative and aesthetic qualities (colour, grain, texture), 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 Public Reporting.

A5-7. Many Dimension Stone deposits can yield 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 often are sold in the market at different prices.

A5-8. If considered material by the Competent Person, estimates for such multiple products must be included either separately or as percentages of the bulk of the Mineral deposit.

A5-9. If the range of product mixes and target markets for the mineral products to be produced, from a particular Mineral deposit, are considered material by the company or reporting entity preparing the Public Report, the Competent Person(s) must report the Dimension Stone Resources and Dimension Stone Reserves within the framework of an existing LoMP or Feasibility Study specifically for those product mixes and target markets.

A5-10. If there is potential for ancillary products or by-products, or for quarrying or processing waste to be re-utilised 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, building and paving stone, etc.), the Competent Person(s) must reflect this in the Public Report and comment on any significant implications (e.g., reduction in the amount of non-saleable material, minimisation 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 Stone are often not the same as those for other Mineral deposit types covered by the PERC Reporting Standard.* *It may be necessary, prior to the Public Reporting of Mineral Resources for Dimension Stone and Mineral Reserves for Dimension Stone., to take account of certain particular key characteristics/features of the target material specific to dimension stone.* *These may include final product specifications, proximity to markets, type, structure and demand of the market (very different area 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 (colour, grain, texture and their regularity in distribution). A correct professional evaluation of the Market Quality, made by the Competent Person(s) in different ways, is the key to evaluating the final product marketability and is a key Modifying Factor in the Definition of Mineral Reserves for Dimension Stone.* *The Competent Person(s) should explain in detail in the Public Report the method utilised for the Market Quality evaluation of the target Dimension Stone, and in case of the market, the references cited, together with documentation 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 Resources and Mineral Reserves for Dimension Stone at both the site of production and at the site of reception where they are considered as useable products (with or without further processing to make them marketable).*

A5-11. In contrast with Industrial Minerals, Cement Feed Materials and Construction Raw Materials (Appendix 4), where 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.

A5-12. The Public Report may contain either the geological or commercial names of the target Dimension Stone. In any case, an explanation of these terms must be included in the Public Report.

A5-13. Other industry guidelines on the estimation and reporting of Dimension Stone may be helpful but will under no circumstances override the provisions and intent of the PERC Reporting Standard.

A5-14. Many of the Modifying Factors are more relevant and specific to Dimension Stone than to metalliferous Minerals. In particular, the legal control of Dimension Stone Mineral Resources and Dimension Stone Mineral Reserves may be significant, 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.

A5-15. Public Reports must make clear the 'permitted' or 'non-permitted' status of the Mineral Resources and Mineral Reserves for Dimension Stone, and, in addition, Mineral Reserves for Dimension Stone must only be quoted where the operator has legal control.

A5-16. Mineral Reserves and Mineral Resources of Dimension Stone mines or quarries with the same material and owned by the same company, potentially serving local or regional markets, may be reported on an aggregated basis on an appropriately defined geographical basis to reflect the particular economic constraints of the Mineral deposits being reported without divulging commercially sensitive information.

In certain cases, commercial sensitivity may prevent the publication of detailed information and data associated with Mineral Resources and Mineral Reserves of Dimension Stone deposits, and in such cases, this must be justified in the Public Report (either prepared for an individual site or on an aggregated basis).

APPENDIX 6
REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR OIL SHALES, OIL SANDS, AND OTHER ENERGY MINERALS EXTRACTED BY MINING METHODS

A6-1. The Clauses in this Appendix address matters related to the Public Reporting of Oil Shales, Oil Sands, and Other Energy Minerals where the hydrocarbons are extracted by the processing of mined rock.

A6-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A6-3. Table 1, as part of the PERC Reporting Standard, must be considered when Publicly Reporting on Exploration Results, Mineral Resources and Mineral Reserves of Oil Shales, Oil Sands, and Other Energy Minerals.

A6-4. When Publicly Reporting information and estimates for Oil Shales, Oil Sands, and Other Energy Minerals where the hydrocarbons are extracted by the processing of mined rock, the key principles and purpose of the PERC Reporting Standard apply.

A6-5. Chemical analyses may not always be relevant, and other quality and performance characteristics may be more applicable and acceptable as the basis of the Public Reporting. Some deposits of such Minerals may be capable of yielding products suitable for more than one application and/or specification. If considered material by the Competent Person(s), such multiple products should be quantified either separately or as a percentage of the bulk Mineral deposit.

Guidance	*Unless it is a specific aspect of their instructions to reflect the range of product mixes and target markets for the Mineral deposit, the Competent Person(s) should generally report the Mineral Reserves and Mineral Resources of Oil Shales, Oil Sands, and Other Energy Minerals within the framework of an existing mining plan or established set of product and market assumptions and objectives.* *The factors underpinning the estimation of Mineral Resources and Mineral Reserves for Oil Shales, Oil Sands, and Other Energy Minerals are the same as those for other Mineral deposit types covered by the PERC Reporting Standard.* *Before the Public Reporting of Mineral Resources or Mineral Reserves for Oil Shales, Oil Sands, and Other Energy Minerals, it may be necessary to take particular account of specific key characteristics or qualities such as likely hydrocarbon product specifications, proximity to markets and general product marketability.* *For hydrocarbon products, it is common practice to report the saleable*

	product after extraction from the host rock matrix, rather than the 'as mined' product. It is recognised that commercial sensitivities may not permit the publication of Mineral Resources and Mineral Reserves for Oil Shales, Oil Sands, and Other Energy Minerals in the latter format, which is the preferred style of Public Reporting within the PERC Reporting Standard. *It is important that, in all situations where the saleable product is reported, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.*

A6-6. In some jurisdictions, it may be required, or it may be standard practice, to report Exploration Results, Mineral Resources and Mineral Reserves for Oil Shales, Oil Sands, and Other Energy Minerals using other reporting standards and under different market regulations from those which apply to solid Minerals. In such circumstances, the other reporting standards will generally take precedence, and the choice of appropriate reporting standard to be used will, in general, not be a matter for decision by the Competent Person.

A6-7. Where this is not the case, even though other industry guidelines on the estimation and reporting of Mineral Resources and Mineral Reserves of Oil Shales, Oil Sands, and Other Energy Minerals may be helpful, where such materials are solid Minerals, they fall within the scope of the PERC Reporting Standard, but under no circumstances must those guidelines override the provisions and intent of the PERC Reporting Standard.

A6-8. Public Reports must make clear the 'permitted' or 'non-permitted' status of the Mineral Resources and Mineral Reserves for Oil Shales, Oil Sands, and Other Energy Minerals, and, in addition, Mineral Reserves for Oil Shales, Oil Sands, and Other Energy Minerals must only be quoted where the operator has legal control.

A6-9. In certain cases, commercial sensitivity may prevent the publication of detailed quality parameters, but in such cases, this must be clearly justified in the Public Report.

APPENDIX 7
REPORTING OF EXPLORATION RESULTS, MINERAL RESOURCES AND MINERAL RESERVES FOR METALLIC OR NON-METALLIC MINERALS EXTRACTED BY SOLUTION MINING METHODS

A7-1. The Clauses in this Appendix address matters related to the Public Reporting of any solid Minerals extracted by in-situ dissolution and transfer to the surface in solution, water, steam, or other solvent.

A7-2. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A7-3. Table 1, as part of the PERC Reporting Standard, must be considered when Publicly Reporting on Exploration Results, Mineral Resources and Mineral Reserves of Minerals extracted by solution mining.

A7-4. When Publicly Reporting information and estimates for Minerals extracted by solution mining, the key principles and purpose of the PERC Reporting Standard apply.

A7-5. Mineral Resources and Mineral Reserves for Minerals extracted by solution mining, as for all other Minerals, are expressed in terms of the in-situ rock quantities and the quality parameters representing the proportion and quality of the economic Mineral product.

A7-6. If Mineral Resources and Mineral Reserves for Minerals extracted by solution mining are estimated at a stage after production has already started, then the methods and assumptions of such estimation must be stated.

Guidance	*As with all other Minerals reported under the PERC Reporting Standard, the Competent Person(s) should generally report the Mineral Reserves and Mineral Resources for Minerals extracted by solution mining within the framework of an existing production plan and established set of product and market assumptions and objectives.* *The factors underpinning the estimation of Mineral Resources and Mineral Reserves for Minerals extracted by solution mining are the same as those for other Mineral deposit types covered by the PERC Reporting Standard.* *The product for Minerals extracted by solution mining should generally be the solid material remaining after crystallisation, and removing or recycling the solvent.* *The quantities of the solvent itself should not be reported as part of the Mineral Resources or Mineral Reserves for Minerals extracted by solution mining, but are relevant only insofar as the related costs are considered along with all other Modifying Factors.* *In all situations where the saleable product is reported, a clarifying*

	statement should be included to ensure that the reader is fully informed about what is being reported and what processing steps have been required to obtain the saleable product.

A7-7. Other industry guidelines on the estimation and reporting of Mineral Resources and Mineral Reserves for Minerals extracted by solution mining may be helpful, but under no circumstances must those guidelines override the provisions and intent of the PERC Reporting Standard.

A7-8. Reports should make clear the 'permitted' or 'non-permitted' status of the Mineral Resources and Mineral Reserves for Minerals extracted by solution mining, and, in addition, Mineral Reserves for Minerals extracted by solution mining must only be quoted where the operator has legal control.

