Mineral Asset Valuation Codes: Towards an International Standard

By

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Abstract

To facilitate an efficient process of asset price determination in minerals industry markets, participants require materially complete, accurate, and timely disclosure of information. The standardization of reporting related to mineral assets evolved out of a recognition of the need for such information. However, development of an international mineral asset valuation code has lagged behind similar efforts for technical reporting of reserves and resources.

A review of existing national mineral asset valuation codes in Australia, Canada, and South Africa indicated broad compatibility of these codes with respect to developing an international standard. The existing national codes provide a firm foundation on which to base a harmonized global standard, including valuation principles, common definitions, and code structure. While a previously existent standard, Guidance Note 14, developed by the International Valuation Standards Committee (IVSC) was withdrawn in 2010, the emergence of the International Mineral Valuation (IMVAL) Committee and a new IVSC Extractive Industries Expert Group in 2012, suggests new hope for a global standard.

A series of interviews were conducted in order to assess the viability of developing an international mineral asset valuation code, and to determine the current state of valuation reporting standards. Interviewees included market regulators, valuation professionals, representatives of minerals professional organizations, and other individuals identified as key persons in the development of mineral asset valuation codes. These interviews in combination with a review of existing valuation reporting codes and practices indicated that the industry would be best placed to adopt the International Valuation Standards (IVS) and develop an Extractives Industry Standard as well as an Extractives Industry Technical Paper to be incorporated into a subsequent edition of the IVS.

An analysis of the business case for an international mineral asset valuation code indicated the urgency of developing such a code. The severe access to capital constraints faced by the industry in 2013, in
combination with generally declining market conditions indicate a need to attract alternative forms of financing which would be better facilitated through improved reporting. The expansion of the market for valuation services and reduced regulatory compliance costs were also identified as key benefits.
Acknowledgements

I would like thank my supervisor, Professor Jeffrey Davidson for his patience and support in the evolution of my thesis. I would also like to thank the various interviewees who took time out of their busy schedules in order to assist me in my research efforts, and the Canadian Institute of Mining Metallurgy and Petroleum (CIM) who kindly provided me with papers and conference proceedings at no cost. Lastly, I would like to thank my friends and family for their continued support and encouragement.
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<td>AIMA</td>
<td>American Institute of Mineral Appraisers</td>
</tr>
<tr>
<td>AusIMM</td>
<td>Australasian Institute of Mining and Metallurgy</td>
</tr>
<tr>
<td>ASX</td>
<td>Australian Securities Exchange</td>
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<tr>
<td>CIM</td>
<td>Canadian Institute for Mining Metallurgy and Petroleum</td>
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<td>CIMVal Committee</td>
<td>Special Committee of the Canadian Institute of Mining Metallurgy and Petroleum on Valuation of Mineral Properties</td>
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<td>CIMVal Standards</td>
<td>CIMVal Committee Standards and Guidelines for Valuation of Mineral Properties</td>
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<tr>
<td>CRISCO</td>
<td>Committee for Mineral Reserves International Reporting Standards</td>
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<tr>
<td>HKSE</td>
<td>Hong Kong Stock Exchange</td>
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<tr>
<td>IASB</td>
<td>International Accounting Standards Board</td>
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<tr>
<td>IFRS</td>
<td>International Financial Reporting Standards</td>
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<tr>
<td>IMVAL Committee</td>
<td>International Mineral Valuation Committee</td>
</tr>
<tr>
<td>IVS</td>
<td>International Valuation Standards</td>
</tr>
<tr>
<td>IVSC</td>
<td>International Valuation Standards Council</td>
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<tr>
<td>JORC</td>
<td>Joint Ore Reporting Code</td>
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<tr>
<td>JSE</td>
<td>Johannesburg Securities Exchange</td>
</tr>
<tr>
<td>MAVC</td>
<td>Mineral Asset Valuation Code</td>
</tr>
<tr>
<td>MICA</td>
<td>Minerals Industry Consultants Association</td>
</tr>
<tr>
<td>MSTF</td>
<td>Mining Standards Task Force</td>
</tr>
<tr>
<td>SAIMM</td>
<td>Southern African Institute of Mining and Metallurgy</td>
</tr>
<tr>
<td>Samval</td>
<td>South African Code for the Reporting of Mineral Asset Valuation</td>
</tr>
<tr>
<td>SME</td>
<td>Society for Mining Metallurgy and Exploration</td>
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Chapter 1

Introduction

1.1 Overview

The nature of markets dictates that participants intrinsically have competing interests. Sellers of mineral assets will naturally seek to maximize the price obtained while buyers will seek to maximize their own gain by minimizing the price paid. In order for opposing market interests to efficiently reach an equilibrium price, the market requires materially complete, accurate and timely disclosure of relevant information. In the context of minerals markets, information relating to mineral assets and their derivative securities is provided to market participants in the form of standardized reports. Such reporting forms the basis for disclosure requirements for exchange listed mining securities. Efforts to standardize the disclosure of relevant information for the minerals industry were first set in motion with the introduction of the Joint Ore Reserves Committee’s JORC Code in 1989. The JORC Code marked the first major milestone for standardized reporting in the minerals industry and set off ensuing development in mineral reserve and resource reporting standards globally. As of 2014, most major mining jurisdictions had enforceable mineral resource and reserve reporting standards which are broadly compatible.

