



**THE SOUTH AFRICAN CODE FOR THE REPORTING OF MINERAL
ASSET VALUATION
(THE SAMVAL CODE)
2016 EDITION
As amended 20 July 2015**

Prepared by the South African Mineral Asset Valuation Committee (SAMVAL) Working Group under the auspices of the Southern African Institute of Mining and Metallurgy and the Geological Society of South Africa, through the SAMREC/SAMVAL Committee (SSC)

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1 INTRODUCTION

1.1 Foreword

The SOUTH AFRICAN CODE FOR THE REPORTING OF MINERAL ASSET VALUATION (the SAMVAL Code or 'the Code') sets out minimum standards and guidelines for Reporting of Mineral Asset Valuation in South Africa.

An important characteristic of the extractive industries that sets them aside from other industries or economic sectors is the depletion or wasting of natural resources that cannot be replaced in their original state once extracted. The agent of production is extraction of mineral-bearing and associated materials from the Earth. The ultimate quantity and quality of material of economic interest that might be extracted from a property is often not known at the date of valuation. As a result, the valuation process relies on multiple technical and economic inputs, and therefore the Competent Mineral Asset Valuator (CV) needs to have an understanding of these, in order to conduct the valuation. This sets apart the Mineral Asset Valuation profession as being a specialist area of valuation.

The SAMVAL Code forms a part of the SAMCODE document, and as such relies upon the requirements of the SAMREC Code (The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves) for the reporting of Mineral Resources and Mineral Reserves, where necessary, and it draws on, and cross-references to, definitions and principles embodied within the SAMREC Code as well as the South African Code for the Reporting of Oil and Gas Resources (the SAMOG Code) for the estimation and valuation of petroleum assets. This is in the area of Public Reporting in South Africa, but applies equally to reports that may be deemed to be 'non-public'. (In certain instances, it may also rely on Competent Person's Reports that are based on other Mineral Resource and Mineral Reserve Codes).

1.2 History

The process for establishing the SAMVAL Code was initiated through an open meeting at a colloquium convened by the Southern African Institute of Mining and Minerals (SAIMM) in March 2002. Various papers and articles were published on the matter and the colloquium called for comment and mandates. Contact was also established with the Australasian Institute of Mining and Metallurgy (AusIMM), the Canadian Institute of Mining, Metallurgy and Petroleum (CIM), the International Accounting Standards Board (IASB), and the International Valuation Standards Council (IVSC).

In its original form, the SAMVAL Code was drawn up by the SAMVAL Working Group of the SAMREC/SAMVAL Committee (SSC) under the joint auspices of the Southern African Institute of Mining and Metallurgy (SAIMM) and the Geological Society of South Africa (GSSA). The SSC consisted of representatives of the SAIMM, the GSSA, the South African Council for Natural Scientific Professions (SACNASP), the South African Council for Professional and Technical Surveyors (PLATO), the Engineering Council of South Africa (ECSA), the South African Institute of Chartered Accountants (SAICA), the Association of Law Societies of South Africa (ALSSA), the General Council of the Bar of South Africa (the GCB), the Department of Minerals and Energy (DME) (now the Department of Mineral Resources (DMR), the Johannesburg Stock Exchange Limited (JSE), the Council for Geoscience (CGS), the Banking Association of South Africa (BASA), the Minerals Bureau, the Chamber of Mines of South Africa (COMSA), and the University of the Witwatersrand (Wits). This resulted in publication in April 2008 of the SAMVAL Code, with further amendments in July 2009.

After various discussions it became apparent that a review process was required, and this was initiated in September 2011 at an open meeting at which participants were invited to express their

opinions on matters that were unclear, or that required inclusion/exclusion or modification, in the 2008 edition.

All of these points were captured, and retained for the revision process. The timing has proven to be opportune, because at the same time, a review of the Code for the Technical Assessment and Valuation of Mineral Assets and Securities for Independent Expert Reports (the VALMIN CODE) was initiated in Australia, and an international harmonization group for Mineral Asset Valuation principles, and definitions was formed, known as the International Mineral Asset Valuation Group (IMVAL), thus allowing these processes to run in parallel, and with international participation and discussion. A fundamental premise of this revision is to align to international Valuation Standards, as far as is possible and practical, as is the recommendation and intent of IMVAL, particularly with respect to definitions and principles. The review was undertaken under the auspices of the SSC, by the SAMVAL Working Group and its various sub-committees.

1.3 Application and Purpose

The Code is applicable to the preparation and reporting of valuations conducted on all styles of solid mineralization. Valuations conducted on oil and gas (petroleum) assets are to be conducted under the auspices of the SAMOG Code.

The guiding philosophy and intent of the SAMVAL Code is that Mineral Asset Valuations should be performed by Competent Mineral Asset Valuers (CVs), and all relevant information fully disclosed. The SAMVAL Code is based on best practice and Generally Accepted Valuation Standards in the minerals industries and allows for professional judgement.

Valuation is the estimation of the Value of a Mineral Asset in money or monetary equivalent. 'The word "valuation" can be used to refer to the estimated value (the Valuation conclusion) or to the preparation of the estimated Value (the act of valuing)' (IVS Framework, para 9, p.13). The word 'valuation' is synonymous with the word 'appraisal' as used in certain countries. In contrast, the word 'appraisal' is used in Australia for the broader activity of evaluation, including the preparation of Resource and Reserve estimates (IMVAL, 2015).

An evaluation of a Mineral Asset, as defined in this Code, is a broad physical, legal, economic, and other assessment, generally sought for an investment decision. Evaluations include Feasibility Studies, Prefeasibility Studies, and Scoping Studies. For clarity, evaluation is distinct from valuation.

The underlying reason for having a Code for the valuation of Mineral Assets is to provide consistency and minimum standards, as well as guidance, for Mineral Asset Valuation professionals. This limits unscrupulous valuations, which could result in severely compromising the interests of investors and potential investors.

1.4 Scope and Limitations

The Code is intended to form the basis of best practice in Mineral Asset Valuation and Reporting while allowing for flexibility through effective professional judgement and specific local provisions and/or conditions. The scope in terms of asset type and ownership issues is limited principally to the valuation of mineral assets, including valuation of the Mineral Resources and Mineral Reserves at any point on the value curve, including real and personal property associated with the asset being valued. The valuation of oil and gas assets is dealt with in the SAMOG Code.

The Code sets out a required minimum standard for the Reporting of Mineral Asset Valuations. This applies to both Public Reports, required for listings, financing, etc., and to other reports for various purposes as referred to below.

Where referred to in this Code, Public Reports are all those reports prepared for the purpose of informing investors or potential investors and their advisers and include, but are not limited to, companies' annual reports, quarterly reports, and other reports included in JSE circulars, or as

required by the Companies Act (Act 71 of 2008). The Code also applies to the following reports if they have been prepared for the purposes of informing investors, potential investors and their advisors: environmental statements; information memoranda; expert reports; technical papers; website postings; and public presentations.

For companies issuing annual reports or other summary reports, the inclusion of all material information relating to Mineral Asset Valuation shall be included (Refer Table 1 in Appendix A). Where a summary is presented, it should be clearly stated that it is a summary, with a reference attached giving the location of the Code-compliant Public Reports or Public Reporting on which the summary is based. Companies and other entities should provide information, which is as comprehensive as possible, in their Public Reports.

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

Reference in the Code to 'documentation' pertains to internal company documents prepared as a basis for, or in support of, a Valuation Report. It is recognized that situations may arise where such supporting documentation, prepared by CVs for internal company or similar non-public purposes, may not specifically be compliant with the Code. In such situations the documentation should include a prominent statement to this effect.

For reports that are not intended for the public domain, such as analysts' reports and internal company reports, the use of the Code is still recommended.

1.5 Format of the Code

The Code is divided into Introduction, Principles and Definitions, Standards and Guidance sections, as well as the minimum disclosure requirements for Mineral Asset Valuation Reporting and Assessment criteria (Table 1 in Appendix A), the competencies of a CV (Appendix B), a glossary of terms (Appendix C), and a list of abbreviations (Appendix D).

This format has been derived from extensive research of other Mineral Asset Valuation Codes. As far as possible, principles have been aligned to other international Valuation Codes, and definitions have been chosen/developed based on further extensive research of globally common definitions.

Standards represent the minimum mandatory standards that CVs 'shall' adopt and be governed by, whereas Guidance provides best-practice guidelines on various aspects of Mineral Asset Valuation.

The conventions used in this Code follows those of the United Nations Framework Classification (UNCF). As such:

'shall' is used where a provision is mandatory, 'should' is used where a provision is preferred, and 'may' is used where alternatives are equally acceptable.