A7-9. In certain cases, commercial sensitivity may prevent the publication of detailed quality parameters, but in such cases, this must be clearly justified in the Public Report.

APPENDIX 8
DISCLOSURE OF ESTIMATES OF MINING WASTE AND OTHER WASTE MATERIALS OF POTENTIAL ECONOMIC VALUE

A8-1. The Clauses in this Appendix address matters related to the Public Reporting of Mineral Resources and Mineral Reserves for Mining Waste and Other Waste Materials of Potential Economic Value ('Waste Materials').

A8-2. Waste Materials are Mineral materials that were not considered to have any saleable or otherwise usable value at the time of extraction from the ground.

A8-3. Unless otherwise stated, Sections 1 to 12 of the PERC Reporting Standard (including Figure 1) apply.

A8-4. Table 1, as part of the PERC Reporting Standard, must be considered when Publicly Reporting on Mineral Resources and Mineral Reserves of Waste Materials**.**

A8-5. Three categories of Waste Materials are considered within the scope of this section of the PERC Reporting Standard:

- Waste Materials supplied on an 'ad-hoc' basis from another site under third party control;
- Waste Materials supplied under the terms of a defined supply agreement from another site under third party control; and
- Waste Materials supplied from another operating site in the company's or reporting entity's control.

A8-6. Specific considerations must be taken into account for any Waste Materials imported for processing and sale, but generated at another site under third party control.

Guidance	*Waste Materials attracts a specific definition in some jurisdictions (for example, in the European Union, where it is defined in the context of the Waste Directive 75/442/EEC, and further covered in the Mining Waste Directive 2006/21/EC) and once defined as Waste Materials cannot be 'undefined' as such, until it is processed and sold.* *Any processing and sale of such materials are considered a waste recovery/recycling operation and not a mining activity.*

A8-7. For the purposes of Public Reporting, any importation of such materials is, therefore, a waste management activity, and the materials do not comprise Mineral Reserves and Mineral Resources of Waste Materials, even though their eventual processing and sale may be complementary to, and an integral part of the operation, mine or quarry operation.

A8-8. Waste Materials extracted from another operation, mine or quarry site under third party control and supplied to the company's or reporting entity's site on an 'ad hoc' basis should not be reported as Mineral Reserves and Mineral Resources of Waste

Materials at the receiving site. Since their supply is variable and not guaranteed, there is no 'reasonable expectation' of eventual sale for Public Reporting purposes.

Guidance	*In any event, if the Waste Materials are extracted from the third party site and then sold to the company or reporting entity, at the very least, this represents the extraction of Mineral Resources and Mineral Reserves of Waste Materials from the supply site and the purchase of stock or raw feed for the company or reporting entity.* *As such, this would place it outside the scope of Public Reporting of Mineral Resources and Mineral Reserves of Waste Materials since the purchased materials will appear in the company's or reporting entity's financial reporting as inventory under current assets.*

A8-9. For Waste Materials, which are supplied under the terms of a defined supply agreement from another site under third party control, similar conditions apply to the supply of Waste Materials on an 'ad hoc' basis (see Clause A8-8 above). However, one notable difference is the element of 'certainty' provided through the supply agreement. There is a case for the purchase of such Waste Materials through the supply agreement to be treated as inventory and therefore not reportable as Mineral Reserves and Mineral Resources of Waste Materials. However, where Waste Materials are supplied 'free of charge', the situation could be viewed differently.

Guidance	*If there is no charge for the Waste Materials from the producing site, then it is reasonable to assume that they would not have been reported at the producing site as Mineral Reserves or Mineral Resources of Waste Materials.* *Such a situation could arise where the Waste Materials received are not the target Minerals at the production site, and the supply to the company or reporting entity is an expedient means of removing a burden at the producing site.*

A8-10. The guaranteed supply of Waste Materials under the terms of a defined supply agreement comprises a 'reasonable expectation' for the tonnage which is the subject of the agreement and could therefore be considered as Mineral Reserves and Mineral Resources of Waste Materials for the receiving company. At the time of reporting, the total Mineral Reserves and Mineral Resources would represent the future guaranteed tonnage deliverable under the agreement.

Guidance	*Waste Material related to a supply agreement is different to the concept of inventory – since the Waste Materials have not yet been received, they do not comprise current assets.*

A8-11. The supply of Waste Materials from one site to another under the company's or reporting entity's control is effectively the supply of raw feed, and the relevant tonnage would be reportable as Mineral Resources and Mineral Reserves of Waste Materials at the production site and not at the receiving site.

APPENDIX 9
DISCLOSURE OF PREVIOUSLY REPORTED ESTIMATES

A9-1. A company or reporting entity may disclose an estimate of Mineral Resources or Mineral Reserves previously reported under a classification system or a reporting code or standard other than the PERC Reporting Standard or by a person or persons other than the Competent Person(s) approving the new disclosure, using the previously used terminology, if the disclosure satisfies all of the following conditions:

- identifies the source and date of the previously Publicly Reported estimate and the classification system or reporting code or reporting standard used; AND
- comments on the relevance and reliability of the previously Publicly Reported estimate; AND
- states whether the previously Publicly Reported estimate uses categories other than the ones defined in Clause 4 of the PERC Reporting Standard and, if so, includes an explanation of the differences; AND
- includes a proximate cautionary statement making clear that such an estimate cannot be combined with any other estimates; AND
- includes a proximate cautionary statement making clear that such an estimate cannot be formally approved by the Competent Person(s); AND
- includes any more recent estimates or data available to the company or reporting entity on Exploration Results, Mineral Resources or Mineral Reserves.

Guidance	*This provision allows for the disclosure of estimates produced by the same or a different company, using the same or other reporting codes or reporting standards, including the situation where the previous Competent Person (if any) is no longer available to authorise the new disclosure.*

A9-2. The company or reporting entity must also include within the disclosure a statement by the Competent Person(s) describing the actions proposed to make the estimates of Exploration Results, Mineral Resources or Mineral Reserves compliant with the PERC Reporting Standard.

APPENDIX 10
GENERIC TERMS AND SYNONYMS

Certain words are used throughout the PERC Reporting Standard in a more general sense when a more specific meaning might be attached to them by particular commodity groups within the minerals industries. The generic terms are listed below, together with other terms that may be regarded as synonymous.

Generic Term	Synonyms or similar terms	Intended generalised meaning
Aspects	Considerations, Factors, Parameters, Issues,	These descriptors relate to particular parts or features within a project, process or activity that should be considered when making decisions.
Beneficiation	Processing, Preparation, Concentration, Smelting and Refining	Physical and/or chemical separation of constituents of interest from a larger mass of material. Methods employed to prepare a final saleable or marketable product from the material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting, smelting and refining, etc.
Clawback rights		Financial or other benefits that are given but can later be taken back under defined circumstances.
Competent Person	Qualified Person (Canada), Qualified Competent Person (Chile)	Refer to PERC Reporting Standard Clause 3.2 for the Definition of a Competent Person.
Competent Person's Report	CPR	A report on the technical and economic aspects of a project or operation prepared by a Competent Person, which may contain Exploration Results or estimates of Mineral Resources and Mineral Reserves. The contents are determined by the nature/status of the project or operation being reported and may include a techno-economic model as appropriate for the level of study.
Compliance	Regulatory Compliance	Conforming to a rule, such as a specification, policy, standard or law. Regulatory compliance is the sum of efforts made to comply with relevant laws, regulations and policies.
Context	Setting	The circumstances that form the setting for a project or operation in terms of which the project or operation can be fully understood.

Generic Term	Synonyms or similar terms	Intended generalised meaning
Cut-off grade	Product specifications, quality cut-off	The lowest grade, or quality, of mineralised material that qualifies as economically mineable and available in a given deposit. It may be defined on the basis of economic evaluation or on physical or chemical attributes that define an acceptable product.
Diamond	Gemstones	Diamonds may be gemstones or may be of 'industrial' quality and not considered gemstones. Gemstones are typically Minerals or derivations of organic substances typically used in jewelry and other decoration on account of their quality or beauty. They are generally crystalline but may also be colloidal, massive or formless.
Environmental Aspects	Environmental Considerations	Environmental aspects are activities, products, or services related to a project or operation that can interact with the environment and may require specific management actions to reduce or eliminate negative impacts.
Environmental, Social and Governance (ESG)	ESG Considerations/ performance/ factors, Sustainability, Health and safety	Environmental, Social, and 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.
Free and Prior Informed Consent (FPIC).		The consensus of the Indigenous Cultural Communities/Indigenous People (ICCs/IPs) is determined in accordance with their respective customary laws and practices that are free from any external manipulation, interference and coercion and obtained after fully disclosing the intent and scope of the project, in a language and process that is understandable to the community.
Global Principles	Global standards and guidance, Sustainability Frameworks	A global set of propositions is the foundation for a system of behaviour or a chain of reasoning.
Governance	Governance Considerations	Governance includes both external governance exercised by governmental or regulatory authorities and internal corporate governance. External Governance includes regional and national authorities and regulatory bodies that administer permits and regulatory requirements. Governance at a corporate level includes tax transparency, board diversity, shareholder rights and relationship with regulatory bodies

Generic Term	Synonyms or similar terms	Intended generalised meaning
Grade	Quality, Assay, Analysis	Any physical or chemical measurement or assessment of the characteristics of the material of interest. Note that the term 'quality' for Diamonds and other Gemstones is interpreted as 'stone quality'.
Lead Competent Person		A Lead Competent Person is the team member that accepts overall responsibility for a Public Report that has been prepared in whole or in part by others. The Lead Competent Person must accept full responsibility for the report and should not treat the procedure merely as a 'rubber-stamping' exercise.
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, regulatory, engineering, operational and all other Modifying Factors, which are considered in sufficient detail (at least to Pre-Feasibility level) to demonstrate that continued extraction is reasonably justified.
Local Content		Local content is the development of local skills, technology transfer, and use of local workforce; local manufacturing and procurement and building a competitive supplier base.
Material		Circumstances are considered material if omission or misstatement of the associated factor, constituent or information could influence the economic decisions of users. As a rule of thumb, this difference would normally be equal to or exceed 10%.
Material Information		Material information is any information relating to the business and affairs of a company that results in or would reasonably be expected to result in a significant change in the market price or value of any of the company's assets. Material information consists of both material facts and material changes related to the business and affairs of a company.