This first generation of codes focused on resource and reserve classification as well as corresponding technical reporting. A second generation of codes focusing on valuation reporting for mineral assets emerged with the introduction of the Australian VALMIN Code in 1995. Similar codes were developed by Canada in 2003 with the introduction of CIMVal, and in South Africa in 2008 with Samval. Despite efforts to draw global industry involvement in the development of this second generations of codes, a “patchwork” of national standards emerged [1], resulting in a reporting regime that is not adequate to support an efficient process of for mineral property price determination. The need to address this issue,

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[1] CRIRSCO-style codes include CIM (Canada), SME (United States), JORC (Australasia), SAMREC (South Africa), PERC (Europe), NAEN (Russia), Comisión Minera (Chile) [104]
and to fulfill the goal of a comprehensive minerals industry reporting regime drove efforts to develop a third generation code, intended to act as a single international standard for the valuation of mineral assets. This code would replace existing national valuation codes and tie together the technical reporting of reserve and resources with more general established asset valuation standards. A previous attempt to design such a code, Guidance Note 14 (GN-14) developed by the International Valuation Standards Council (IVSC), was short lived. The need to develop a new international mineral asset valuation code (MAVC) to replace GN-14 has become increasingly important in light of recent adverse market conditions and the associated severe access to capital constraints faced by the industry in 2013. In order to respond to these conditions, the minerals industry faces a need to attract non-traditional forms of capital which have higher informational and reporting related demands.

The creation of the International Mineral Valuation (IMVAL) Committee and a new IVSC Extractive Industries Expert Group in 2012 reflects a renewed emphasis on developing an international MAVC, and has brought the industry closer than ever before to achieving a comprehensive reporting environment. A comprehensive reporting environment for the global minerals industry has long been the goal of global industry professionals, mining organizations, regulators, and investors.

This thesis explores MAVCs in depth, including a review of past internationalization efforts, and the business case for such a universal code. Most importantly, a framework is proposed for crafting a new international MAVC, along with key supporting actions to promote uptake by valuation professionals, mineral organizations, securities exchanges, market regulators and mining companies.

1.2 Hypothesis

Development and adoption of an international MAVC is the final step toward constructing a comprehensive reporting environment for the minerals industry. To date, the development focus of MAVCs has been aimed at the national level, resulting in various inefficiencies for securities exchanges, regulators, investors, mining companies, and providers of valuation services. It is the hypothesis of this
thesis that stakeholders would be better served by adopting an international MAVC as opposed to maintaining separate country or region specific valuation codes. The writing of this thesis coincides with the emergence of two important renewed efforts to harmonize existing MAVCs; the 2011 revitalization of the IVS Extractive Industries Expert Group and the 2012 creation of the International Mineral Valuation (IMVAL) Committee. The coordination of the efforts of these two groups, which currently operate in isolation from each other, offers the minerals industry with the best opportunity to develop an international MAVC that is consistent with the existing VALMIN, CIMVal, and Samval codes.

Since valuations of mineral assets are often conducted in conjunction with more general valuations of a businesses or securities, it is further suggested that mineral asset valuations should be consistent with Generally Accepted Valuation Principles (GAVP) as are embodied in the International Valuation Standards (IVS) [2]. This would be best achieved by developing an Extractives Industry Standard as well as an Extractives Industry Technical Paper for the International Valuation Standards (IVS), followed by the adoption of the new IVS in its entirety. The proposed Extractives Industry Standards, would provide modifications and additional requirements to the IVS General Standards as they apply to mineral assets, while the Technical Paper would provide more specific explanations of valuation practices related to the extractive industries. The development of the proposed additions to the IVS and the subsequent adoption of the IVS in its entirety would require support by mineral valuation professionals and their member organizations, as well as securities regulators and exchanges. This thesis is focused on demonstrating the value and efficacy of this approach to valuation code harmonization.

1.3 Research Objectives

The research work undertaken had four objectives.

1. to examine existing national mineral asset valuation codes in order to identify commonalities between their main elements, valuation principles, and overall structure which could be used as the basis for the construction of an international MAVC.
2. to review the current state of harmonization efforts, as well as past efforts in order to identify the most appropriate path forward.

3. to identify considerations for the framework of an international MAVC as well as actions which might be required to support the adoption of such a code, and

4. to establish the business case for an international MAVC with respect to the interests of valuation professionals, mining companies, securities exchanges, market regulators, and the investing public.

1.4 Research Methodology, Approach, and Data Sources

1.4.1 Methodology

The research methodology was based on:

1. A review of secondary sources, including documents that are publicly available and those that are held in organizational libraries or personal collections that have been made available to the author.

2. Primary data collection, involving interviews of key individuals that have been involved in the development of the country specific codes and in efforts to promote harmonization over the past 30 years. This involved interviews with various market regulators, valuation professionals, representatives of minerals professional organizations, and other individuals identified as key persons in the development of mineral asset valuation codes.

1.4.2 Approach

Identification of Commonalities: Initially four MAVCs were reviewed in detail; VALMIN, CIMVal, Samval and IVS GN-14. The review systematically broke down each code in terms of requirements of the valuator, details of the report commissioning process, data verification procedures, report content requirements, and specifics related to valuation conclusions. Each code’s definition(s) of value were then compared and their implications for valuation reporting elucidated. The comparative review was designed to determine whether the core definitions and principles of each code could be compatible, and
secondly whether they could be satisfactorily addressed by the International Valuation Standards. Findings are summarized in Table 7.

**Recent Harmonization Efforts:** Previous harmonization efforts under the IVS Extractive Industries Expert Group were reviewed with reference to general asset valuation codes, namely the IVS. The relationship between the MAVC harmonization and the ongoing parallel effort by the IASB to develop an international accounting standard for the minerals industry was also reviewed.

**Developing a Framework for an International MAVC:** Building on the lessons learned from previous efforts to harmonize national codes, a preliminary framework for an international MAVC was constructed and presented.

**The Business Case for Harmonization:** Finally, a review of the current state of the minerals industry with respect to the health of capital markets, access to financing, access to valuation services, and the interests of minerals industry investors, was conducted to determine how an international MAVC might benefit all participants.