1.6 Limitations to the Use of Valuations

Limitations to the use of any valuation shall be defined by the Commissioning Entity in consultation with the CV. The purpose(s) of the valuation shall be clearly stated. It is the responsibility of the reader to understand that the valuation was intended for a specific purpose, at a specific time, and that it may not be suitable for any other purpose and/or use at a later date.

The only way in which the use of the Mineral Asset Valuation can be limited is by an unambiguous statement of purpose(s) in the document itself.

A further limitation of the valuation is that it is only valid as at the Effective Date.

1.7 Out-of-scope Issues

The valuation of companies is out of the scope of this document as this aspect deals with reputational issues of executives and management, which is rather the remit of market analysts. The same mineral asset could therefore have different valuations depending on the credentials of the owners. It is important to note that CVs requires a wider range of competencies to assess the valuation of companies and it may be necessary to protect them from litigation issues that may arise from undue complexity.

In these cases, where the valuation of the Mineral Resources and Mineral Reserves forms an integral part of the valuation of the company, the CV may be part of a competent team that values all the assets of the company. Where these are assets such as real property (other than the Mineral or Prospecting Rights), personal property, or business combinations, reliance may be placed on technical experts competent in these areas, and competent to value the 'going concern'.

1.8 The Scope in Terms of Type of Commodity

The SAMVAL Code includes the valuation of all types of solid mineral commodities and styles of mineralization.

It is the responsibility of the CVs to ensure that they have the necessary skills in accordance with the specific scope as it pertains to a type of mineral commodity, and the scope of the assignment, or to rely on suitably qualified Technical Experts or Competent Persons to provide technical inputs, or to provide expertise in valuation which the CV may not have (for example, where valuations at a company level are required, and which may include valuation of personal property, businesses, and financial interests).

1.9 Purposes of Valuations

The use and purpose of the Valuation Report prepared in accordance with the SAMVAL Code should be clearly stated by the Commissioning Entity. Once the Commissioning Entity requests that the report be compiled in accordance with the SAMVAL Code, it then becomes binding on the CV.

The SAMVAL Code applies to the valuation of mineral assets for any report intended for public release and issued for a purpose regulated by the Companies Act, other provisions of South African law, or by the listing requirements of the JSE and other recognized stock exchanges.

Other purposes for which the SAMVAL Code, in whole or in part, could be followed are valuations involved with, including but not limited to:

- The justification for raising debt or equity finance;
- Facilitating negotiations between parties;
- The assessment of Government charges and taxes;
- Estate settlements;
- Internal corporate reports;
- Reports and expert witness statements provided for the purposes of litigation;
- Acquisitions and disposals;
- Impairment calculations; and
- Accounting and financial reporting.

These could be deemed non-public, but at some stage could be in the public domain. It is advisable therefore, that all reports be considered 'public' and therefore should comply with this Code as a matter of best practice and good governance.

1.11 Alignment with Other Jurisdictions

The Code has been aligned, as far as possible, with other Mineral Asset Valuation Codes, such that where it is used in other jurisdictions (say, within joint venture valuations) it should be reconcilable with all other codes. Cognisance has been taken of international developments in terms of the IMVAL Code.

1.12 Asset Types and Ownership Issues

Mineral rights, including prospecting and mining rights, are recognized as a 'limited real right' for the purpose of valuation in South Africa. Elsewhere, they are commonly known as 'real rights'.

The status of mineral rights, contracts, and other ownership issues are examples of Modifying Factors that may have an influence on overall valuation and remain in scope. It is the responsibility of the Commissioning Entity to disclose these interests, and of the CV to conduct the valuation with these ownership issues in mind. Where the mineral right is owned, the CV shall take into account any restrictions or conditions attached to the right which could impact on value, as well as take account of servitudes, leases, and contracts over the land.

1.13 Relationship with SAMREC and Other Codes

SAMVAL-compliant valuations shall be based on Resources and Reserves prepared in accordance with the SAMREC or any other CRIRSCO-affiliated Mineral Resource and Mineral Reserve Reporting Code as required by the Commissioning Entity and the respective area of jurisdiction. The Valuation Report shall therefore refer to the Code(s) upon which the valuation is reliant, as well as the reason for using this Code.

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2 FUNDAMENTAL PRINCIPLES

2.1 Fundamental Principles

The Code is a principles-based code, whereby certain fundamental principles should be followed, upon which CVs base their professional judgement and are able to justify their valuation to their peers.

The Code differentiates between fundamental principles, which shall be adhered to by the CV, and guiding principles (described later), which are more ethics-based.

The following fundamental principles shall be considered in the application of the Code:

2.1.1 Materiality:

A Public Report contains all the relevant information that investors, their professional advisors and/or Commissioning Entity would reasonably require, and expect to find, for the purpose of making a reasoned and balanced judgement regarding the Mineral Asset Valuation.

2.1.2 Transparency:

The reader of a Public Report shall be provided with sufficient and relevant information, the presentation of which is clear and unambiguous, to understand the report and not be misled. The process or methodology should be aligned with the purpose for which the valuation is intended and should be readily auditable in all material respects.

2.1.3 Competency:

A CV is a person who possesses the necessary qualifications, ability, and sufficient relevant experience in valuing minerals assets. A person being called upon to sign as a CV shall be clearly satisfied in their own mind that they are able to pass the scrutiny of their peers and demonstrate competence in the valuation undertaken.

The CV shall be registered with ECSA, SACNASP, or PLATO, or be a Member or Fellow of the SAIMM, GSSA, or SAICA or a Recognized Professional Organization (RPO), or other organizations recognised for this purpose by the SSC on behalf of the JSE, be subject to an enforceable Code of Conduct (Ethics) and a Disciplinary Code and be able to demonstrate the competencies listed in Appendix B.

A complete list of RPOs which is published by the SSC on the SAMCODE website, is updated from time to time.¹

2.1.4 Reasonableness:

Reasonableness means that other appropriately qualified and experienced CVs with access to the same information, as of the same Effective Date, would arrive at a broadly comparable range of value using the same Basis of Value and the same Scope of Work.

A 'reasonableness test' serves to identify a valuation which may be out of step with industry standards or norms. If the Basis of Value is Market Value, assumptions applied and any property development method or model relied upon, should be reasonable within the context of the purpose of the valuation. The development method or model should be within the expected capability and consideration of the assumed likely buyer of the subject Mineral Asset.

¹ www.samcode.co.za

3 STANDARDS

3.1 Basis of Valuation

The basis of valuation is the monetary value of the Mineral Asset being valued. This may vary depending on the value type that is being assessed.

In the extractive industries, value is usually derived from an assessment of the **Intrinsic Value**, which is based on the unique technical characteristics of the asset being valued. If some other type of value is utilized or required, a clear definition shall be provided by the CV and highlighted in the Valuation Report. This is especially the case where a Market Value or Fair Value is required. In order for the Intrinsic Value to be converted to a Market Value, appropriate and justifiable market factors are applied.

3.2 Principles

The fundamental principles of materiality, transparency, competence, and reasonableness, as described above, shall be applied by the CV when conducting a valuation.

3.3 Valuation Approaches

The CV shall apply at least two valuation approaches to assess the value of a Mineral Asset. Where it is not possible to use more than one approach, the CV shall clearly justify why this is not possible. The three approaches are:

3.3.1 Income Approach

The Income Approach relies on the 'value-in-use' principle and requires determination of the present value of future cash flows over the useful life of the Mineral Asset.

3.3.2 Market Approach

The Market Approach relies on the 'willing buyer, willing seller' principle and requires that the monetary value obtainable from the sale of the Mineral Asset is determined as if in an arm's-length transaction.

The application of certain logic in Mineral Asset Valuation, such as 'gross *in-situ* value' simply determined from the product of the estimate of mineral content and commodity price(s), is considered unacceptable and inappropriate.

3.3.3 Cost Approach

The Cost Approach relies on historic and/or future amounts spent on the Mineral Asset, and is a valuation approach based on the economic principle that a buyer will pay no more for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction (as defined in the IVSC Glossary).

3.4 Impartiality

The CV shall be satisfied that their work has not been unduly influenced by the organization, company, or person commissioning a report or any report that may be deemed a Public Report; that all assumptions, premises, and modifying factors are documented; and that adequate disclosure is made of all material aspects that the informed reader may require to make a reasonable and balanced judgement thereof.

3.5 Responsibility

The CV is responsible for adhering to the principles of materiality, transparency, reasonableness, and competency in the valuation of the mineral asset.

The CV is responsible for assessing the technical data and information, technical interpretations, technical conclusions, forecasts, and parameters used in the Mineral Asset Valuation, valuation

approach, and valuation methods, and applying judgement to the relevance, reliability, and quality of these inputs.

The CV has the responsibility to decide which valuation approaches and methods to use. The choice of the specific approaches and methods used, or excluded, shall be explained and justified by the CV. The applications and limitations of each method shall be explained.