Generic Term	Synonyms or similar terms	Intended generalised meaning
Mineral Reserve	Ore Reserve	Refer to PERC Reporting Standard Clause 7.1 for the definition of a Mineral Reserve. 'Mineral' is preferred in reporting under the PERC Reporting Standard. Although the word 'ore' is in common use in some industry sectors and is generally understood, the word Mineral should be used for the purposes of the PERC Reporting Standard. Other descriptors can be used to clarify the meaning, e.g., Coal Reserves, Diamond Reserves, etc.
Mineralisation		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 mineralisation might occur, whether by class of deposit, mode of occurrence, genesis, style, or composition.
Mineral deposit		A Mineral deposit is a natural accumulation of Minerals or a combination of Minerals in the Earth's crust, in the form of one or several bodies of economic interest, which can be extracted at the present time or in the future.
Mining	Quarrying	All activities related to the extraction of metals, Minerals and Gemstones from the Earth, whether from surface or underground, and by any method (e.g., quarries, opencast mining, open-pit mining, etc., solution mining, dredging, etc.).
National Reporting Organisation	NRO	An organisation that defines CRIRSCO-aligned reporting codes and reporting standards for Public Reporting
Participating Organisation	PO	An RPO which supports and is represented on PERC.
Proved	Proven	Represents the highest confidence category of Mineral Reserve estimate.
Recognised Professional Organisation	RPO	An organisation or association which is recognised for the purposes of the PERC Reporting Standard as providing the professional qualifications or registration required for a person to act as a Competent Person
Recovery	Yield	The percentage of material of initial interest that is extracted during mining and/or processing. A measure of mining or processing efficiency.

Generic Term	Synonyms or similar terms	Intended generalised meaning
Regulatory	Governmental	Regulatory factors include external governmental and other regulatory factors, whether specified by national, regional or local governments or other regulatory authorities, including stock exchange regulators. Regulatory factors include the fiscal regime, applicable legislation, legislation on production sharing, royalties, limits on employment of expatriates, control of infrastructure, issue of, and terms and conditions applied to licences for exploration and mining, etc.
Risk	Enterprise risk management, Uncertainty	Risk is the effect of uncertainty on objectives. Risks can be potential opportunities and or threats. Risk applies to situations where one does not know the outcome of a given situation but can measure the odds with a certain level of accuracy. Risks include all geological, technical, economic and ESG potential opportunities and threats, and are typically managed in an integrated fashion.
Shared value		Shared value encompasses local content as part of a strategy to leverage the Mineral Resources and innovation of the private sector to create viable solutions to improve quality of life.
Social	Societal, Social performance	Social refers mainly to the relations of persons or groups within society; Societal relates to the organisation of society as a whole; Social performance is the sum of a company's interactions, activities and outcomes that can affect its stakeholders.
Social Licence to Operate (SLO)		SLO refers to the ongoing acceptance of a company or industry's standard business practices and operating procedures by its employees, stakeholders, and broader society.
Stakeholders		Stakeholders are individuals and entities with an interest in, potentially affected by, or able to affect a project or operation.
Sustainability		Sustainability means meeting our own needs without compromising the ability of future generations to meet their own needs. The concept of sustainability is composed of three pillars: economic, environmental, and social

Generic Term	Synonyms or similar terms	Intended generalised meaning
Tonnage	Quantity, Volume	An expression of the amount of material of interest, irrespective of the units of measurement (which should be stated together when figures are reported).
Uncertainty	Confidence Levels	Uncertainty applies to situations where one cannot know all the information needed to set accurate odds on the outcomes.

APPENDIX 11
CERTIFICATE OF COMPETENT PERSON

This Certificate of Competent Person is given only as a guide to the Competent Person. It is designed to incorporate all of the requirements of the PERC Reporting Standard.

Certificate of Competent Person

As the Competent Person responsible for the information on which the Public Report entitled [report title] is based, I hereby state:

1. My name is [Competent Person's name].
2. [Details of the position in the company, reporting entity name, address].
3. [Profession and details of registration body].
4. [Qualifications].
5. [Relevant experience].
6. I meet the requirements of a 'Competent Person' as defined explicitly in the PERC Reporting Standard.
7. [Work undertaken or services rendered].
8. [Site inspection details].
9. [Details of aspects of this Public Report for which the Competent Person is responsible].
10. I am not aware of any material fact or material change concerning the subject matter of the Public Report that is not reflected in the Public Report, the omission of which would make the Public Report misleading.
11. I declare that this Public Report appropriately reflects the Competent Person's view.
12. I am independent/not independent of [name of reporting entity/issuer].
13. I confirm that I have read all the relevant sections of the PERC Reporting Standard [year of issue]. The Public Report has been prepared under the requirements of the PERC Reporting Standard.
14. I do not have, nor do I expect to receive, a direct or indirect interest in the [project/ operation details] of the [name of reporting entity/issuer] OR I am an [employee/shareholder/director or other interested party] in respect of the [name of reporting entity/issuer] or the project/operation.
15. I have no conflicts of interest in respect of the reporting entity/issuer [name of reporting entity/issuer] or the project/operation.
16. At the effective date of the Public Report, to the best of my knowledge, information and belief, the Public Report contains all scientific and technical information required to be disclosed in order to make the Public Report not misleading.

Dated at [place] and [date].

[Signed]_____

[Name of Competent Person] [Name of Recognised Professional Organisation]

TABLE 1 CHECKLIST OF ASSESSMENT AND REPORTING CRITERIA

Preamble

Table 1 applies to all declarations compliant with the PERC Reporting Standard. In the context of complying with the principles of the PERC Reporting Standard, comment on the relevant sections of Table 1 must be provided on an 'if not, why not' basis within the Competent Person's Report (CPR). This approach ensures that it is clear to the reader of the Competent Persons Report whether items have been considered and deemed to be of low consequence or have yet to be addressed or resolved.

Table 1 is a high-level checklist of reporting and assessment criteria to be used as a reference by those preparing Competent Persons Reports on Exploration Results, Mineral Resources and Mineral Reserves. The Table 1 checklist is not expected to be completed for shorter Public Reports that are a summary of or are based on information or estimates in an existing detailed Competent Persons Report (CPR).

Introduction

Table 1 provides, in a summary form, a list of the criteria which must be considered when preparing reports on Exploration Results, Mineral Resources and Mineral Reserves. Comment must be given to all relevant sections of Table 1 on an 'if not, why not' basis.

Requirements will differ from jurisdiction to jurisdiction, and as always, Transparency, Materiality, Competence, and Accountability are overriding principles that determine what information must be publicly reported. The Competent Person must provide sufficient comment on all matters that may affect a reader's understanding or interpretation of the results or estimates being reported.

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

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

The order and grouping of criteria in Table 1 reflects the systematic approach to exploration, evaluation and the estimation of Mineral Resources and Mineral Reserves. Table 1 should be approached from left to right. In other words, criteria in the first column, Exploration Results, should be considered to also apply also when reporting Mineral Resources and Mineral Reserves. Similarly, additional criteria in the Mineral Resources column also apply to the reporting of Mineral Reserves.

When compiling a Public Report dealing with Coal; Diamonds and Other Gemstones; Industrial Minerals, Cement Feed Materials and Construction Raw Materials; or Dimension Stone, Ornamental and Decorative Stone, there are other commodity-specific matters that must be considered. Appendices 2 to 5 of the PERC Reporting Standard address these specific commodities. The sections of Table 1, which include additional considerations specific to these commodities, are in the Sections with the same designation as the corresponding Appendix.

Table 1 is also available as an Excel workbook that can be downloaded from www.percstandard.org/perc-standard.