### 1.4.3 Data Sources

#### 1.4.3.1 Personal communications

Interviews with individuals considered key actors in the development of national MAVCs as well as those integral to international efforts were conducted by phone and email. These individuals represent a cross section of the industry and related institutions including valuation professionals, representatives of securities administrations, and representatives of professional valuation associations. Interviews with independent valuation professionals focused on their experiences with existing codes and opinions regarding an international code. Interviews with securities administrators regarding their personal opinions on the effectiveness or necessity of codes, not reflective of the opinions of the securities administrations. Interviews with real estate market valuation professionals were also conducted to
compare similarities or differences between general asset valuation approaches and methodologies and those specific to the minerals industry. A complete list of interviewees is presented in Appendix 7.5.

1.4.3.2 Key information sources
The majority of literature relating to mineral valuation codes, and mineral valuation principles more generally is catalogued by national minerals industry associations and their related bodies. Specifically, the Minerals Industry Consultants Association (MICA) in Australia, the American Institute of Minerals Appraisers (AIMA) in the United States, the Canadian Institute of Mining Metallurgy and Petroleum (CIM) Management and Economics Society, and the Southern African Institute of Mining and Metallurgy (SAIMM).

Proceedings from mineral valuation conferences and symposiums hosted by these organizations formed much of the basis for the literature review and analysis. Notably, the proceedings of the VALMIN Seminar Series (MINVAL Seminar Series prior to 1994) hosted by the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG) variously: 31 May 1984 in Sydney; 4-5 September 1989 in Sydney; 27-28 October 1994 in Sydney; 25-26 October 2001 in Sydney; 18 October 2011 in Perth; 17 April 2012 in Brisbane. These proceedings were made available to the author by the Minerals Industry Consultants Association (MICA) of Australia. Additionally, the Mining Millennium 2000 Conference, jointly hosted by the Prospectors and Developers Association of Canada (PDAC) and the Canadian Institute of Mining Metallurgy and Petroleum (CIM), held 5-10 March 2000, Toronto later published as Special Volume 56, ‘Mineral Resources/Reserves & Valuation Standards’ by the CIM Management and Economics Society (MES) [3].

1.5 Thesis Organization
Chapter 1 presents the introduction of the thesis which outlines the problem statement and hypothesis regarding the current state of mineral industry reporting related to MAVCs. The chapter also outlines research objectives and main data sources.
Chapter 2 presents a review of existing literature related to mineral asset valuations. The chapter is divided into four main sections; a review of the fundamentals of MAVCs, valuation theory related to mineral assets, the development of national valuation codes, and international development efforts. The first section examines the purpose of MAVCs including common principles and requirements of a code. The section also distinguishes the critical difference between valuation and evaluation. The second section reviews the main valuation approaches and methods related to each approach, as well as the critical implications that the definition of value can have on the selection of a valuation approach. The third section reviews the development of VALMIN, CIMVal, and Samval. The final section of the Chapter reviews the history of the international development effort with a focus on GN-14.

Chapter 3 reviews VALMIN, CIMVal, Samval, and GN-14 in terms of major principles, key requirements, valuation approaches, and apparent shortfalls and benefits. In order to draw out common elements for inclusion in a harmonized code, each code is compared in a summary table in Section 3.6. Since the basis of value has a significant influence on the valuation process, as discussed in Chapter 2, a section of Chapter 3 reviews the definition of value employed by each code, and examines the implications of each on the selection and application of valuation approaches. The review is structured to identify whether each definition is amenable to a common standard definition that is consistent with both International Financial Reporting Standards and International Valuation Standards.

Chapter 4 summarizes the current state of the international harmonization effort most notably the recent international project, IMVAL, which emerged in 2012. Proposed is a framework for an Extractives Industry Standard as well as an Extractives Industry Technical Paper structured as additions to the 2013 International Valuation Standards (IVS). Because the existing Canadian, Australian, and South African codes are already largely compatible with the 2013 IVS, the advantages of the IVS’s universal nature can be realized with minimal additional effort, and without re-drafting an entirely new mineral specific code. The chapter also outlines general actions which must be taken to support the adoption and long term
viability of the proposed code including the roles of valuation professionals, professional organizations, mining companies, and regulators.

Chapter 5 discusses how Mineral Asset Valuation Reporting Codes can ensure these conditions are met, and how all market participants are better served under such conditions. The business case for an international code is examined with particular reference to how valuation codes can create greater access to alternative forms of financing, increase the efficiency and competitiveness of the market for valuation services, and generally improve investor confidence in the industry. Finally, Chapter 6 presents the conclusion of the thesis.
Chapter 2

Literature Review

2.1 Mineral Asset Valuation Codes

Valuation reports may be required for a variety of reasons. Common situations that call for a valuation include mergers and acquisitions, takeovers, initial public offerings (IPOs) or other secondary offerings. The purpose of valuation codes, in all cases, is to ensure complete, accurate, and consistent reporting of information and estimates. Mineral asset valuation codes outline best practices, often referred to as Generally Accepted Valuation Principles (GAVP), and legal requirements for professional mineral valuers in the preparation of valuation reports. Mineral asset valuation codes are commonly divided into mandatory requirements and non-mandatory guidance which generally address:

1. Scope or range of application of the code
2. Overriding principles which guide the reporting process
3. Key definitions; particularly the basis of value
4. Qualifications and responsibilities of the valuator and commissioning entity
5. Report commissioning/engagement process
6. Report content requirements; general or specific
7. Data integrity; materiality, reliance on other experts, technical, or economic data
8. Selection of valuation approaches and methods
9. Presentation of valuation conclusions

Most codes share basic valuation principles but vary in terms of accepted valuation methods, definitions of value, and particular content requirements. The enforceability of codes also varies by jurisdiction and is dependent on the degree of adoption by securities regulators, exchanges, and professional member organizations. It is important to note that mineral asset valuation codes are intended only to govern public reporting of valuations and do not have to apply to reporting performed for private or internal purposes.
### 2.2 Evaluation versus valuation

To understand the construction of existing valuation codes it is important to distinguish between evaluations and valuations. An evaluation, often referred to as a technical report, is an assessment of engineering, geological, legal, environmental, and financial considerations as they may affect the actual or potential economic output of a mineral asset. The outcome of a technical report is an estimate of the net present value (NPV) of the mineral asset to a particular owner. This value is known as the asset’s Investment Value, also referred to as the Technical Value [4]. A Preliminary Feasibility Study as defined by CIM Definition Standards [5] and a Technical Report as defined by VALMIN [6] are considered evaluations.