Mineral Asset Valuation may require a team effort. Where there is a clear division of responsibilities within a team, each Competent Person or Technical Expert shall accept responsibility for his or her own contribution.

The CV shall clearly state under what circumstances other people's work has been relied on, and identify such other persons. The author of the Valuation Report shall be satisfied that his or her work has not been unduly influenced by the organization, company, or person commissioning a report or any report that may be deemed a Public Report, that all relevant assumptions, premises and constraints are documented, and that adequate disclosure is made of all material aspects that the informed reader may require to make a reasonable and balanced judgement thereof.

The CV also accepts overall responsibility for the Mineral Asset Valuation that has been prepared in whole or in part by the other contributors, is satisfied that permission has been gained to utilize this work and that the work of the other contributors is acceptable, and that constituent parts of the report have been signed off by such contributors. Based on the glossary of terms, Technical Experts equates to Competent Persons (CPs) with a specific or specialized practice area which differs from that of the CV. The competency profiles, occupational task, and typical functions/roles/responsibilities of CPs and CVs are therefore different, although complementary with respect to the valuation of Mineral Assets.

In the interests of convergence, the CV should be aware of the requirements of Integrated Reporting, where value is required to be reported, and of Generally Accepted Valuation Standards as described by the IVSC. In this regard, the CV may be called upon to conduct a valuation which provides input to a transaction, a re-valuation or impairment, or which may need to rely upon accounting information to conduct a valuation on exploration assets, or going concerns.

Should the valuation be of a 'going concern' company, there may be a number of accounting values that shall be used in the valuation, such as goodwill, intangibles, *etc.* For these types of assignment, the CV will often be part of a larger team, and therefore should acquaint himself/herself with the relevant IFRSs and IASB definitions.

There are circumstances, such as where certain Cost or Market approaches and methods are used, where the valuation is not directly reliant on a Competent Person's report. However, where Mineral Asset Valuations depend on Exploration Results, Mineral Resources, and Mineral Reserves, these should be compliant with the SAMREC Code, and signed off by a Competent Person in accordance with the requirements of the SAMREC Code. In certain cases, the valuation may rely on other CRIRSCO-affiliated reporting codes, as defined by the jurisdiction or Commissioning Entity.

3.6 Dealing with Rights and Contracts

The CV shall ascertain the ownership status the Mineral Asset. In particular, the property is held as a right or freehold, and whether restrictions on rights and agreements influence the valuation. This includes issues such as security of tenure, access, servitudes, royalty payments, and joint ventures, *etc.* Assessment should also be made of the land value, if relevant to the valuation, and whether this attaches to the asset, or requires rentals to be paid.

3.7 Site Visit

A site visit to the mineral property being valued shall be undertaken by the CV. If a site visit is not undertaken, the reasons should be given, which may include non-materiality.

3.8 Complaints and Discipline

Complaints made in respect of the Valuation Report of a CV will be subject to a Code of Conduct (Ethics) and a Disciplinary Code of the respective relevant Statutory Body, Professional Body, or RPO.

Complaints may be lodged with the SSC, which will investigate the complaint and if necessary refer the matter for peer investigation, discipline and/or recourse to the relevant Statutory Body, Professional Body, or RPO with which the CV is registered.

3.9 Commissioning Entity

A Commissioning Entity shall reasonably establish that the CV is sufficiently knowledgeable, skilled and experienced and Independent to perform the valuation of the subject Mineral Asset.

The Commissioning Entity and the CV shall agree, in an engagement letter or written contract, on the terms of reference of the valuation assignment, which terms shall be summarized and disclosed in the Valuation Report. However, this shall not influence or bias the CV to conduct the valuation in any other way than the CV sees fit. Instead, it should set out the purpose of the assignment, its objectives and the access and disclosure requirements, and any relevant assumptions, premises, or constraints that may apply to the assignment.

The Commissioning Entity shall confirm in writing to the CV that complete, accurate, and true disclosure is made to the CV of all material data and information relevant to the valuation and that the CV has reasonable access to the Commissioning Entity's records and personnel in order to enable a proper valuation to be made.

The Commissioning Entity shall inform the CV which, if any, of the data and information supplied is confidential and the extent to which it should or should not be disclosed to the public.

The Commissioning Entity shall clearly state the purpose and use of the valuation, and disclose all material information and access that the CV needs to conduct his/her assignment diligently. It is the responsibility of the Commissioning Entity not to unduly influence the outcome of the valuation.

3.10 Valuation Reports

A Public Report concerning a company's Mineral Asset Valuation is the responsibility of the company acting through its Board of Directors. Any such report shall be based on and fairly reflect the Mineral Asset Valuation report(s) and supporting documentation prepared by a CV. A Public Report shall disclose the name of the CV and his or her qualifications, professional affiliations and relevant experience, and his/her registration with the appropriate Statutory Body, Professional Body, or RPO. Table 1 in Appendix A is a high-level checklist of reporting and assessment criteria to be used as a reference by those preparing reports on Mineral Asset Valuations. The checklist is not prescriptive and, as always, relevance and materiality are the overriding principles that determine what information should be publicly reported.

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

3.11 Valuation Date

The Valuation Date of the valuation shall be given, because assumptions, premises, and forecasts used in the valuation are only valid at a specific point in time.

4 GUIDANCE

4.1 Independence

In certain circumstances, the Commissioning Entity may require that the CV discloses and demonstrates independence. Independence in such circumstances means that, other than professional fees and disbursements received in connection with the Mineral Asset Valuation concerned, the CV has no pecuniary or beneficial (present or contingent) interest in any of the Mineral Assets being valued, nor has any association with the Commissioning Entity or any holder of any rights in Mineral Assets that are the subject of the valuation that is likely to create an apprehension of bias. This will also include the disclosure that the CV will not receive any benefit accruing after the valuation assignment and report has resulted in a transaction.

When required, the CV shall disclose his or her Independence and his or her relationship with the Commissioning Entity in writing.

4.2 The Valuation Process

The process or methodology adopted by the CV should be aligned with the purpose for which the valuation is intended. In order to be transparent, it shall cater for the auditability of all aspects that can materially influence the result or outcome in the context of such intended purpose. The process and method used should seek to generate an unbiased representation or use of the information at hand.

4.3 The Valuation Report

The CV should, as far as reasonably possible, ensure that all readers of the final document would be able to satisfy themselves of the materiality, factual correctness, and completeness of the data and information used or relied upon. The final Valuation Report should reveal a reasonable balance between qualitative reasoning and quantitative data for the assessment, and it should make clear reference to the intended purpose for such a judgement to be possible.

4.4 Valuation Methods

Valuation methods are essentially a subset of the various valuation approaches. The choice of the valuation method(s) applied is a matter for the judgement of the CV, and the decision to use any particular method (and approach) should be justifiable to the CV's peers.

There are many methods within each approach and for detailed information on these the reader is referred to IVS and other texts and papers on the subject. Whichever method is used, the CV should justify the use of such method, and disclose all assumptions, premises, modifying factors, constraints (restrictions), discounts, weightings, adjustments *etc.* that may have been applied.

The results from the valuation approaches and methods employed should be weighted and reconciled into a concluding opinion of value in accordance with Figure 1. The reasons for giving a higher weighting to one method or approach over another should also be stated and justified.

Certain valuation methodologies are more widely used and may be more generally acceptable as industry practice than others, although this could change over time. This is illustrated in Figure 1, which shows how the various approaches are generally applied to different stages of exploration and mining properties. This, however, is for guidance only, and is not prescriptive. Ultimately, the CV should stipulate the quality and level of confidence in the various inputs, in deciding which approach and method to apply.

Valuation approach	Early stage exploration	Advanced stage exploration	Development properties	Production properties	Dormant properties		Defunct properties
					Economically viable	Economically not viable	
Income	Not generally used	Less widely used	Widely used	Widely used	Widely used	Not generally used	Not generally used
Market	Widely used	Widely used	Less widely used	Quite widely used	Quite widely used	Widely used	Widely used
Cost	Widely used	Widely used	Not generally used	Not generally used	Not generally used	Less widely used	Quite widely used

Figure 1: Relationship between stages of development and valuation approaches for Mineral Assets.

Figure 1 is used for general guidance only. The CV should decide and stipulate, on the basis of the subject property data, which is the most appropriate approach and method. This is especially the case where exploration and development properties are concerned.

The relevant technical and related parameters, including modifying factors, shall be disclosed in the Valuation Report or the appended Technical Report. Technical and related parameters and modifying factors used as inputs to Mineral Asset Valuations include, but are not limited to, Mineral Resources, Mineral Reserves, assumptions, premises, constraints (limitations), mining recovery, mining dilution, mining plans, production schedules, metallurgical test work, metallurgical recovery, process plant design, project engineering, construction schedules, environmental aspects, permitting, socio-economic aspects, political risk, reclamation and rehabilitation, capital costs, operating costs, smelter terms, product marketing and sales contracts, commodity prices, exchange rates, inflation and escalation rates, the cost of capital, and discount rates.