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

Section 1: Project Outline				
Section 1: Project Outline			**1.0 Introduction - General**	
	1.0	(i)	The terms of reference or scope of work.	
		(ii)	The Competent Person'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, work conducted, effective date of report, and 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 summarises important information in the public report, including property description and ownership, geology and mineralisation, the status of exploration, development and operations, Mineral Resource and Mineral Reserve estimates, and the Competent Person's conclusions and recommendations. If Inferred Mineral Resources are used, a summary valuation with and if practical without inclusion of such Inferred Mineral Resources. The Executive Summary should have sufficient detail to allow the reader to understand the essentials of the project.	
		(vii)	A declaration from the Competent Person, stating whether "the declaration has been made in terms of the guidelines of the PERC Reporting Standard".	
		(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 important features described in the text, including all relevant cadastral and other infrastructure features.	
		(ix)	The units of measure, currency and relevant exchange rates.	
		(x)	The details of the personal inspection on the property by each Competent Person or, if applicable, the reason why a personal inspection has not been completed.	
		(xi)	If the Competent Person is relying on a report, opinion, or statement of another expert who is not a Competent Person, then a disclosure of the date, title, and author of the report, opinion, or statement, the qualifications of the other expert, the reason for the Competent Person to rely on the other expert, any significant risks and any steps the Competent Person took to verify the information provided.	
			1.1 Property Description	
	1.1	(i)	Brief description of the scope of project (i.e. whether in preliminary sampling, advanced exploration, scoping, pre-feasibility, or feasibility phase, Life of Mine plan for an ongoing mining operation or closure).	
		(ii)	Describe (noting any conditions that may affect possible prospecting/mining activities) topography, elevation, drainage, fauna and flora, the means and ease of access to the property, the proximity of the property to a population centre, and the nature of transport, the climate, known associated climatic risks and the length of the operating season and to the extent relevant to the mineral project, the sufficiency of surface rights for mining operations including the availability and sources of power, water, mining personnel, potential tailings storage areas, potential waste disposal areas, heap leach pad areas, and potential processing plant sites.	
		(iii)	Specify the details of the personal inspection on the property by each CP or, if applicable, the reason why a personal inspection has not been completed.	

Section References		PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
		Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 1: Project Outline		**1.2 Location**			
1.2	(i)	Description of location and map (country, province, and closest town/city, coordinate systems and ranges, etc.).			
	(ii)	Country Profile: describe information pertaining to the project host country that is pertinent to the project, including relevant applicable legislation, environmental and social context etc. Assess, at a high level, relevant technical, environmental, social, economic, political and other key risks.			
	(iii)	Provide a general topocadastral map	Provide a Topo-cadastral map in sufficient detail to support the assessment of eventual economics. State the known associated climatic risks.	Provide a detailed topo-cadastral map. Confirm that applicable aerial surveys have been checked with ground controls and surveys, particularly in areas of rugged terrain, dense vegetation or high altitude.	
		1.3 Adjacent Properties			
1.3	(i)	Discuss details of relevant adjacent properties If adjacent or nearby properties have an important bearing on the report, then their location and common mineralized structures should be included on the maps. Reference all information used from other sources.			
		1.4 History			
1.4	(i)	State historical background to the project and adjacent areas concerned, including known results of previous exploration and mining activities (type, amount, quantity and development work), previous ownership and changes thereto.			
	(ii)	Present details of previous successes or failures with reasons why the project may now be considered potentially economic.			
	(iii)		Discuss known or existing historical Mineral Resource estimates and performance statistics on actual production for past and current operations.		
	(iv)			Discuss known or existing historical Mineral Reserve estimates and performance statistics on actual production for past and current operations.	
		1.5 Legal Aspects and Permitting			
1.5	(i)	A statement from the Competent Person on the confirmation of the legal tenure, including a description of (the following):			
	(ii)	Discuss the nature of the issuer's rights (e.g. prospecting and/or mining) and the right to use the surface of the properties to which these rights relate. Disclose the date of expiry and other relevant details.			
	(iii)	Present the principal terms and conditions of all existing agreements, and details of those still to be obtained, (such as, but not limited to, concessions, partnerships, joint ventures, access rights, leases, historical and cultural sites, wilderness or national park and environmental settings, royalties, consents, permission, permits or authorisations).			
	(iv)	Present the security of the tenure held at the time of reporting or that is reasonably expected to be granted in the future along with any known impediments to obtaining the right to operate in the area. State details of applications that have been made. See Clause 8.1 for declaration of a Mineral Reserve.			
	(v)	Provide a statement of any legal proceedings for example; land claims, that may have an influence on the rights to prospect or mine for minerals, or an appropriate negative statement.			
	(vi)	Provide a statement relating to governmental/statutory requirements and permits as may be required, have been applied for, approved or can be reasonably be expected to be obtained. Provide a review of risks that permits will not be received as expected and impact of delays to the project.			
		1.6 Royalties			
1.6	(i)	Describe the royalties that are payable in respect of each property.			
		1.7 Liabilities			
1.7	(i)	Describe any liabilities, including rehabilitation guarantees that are pertinent to the project. Provide a description of the rehabilitation liability, including, but not limited to, legislative requirements, assumptions and limitations.			

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

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

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

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

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 3: Exploration and Drilling, Sampling Techniques and Data			**3.3 Sample method, collection, capture and storage**			
	3.3	(i)	Describe the nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.			
		(ii)	Describe the sampling processes, including sub-sampling stages to maximize representivity of samples. This should include whether sample sizes are appropriate to the grain size of the material being sampled. Indicate whether sample compositing has been applied.			
		(iii)	Appropriately describe each data set (e.g. geology, grade, density, quality, diamond breakage, geo-metallurgical characteristics etc.), sample type, sample-size selection and collection methods			
		(iv)	Report the geometry of the mineralisation with respect to the drill-hole angle. State whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the Mineral deposit type. State if the intersection angle is not known and only the downhole lengths are reported.			
		(v)	Describe retention policy and storage of physical samples (e.g. core, sample reject, etc.)			
		(vi)	Describe the method of recording and assessing core and chip sample recoveries and results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples and whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.			
		(vii)	If a drill-core sample is taken, state whether it was split or sawn and whether quarter, half or full core was submitted for analysis. If a non-core sample, state whether the sample was riffled, tube sampled, rotary split etc. and whether it was sampled wet or dry. the impact of water table or flow rates on recovery and introduction of sampling biases or contamination from above. Discuss the impact of variable hole diameters, e.g., by the use of a calliper tool.			
		(viii)	If a drill-core sample is taken, sufficient information should be supplied to assess the effects of core loss. Occasionally, only total core recovery is mentioned but at the same time the mineralized parts are designated as poor quality. This type of reporting is against the main principles of Transparency and Materiality. Heavy core losses throughout an ore body intersection can seriously undermine the confidence in a resource estimate. It is important to determine whether a relationship exists between grade and recovery (either positive or negative) to assess the potential for grade bias. In addition, it is important to state the method used to determine the core recovery: Total Core Recovery (TCR), Solid Core Recovery (SCR) and Rock Quality Designation (RQD).			
			3.4 Sample Preparation and Analysis			
	3.4	(i)	Identify the laboratory(s) and state the accreditation status and Registration Number of the laboratory or provide a statement that the laboratories are not accredited. Record the steps taken by the Competent Person to ensure the results from a non-accredited laboratory are of an acceptable quality.			
		(ii)	Identify the analytical method. Discuss the nature, quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.			
		(iii)	Describe the process and method used for sample preparation, sub-sampling and size reduction, and likelihood of inadequate or non representative samples (i.e. improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.)			

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 3: Exploration and Drilling, Sampling Techniques and Data			**3.5 Sampling Governance**			
	3.5	(i)	Discuss the governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading, selective losses or contamination, core/hole diameter, internal and external QA/QC, and any other factors that may have resulted in or identified sample bias.			
		(ii)	Describe the measures taken to ensure sample security and the Chain of Custody.			
		(iii)	Describe the validation procedures used to ensure the integrity of the data, e.g. transcription, input or other errors, between its initial collection and its future use for modelling (e.g. geology, grade, density, etc.)			
		(iv)	Describe the audit process and frequency (including dates of these audits) and disclose any material risks identified.			
			3.6 Quality Control/Quality Assurance			
	3.6	(i)	Demonstrate that adequate field sampling process verification techniques (QA/QC) have been applied, e.g. the level of duplicates, blanks, reference material standards, process audits, analysis, etc. If indirect methods of measurement were used (e.g. geophysical methods), these should be described, with attention given to the confidence of interpretation. Refer to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. QA/QC procedures used to check databases augmented with 'new' data have not resulted in corruption of previous versions containing stored 'old' data.			
		(ii)	Document the use of any independent check laboratory (umpire check samples). Identify the independent laboratory and details of its accreditation.			
			3.7 Bulk Density			
	3.7	(i)	Describe the method of bulk density determination with reference to the frequency of measurements, the size, nature and representativeness of the samples.			
		(ii)	If target tonnage ranges are reported state the preliminary estimates or basis of assumptions made for bulk density.			
		(iii)	Discuss the representivity of bulk density samples of the material for which a grade range is reported.			
		(iv)	Discuss the adequacy of the methods of bulk density determination for bulk material with special reference to accounting for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the mineral deposit.			
			3.8 Bulk-Sampling and/or Trial-mining			
	3.8	(i)	Indicate the location of individual samples (including map).			
		(ii)	Describe the size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.			
		(iii)	Describe the method of mining and treatment.			
		(iv)	Indicate the degree to which the samples are representative of the various types and styles of mineralisation and the mineral deposit as a whole.			