By contrast, the objective of a valuation is most commonly to estimate what another entity might pay at a specified future date to acquire the mineral asset. This value is known as the asset’s Fair Market Value (FMV) [7]. For a variety of reasons, the FMV may represent a premium or discount to the Investment Value of the asset [8] [9] [10]. This difference between Investment Value and FMV provides the incentive for market participants to complete a transaction [2].

The majority of valuation literature draws a distinction between valuations and evaluations [4]. This distinction is explained by Torries, who states that the perceived difference between valuation and evaluation arises from the two conventional classifications of mineral properties; developed properties, which are considered to be immediate investment opportunities and undeveloped properties that will or may be developed, for which no immediate sale is contemplated [11]. Torries states that since “an investor always has the option to sell a property whether a sale is contemplated or not, the value of any mineral property depends on the potential for that property to be developed, regardless of when such an investment takes place” [11]. Given this understanding, mineral evaluation can then be divided into two categories; one, determining fair market value and the other, determining value for investment purposes.
Here the term ‘value for investment purposes’ refers to the Investment Value as would be determined in a technical report.

Existing mineral codes follow the consensus opinion within valuation literature than valuation reporting is distinct from an evaluation. To reflect this distinction Canada, South Africa and Australia have distinct codes for both evaluations and valuations. In Canada, NI 43-101 governs evaluation reports while CIMVal governs valuation reporting [12]. Similarly, South Africa’s Samrec governs evaluation reports while Samval governs valuation reports [13] [14]. In Australia, VALMIN governs both evaluation and valuation reports, however the code distinguishes between Technical and Valuation reports providing clearly drawn requirements for each [15].

2.3 Valuation Theory

Valuation approaches are commonly divided into three categories: Income Approaches, Cost Approaches, and Market Approaches. A variety of valuation methods have been identified and linked to each of these approaches. These are summarized in Table 1.

**Table 1 Classification of Valuation Approaches and Methods adapted from CIMVal Standards and Guidelines [20]**

<table>
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<tr>
<th>Income Approach</th>
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<td>DCF + Monte Carlo</td>
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<tr>
<td>DCF + Probabilistic Factors</td>
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<td>Real Options Methods</td>
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<td>Geoscience Factor (Kilburn Geoscience Factor)</td>
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<tr>
<th>Market Approach</th>
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<tbody>
<tr>
<td>Comparable Transactions Method</td>
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<tr>
<td>Option Agreement Terms Method</td>
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<tr>
<td>Value per unit area Method</td>
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<tr>
<td>Net Metal Value or Value per unit of metal Method</td>
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<td>Gross in-situ value Method</td>
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</table>
The Income Approach is based on the economic theory of utility [16], which infers that the value of an asset is equal to the economic benefit (utility) that it may yield. More specifically, an asset’s value is equal to the Net Present Value (NPV) of all future cash flows that the asset may generate discounted at an appropriate risk weighted rate. To provide an estimate of NPV a Discounted Cash Flow (DCF) model must be constructed. The various technical and economic inputs to a DCF model of a mineral asset are described in detail by Gentry and O’Neil in ‘Mine Investment Analysis’ [17]. Methods falling under the Income Approach may incorporate certain probabilistic factors, simulation, or real options modeling. These methods are also used for determining Investment Value in “evaluation” studies.

The Market Approach, also referred to as the Sales or Sales Comparison Approach, is based on the economic theory of substitution [1] which infers that the value of an asset is equal to the observed prices of other identical assets. Obvious difficulties related to this approach include limited transaction data and lack of similarity between assets which give rise to conditions of imperfect substitution [18]. ‘Rule of thumb’ methods such as the value per unit area or value per unit metal methods are also generally classified under the Market Approach but have limited use and acceptability [19].

The Cost Approach which lacks a firm theoretical basis [16] has limited use in most mineral asset valuations [17]. Cost Approaches estimate present value of a mineral asset based on past expenditures related to the asset. Methods which are classified under the Cost Approach, such as the Appraised Value Method, may be applied to a property at any stage of development, but are most commonly applied to valuations of early stage properties.

To guide valuators, valuation approaches are often classified based on their applicability to mineral properties of different stages of development. Generally, early stage exploration properties are more amenable to the Cost and Market Approaches, whereas later stage developed properties are more amenable to the Income Approach. For example, it would not be appropriate to apply the Income Approach to a property which lacks a resource or reserve estimate. A common classification of approaches in terms of applicability to mineral properties of varying stages of development is shown in
Table 2, adapted from ‘Canadian Standards and Guidelines for Valuation of Mineral Properties-An Update’ [20].

Table 2 Valuation approach by stage of development. Adapted from K.Spence [20]

<table>
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</thead>
<tbody>
<tr>
<td>Income</td>
<td>No</td>
<td>In some cases</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Market</td>
<td>In some cases</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>

Since all valuation approaches involve a high degree of uncertainty, it is rare that a single approach is used in isolation [21]. Rather, by combining the results of multiple approaches it is possible to increase the reliability of the estimate [21]. For a critique of valuation methods as they apply to mineral asset valuation, readers are directed to ‘A Critique of Valuation Methods for Exploration Properties and Undeveloped Mineral Resources’ (2000) by Thompson [19]. A more general discussion on mineral asset valuation approaches is presented in ‘An Overview of Valuation Practices and the Development of a Canadian Code for the Valuation of Mineral Properties’ (2000) by Spence [22]. Lastly, for a theoretical discussion on valuation approaches readers are directed to ‘Valuation Methodology for VALMIN’ (2000) by Sorentino [16].