4.5 Use of Mineral Resources and Mineral Reserves

All Exploration Results, Mineral Resources, and Mineral Reserves on a Mineral Property should be considered in the valuation of a Mineral Asset. Depending on the circumstances, the Income Approach, Market Approach, or Cost Approach may be more appropriate for the valuation of a Mineral Property depending on the confidence of the Mineral Resource and Mineral reserve estimates.

For Income Approach methods, it is generally acceptable to use all Proved Mineral Reserves and Probable Mineral Reserves, and to use Measured Mineral Resources and Indicated Mineral Resources in the circumstances described below.

It is generally acceptable to use Mineral Resources in the Income Approach if Mineral Reserves are also present, and if, in general, mined ahead of the Mineral Resources in the same Income Approach model, provided that in the opinion of the CP the Mineral Resources as depicted in the Income Approach model are likely to be economically viable.

Mineral Resources and Mineral Reserves used in the Income Approach shall be estimated or confirmed by a CP and shall be relevant to the Effective Date of the valuation. If they are not, qualifying statements should be made by the CV, as to the date of the Mineral Resources and Mineral Reserves that have been relied upon.

Thus, these Mineral Resources and Mineral Reserves shall be signed off by a CP (or CPs) in accordance with the SAMREC (or other CRIRSCO reporting cCode). Additionally, Mineral Reserves should be based on a Life of Mine Plan for an operating (going concern) mine, or at least a Prefeasibility Study for a mine project.

Where Measured and Indicated Mineral Resources are used in the Income Approach, the technical and related parameters used should be estimated or confirmed by one or more CPs and/or Technical Experts and a qualifying statement should be included in the Valuation Report about the level of confidence of the technical and related parameters relative to the level of accuracy and confidence of a Prefeasibility Study. Technical and related parameters should be current with respect to the Valuation Date.

Where Measured and Indicated Mineral Resources are used in the Income Approach and/or where technical, economic, financial and related parameters are at a lower level of confidence than Prefeasibility Study level, the higher level of risk or uncertainty should be recognized by some means, which might include a higher discount rate, reducing the quantum of the Mineral Resources, or delaying the timing of production of the Mineral Resources in the Income Approach model, or some other appropriate means of reflecting the higher risk of including Mineral Resources.

4.6 Valuation of Inferred Resources, Exploration Properties, and Exploration Targets

While not included in Mineral Reserve estimation, markets attach value to Inferred Resources during the exploration process. Many operations mine Inferred Resources in practice and these needs should be taken into account in the valuation of going concerns as set out in the respective specific scope. There are instances and applications where it is required to conduct a valuation on Inferred Resources, Exploration Properties and/or Exploration Targets. These may be in circumstances such as the following (but not limited to):

- The valuation of exploration assets in terms of IFRS 6;
- The valuation of Exploration Properties for sale or acquisition, or other valuation purposes;
- The valuation of Inferred Resources in the case of a merger or acquisition;
- The valuation of prospecting or mining rights that include Inferred Resources and/or Exploration Targets;
- The justification for future (warranted) expenditure on Exploration Targets and properties;
- A need to upgrade Inferred Resources to higher confidence levels;
- Valuations that are required to justify expenditure to increase the level of confidence in Exploration Targets or Mineral Resources; and
- Valuation for estate considerations, taxation, royalties, litigation *etc.*

These aspects may or may not be published in Public Reports, depending on the nature of the valuation and its purpose.

Furthermore, these aspects may not be reliant on a Mineral Resource statement (in the case of Exploration Targets), particularly where a Market or Cost Approach is applied, as decided by the CV.

Clearly, in such cases, there are material risks associated with the valuation, in terms of the level of accuracy and level of confidence of the estimates, or the approach/method. The CV should therefore qualify any such valuation with the following:

- A clear statement of the level of confidence, and the risks associated with the valuation;
- The reason for the application of the approach and method;
- The reasons why the valuation may or may not be based on a SAMREC-compliant report;
- The application of more than one approach and associated method; and
- The modifying factors that have been applied in the assignment.

It is not considered acceptable to use, in the Income Approach, 'potential resources', 'hypothetical resources', or any other such categories that do not conform to the definitions of Mineral Resources and Mineral Reserves within SAMREC or the CRIRSCO definitions. Where Inferred Resources are being valued, if, in the opinion of the CV, an Income Approach could be applied, the CV should justify the usage, and indicate the risks associated with the valuation.

It is important to recognize that valuations may be conducted on these early stage projects, provided that adequate qualifying statements as to the risks/inaccuracies behind the valuation are fully disclosed.

4.7 Scoping Study

A Scoping Study (also commonly known as a Preliminary Economic Assessment) is defined as a study, other than a Prefeasibility or Feasibility Study, that includes an economic analysis of the potential viability of Mineral Resources. A Scoping Study 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 Prefeasibility Study can be reasonably justified. A Scoping Study should not be used as the basis for estimation of Mineral Reserves.

A Scoping Study might include Measured, Indicated, or Inferred Mineral Resources, or a combination of any of these. However, historical estimates, Exploration Results, Exploration Targets, and Mineralization – anything not defined as a Mineral Resource or Mineral Reserve as defined in the SAMREC Code – shall not be included in a Scoping Study.

The accuracy of input assumptions to a Scoping Study should be recognized as being at a low level of confidence. In such cases, the CV should disclose the risks associated with the low level of accuracy and confidence that is associated with these inputs, and should disclose premises, all assumptions, constraints, limitations, or any other relevant modifying factors and forecasts that have been used in the assessment.

The definition of a Mineral Resource includes the requirement of 'realistic prospects of eventual economic extraction'. This definition requires the application of an appropriate level consideration of potential viability, based on reasonable assumptions and forecasts, resulting in a basic cut-off grade calculation. The CV should be aware of this requirement in quantitative terms, and be able to justify it.

4.8 Highest and Best Use (HABU)

In circumstances where it may be required, the valuation of a Mineral Asset may be based on the Highest and Best Use of the Asset. Under most circumstances, when undertaking a Mineral Asset Valuation it is assumed that extraction (mining) will take place. There may, however, be special circumstances in which other uses may be possible, especially in the case of defunct mines, or agricultural properties over which mining is contemplated. This requires consideration of non-minerals-related uses for the project, if such uses are possible. Consideration should also be given to a change in exploration, development, or operating strategy, or potential for leasing the project, in order to maximize its economic potential.

HABU should be considered by the CV where this is part of the brief from the Commissioning Entity. HABU should also be considered only when the alternate use is:

- Physically possible;
- Appropriately justified;
- Legally permissible;
- Financially feasible; and
- Resulting in the highest value of the property being valued.

In cases where HABU valuations may be undertaken, the CV may need to rely on other experts to fulfil this requirement.

4.9 Dealing with risk in valuations

Valuations of Mineral Assets are inherently risky in terms of the confidence of the inputs and forecasts. The CV should highlight the uncertainties associated with the resources and modifying factors in such a way that an informed layman can have a clear understanding of the risks involved in the valuation. The CV should conduct a risk assessment of the valuation, using appropriate techniques.

4.10 The Behaviour of the CV

4.10.1 Principles

The CV should embrace objectivity and transparency as principles that are fundamental to the preparation of a Mineral Asset Valuation. The CV should endeavour to remain impartial and display sound judgement throughout the process. In order to ensure transparency, the CV should follow an auditable methodology.

4.10.2 Values

These should influence the preparation of the valuation exercise to clearly demonstrate that the valuation is based on validated data and reasonable assumptions in an impartial and balanced manner. The CV should have integrity and always apply a test of the reasonableness of the data, opinions, and assumptions used, since he/she may be required to defend these to his/her professional peers.

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5 APPENDICES

APPENDIX A

Table 1 is a high-level checklist of reporting and assessment criteria and a minimum level of disclosure to be used as a reference by those preparing reports on Mineral Asset Valuations (the Valuation Report'). The checklist is prescriptive and, as always, relevance and materiality are the overriding principles that determine what information should be publicly reported.

The Valuation Report shall consist of technical information and valuation analyses. Where a Competent Person's Report ('CPR'), prepared in compliance with the SAMREC Code (or other Reporting Code), is appended to or supports the Valuation Report, the technical information can be incorporated by reference to the CPR and need only be summarized in the relevant sections of the Valuation Report.

The valuation and reporting of mineral projects and forward-looking mine plans or statements from ongoing operations are expressions of judgment predicated on knowledge and experience. Such valuations and reports are more than arbitrary determinations; they seek to facilitate valuation as a consequence of method. The methods employed should be valid, tested, use accepted definitions of terms and procedures, and be best suited to the valuation of the asset in question.