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

Section 4: Estimation and Reporting of Exploration Results, Mineral Resources and Mineral Reserves

Section 4: Estimation and Reporting of Exploration Results, Mineral Resources and Mineral Reserves

4.1 Geological model and interpretation

4.1	(i)	Describe the geological model, construction technique and assumptions that forms the basis for the Exploration Results or Mineral Resource estimate. Discuss the sufficiency of data density to assure continuity of mineralisation and geology and provide an adequate basis for the estimation and classification procedures applied.			
	(ii)	Describe the nature, detail and reliability of geological information with which lithological, structural, mineralogical, alteration or other geological, geotechnical and geo-metallurgical characteristics were recorded.			
	(iii)	Describe any obvious geological, mining, metallurgical, environmental, social, infrastructural, legal and economic factors that could have a significant effect on the prospects of any possible exploration target or mineral deposit.			
	(iv)		Discuss all known geological data that could materially influence the estimated quantity and quality of the Mineral Resource.		
	(v)		Discuss whether consideration was given to alternative interpretations or models and their possible effect (or potential risk) if any, on the Mineral Resource estimate.		
	(vi)		Discuss geological discounts (e.g. magnitude, per reef, domain, etc.), applied in the model, whether applied to mineralized and / or un-mineralized material (e.g. potholes, faults, dykes, etc.).		

4.2 Estimation and modelling techniques

4.2	(i)	Describe in detail the estimation techniques and assumptions used to determine the grade and tonnage ranges for any Exploration Targets, if reported in a Public Report.			
	(ii)		Discuss the nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values (cutting or capping), compositing (including by length and/or density), domaining, sample spacing, estimation unit size (block size), selective mining units, interpolation parameters and maximum distance of extrapolation from data points.		
	(iii)		Describe assumptions and justification of correlations made between variables.		
	(iv)		Provide details of any relevant specialized computer program (software) used, with the version number, together with the estimation parameters used.		
	(v)		State the processes of checking and validation, the comparison of model information to sample data and use of reconciliation data, and whether the Mineral Resource estimate takes account of such information.		
	(vi)		Describe the assumptions made regarding the estimation of any co-products, by-products or deleterious elements.		

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 4: Estimation and Reporting of Exploration Results, Mineral Resources and Mineral Reserves			**4.3 Reasonable prospects for eventual economic extraction**			
	4.3	(i)		Disclose and discuss the geological parameters. These would include (but not be limited to) volume / tonnage, grade and value / quality estimates, cut-off grades, strip ratios, upper- and lower- screen sizes.		
		(ii)		Disclose and discuss the engineering parameters. These would include mining method, dilution, processing, geotechnical, geohydraulic and metallurgical) parameters.		
		(iii)		Disclose and discuss the infrastructural including, but not limited to, power, water, site-access.		
		(iv)		Disclose and discuss the legal, governmental, permitting, statutory parameters.		
		(v)		Disclose and discuss the environmental and social (or community) parameters.		
		(vi)		Disclose and discuss the marketing parameters.		
		(vii)		Disclose and discuss the economic assumptions and parameters. These factors will include, but not limited to, commodity prices and potential capital and operating costs		
		(viii)		Discuss any material risks		
		(ix)		Discuss the parameters used to support the concept of "eventual"		
			4.4 Classification Criteria			
	4.4	(i)		Describe criteria and methods used as the basis for the classification of the Mineral Resources into varying confidence categories.		

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 4: Estimation and Reporting of Exploration Results, Mineral Resources and Mineral Reserves			**4.5 Reporting**			
	4.5	(i)	Discuss the reported low and high-grades and widths together with their spatial location to avoid misleading the reporting of Exploration Results, Mineral Resources or Mineral Reserves.			
		(ii)	Discuss whether the reported grades in Exploration Targets are regional averages or if they are selected individual samples taken from the property under discussion.			
		(iii)	State assumptions regarding mining methods, infrastructure, metallurgy, environmental and social parameters. State and discuss where no mining related assumptions have been made.			
		(iv)	State the specific quantities and grades / qualities which are being reported in ranges and/or widths, and explain the basis of the reporting			
		(v)		Present the detail for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in the Mineral Resource statement		
		(vi)		Present a reconciliation with any previous Mineral Resource estimates. Where appropriate, report and comment on any historic trends (e.g. global bias).		
		(vii)		Present the defined reference point for the tonnages and grades reported as Mineral Resources. State the reference point if the point is where the run of mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.		
		(viii)	If the CP is relying on a report, opinion, or statement of another expert who is not a CP, disclose the date, title, and author of the report, opinion, or statement, the qualifications of the other expert and why it is reasonable for the CP to rely on the other expert, any significant risks and any steps the CP took to verify the information provided.			
		(ix)	State the basis of equivalent metal formulae, if applied.			

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 5: Technical Studies				
Section 5: Technical Studies	**5.1 Introduction**			
5.1 (i)	not applicable to Exploration Results	State the level of study – whether Scoping, Pre-Feasibility, Feasibility or ongoing Life of Mine	State the level of study – whether Pre-feasibility, Feasibility or ongoing Life of Mine. The Standard requires that a study to at least a Pre-Feasibility level has been undertaken to convert Mineral Resource to Mineral Reserve. Such studies will have been carried out and will include a mine plan or production schedule that is technically achievable and economically viable, and that all Modifying Factors have been considered.	
5.1 (ii)			Provide a summary table of the Modifying Factors used to convert the Mineral Resource to Mineral Reserve for Pre-feasibility, Feasibility or on-going Life-of-Mine studies.	
	5.2 Mining Design			
5.2 (i)	not applicable to Exploration Results	State assumptions regarding mining methods and parameters when estimating Mineral Resources or explain where no mining assumptions have been made.		
5.2 (ii)		Discuss Modifying factors taken into account in estimation of Mineral Resources	State and justify all modifying factors and assumptions made regarding mining methods, minimum mining dimensions (or pit shell) and internal and, if applicable, external) mining dilution and mining losses used for the techno-economic study and signed-off, such as mining method, mine design criteria, infrastructure, capacities, production schedule, mining efficiencies, grade control, geotechnical and hydrological considerations, closure plans, and personnel requirements.	
5.2 (iii)		State what mineral resource models have been used in the study.		
5.2 (iv)		Explain the basis of (the adopted) cut-off grade(s) or quality parameters applied. Include metal equivalents if relevant		
5.2 (v)			Description and justification of mining method(s) to be used.	
5.2 (vi)			For open-pit mines, include a discussion of pit slopes, slope stability, and strip ratio.	

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 5: Technical Studies	5.2	(vii)	not applicable to Exploration Results		For underground mines, discuss mining method, geotechnical considerations, mine design characteristics, and ventilation/cooling requirements.	
		(viii)			Discuss mining rate, equipment selected, grade control methods, geotechnical and hydrogeological considerations, health and safety of the workforce, staffing requirements, dilution, and recovery.	
		(ix)			State the optimisation methods and any software used in planning, list of constraints (practicality, plant, access, exposed Mineral Reserves, stripped Mineral Reserves, bottlenecks, draw control).	
	5.3 Metallurgical and Test work					
	5.3	(i)	not applicable to Exploration Results	Discuss the source of the sample, the representivity of the potential feed and the techniques used to obtain the samples, laboratory and metallurgical testing techniques.		
		(ii)		Explain the basis for assumptions or predictions regarding metallurgical amenability and any preliminary mineralogical test work already carried out.		
		(iii)		Discuss the possible processing methods and any processing factors that could have a material effect on the reasonable expectations of eventual economic extraction. Discuss the appropriateness of the processing methods to the style of mineralisation.	Describe and justify the processing method(s) to be used, equipment, plant capacity, efficiencies, and personnel requirements.	
		(iv)			Discuss the nature, amount and representativeness of metallurgical test work undertaken and the recovery factors used. A detailed flow sheet / diagram and a mass balance should exist ,especially for multi-product operations from which the saleable materials are priced for different chemical and physical characteristics.	
		(v)			State what assumptions or allowances have been made for deleterious elements and the existence of any bulk-sample or pilot-scale test work and the degree to which such samples are representative of the ore body as a whole.	
		(vi)			State whether the metallurgical process is well-tested technology or novel in nature. If novel, justify its use in Mineral Reserve estimation.	

Section References		PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
		Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 5: Technical Studies		**5.4 Infrastructure**			
5.4	(i)	not applicable to Exploration Results	Comment regarding the current state of infrastructure or the ease with which the infrastructure can be provided or accessed		
	(ii)			Report in sufficient detail to demonstrate that the necessary facilities have been allowed for (which may include, but not be limited to, processing plant, tailings dam, leaching facilities, waste dumps, road, rail or port facilities, water and power supply, offices, housing, security, resource sterilisation testing etc.). Provide detailed maps showing locations of facilities.	
	(iii)			Statement showing that all necessary logistics have been considered.	
		5.5 Environmental, Social Performance, and Governance			
5.5	(i)		General: - Confirm that the company or reporting entity has addressed the host country 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&AP) and/or studies that could have a material effect on the likelihood of eventual economic extraction. Discuss possible means of mitigation. - Identify any legislated social management programmes that may be required and discuss the content and status of these. - 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 is determined and described, including the following aspects: • The locality's physical geography, centres 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; and • Local governance structures and administrative bodies, their roles and responsibilities in relation to permitting and regulations. • Site access routes and any potential impact on environment or local communities • Provision of energy for activities (e.g. off-grid renewable energy, or sourced direct from local non-renewable power grid with plans for decarbonisation for future project if possible)			
	(iii)	• High level assessment of level of water stress (e.g. potential for drought, flood and impact on water quality) • High level assessment of biodiversity (e.g. endangered species known in 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 I&AP and/or studies that could have a material effect on the likelihood of eventual economic extraction. •Management of project waste and anticipated requirements for large scale infrastructure for mine waste for future, including but not limited to waste dumps and tailings dams.		