2.4 Defining Value

The methodologies used for valuation reporting are a function of the purpose of the report and by extension, the nature of the value being defined. Performing a valuation may be required for a number of reasons including accounting, insurance or financing purposes [22]. Under most situations, the value being estimated in a valuation report is Fair Market Value (FMV). The definition of FMV has significant implications on the selection of valuation approaches and the valuation more generally. To understand how the definition may affect the valuation process, this section briefly reviews the concept of value with respect to mineral assets.
A mineral property holds intrinsic value because of its potential to confer an economic benefit upon the owner [16]. A rational buyer will seek to obtain a mineral property to gain its potential economic benefit, while a rational seller will seek compensation equal to the potential economic benefit that he is foregoing. At the conclusion of a transaction, the buyer will pay a price to obtain the mineral property’s intrinsic value. To understand the concept of market value, it is useful to identify the two types of markets; open markets and notional markets [23].

In an open market, negotiations take place between two arm’s length parties in order to determine the price that will be paid for a particular asset. This type of market is most analogous to a residential real estate market. In an open market, the price is established through the transaction.

The task of a valuator is to determine what price is most likely to be paid at a specified future date if a negotiation were to occur [23]. In order to accomplish this, the valuator must assume a notional market. The notional market is a hypothetical market assumed by the valuator at the time of the valuation. In an open market context, price represents what was paid for an asset, and in a notional market context value represents what is likely to be paid in the future, i.e. there is no actual price only a projected value. Consequently, in any actual transaction the buyer obtains the “value” of the property while the seller receives the “price” [23]. It is important to note that the price paid in an open market does not necessarily reflect the “fair market value” as estimated in a notional market.

Fair Market Value (FMV) is most commonly defined as the price that is most likely to be obtained in an unrestricted market in which informed prudent parties act at arm’s length, and without compulsion [23]. In order to estimate a FMV, the valuator has several approaches at his/her disposal as discussed in Section 2.3. It is important to note than any approach used will only yield a reasonable estimate of FMV if great care is taken to incorporate market-based inputs [21]. For further discussion related to market-based inputs in valuations, readers are directed to Torries [21], Roscoe [18], and Cartwright [9]. By combining multiple approaches the valuator has a better chance of arriving at a reasonable estimate of FMV.
It is worth noting that several other bases of “value” may also be estimated such as book value, insured value, salvage value, and full cash value. The purpose of the valuation will determine the appropriate basis of value. In all cases, due to the various subjective inputs involved in valuation, the outcome must be regarded as an opinion, and not as a fact [23]. For this reason, value is most appropriately stated as a range from which the most likely value is identified based on stated assumptions.

2.5 Highest and Best Use

The concept of Highest and Best Use (HABU) is an important valuation concept which requires the valuator to consider whether an asset’s current use is its economically optimal use [24]. That is, the valuator must consider whether an alternative use for the asset may yield greater value. In considering alternative uses for an asset, three conditions must be satisfied; the use must be physically possible, legally permissible, and financially feasible [25]. Among uses which meet these criteria, the use yielding the highest value will be the HABU. In the case of mineral properties, their Highest and Best Use is almost always regarded as their current use for mineral development [24]. However, this is not always the case. At times, a property’s Best Use has been established by political processes, which may determine its use to be better served as part of a nature preserve, for example, or for protecting cultural values or ensuring local livelihood opportunities based on the exploitation of other natural resources that would be jeopardized by mining activities. Environmental and cultural considerations have resulted in national and sub-national government authorities withholding or retracting approvals for projects in Canada and Australia, e.g. the Kerness North and New Prosperity projects in British Columbia, and the Jabiluka mine development in the Northern Territory of Australia.

2.6 Development of National Valuation Codes

2.6.1 VALMIN

The Code for the Technical Assessment and Valuation of Mineral and Petroleum Assets and Securities for Independent Expert Reports (The VALMIN Code) was first published by a joint committee of the
AusIMM, AIG and MICA collectively known as the VALMIN Committee in 1995. The VALMIN Committee was formed in 1991 in response to the Australian Securities Commission’s withdrawal of NCSC Policy Release 149 which previously governed independent expert reports [26]. The purpose of the VALMIN Committee was to develop a more ‘user-friendly’ replacement to the previous Policy Release 149. Under this mandate, the committee held the 1994 VALMIN conference in Sydney to draw broader industry input. The following year, the first edition of the VALMIN Code was published. While the code was immediately endorsed by the ASX, and adopted by the AusIMM and the AIG as binding upon its members, it was not formally incorporated into securities law. In response to the VALMIN Code the ASX posted Information Release 95/12, which stated that the VALMIN Code was to be indicative of best practice for ASC regulators when reviewing independent expert reporting [26].

A revised second edition of the VALMIN Code published in 1998 expanded the scope of the code to include petroleum assets and technical reports having an economic basis. Other changes focused on minor edits and reorganization for improved readability. A third review of the Code was commissioned by the AusIMM in 2001 with the formation of the Code Review Task Force. The Task Force engaged in an open review process inviting submissions from public institutions and industry participants. The Task Force’s interim report was presented to the 2001 VALMIN conference [27]. Final conclusions of the Task Force were published in a Final Report in 2002 and incorporated into the third edition of the VALMIN Code published in 2005. The overall goal of the changes was to reduce the perception of the Code as ‘black letter law’ [26], as being overly prescriptive. To facilitate this, some sections of the code which were previously stated using the language ‘must do’ were changed to ‘should do’, while some sections deemed to be interpretable as statements of law were removed entirely.