The Competent Mineral Asset Valuator (CV) is responsible for considering all the criteria listed below and deciding which additional criteria should apply to the study of a particular asset. The relative importance of the criteria will vary from asset to asset and with the legal and economic conditions pertaining at the time of determination.

When information is publicly reported, it shall be sufficient to enable an informed reader to make a reasonable and balanced assessment of the significance of this information. It is, however, important to report any matters that might materially affect a reader's understanding or interpretation of the valuations being reported. This is particularly important if inadequate or uncertain data would affect the reliability of, or confidence in, a valuation statement.

TABLE 1: MINERAL ASSET VALUATION: REPORTING AND ASSESSMENT CRITERIA

Criteria	Comments
T1.0 General	<p>The Valuation Report shall contain:</p> <p>The signature of the CV;</p> <p>The CV's qualifications and experience in valuing mineral properties, or relevant valuation experience;</p> <p>A statement that all facts presented in the report are correct to the best of the CV's knowledge;</p> <p>A statement that the analyses and conclusions are limited only by the reported forecasts and conditions;</p> <p>A statement of the CV's present or prospective interest in the subject property or asset;</p> <p>A statement that the CV's compensation, employment, or contractual relationship with the Commissioning Entity is not contingent on any aspect of the Report;</p> <p>A statement that the CV has no bias with respect to the assets that are the subject of the Report, or to the parties involved with the assignment;</p> <p>A statement that the CV has (or has not) made a personal inspection of the property; and</p> <p>A record of the CP's and experts who have contributed to the valuation. Written consent to use and rely on such Reports shall be obtained.</p> <p>Significant contributions made by such experts shall be highlighted individually.</p>
T1.1 Illustrations	<p>There are numerous instances (especially in the non-listed environment) when a valuation is not accompanied by the CPR on which it is based. In these cases, especially, diagrams/illustrations are required and shall be in the required format.</p> <p>Diagrams, maps, plans, sections, and illustrations shall be legible and prepared at an appropriate scale to distinguish important features. Maps shall be dated and include a legend, author or information source, coordinate system and datum, a scale in bar or grid form, and an arrow indicating north. 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, shall be included.</p>
T1.2 Synopsis	<p>Provide the salient features of the report – a brief description of the terms of reference, scope of work, the Valuation Date, the mineral property; its location, ownership, geology, and mineralization; history of exploration and production, current status, Exploration Targets, mineralization and/or production forecast, Mineral Resources and Mineral Reserves, production facilities (if any); environmental, social, legal, and permitting considerations; valuation approaches and methods, valuation, and conclusions.</p>
T1.3 Introduction and Scope	<p>Introduction and scope, specifying commissioning instructions including reference to the valuation, engagement letter, date, purpose and intended use of the valuation. The CV shall fully disclose any interests in the Mineral Asset or Commissioning Entity.</p> <p>Any restrictions on scope and special instructions followed by the CV, and how these affect the reliability of the valuation, shall be disclosed.</p>
T1.4 Compliance	<p>A statement that the report complies with SAMVAL shall be included.</p> <p>Any variations shall be described and discussed.</p>
T1.5 Identity, Tenure and Infrastructure	<p>The identity, tenure, associated infrastructure and locations of the property interests, rights or securities to be valued (<i>i.e.</i> the physical, legal, and economic characteristics of the property) shall be disclosed.</p>
T1.6	<p>History of activities, results, and operations to date shall be included.</p>

History	
T1.7 Geological Setting	Geological setting, models, and mineralization shall be described.
T1.8 Exploration Results and Exploration Targets	Exploration programmes, their location, results, interpretation, and significance shall be described. Exploration Targets shall be discussed.
T1.9 Mineral Resources and Mineral Reserves	Mineral Resource and Mineral Reserve statements shall be provided. They shall be signed off by a Competent Person in compliance with the SAMREC Code or another CRIRSCO code. The CV shall set out the manner in which he has satisfied himself that he can rely upon the information in the CPR.
T1.10 Modifying Factors and Key Assumptions	A statement of Modifying Factors shall be included, separately summarizing material issues relating to each applicable Modifying Factor. The CV shall set out the manner in which he has satisfied himself that he can rely upon the technical information provided. (NOTE: All the Modifying Factors shall be listed, or references provided to relevant definitions). This shall include an explanation of all material assumptions and limiting factors.
T1.11 Previous Valuations	The valuation shall refer to all available and relevant previous valuations of the Mineral Asset that have been performed in at least the previous two years, and explain any material differences between these and the present valuation.
T1.12 Valuation Approaches and Methods	The valuation approaches and methods used in the valuation shall be described and justified in full.
T1.13 Valuation Date	A statement detailing the Report Date and the Valuation Date, as defined in this Code, and whether any material changes have occurred between the Valuation Date and the Report Date.
T1.14 Valuation Results	For the Income Approach, the valuation cash flow shall be disclosed. For the Market Approach, the market comparable information shall be disclosed. For the Cost Approach, the relevant and applicable cost shall be disclosed.
T1.15 Valuation Summary and Conclusions	A summary of the valuation details, consolidated into single material line items, shall be provided. The Mineral Asset Valuation shall specify the key risks and forecasts used in the valuation. A cautionary statement concerning all forward-looking or forecast statements shall be included. The valuation's conclusions, illustrating a range of values, the best estimate value for each valuation, and whether the conclusions are qualified or subject to any restrictions imposed on the CV, shall be included.
T1.16 Identifiable Component Asset (ICA) Values	In some valuations, the valuation shall be broken down into Identifiable Component Asset Values (an ICA valuation) equalling the Mineral Asset Value. This could be, for example, due to the requirements of other valuation rules and legislative practices including taxation (<i>i.e.</i> fixed property, plant, and equipment relative to Mineral Asset Value allocations such as in recoupment or capital gains tax calculations or where a commissioned Mineral Asset Valuation specifies a need for a breakdown of the Mineral Asset Valuation). In such cases, the separate allocations of value shall be made by taking account of the value of every separately identifiable component asset. Allocation of value to only some, and not all, identifiable component assets is not allowed. This requires a specialist appraisal of each identifiable component asset of property, plant and equipment, with the 'remaining' value of the Mineral Asset being attributed to the Mineral Resources and Reserves. Such

	valuations shall be performed by suitably qualified experts, who may include the CV. If the Mineral Asset Valuation includes an ICA Valuation, the CV shall satisfy himself or herself that the ICA Valuation is reasonable before signing off the Mineral Asset Valuation.
T1.17 Historic Verification	A historic verification of the performance parameters on which the Mineral Asset Valuation is based shall be presented.
T1.18 Market Assessment	A comprehensive market assessment should be presented.
T1.19 Sources of Information	<p>The sources of all material information and data used in the report shall be disclosed, as well as references to any published or unpublished technical papers used in the valuation, subject to confidentiality.</p> <p>A reference shall be made to any other report that has been compiled, for the purpose of providing information for the valuation, including SAMREC-compliant reports and any other contributions or reports from experts.</p>

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APPENDIX B

SPECIFIC COMPETENCIES: THE COMPETENT MINERAL ASSET VALUATOR (CV)

The CV shall be able to demonstrate specific competencies, namely to:

- Apply the Principles, Standards and Requirements of Mineral Asset Valuation (*i.e.* Materiality, Competence, Transparency and Reasonableness) as described in the SAMVAL Code);
- Identify the Mineral Assets being valued in terms of the valuation scope and purpose, in order to generate a value;
- Determine the Market Value of the Mineral Asset in terms of the definitions in Appendix C;
- Interpret, apply, and incorporate the IFRS hierarchy of Fair Value Inputs in the Mineral Asset Valuation;
- Appreciate that there is a value to be determined from the underlying Mineral Assets and the associated quantification of the future benefits and costs, or that there is a price determined by argument, debate, and negotiation. These differences are expressed as value and price respectively, and the CV shall be able to differentiate between these two;
- Select and apply appropriate valuation approaches and methods, as a matter of professional judgement, for the Mineral Asset concerned, and justify that the approach is reasonable;
- Justify the selection of appropriate Mineral Asset Valuation approaches and methodologies to their peers, and understand the implications of their conclusions;
- Understand, appraise and analyse Modifying Factors;
- Ensure that Technical Experts/Specialists are engaged where necessary, to prepare and be responsible for their appropriate inputs to the Report, and that their Reports can be relied upon; and
- Practice across international boundaries, and in such cases be familiar with local jurisdiction and international best practices (if relevant).