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 5: Technical Studies	5.5	(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 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 mechanisms in place to address unplanned closure •If appropriate, describe 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, 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 Presence, or not of Indigenous People, if FPIC triggered, 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 programme inclusive of evidence of adherence to them and ongoing health and safety record		
		(ix)	Opportunities for contributing to the local economy identified and utilized where appropriate.	Legislated and or voluntary social development programmes that may be required and content and status of these.		
		(x)		Material socio-economic and cultural impacts that need to be managed, and where appropriate the associated costs.		
		(xi)	Description of corporate governance board structure: gender, nationality, tenure, roles, responsibilities and process for selection of Board members, and Board remuneration processes and procedures			
		(xii)	• Commitment to GIIP: transparency, diversity, commitment to ESG described • Corporate commitment to social performance described/ provided • Corporate commitment to environmental stewardship described / provided	• Description of how corporate compliance is assured and verified • Demonstrable commitment to GIIP: transparency, diversity, commitment to ESG described • Demonstrable commitment to social performance described • Demonstrable commitment to environmental stewardship described		
		(xiii)	Integrated Risk Management: Description of identified potential modifying factors and management actions taken to manage them where appropriate	• Description of proposed mitigation plans for identified modifying factors and management actions taken to manage them where appropriate. • Description of any additional risks that may impact on the long term future of the project, even if not deemed to be material at the current time. • Description of how the risk assessment process outlined here is integrated with the overall risk management framework for the company as a whole.		

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
			5.6 Market Studies and Economic Criteria			
Section 5: Technical Studies	5.6	(i)	not applicable to Exploration Results	Discuss any technical and economic factors likely to influence the prospect of economic extraction.	Describe the valuable and potentially valuable product(s) including suitability of products, co-products and by products to market.	
		(ii)			Describe product to be sold, customer specifications, testing, and acceptance requirements. Discuss whether there exists a ready market for the product and whether contracts for the sale of the product are in place or expected to be readily obtained. Present price and volume forecasts and the basis for the forecast.	
		(iii)			State and describe all economic criteria that have been used for the study such as capital and operating costs, exchange rates, revenue / price curves, royalties, cut-off grades, reserve pay limits.	
		(iv)			Summary description, source and confidence of method used to estimate the commodity price/value profiles used for cut-off grade calculation, economic analysis and project valuation, including applicable taxes, inflation indices, discount rate and exchange rates.	
		(v)			Present the details of the point of reference for the tonnages and grades reported as Mineral Reserves (e.g. material delivered to the processing facility or saleable product(s)). It is important that, in any situation where the reference point is different, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.	
		(vi)			Justify assumptions made concerning production cost including transportation, treatment, penalties, exchange rates, marketing and other costs. Provide details of allowances that are made for the content of deleterious elements and the cost of penalties.	
		(vii)			Provide details of allowances made for royalties payable, both to Government and private.	
		(viii)			State ownership, type, extent and condition of plant and equipment that is significant to the existing operation(s).	
		(ix)			Provide details of all environmental, social and labour costs considered	

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 5: Technical Studies			**5.7 Risk Analysis**			
	5.7	(i)	A high level assessment should be made of key areas of uncertainty which may affect exploration outcomes. An assessment should be provided on the chances of exploration success, together with consideration of any potential threats, such as ESG aspects, which could hinder eventual development of a mining or extraction project in the exploration area."	Report an assessment of technical, environmental, social, economic, political and other key risks to the project. Describe actions that will be taken to mitigate and/or manage the identified risks.		
			5.8 Economic Analysis			
	5.8	(i)	not applicable to Exploration Results	Describe the basis on which reasonable prospects for eventual economic extraction has been determined, including any material assumptions made in determining the 'reasonable prospects for eventual economic extraction'.	State and justify the inclusion of any Inferred Resources in the Pre-feasibility and Feasibility Studies economic analysis. Report the sensitivity to the inclusion of any Inferred Resources.	
		(ii)		At the relevant level (Scoping Study, Pre-feasibility, Feasibility or on-going Life-of Mine), provide an economic analysis for the project that includes:		
		(iii)		Cash Flow forecast on an annual basis using Mineral Reserves or an annual production schedule for the life of the project		
		(iv)		A discussion of net present value (NPV), internal rate of return (IRR) and payback period of capital		
		(v)		Sensitivity or other analysis using variants in commodity price, grade, capital and operating costs, or other significant parameters, as appropriate and discuss the impact of the results.		

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 6: Estimation and Reporting of Mineral Reserves				
Section 6: Estimation and Reporting of Mineral Reserves	**6.1 Estimation and Modelling Techniques**			
6.1 (i)	not applicable to Exploration Results	Describe the Mineral Resource estimate used as a basis for the conversion to a Mineral Reserve.		
6.1 (ii)		Report the Mineral Reserve Statement with sufficient detail indicating if the mining is open pit or underground plus the source and type of mineralisation, domain or ore body, surface dumps, stockpiles and all other sources.		
6.1 (iii)			If Inferred resources are used in assessing Mineral reserves, then report and discuss a comparison between the two possibilities, the one with inclusion of Inferred Mineral Resources and the one without inclusion, in such a way so as not to mislead the investors. Identify the quantity of the Inferred Mineral Resources included and the sensitivity of the inclusion to the study.	
6.1 (iv)			A Mineral Reserve Statement in sufficient detail indicating if the mining is open pit or underground plus the source and type of mineralisation , domain or ore body, surface dumps, stockpiles and all other sources.	
6.1 (v)			Provide a reconciliation reporting historic reliability of the performance parameters, assumptions and modifying factors including a comparison with the previous Reserve quantity and qualities, if available. Where appropriate, report and comment on any historic trends (e.g. global bias)	
	6.2 Classification Criteria			
6.2 (i)			Describe and justify criteria and methods used as the basis for the classification of the Mineral Reserves into varying confidence categories, based on the Mineral Resource category, and including consideration of the confidence in all the modifying factors.	

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Section 6: Estimation and Reporting of Mineral Reserves			**6.3 Reporting**			
	6.3	(i)			Discuss the proportion of Probable Mineral Reserves, which have been derived from Measured Mineral Resources (if any), including the reason(s) therefore.	
		(ii)			Present details of for example open pit, underground, residue stockpile, remnants, tailings, and existing pillars or other sources in respect of the Mineral Reserve statement	
		(iii)			Present the details of the defined reference point for the Mineral Reserves. State where the reference point is the point where the run of mine material is delivered to the processing plant. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State clearly whether the tonnages and grades reported for Mineral Reserves are in respect of material delivered to the plant or after recovery.	
		(iv)			Present a reconciliation with the previous Mineral Reserve estimates. Where appropriate, report and comment on any historic trends (e.g. global bias).	
		(v)			Confirm that only Measured and Indicated Mineral Resources can be considered for inclusion in the Mineral Reserve.	
		(vi)		State whether the Measured Mineral Resources and Indicated Mineral Resources are inclusive of or additional to the Mineral Reserves.		
			6.4 Specific for Metal Equivalents or Combined Grades Reporting			
	6.4	(i)	Confirm that all reports comply with section 9 (paragraphs 9.1 to 9.5) of the PERC Reporting Standard.			
		(ii)		Discuss and describe the basis for the grade estimation for each metal relating to the metal equivalence or combined grade		
		(iii)		Disclose all economic criteria that have been used for the calculation such as exchange rates, revenue / price curves, royalties, cut-off grades, pay limits.		
		(iv)		Discuss the basis for assumptions or predictions regarding metallurgical factors such as recovery used in the metal equivalents or combined grades calculation.		
		(v)		Show the calculation formula used.		

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

Section 7: Audits and Reviews				
Section 7: Audits and Reviews	**7.1 Audits and Reviews**			
	7.1	(i)	State type of review/audit (e.g. independent, external), area (e.g. laboratory, drilling, data, environmental compliance etc.), date and name of the reviewer(s) together with their recognized professional qualifications. State the level of review/audit (desk-top, on-site comparison with standard procedures, or endorsement where auditor/reviewer has checked the work to the extent they stand behind it as if it were their own work).	
		(ii)	Disclose the conclusions of relevant audits or reviews. Note where significant deficiencies and remedial actions are required.	

Section 8: Other Relevant Information				
Section 8: Other Relevant Information	**8.1 Other Relevant Information**			
	8.1	(i)	Discuss all other relevant and material information not discussed elsewhere.	

Section 9: Qualification of Competent Person(s) and other key technical staff. Date and Signature Page				
Section 9: Competent Person Signoff	**9.1 Competent Person Details**			
	9.1	(i)	State the full name, registration number and name of the professional body or RPO, for all the Competent Person(s). State the relevant experience of the Competent Person(s) and other key technical staff who prepared and are responsible for the Public Report.	
		(ii)	State the Competent Person's relationship to the issuer of the report.	
		(iii)	Provide the Certificate of the Competent Person (Appendix 2), including the date of sign-off and the effective date, in the Public Report.	