In 2011, the fourth and most recent review of the VALMIN Code was initiated. During this review period a two part VALMIN Seminar Series conference was held, first in Perth in 2011 and then in Brisbane in 2012. The international focus of the Seminar Series brought together representatives of the Samval review committee, the IVSC, SME, and other international participants. The review process remains in progress.
and is expected to draw to a conclusion in 2014 coinciding with the release of the first IMVAL draft as discussed in Section 2.6.4

2.6.2 CIMVal

The Bre-x gold fraud in 1997 served as the impetus for stricter disclosure rules for the Canadian mining industry, eventually leading to the development of new standards for both Technical Reporting and, later, Valuation Reporting [28]. In July 1997 the Ontario Securities Commission (OSC) and the Toronto Stock Exchange (TSE) formed a joint committee, the Mining Standards Task Force (MSTF), to examine minerals industry disclosure issues [20]. The Final Report of the MSTF published in 1999 contained several suggestions relating to the proposed National Instrument 43-101, then under consideration by Canadian securities regulators. The MSTF Report also contained a recommendation that the CIM establish a committee to study appropriate valuation methodologies. In response, the Special Committee of the Canadian Institute of Mining Metallurgy and Petroleum on Valuation of Mineral Properties (CIMVal) was formed in late 1999.

The efforts of Canadian securities regulators to develop technical reporting standards continued to evolve independently of CIMVal’s efforts to develop a valuation reporting standard. In 2001 the National Instrument 43-101 ‘Standards of Disclosure for Mineral Projects’ came into effect, replacing the previous National Policy 2-A. The new disclosure standards provided far more detailed rules for the preparation of technical evaluations, more commonly referred to as feasibility, prefeasibility, and scoping studies. In 2003, following a Draft Discussion Paper [29] and a process of consultations, CIMVal released the ‘Standards and Guidelines for Valuation of Mineral Properties’ (CIMVal Standards) [24]. The CIMVal Standards were adopted by the CIM in the same year, and a modified version was incorporated into TSE listing requirements in 2004. In 2010 the Hong Kong Stock Exchange (HKSE) also incorporated the CIMVal Standards into its mining listing regulations [30].

The first review of the CIMVal Standards began in 2012 and coincided with a simultaneous effort by mining standard setting bodies internationally to update their respective codes (see the discussion on
Samval and the IMVAL below). The 2012 review remains underway and is expected to coincide with the release of the first IMVAL draft in 2014. At present, CIMVal Standards have yet to be incorporated into Canadian securities legislation.

2.6.3 Samval

Following the development of the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC Code) in 2000, the need to develop a valuation reporting code became apparent. The first public proposal for a South African mineral valuation code was made in 2001 at a presentation to the VALMIN ’01 Conference in Sydney [31]. The following year, the SAIMM convened its own colloquium in Johannesburg titled ‘Valuation of Mineral Projects and Properties’. The colloquium’s international focus drew participants from the CIM, AusIMM, IVSC, and the IASB. In response to the colloquium, the Samrec/Samval Committee (SSC) established the Samval Working Group to develop what would become the Samval code.

In 2007 a draft code was circulated for industry comment. The first version of Samval, the South African Code for the Reporting of Mineral Asset Valuation (Samval Code) was jointly published by the Southern African Institute of Mining and Metallurgy (SAIMM) and the Geological Society of South Africa (GSSA) in 2008. The Samval code was immediately adopted by the JSE Limited (then Johannesburg Securities Exchange) and incorporated into its listing rules. In 2009 the SAMREC and Samval codes were combined into a single document called SAMCODE. Although the codes were maintained as separate sections within the new document, the purpose of SAMCODE was to provide a single reference document for technical and valuation reporting.

In 2012, following the VALMIN Seminar Series conference in Perth, the Samval Working Group was reconvened to review and update the code in light of a recent renewed push towards international harmonization. The 2012 review remains underway and is expected to coincide with the release of the first IMVAL draft in 2014.
The International Valuation Standards (IVS) form comprehensive global valuation standards for the valuation of all asset types. Published by the International Valuation Standards Council (IVSC) starting in 1981, the standards are intended to form the basis of Generally Accepted Valuation Principles (GAVP) for the global valuation profession [2]. For later versions published in 2005 and 2007, specific guidance regarding the valuation of mineral assets was provided, in the form of a guidance note, *International Valuation Guidance Note 14-Valuation of Properties in the Extractive Industries* (GN-14) [32].

Following a review process undertaken by the IVSC in 2007, GN-14 was removed from subsequent editions of the IVS as it failed to meet form and content requirements dictated by the revised edition of the IVS [33]. The most recent edition, the 2013 IVS, does not contain any provisions specific to the extractives industry. Instead, the 2013 IVS provide universal valuation principles and general standards which are supplemented by asset-category-specific standards. For a complete discussion of the 2013 IVS, readers should refer to Section 4.5.

The IVS is designed to be compatible with International Financial Reporting Standards (IFRS) which are published by the International Accounting Standards Board (IASB) [34]. It is the aim of both organizations to harmonize global reporting in the closely related activities of financial reporting and valuation reporting. However, since 2000, the IVSC and IASB have pursued separate but related projects to develop standards to address the unique characteristics of the extractives industries.

### The Parallel and Separate Initiatives of the IVS Council and the IAS Board

In 2000, the IASB published its *Extractive Industries Issues Paper* which examined among other issues, the implications of the shift towards current cost accounting [35]. Among its conclusions, the detailed IASB report recommended that value only be assigned to proven and probable portions of the mineral resource. In 2001, the IVSC formed an Extractive Industries Expert Group with the express purpose of

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2 The IVSC is a not-for-profit organization whose purpose is to advance and harmonize the global valuation profession [107]

3 Members were Trevor Ellis, Wiliam Roscoe, Alastair Macfarlane, Donald Warnken, Raymond Westwood
developing a report to rebut the conclusions of the IASC report [36]. The IVSC Expert Group submitted its rebuttal report to the IASB in mid-2001 [37].