Occupational Tasks: the Competent Mineral Asset Valuator

The **Competent Mineral Asset Valuator (CV)** performs one or more the following **occupational tasks**:

- Valuation of Mineral Assets;
- Valuation of Mineral Assets and Mineral Asset interests/considerations used for litigation/disputes/expert witness testimony (*e.g.* disputes, estates, private sales *etc.*);
- Valuation of Minerals Assets for purposes of State;
- Compile and/or sign off Mineral Asset Valuation Reports; and
- Perform valuations inclusive of Mineral Asset Valuations for internal use inclusive of corporate valuations, consolidations, projects, feasibilities *etc.*

APPENDIX C**GLOSSARY OF TERMS**

The SAMVAL Working Group Committee conducted extensive literature research to establish generally global industry accepted terms and definitions for conducting valuations, and specifically mineral asset valuations. The Working Group, predominantly, extracted the pertinent terms from the following sources:

Relevant area	Details
Resource codes	SAMREC, JORC, NI43-101, CRIRSCO
Valuation codes	VALMIN, CIMVAL, SAMVAL
Listing rules	LSE/AIM, TSX, ASX, JSE, NYSE, HKSE
International standards	IFRS, GAAP, GAVP, IVS, IVS-GN14, IVSC Guidelines, IPEVC Guidelines
International bodies	CESR/ESMA, IASB, IVSC, American Society of Appraisers, American Institute of Certified Public Accountants, Australian Standard for Valuing Commercial Forests, Royal Institute of Chartered Surveyors, SA Institute of Valuers
SA statutory bodies	ECSA, SACNASP, PLATO
Other	Mineral Economics Group, Wikipedia, Oxford Dictionary

The terms set out below shall, unless the context otherwise indicates, apply in relation to this Code. This list is not exhaustive and a more comprehensive list of terms and definitions can be found on the SAMREC/SAMVAL Committee (SSC) website.

Terms	Description
PRINCIPLES and GUIDANCE	
Competency (principle)	<p>Competence and Competent apply to a suitably qualified skilled and experienced person who is a member of a Statutory Body, Professional Body, or RPO with an enforceable Code of Conduct (Ethics) and a Disciplinary Code that includes the ability to discipline and expel a member.</p> <p>In the context of Mineral Asset Valuation, competence for a Valuer also requires <i>'appropriate technical skills, experience and knowledge of the subject of the valuation, the market in which (the Mineral Asset) trades and the purpose of the valuation'</i> (IVS Framework 4).</p>
Impartiality	<p>Whether Independence is required to be demonstrated or not, the Valuator should always ensure that his/her judgement is impartial, and not biased by any pressure from the commissioning entity, or from any other source (IMVAL GN14 4.2(e), 2013).</p> <p><i>The author of the Public Report should be satisfied that his work has not been unduly influenced by the organization, company, or person commissioning a report or any report that may be deemed a Public Report, that all assumptions are documented, and that adequate disclosure is made of all material aspects that the informed reader may require to make a reasonable and balanced judgement thereof.</i></p>
Independence	<p>'Independence' or 'Independent' means that other than professional fees and disbursements received or to be received in connection with the valuation concerned, the Valuer or Expert has no pecuniary or beneficial (present or contingent) interest in any of the property or interest being valued, nor has any association with the entity commissioning the valuation nor any holder(s) of any interests in any subject property that is likely to create an apprehension of bias [IVS EITP Note 4.6, 2013].</p>
Materiality (principle)	<p>'Materiality' and 'Material' pertain to information that, if omitted, could affect the judgement of the reader as to the validity of the estimate, opinion, or data being reported by the Valuer.</p> <p>A Public Report contains all the relevant information that investors, their professional advisors and/or the Commissioning Entity would reasonably require, and expect to find, for the purpose of making a reasoned and balanced judgement regarding the Mineral Asset Valuation.</p>
Objectivity	<p>Not to allow conflict of interest, or undue influence or bias to override professional or business judgement [IMVAL GN14 4.2(b), 2013]</p>
Reasonableness (principle)	<p>Reasonableness means that other appropriately qualified and experienced CVs with access to the same information, would estimate the value of the Mineral Asset at a similar order of magnitude for the same Valuation Date and Basis of Value.</p> <p>A reasonableness test serves to identify valuations that may be out of step with industry standards. Where a determination turns on reasonableness, the test is an objective, rather than a subjective one, in that it turns on what a Competent Valuer acting reasonably would conclude in the circumstances [IVS EITP Note 4.15].</p> <p><i>Reasonableness, in reference to the Valuation of a Mineral Property, means that other appropriately qualified and experienced valuers with access to the same information would value the property at approximately the same range (IMVAL GN14 3.3.30, 2013).</i></p>
Transparency (principle)	<p>The reader of a Public Report/Mineral Asset Valuation shall be provided with sufficient information, the presentation of which is clear and unambiguous, to understand the report and not be misled.</p>
VALUE TYPES	
Fair Value	<p>For the purposes of financial reporting, Fair Value is <i>'The estimated price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between knowledgeable and willing parties at the measurement date (an exit price) [IFRS], other than in a liquidation sale'</i> (US GAAP, FAS 157). (IFRS definition).</p> <p>For valuations that are not applicable to financial reporting, fair value is <i>'the estimated price for the transfer of an asset or liability between identified knowledgeable and willing parties that reflect the respective interests of those parties'</i> (IVS Definitions and Framework 38).</p>
Intrinsic Value	<p>The amount considered, on the basis of an evaluation of available facts, to be the 'true', 'real', or underlying' worth of an item. Thus it is a long-term, non-market value concept that smooths out short-term price fluctuations. In the case of real estate, this would be the value of the property taking into account the structure, size, location, etc. as opposed to taking into account the current state of the market.</p> <p>In mining, the intrinsic value refers to the fundamental value based on the technical inputs, and a cash flow projection that creates a net present value (NPV). Few of these inputs are market-related, except possibly for metal price, benchmarked costs, and the discount rate applied (GN5).</p>

Investment Value	<i>'The value of an asset to the owner or a prospective owner for individual investment or operational objectives' (IVS Definition and Framework 36).</i>
Market Value	<i>'The estimated amount for which an asset or liability should exchange on the valuation date between a willing buyer and a willing seller in an arm's length transaction after proper marketing wherein the parties had each acted knowledgeably, prudently, and without compulsion' (IVSC, IFRS).</i>
Special Value	<i>'An amount that reflects particular attributes of an asset that are only of value to a Special Purchaser' (IVS Definitions and Framework 43).</i>
Synergistic Value	<i>'An additional element of value created by the combination of two or more assets or interest where the combined value is more than the sum of the separate values' (IVS Definitions and Framework 47).</i>
STUDY TYPES	
Feasibility Study	A comprehensive design and costing study of the selected option for the development of a mineral project in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational, and all other modifying factors that are considered in sufficient detail to demonstrate, at the time of reporting, that extraction is reasonably justified (economically mineable) and the factors reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The overall confidence of the study should be stated.
Prefeasibility Study	A comprehensive study of the viability of a range of options for a mineral project that has advanced to a stage at which the preferred mining method in the case of underground mining, or the pit configuration in the case of an open pit, has been established and an effective method of mineral processing has been determined. It includes a financial analysis based on realistic assumptions of technical, engineering, operating, and economic factors and the evaluation of other relevant factors that are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as a Mineral Reserve. The overall confidence of the study should be stated. A Prefeasibility Study is at a lower confidence level than a Feasibility Study.
Scoping Study	<p>A Scoping Study (also commonly known as a Preliminary Economic Assessment) 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, whether or not the project is potentially viable and if it can be reasonably justified to recommend proceeding to a Prefeasibility Study.</p> <p>The accuracy of a Scoping Study is likely to be low due to high-level assumptions based on industry benchmarks, vendor productivity information, and the experience of the CP.</p> <p>If Inferred Mineral Resources are used, then this should be disclosed in terms of Clause 25 of the SAMREC Code and the entity shall include a cautionary statement such as:</p> <p><i>'The Scoping Study referred to in this report is based on low-level technical and economic assessments. It is preliminary in nature, and includes Inferred Mineral Resources which are insufficient to provide certainty that the conclusions of the Scoping Study will be realized.'</i></p> <p>Historical estimates, Exploration Results, Exploration Targets, and mineralization may not be included in a Scoping Study.</p> <p>While initial mining and metallurgical cases may have been developed during a Scoping Study, a Scoping Study may not be used as the basis for the estimation of Mineral Reserves.</p>
PROPERTY TYPES / STAGES OF DEVELOPMENT	
Advanced-stage exploration property	<p>'Advanced' means tenure holdings where considerable exploration has been undertaken and specific targets have been identified that warrant further detailed evaluation, usually by drill testing, trenching, or some other form of detailed geological sampling.</p> <p>A Mineral Resource estimate has been defined and a Scoping Study has been applied to determine whether there are reasonable prospects for eventual economic extraction.</p>
Defunct property	A Mineral Asset on which the Mineral Resources and Mineral Reserves have been exhausted and exploitation has ceased, and that may or may not have residual assets and liabilities.
Development property	A Mineral Asset that is being prepared for mineral production and for which economic viability has been demonstrated by a Feasibility Study or Prefeasibility Study and includes a Mineral Asset which may not be financed or is under construction.
Dormant property	A Mineral Asset that is not being actively explored or exploited, in which the Mineral Resources and Mineral Reserves have not been exhausted, and that may or may not be economically viable.