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

APPENDIX 2: Reporting of Coal

Appendix 2: Reporting of Coal

		A2.1 Specific Reporting for Coal	
A2.1	(i)	Confirm that the reports on Coal deposits take cognisance of Appendix 2 of the PERC Reporting Code and Sections 1 - 9 of Table 1.	
	(ii)	Confirm that the Coal Exploration Results, Coal Inventory, Coal Resources and Coal Reserves are reported using the South African National Standard 10320 as the guideline	
		A2.2 Geological Setting, Deposit, Mineralisation	
A2.2	(i)	Describe the project geology including coal deposit type, geological setting and coal seams / zones present.	
	(ii)	Identify and discuss the structural complexity, physical continuity, coal rank, qualitative and quantitative properties of the significant coal seams or zones on the property.	
		A2.3 Drilling Techniques	
A2.3	(i)	Report core recoveries and method of calculation. Confirm that core recoveries in cored boreholes are in excess of 95% by length within the coal seam intersection.	
		A2.4 Relative Density to replace Bulk Density	
A2.4	(ii)	Describe the apparent relative density or true relative density of the coal seam(s) determined on coal samples from borehole cores using recognized standard laboratory methods or commonly used procedures. State the moisture basis on which the relative density determination is based and the moisture basis on which the final density value is reported (in situ or air-dried basis).	
		A2.5 Bulk-Sampling and/or Trial-mining	
A2.5	(iii)	Describe the purpose or aim of the bulk sampling programme, the size of samples, spacing/density of samples recovered. Describe the applicability of bulk sampling or large diameter core samples towards providing representative samples for tests. Compare and comment on results obtained from bulk sampling versus exploration sampling.	
		A2.6 Reasonable prospects for eventual economic extraction	
A2.6	(i)	Confirm that an appropriate coal quality is reported for all Coal Resource categories. Present and discuss the type of analysis (e.g. raw coal, washed coal at a specific cut-point density) and the basis of reporting of the coal quality parameters (e.g. air-dried basis, dry basis, etc.).	

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Appendix 2: Reporting of Coal		**A2.7 Coal Resource Reporting**				
	A2.7	(i)		Discuss 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). Present and discuss the MTIS Coal Resource tonnage and quality.		
		(iii)		State the reporting basis for the Coal Resource statement with particular reference to moisture and relative density.		
		(iv)			State the reporting basis for the Coal Reserve statement with particular reference to moisture and relative density.	
		(v)			Confirm that the Coal Reserves are reported as ROM tonnages and coal quality, and also as Saleable product/s tonnages and coal quality. Present and discuss the reporting basis for the Coal Reserve statement with particular reference to moisture content and relative density.	

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

Appendix 3: Reporting of Diamonds and Other Gemstones

APPENDIX 3: Reporting of Diamonds and Other Gemstones			
A3.1 Specific Reporting for Diamonds and Gemstones			
A3.1	(i)	Criteria applicable to diamond deposits are also applicable to other gemstone deposits	
	(ii)	Appendix 3 provides additional criteria for reporting on diamonds and other gemstones.	
A3.2 Geological Setting, Deposit, Mineralisation			
A3.2	(i)	Describe the nature of the source of the diamonds, including the rock type and geological environment. For diamond placer occurrences, describe the overburden and gravel thicknesses, as well as bedrock topography.	
A3.3 Sampling of Diamond Projects			
A3.3	(i)	Describe the type of sample (outcrop, boulder, drill-core, RC drill cuttings, gravel, stream sediment or soil) and purpose (for example: RC drilling to identify gravel thickness, large diameter drilling to establish stones per unit of volume, bulk-sample, etc.)	
	(ii)	Discuss sample size, distribution and representivity	
	(iii)	Identify the type of sample facility, treatment rate and accreditation	
	(iv)	Discuss sample size reduction, bottom and top screen sizes and any re-crush	
	(v)	Discuss the sample processes (e.g. DMS, grease, X-Ray, Hand-sorting, etc.)	
	(vi)	Discuss process efficiency, tailings auditing and granulometry	
	(vii)	Identify the laboratory used, type of process for microdiamonds and accreditation. Reports of microdiamond recoveries should describe the extraction process, crushing methodology and the stone counts per unit weight, as a minimum.	
	(viii)	State whether the reports of kimberlitic indicator minerals ("KIM's") or diamond indicator minerals ("DIM's") have been prepared by a suitably qualified laboratory which must be identified.	
	(ix)	Supply details of the sampling parameters for reports dealing with recoveries of diamonds or KIM's, including, but not limited to type of sample (stream sediment, soil, bulk, rock, etc.) as well as sample size, sample frequency, representivity and screen parameters are required.	
	(x)	Discuss the relevant major and trace element chemistry of any kimberlitic indicator minerals recovered. Reference relevant peer-reviewed published research articles when reporting the interpretation of mineral chemistry data for diamond exploration projects.	
	(xi)	Provide details of the form, shape, colour and size of the diamonds recovered and, where relevant, comments regarding the nature of the source of the diamonds.	
A3.4 Bulk-Sampling and/or Trial-mining			
A3.4	(i)	Provide a table of relevant results , including (but not limited to) volume of sample, number of individual diamonds, total number of carats, sample grade, diamond value (it is not possible to evaluate diamond assortment from microdiamonds).	
	(ii)	Discuss micro- and macro- diamond sample results per geological domain.	
	(iii)	Discuss stone-size and -number distribution (Size-frequency distribution). Include the suitability of the sample size to the stage of the project and its relevance for both SFD and valuation (assortment) purposes.	
	(iv)	State the top and bottom sieve cut-off sizes.	
	(v)	Discuss diamond breakage, where relevant	

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Appendix 3: Reporting of Diamonds and Other Gemstones	A3.4	(vi)	Define the unit of grade measure used in the document (e.g. carat per units of mass, area or volume). Where carats per unit of mass is used, include a discussion of mass to tonnage conversion. 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. 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 m³ are acceptable. In the marine placer environment Diamond Reserve grades are, typically, reconciled on a per m² basis.			
			A3.5 Estimation and Modelling Techniques			
	A3.5	(i)	Describe in detail any estimation techniques (including geostatistical estimation, where relevant) used to determine the volume/tonnage, grade and value data, including their applicability to the deposit type.			
		(ii)	Express applicable volumes, grades and values in ranges (with appropriate clarifiers to denote lack of reliability of data). The use of "ranges" in this context has no statistical connotation	State all Diamond Resource estimates so as to convey the order of accuracy by rounding off to appropriately significant figures.	State all Diamond Reserve estimates so as to convey the order of accuracy of the estimates by rounding off to appropriately significant figures.	
		(iii)	Discuss volume/tonnage, grade and value information per identified domain (where possible, even if in a very preliminary form)	Discuss volume/tonnage, grade and value information per identified domain		
		(iv)	If grades are reported then state clearly whether these are regional averages, based on microdiamond assessment, KIM analyses, or if they are selected individual samples taken from the property under discussion.	State that the grades for the Diamond Resources are estimated from sampling data derived from the property itself	State that the grades for Diamond Reserves have been estimated from bulk-sampling and/or trial-mining	
		(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 result. This may not be true for marine deposits, in which case further explanation and discussion would be necessary.			
		(vi)	Report all diamond values in US$/ct. If reference is made to local currencies then provide the prevailing exchange rate as well as the effective date of the exchange rate. Also supply the date of valuation.			
		(vii)	Specify details of the type and size of individual samples (including top and bottom cut-off size, in millimetres, used in the recovery).			
		(viii)	Discuss the representivity of the type, size, number and location of the samples			
		(ix)	Discuss geostatistical estimation (where relevant) and interpolation techniques applied and their applicability to the mineral deposit type			

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Appendix 3: Reporting of Diamonds and Other Gemstones	A3.5	(x)	Specify the number and total weight (in carats) of diamonds recovered. The weight of diamonds recovered may only be omitted from the report when the diamonds are less than 0.5mm in size (i.e. when the diamonds recovered are microdiamonds) or when the diamonds are below a specified commercial cut-off value, which must be specified.			
		(xi)		Disclose the number of stones and the total number of carats used in the SFD, grade and value estimation and discuss the validity of this data.		
		(xii)		Note whether a strict lower cut-off has been applied or if the modelled results include incidental diamonds below the lower cut-off? Discuss the implications.		
		(xiii)		Present aspects of spatial structure analysis and grade and value distribution		
		(xiv)		Present aspects of micro and macro- diamond sample results per domain		
		(xv)		Present aspects of the effect on sample grade and value with change in bottom cut off screen size.		
		(xvi)		Describe any adjustments made to size distribution for sample plant performance and performance on a commercial scale, where applicable.		
		(xvii)		Confirm that valuations have not been reported for samples of diamonds processed using total liberation methods (which are commonly used for processing kimberlite exploration samples and which are based on microdiamonds).		
		(xviii)		Justify the use of microdiamonds to extrapolate diamond value at depth through the presentation of geological and size frequency distribution models		
		(xix)		State the name, qualifications, experience and independence of the recognised expert responsible for the classification and valuation of the diamond parcel(s).		
		(xx)		For each diamond parcel valued, supply information relating to the number of stones and the carats and size distribution using a standard progression of sieve sizes or diamond mass ranges for each identified geological domain. For marine or alluvial placers the average price per average stone size may be used instead of a size distribution		
		(xxi)		State that the valuation is on the run-of-mine diamond parcel (i.e. not partial parcel)		
		(xxii)		Define the unit of grade measure used in the resource/reserve estimation (e.g. carat per units of mass, area or volume). Where carats per unit of volume is used, include a discussion of mass to tonnage conversion.		