In 2003, the IVSC requested that its own Extractive Industries Expert Group develop an extractive industries standard which would complement the IASB’s proposed extractive industries IFRS. Following the request, the EI Expert Group produced the GN-14, which was published as part of the 2005 IVS. The IVSC Extractive Industries Expert Group continued to develop an Extractive Industries Technical Paper which was intended to provide a comprehensive best practice guide in support of GN-14. Following a dispute between the IVSC and its own Extractive Industries Expert Group, the IVSC dissolved the Expert Group and the Extractive Industries Technical Paper was never published [38]. The unpublished Extractive Industries Technical Paper was adopted in 2011 by the American Institute of Mineral Appraisers (AIMA) to form the AIMA Best Practice Guidelines [39]. The AIMA Best Practice Guidelines are not publicly available.
Chapter 3

Detailed Review of Codes

3.1 Overview

There are presently three national mineral asset valuation codes; the Australian VALMIN Code, the Canadian CIMVal Code, and the South African Samval Code. The first code to be published, the VALMIN Code, formed much of the subsequent basis for Canadian and South African codes. In addition to the three mineral specific valuation codes, the Uniform Standards for Professional Appraisal Practice (USPAP) is a general asset valuation code used within the United States. The USPAP is not reviewed in this chapter since it contains no specific provisions for mineral assets and is limited to use within the United States.

Internationally, attempts to develop a single global mineral asset valuation code have so far only been partially successful. The first such effort, Guidance Note (GN-14) was published as part of the 2007 International Valuation Standards (IVS) but was later removed from the 2011 edition. A renewed effort to develop a mineral asset specific IVS with a focus on achieving consistency with International Financial Reporting Standards (IFRS) began in 2010 under the auspices of a new IVSC Extractive Industries (EI) Expert Group and remains underway. A parallel effort focused on achieving greater harmonization between CIMVal, Samval, and VALMIN began in 2012 under the title IMVAL. At the time of publishing, the IMVAL effort also remained underway with a draft code expected in 2014. These valuation codes are summarized in Table 3.

<table>
<thead>
<tr>
<th>Table 3 Codes relevant to mineral asset valuations as of 2013</th>
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<tr>
<td><strong>National</strong></td>
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<td></td>
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<tr>
<td><strong>International</strong></td>
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3.2 VALMIN

3.2.1 Overview

1. Technical Assessment Reports which are intended to provide an estimate of Technical Value
2. Valuation Reports which express an opinion of value, and
3. Fairness and Reasonableness Reports which express an opinion as to the reasonableness of a transaction.

The distinction in report types is intended to highlight the range of application of the code; its provisions apply equally to all report types. The sections of the code are divided into mandatory requirements prefaced by the term ‘must do’, and discretionary requirements prefaced by the term ‘should do’. For purposes of summarizing the code and understanding how its 103 sections enforce its fundamental principles, it can be broken into the following areas; fundamental principles, requirements of commissioning entities and independent experts, the commissioning process, data verification, contents of a report, and conclusions concerning value.

3.2.2 Principles
The overriding principles of the VALMIN Code are Materiality, Competence, Independence, and Transparency. A fifth principle, Reasonableness, is implied though not stated explicitly. The principles are intended to govern all actions related to the valuation and reporting processes. Collectively, these principles ensure that all material information is presented by an appropriately qualified expert free of bias or influence whose work and conclusions can be clearly understood and reproduced to verify their reasonableness.
1. Materiality- governs the decision to include information in a report; if the inclusion of certain information that was omitted would lead a reader of the report to reach a different conclusion, then the information should be considered material and must be included.

2. Competence-an Expert or Specialist must demonstrate relevant education, qualifications, experience, expertise, and licenses to establish “a reputation that gives authority to statements made”.

3. Independence- An expert or specialist must be independent of the commissioning entity by relevant legal definitions, and must also be perceived to be independent.

4. Transparency- To demonstrate transparency, a report must conform to content requirements of VALMIN and all assumptions regarding inputs and risks must be stated.

5. Reasonableness- The overall valuation approach should be rational in its treatment of inputs such that another expert would make a similar assessment.

3.2.3 Requirements of parties
The VALMIN Code is unique in that it clearly sets out the responsibilities of both the independent expert and the commissioning entity. To support the principle of competence the Code relies on the concept of Experts and Specialists. Experts must meet minimum experience requirements, hold appropriate licenses, and be a member of a professional body with an enforceable code of ethics. An Expert takes overall responsibility and must sign off on any final report. Specialists may be employed by the Expert to assist in areas in which the Expert lacks competence. A specialist must meet similar experience, licensing, and membership requirements. While Experts and Specialists are required to declare their competence and independence in fulfillment of such definitions, the commissioning entity is also required to verify such claims. These mutual responsibilities serve as a check on the reporting process.
3.2.4 Commissioning process

As part of the report commissioning process, the Expert and commissioning entity must enter into a formal written agreement, prior to the commencement of any work, which addresses areas such as the report scope, cost, schedule, and valuation date. The agreement must also include details of the expert’s right of refusal and liability indemnity as well as details of his or her independence and qualifications. By addressing these areas prior to the commencement of work a proper working relationship is established with clearly defined expectations, thus avoiding common problem areas between experts and commissioning entities.

3.2.5 Data verification

The data verification procedures set out in the Code are designed to support the principle of materiality. To prevent the Expert from relying uncritically on data provided by the commissioning entity, the Code requires that the Expert perform suitable checks to ensure that data is complete, current, and accurate. A site inspection is also required when it is likely that it would reveal material information.