Early stage exploration property	Early stage means tenure holdings where mineralization may or may not have been identified, and where Mineral Resources have not been defined.
Exploration Target	<p>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 tons and a range of grade or quality, relates to mineralisation for which there has been insufficient exploration to estimate Mineral Resources.</p> <p>An 'Exploration Target' is a concept of mineralization with respect to type, quantity and quality, which would be of interest to an exploration or mining company. There shall be a likelihood that this exploration target occurs in an area of geological prospectivity for that commodity and mineralization type. An Exploration Target need not represent any discovered mineralization, nor does it imply reasonable and realistic prospects for possible economic extraction. Any such information relating to an Exploration Target shall, however, be expressed so that it cannot be misrepresented or misconstrued as an estimate of a Mineral Resource or Mineral Reserve.</p>
Exploration Property	A Mineral Asset that is being actively explored for mineral resources. Exploration Properties have asset values derived from their potential for the discovery of mineral deposits. Exploration Property interests are bought and sold in the market. Many of these transactions involve partial-interest arrangements, such as farm-in, option or joint-venture arrangements.
Mineral Asset(s)	Any contractual or permanent right to explore for, or mine (or both) or otherwise extract minerals (including petroleum) from the Earth, that has been granted or an entity holding such property or the securities of such an entity, including but not limited to, all corporeal and incorporeal property, mineral rights, mining titles, mining leases, intellectual property, personal property (including plant equipment and infrastructure), mining and exploration tenure and titles or any other right held or acquired in connection with the finding and removing of minerals located in, on or near the earth's crust. Mineral Assets can be classified as Dormant Properties, Exploration Properties, Development Properties, Production Properties or Defunct Properties.
Personal property	Real property includes all the rights, interests, and benefits related to the ownership of real estate. An interest or interests in real property is normally demonstrated by some evidence of ownership (e.g., a title deed) separate from the physical real estate. Real property is a non-physical concept.
Production property	A Mineral Asset that is in production. Tenure holdings, particularly mines, well-fields, and directly connected processing plants that have been commissioned and are in production.
Real estate	Land and all things that are a natural part of the land (for example trees and minerals), things that have been attached to the land, (for example, buildings and site improvements), all permanent building attachments, (for example mechanical and electrical plant providing services to a building), that are both below and above the ground (as defined in the IVSC Glossary).
Real property	Real property includes all the rights, interests, and benefits related to the ownership of real estate (as defined in the IVSC Glossary).
VALUATION APPROACHES	
Cost Approach	<p>The Cost Approach relies on historical and/or future amounts spent on the Mineral Asset.</p> <p><i>'Provides an indication of value using the economic principle that a buyer will pay no more for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction'</i> (IVS Definitions), and includes methods based on expenditures.</p>
Income Approach	<p>The Cash Flow Approach relies on the 'value-in-use' principle and requires determination of the present value of future cash flows over the useful life of the Mineral Asset.</p> <p><i>'Provides an indication of value by converting future cash flows to a single current capital value'</i> (IVS Definitions). For estimation of Market Value, the present value capitalization shall be generated using a discount rate derived from market conditions.</p>
Market Approach	<p>The Market Approach relies on the principle of 'willing buyer, willing seller' and requires that the amount obtainable from the sale of the Mineral Asset is determined as if in an arm's-length transaction.</p> <p><i>'Provides an indication of value by comparing the subject property with identical or similar properties for which the price information is available'</i> (IVS Definitions). The Market Approach is also known as the sale comparison approach.</p>
Valuation Approach	A grouping of valuation methods for which there is a common underlying rationale or basis (refer to Figure 1).
Valuation method	A particular or systematic procedure used to estimate value.
TECHNICAL EXPERTS and PROFESSIONAL ORGANIZATIONS / INSTITUTES	

Competent Person	A 'Competent Person' is a person who is registered with SACNASP, ECSA or SAGC, or is a Member or Fellow of the SAIMM, the GSSA, IMSSA, or a Recognized Professional Organization (RPO). These organizations have enforceable disciplinary processes, including the powers to suspend or expel a member. A complete list of recognized organizations will be promulgated by the SSC from time to time. The Competent Person shall comply with the provisions of the relevant promulgated Acts.
Competent Valuator	A Competent Valuator is a person who is registered with ECSA, SACNASP, or PLATO, or is a Member or Fellow of the SAIMM, the GSSA, SAICA, or a Recognized Professional Organization (RPO) or other organizations recognised by the SSC on behalf of the JSE Limited. A Competent Valuator is a person who possesses the necessary qualifications, ability, and relevant experience in valuing mineral assets. A person called upon to sign as a Competent Valuator shall be clearly satisfied in their own mind that they are able to face their peers and demonstrate competence in the valuation undertaken.
External Valuator/Valuer	A Valuator/Valuer who is not employed by the owner or manager of an asset.
RPO	A Recognized Professional Organization. A RPO shall: <ul style="list-style-type: none"> • Be a self-regulatory organization covering professionals in mining or exploration or both; • Admit members primarily on the basis of their academic qualifications and experience; • Require compliance with the professional standards of competence and ethics established by the organization; • Have disciplinary powers, including the power to suspend or expel a member; and • Have been accepted by SSC Committee as a RPO on behalf of the JSE Limited
Technical Expert	A person who may be retained by the Valuer to review technical information, prepare sections of Valuation Reports, or provide Inputs concerning specialized matters about which the Valuer is not personally competent. The Expert shall have sufficient training and experience relevant to the subject matter for which he or she is being retained to review or provide Inputs.
TECHNICAL TERMS and OTHER	
Appraisal	See valuation.
Asset	An Asset is a resource (not a Mineral Resource) controlled by the entity as a result of past events and from which future economic benefits are expected to flow to the entity (as defined by the International Accounting Standards Board).
Basis of value	'A statement of the fundamental measurement assumptions of a valuation' (IVS Definitions). Basis of value commonly refers to Market Value but can also refer to other bases of value such as Fair Value, Market Value, Investment Value, Special Value, or Synergistic Value.
Commissioning Entity	The organization, company, or person commissioning a Mineral Asset Valuation.
Effective Date	The day, month, and year at which the Market Value is deemed valid.
Evaluation	A broad physical, technical, legal, economic and other assessment, generally sought for an investment decision. Evaluations include Feasibility Studies, Prefeasibility Studies, and Scoping Studies.
Expert	A person who may be retained by the CV to review technical information, prepare sections of Valuation Reports, or provide inputs concerning specialized matters about which the CV is not personally competent. The Expert shall have sufficient training and experience relevant to the subject matters for which he or she is being retained to review or provide inputs.
Extractive industries	Entities and individuals involved in exploration, and the extraction, associated processing, and marketing of natural resources located on, in or near the Earth's crust. This applies to the point of first possible sale of any particular commodity and excludes properties and activities that are downstream from a refinery or processing plant. They are composed of the minerals Industry and the petroleum industry. They do not include the industry sector focused on extraction of water from the Earth, but they do include extractions of geothermal fluids for energy content.
Financial Reporting Standards	South African statements of generally accepted accounting practice as defined in the Companies Act.
Generally Accepted Valuation Standards	The International Valuation Standards Committee's (IVSC) Concepts Fundamental to Generally Accepted Valuation Principles set forth terms and concepts that are fundamental to all valuations. The purpose of Guidance Note No.1 (GN 1) is to amplify those fundamentals so they may be better understood in valuations of real property.
Going concern	The entity is normally viewed as a going concern, that is, as continuing in operation for the foreseeable future. It is assumed that the entity has neither the intention nor the necessity of liquidation or of