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Appendix 3: Reporting of Diamonds and Other Gemstones			**A3.6 Resource/ Reserve Classification Criteria**			
	A3.6	(i)		A Diamond Resource/Reserve must be described in terms of volume/tonnage, grade and value. A Diamond Resource/Reserve must not be reported in terms of contained diamond content unless corresponding tonnages/volumes, grades and values are also reported. The average diamond grade and value must not be reported without specifying the applicable bottom cut-off screen size.		
		(ii)		Discuss issues surrounding stone frequency (stones per cubic metre, per tonne, or per square metre) and stone size (carats per stone) relating to grade (carats per cubic metre, per tonne or per square metre). Consider the elements of uncertainty in these estimates and develop the Diamond Resource classification accordingly.		
		(iii)		Present 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, and - effect on sample grade with change in bottom cut off screen size. Note that a Diamond Resource/Reserve may not be declared without reference to an SFD.		
		(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 metre or carats per (100) cubic metre are acceptable be accompanied by a volume to weight basis for calculation, where relevant; - adjustments made to 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, and - this lower cut-off size should be stated.		

Section References			PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
			Exploration Results	**Mineral Resources**	**Mineral Reserves**	
Appendix 3: Reporting of Diamonds and Other Gemstones	A3.6	(v)		Value - diamond valuation is a highly specialized process and is only possible on parcels containing appropriate numbers of macro-diamonds; - it is not possible to evaluate diamond quality from microdiamonds; - 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 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 this 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 parcel valued, number of stones, carats and size distribution using a standard progression of sieve sizes for each identified geological domain; - average valuation per sieve size; - estimation of value with size; - assessment of diamond breakage; - average USD/carat and/or USD/tonne value with change in bottom cut-off; - minimum parcel size for representative valuation; - has a strict bottom cut-off been applied, or does the modelled value include incidental diamonds below the bottom cut-off?, and - the basis for the price (e.g., dealer buying price, dealer selling price, etc.) should also be stated.	
			A3.7 Audits and Reviews			
	A3.7	(i)	State that the samples were sealed after excavation and discuss the chain of custody from source to reporting of results			
		(ii)	Discuss security standards in sampling plant and recovery sections of bulk-sampling/trial-mining programmes for macrodiamonds			
		(iii)	Describe the type of facility, treatment rate, and accreditation (if any) of the sample plant. It is especially important to discuss the bottom screen size, top screen size and recrush parameters, in addition to the concentration methodology (e.g. pan, DMS, Optical, etc.) and the recovery technique (e.g. grease, X-ray, hand-sorting, etc.).			
		(iv)	Discuss valuer location, escort, delivery, cleaning losses, reconciliation with recorded sample carats and number of stones;			
		(v)	State whether core samples were washed prior to treatment for microdiamonds and discuss the use of diamond drill-bits			
		(vi)	State whether any audit samples were treated at alternative facilities			
		(vii)	Discuss QA/QC of sampling results, including the process efficiency, tailings auditing and granulometry			
		(viii)	Discuss the recovery of tracer monitors used in sampling and treatment			
		(ix)	Discuss geophysical (logged) density and particle density, where relevant			
		(x)	Discuss cross-validation of sample weights, wet and dry, with hole volume and density, moisture factor			

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

APPENDIX 4: Reporting of Industrial Minerals, Cement Feed Materials and Construction Raw Materials				
	A4.1 Specific for Reporting of Industrial Minerals, Cement Feed Materials and Construction Raw Materials			
APPENDIX 4: Reporting of Industrial Minerals, Cement Feed Materials and Construction Raw Materials	A4.1	(i)	Appendix 4 provides additional criteria for reporting on Industrial Mineral, Cement Feed Materials and Construction Raw Materials deposits.	
		(ii)	Describe the exploration or geologically specific specialised industry techniques appropriate to the minerals under investigation	
		(iii)	Describe the nature and quality of sampling or specific specialised industry standard measurement tools appropriate to the minerals under investigation	
		(iv)	Describe the appropriate saleable product qualities being reported. Describe the basis for reporting (physical or chemical parameters, air-dried basis, dry basis, etc.). Reporting of deleterious chemical elements or physical parameters is required.	
		(v)	State assumptions regarding in particular: extraction methods, infrastructure, processing, environmental and social parameters. Where no mining related assumptions have been made, this should be explained.	
		(vi)	Disclose and discuss the marketing parameters, customer specifications, testing, and acceptance requirements.	
		(vii)	Discuss the nature, amount and representativeness of metallurgical/processing studies completed which form the basis for the various saleable materials which may be priced for different chemical and physical characteristics.	
		(viii)	Present the defined reference point of the reported tonnages and grades/qualities. Where the reference point is the point is a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State whether the tonnages and grades/qualities of the material delivered to the plant or after recovery.	

Section References	PERC REPORTING STANDARD - TABLE 1			Section in the CPR where this is located or why it is considered not relevant to the project (*"if not, why not"*).
	Exploration Results	**Mineral Resources**	**Mineral Reserves**	

APPENDIX 5: Reporting of Dimension Stone, Ornamental and Decorative Stone				
	A5.1 Specific for Reporting of Dimension Stones, Ornamental and Decorative Stones			
APPENDIX 5: Reporting of Dimension Stone, Ornamental and Decorative Stone	A5.1	(i)	Appendix 5 provides additional criteria for reporting on Dimension Stone, Ornamental and Decorative Stone deposits.	
		(ii)	Describe the exploration or geologically specific specialised industry techniques appropriate to the minerals under investigation	
		(iii)	Describe the nature and quality of sampling or specific specialised industry standard measurement tools appropriate to the minerals under investigation (see also Market Quality evaluation below)	
		(iv)	Describe the appropriate saleable product technical (geo-mineralogical and structural) and market qualities being reported and their characteristics that refer to the different qualities. Describe the basis for reporting (physical or chemical parameters, mineralogical parameters etc.). Reporting of deleterious chemical elements or physical parameters is required, to avoid any problem after installation of finished products.	
		(v)	Describe in detail and state the real geological definition and denomination of the investigated material, making clear distinction between the dimension stone commercial name (marble, granite, stone, etc.) and the real petrographical-geological name (e.g. a serpentinite is commercially named as "green marble" in the Dimension Stone industry)	
		(vi)	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.	
		(vii)	Disclose and discuss the marketing parameters, customer specifications, testing, and acceptance requirements. Describe the methodology utilised to compare the quality of the material and products under investigation with the quality of similar comparable material already in the market.	
		(viii)	Present the defined reference point of the reported tonnages/volumes and market qualities/grades. Where the reference point is the point is a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported. State whether the tonnages and grades/qualities of the material delivered to the plant or after recovery. In particular describe the methodology to calculate the recovery rate and state to which product it refers	

TABLE 2 GUIDELINE FOR TECHNICAL STUDIES

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

Scoping Studies, Pre-Feasibility Studies, Feasibility Studies (and on-going Life-of-Mine Studies) analyse and assess the same geological, engineering, and economic factors with increasing detail and precision.

Therefore, the same criteria may be used as a framework for reporting the results of all three studies.

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

TABLE 2 – GUIDELINE FOR TECHNICAL STUDIES			
Item	**Scoping Study**	**Prefeasibility 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 Optimised
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 payback period
Mineral Processing	Metallurgical test work	Preliminary Options	Detailed and Optimised

TABLE 2 – GUIDELINE FOR TECHNICAL STUDIES			
Item	**Scoping Study**	**Prefeasibility Study**	**Feasibility Study**
Permitting - (water, power, mining, prospecting & environmental)	Required permitting listed	Preliminary applications submitted	Authorities engaged, and applications submitted
Social licence to operate	Initial contact with local communities	Formal communication structures and engagement models in place	Contracts/agreements in place with local communities and municipalities (local government)
Risk tolerance	High	Medium	Low
Civil/structural, architectural, piping/HVAC, electrical, instrumentation, construction labour, construction labour 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 unit cost or as a percentage of the total cost	Percentage of direct cost by area for contractors; historic for subcontractors	Written quotes from contractors 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 historic estimate	Budgeted quotes on key parameters and estimates from experience, factored from a similar project	Detailed estimate

TABLE 2 – GUIDELINE FOR TECHNICAL STUDIES			
Item	**Scoping Study**	**Prefeasibility Study**	**Feasibility Study**
Environmental compliance / Closure Cost	Factored from historic estimate	Estimate from experience or 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 cost area with risk
Accuracy Range (Order of magnitude)	± 25-50%	± 15-25%	± 10-15%
Contingency Range (Allowance for items not specified in scope that will be needed)	± 30%	15-30%	10% - 15% (actual to be determined based on risk analysis)
Operating Costs	Order-of-magnitude based on historical data or factoring	Estimated from historical factors or percentages and vendor quotes based on material volumes	Detailed estimate
Operating quantities	General	Specific estimates with some factoring	Detailed estimates
Unit costs	Based on historic data for factoring	Estimates for labour, power, and consumables, some factoring	Letter quotes from vendors; minimal factoring
Accuracy Range	± 25-50%	15% - 25%	10% - 15%
Contingency Range (Allowance for items not specified in scope that will be needed)	± 25%	± 15%	± 10% (actual to be determined based on risk analysis)

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