	curtailing materially the scale of its operations (IVS Glossary).
Highest and Best Use (HABU)	The use of an asset that maximizes its Investment Value and that is physically possible, legally permissible, and financially feasible (as defined by the IVSC Glossary).
Inputs	Inputs means all information used in the Valuation.
Internal Valuator/Valuer	A CV who is employed by the company, or has an interest in it, and who is then not fully independent.
License, permit, lease, right, or other similar entitlement	Any form of licence, permit, lease or other entitlement granted by the relevant Government in accordance with its mining legislation that confers on the holder certain rights to explore for or extract minerals (or both) that might be contained in the designated area. Alternatively, any form of title that may prove ownership/tenure of the minerals.
Life of Mine Plan	A design and costing study of an existing mining operation in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational, and all other modifying factors that are considered in sufficient detail to demonstrate at the time of reporting that extraction is reasonably justifiable. The level of study should be equivalent to a Prefeasibility Study.
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.
Mineable	Those parts of the orebody, both economic and uneconomic, that are extracted during the normal course of mining.
Mine design	A framework of mining components and processes taking into account such aspects as mining methods used, access to the orebody, personnel and material handling, ventilation, water, power, and other technical requirements, such that mine planning can be undertaken.
Mine planning	Production planning, scheduling and economic studies, within the mine design, can be undertaken, taking into account geological structures and mineralization, associated infrastructure and constraints, and other relevant aspects.
Mineral deposit	A mass of naturally occurring mineral material, usually of economic interest, without regard to mode of origin. No commercial value is implied.
Mineral occurrence	Any economic mineral in any concentration found in bedrock or as float; especially a valuable (or potentially valuable) mineral in sufficient concentration to suggest further exploration.
Mineralization	Mineralization is defined as a concentration (or occurrence) of material of possible economic interest, in or on the Earth's crust, for which quantity and quality cannot be estimated with sufficient confidence to be defined as a Mineral Resource.
Mineral Asset Valuation	The valuation of a Mineral Asset that has been completed by a Competent Mineral Asset Valuator.
Mineral Reserve	The economically mineable material derived from a Measured or Indicated Mineral Resource, or both. It includes diluting materials and allows for losses that are expected to occur when the material is mined. Appropriate assessments to a minimum of a Prefeasibility Study for a project, or a Life of Mine Plan for an operation, shall have been carried out, including consideration of, and modification by, realistically assumed mining, metallurgical, economic, marketing, legal environmental, social, and governmental factors. Where the term 'Ore Reserve' is used, this is synonymous with the term 'Mineral Reserve'.
Mineral Resource	A concentration or occurrence of material of economic interest in or on the Earth's crust in such form, quality, and quantity that there are reasonable and realistic prospects for eventual economic extraction. The location, quantity, grade, continuity, and other geological characteristics of a Mineral Resource are known, or estimated from specific geological evidence, sampling, and knowledge interpreted from an appropriately constrained and portrayed geological model. Mineral Resources are subdivided, and shall be so reported, in order of increasing confidence in respect of geoscientific evidence, into Inferred, Indicated, and Measured categories.
Modifying Factor	Modifying Factors include, but may not be limited to, premises, assumptions, restrictions (limitations), mining, metallurgical, economic, marketing, legal, environmental, social, and governmental considerations. They are applied when converting Mineral Resources to Mineral Reserves.
Petroleum	Petroleum is defined as a naturally occurring mixture consisting of hydrocarbons in the gaseous, liquid, or solid phase. Petroleum may also contain non-hydrocarbon compounds, common examples of which are carbon dioxide, nitrogen, hydrogen sulphide, and sulphur. In rare cases, non-hydrocarbon content could be greater than 50% as defined in the Petroleum Resources Management System (PRMS, available from the Society of Petroleum Engineers: http://www.spe.org/industry/).

Petroleum industry	Entities involved in exploration for, and the mining, processing and marketing of petroleum. This excludes assets and activities that are downstream from a refinery or processing plants.
Petroleum Resources and Petroleum Reserves	While petroleum is broadly included with minerals, definitions and classification of Petroleum Resources and Petroleum Reserves are published in the Petroleum Resources Management System (PRMS), 2007 edition, as amended from time to time. Guidelines for application of the PRMS were published in 2011.
Public Report	In the context of Mineral Asset Valuation, Public Reports are all those reports prepared for the purpose of informing investors or potential investors and their advisers on Mineral Asset Valuations They include, but are not limited to, companies' annual and quarterly company reports, press releases, information memoranda, technical papers, website postings, and public presentations. These Public Reports may be in printed or electronic media (including social media) and will include JSE circulars, reports as required by the Companies Act, reports for other regulatory authorities or as required by law.
Public Reporting	Public Reporting refers to any documentation which may find its way into the public domain. It does not refer only to reporting or documentation by companies listed on a securities exchange, but also includes documents compiled by/for private companies or individuals. While every effort has been made within the Code to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists as to the appropriate form of disclosure. On such occasions, users of the Code and those compiling reports to comply with the Code should be guided by its intent, which is to provide a minimum standard for Public Reporting and the guidelines of materiality, transparency, and competence, and to ensure that such reporting contains all information which stakeholders, interested parties, investors, and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making of a reasoned and balanced judgment regarding the Exploration Results, Mineral Resources, or Mineral Reserves being reported.
Royalty or royalty interest	The amount of value accruing to the benefit of the royalty owner from the royalty share of production, in money or product, free of production costs. Royalty excludes marketing costs.
SAMOG Code	The South African Code for the Reporting of Oil and Gas Resources. The SAMOG Code provides the basis for minimum disclosure of information for public reporting of oil and gas reserves and resources.
SAMREC Code	The South African Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves.
Solid minerals	Any substance occurring naturally in or on the Earth, in or under water, or in tailings or dumps and having been formed by or subjected to a geological process. Solid minerals include sand, stone, rock, gravel, clay, soil, and any mineral occurring in stockpiles or in residue deposits but exclude water, oil, and gas.
Special Assumption	<i>'An assumption that either assumes facts that differ from the actual facts existing at the Valuation Date or that would not be made by a typical market participant in a transaction on the Valuation Date'</i> (IVS Definitions and Framework 50-51)
SSC Committee	The SAMREC/SAMVAL Committee.
The Companies Act	The Companies Act No 71 of the Republic of South Africa of 2008, as amended, or any law that may wholly or in part replace it from time to time.
Valuation	Valuation is the estimation of the value of a Mineral Asset in money or monetary equivalent. <i>The word 'valuation' can be used to refer to the estimated value (the valuation conclusion) or to refer to the preparation of the estimated Value (the act of valuing)</i> (IVS Framework 9). The word 'valuation' is synonymous with the word 'appraisal' as used in certain jurisdictions, including the USA. In contrast, the word 'appraisal' is used in Australia for the broader activity of evaluation, including the preparation of Resource and Reserve estimates.
Valuation Date	<i>"The date on which the opinion of value (or valuation) applies"</i> (IVS Definitions), as distinguished from the 'Report Date'.
Valuation Report	A document that reports the results of the valuation of a Mineral Asset(s) that adheres to the fundamental principles and guiding principles as required, contains the required information, and conforms to the relevant national code or standards and relevant legal and regulatory requirements. A Valuation Report may be a Public Report
RISK	
Uncertainty	Uncertainty is a measure of our inability to assign a single value to a possible event and defined as the

	variability of possible outcomes (<i>e.g.</i> , gains or losses) around their mean (expected) value. The quantification of uncertainty is the difference between the true value of a natural outcome and an estimate of its value. Bias occurs when values are systematically over- or underestimated.
Risk	Risk is a state of uncertainty where some possible outcomes have an undesired effect or cause significant loss. The probability of something happening multiplied by the resulting cost or benefit is the 'Risk Factor' and is used to compare levels of risk. In the context of valuation, the term 'risk' refers to the probability of a project delivering an undesirable financial outcome.

APPENDIX D

LIST OF ABBREVIATIONS USED IN THIS CODE

- * *AIMA – Alternative Investment Management Association*
- * *ASX – Australian Stock Exchange*
- * *CESR/ESMA – Committee of European Securities Regulators*
- * *CIMVAL – Standards and Guidelines for the Valuation of Mineral Properties: Special Committee of the Canadian Institute of Mining and Metallurgy and Petroleum on Valuation of Mineral Properties*
- * *CRIRSCO - Committee for Mineral Reserves International Reporting Standards*
- * *ESMA – European Securities and Markets Authority*
- * *GAAP – Generally Accepted Accounting Principles*
- * *GAVP – Generally Accepted Valuation Principles*
- * *HKSE – Hong Kong Stock Exchange*
- * *IASB – International Accounting Standards Board*
- * *IFRS – International Financial Reporting Standards*
- * *IMVAL – International Mineral Valuation Committee*
- * *IPEVC Guidelines – International Private Equity and Venture Capital (Valuation Guidelines)*
- * *IPEVC – International Private Equity and Venture Capital (Valuation Guidelines)*
- * *IVS – International Valuations Standards*
- * *IVSC – International Valuation Standards Committee*
- * *IVSC Guidelines – International Valuation Standards Committee Guidelines*
- * *IVS-GN14 – International Valuation Standards Guidance note 14*
- * *JORC – Australasian Code for Reporting Mineral Resources and Ore Reserves*
- * *JSE – Johannesburg Stock Exchange*
- * *LSE/AIM – London Stock Exchange/Alternative Investment Market*
- * *MICA – Mineral Industry Consultants Association*
- * *NYSE – New York Stock Exchange*
- * *RICS – Royal Institution of Chartered Surveyors*
- * *SACNASP – South African Council for Natural Scientific Professions*
- * *TSX – Toronto Stock Exchange*
- * *VALMIN – Technical Assessment and Valuation of Mineral Assets and Securities for Independent Expert Reports*