3.2.6 Report Contents

The VALMIN Code specifies areas which must be addressed by the Expert or Specialist in the report; however it does not explicitly provide a report format or outline. Requirements specified by the code are intended to support the materiality, transparency, and reasonableness principles of the code. These requirements relate to technical parameters including JORC/SPE compliance of resource and reserve estimates as well as an assessment of mining and processing methods. Analysis of economic parameters is required, including all inputs necessary for the construction of a discounted cash flow model, such as operating costs, capital costs, revenue estimates, financing, and market conditions. A general risk analysis is also required relating to both technical and economic parameters.

In all, the content requirement portions of the Code are intended to ensure that the report provides all material information, including a clear presentation of valuation methodology, such that another person might reasonably be expected to reach the same conclusions as to the value of the asset.
3.2.7 Valuation conclusions

Conclusions regarding value are left largely to the discretion of the Expert. Using his or her professional discretion, the Expert must determine the best valuation method(s) for the particular asset while satisfying the criteria implied by the Code’s definitions of Technical and Fair Market Value. Whichever method is selected must be fully explained and must incorporate reasonable assumptions such that another Expert would reach a similar conclusion. The value estimate obtained must be subjected to sensitivity analysis and stated as a range with a preferred value identified. Any difference between Technical and Fair Market Value must be explained with reference to current market conditions. A more detailed discussion on the VALMIN definition of value is presented in Section 3.8.

3.2.8 Distinguishing Features

Having a great wealth of user experience, reflected in its now third iteration, the VALMIN Code has developed several distinguishing features:

- **A broad range of application**: The VALMIN Codes governs Technical and Valuation reporting of all minerals, including oil and gas. This is distinct from Canadian standards which treat technical and valuation reporting separately under NI 43-101 and CIMVal respectively. Additionally, Canadian and South African codes apply only to ‘hard minerals’, while the VALMIN Code applies to minerals under the broadest definition.

- **Provisions for dealing with confidential information**: When dealing with information of a strategic nature, the principle of full material disclosure has the potential to conflict with confidentiality concerns. The VALMIN Code sets out a straightforward procedure for dealing with confidential information which balances the need to satisfy materiality requirements with the confidentiality requirements of the commissioning entity.

- **Onus to demonstrate compliance**: While fundamentally principles based, the VALMIN Code places an onus on the Expert and Commissioning entity to demonstrate that the conditions of Competence, Independence, Transparency and Materiality are met. This includes a disclosure of the basis for remunerating the Expert for his/her time and services
• **Formal commissioning process:** The VALMIN Code provides a formal commissioning process as well as clearly defined mutual responsibilities for both the commissioning entity and the Expert.

• **Layman clause:** The VALMIN Code highlights the importance of targeting a report to its intended audience and therefore requires a layman clause; “a balanced, objective, and concise statement of the Expert’s review and conclusions so that an informed layman can have a clear understanding […]” The clause is intended to reinforce the Transparency and Reasonableness principles.

• **No specific valuation methodology:** In contrast to other valuation codes, the VALMIN Code does not prescribe or list valuation methodologies. Excluded from the first edition of the code due to fundamental differences of opinion regarding valuation methodologies [26], the exclusion has been maintained throughout subsequent versions of the code. The code relies largely on the professional discretion of the Expert or Specialist in combination with detailed definitions of Technical and Fair Market Value which in themselves give some guidance as to the valuation method to be selected. See Chapter 2.4 for further discussion of how definitions of Value guide Valuation Method selection.

### 3.2.9 Benefits

In its current third edition, VALMIN Code exhibits the benefits of time and experience. Chief among its advantages is the broad scope of the Code which provides a single source for both technical and valuation reports relating to mineral and petroleum assets. The Code strikes an appropriate balance between the commissioning entity and Expert by clarifying the rights and obligations of both parties. In this manner the code’s principles of Independence, Competence, and Materiality are reinforced by a set of checks and balances. The Code provides clear definitions of Technical and Fair Market Value while also addressing the importance of identifying the difference between the two.

As a testament to its construction, the VALMIN Code’s principles and many of its requirements have been incorporated by the subsequent CIMVal and Samval Codes. The code has also received

3.2.10 Shortfalls
Contrary to its original intentions, the Code has not been incorporated into Australian securities legislation. Contributors to the Code’s development have indicated this to be a major weakness [40]. The Code’s only enforceability lies in the self-regulatory capacity of the AusIMM which holds the power to review complaints regarding member authored reports and impose sanctions.

3.2.11 Enforceability
The code is binding on AusIMM members for the preparation of public Independent Expert Reports where such reports are required under the Corporations Act 2001. Violations of the VALMIN Code brought to the attention of the AusIMM are subject to investigation and ultimately violators may face sanctions imposed by the AusIMM. As of 2013, the VALMIN Code has not been incorporated into the listing or continuous disclosure requirements of the Australian Stock Exchange (ASX).

The Australian Securities and Investment Commission (ASIC) is empowered under the Australian Securities and Investment Commission Act 2001 to regulate entities with respect to expert reports. ASIC Regulatory Guides (RG) explain how ASIC interprets and applies the law, mainly the Australian Corporations Act 2001, and provides practical guidance to regulated entities [41].
3.3 CIMVal

3.3.1 Overview
The CIMVal Standards apply to Valuations of mineral properties, excluding oil and gas, where required by regulatory bodies or where such valuations are prepared for public disclosure. The thirty-three page document [24] is divided into two sections; mandatory Standards and non-mandatory Guidelines. The Standards form the main requirements of the code and address areas including valuation tenets, qualifications of the valuator, the commissioning process, valuation approaches, and report contents. The Guidelines further elaborate on the Standards and provide “highly recommended” guidance as to their practical implementation.

Several parallel and related developments in the early 2000’s including Canada’s NI 43-101, the broader international harmonization effort, and the Australian VALMIN Code had a formative influence on CIMVal. CIMVal standards incorporate the same fundamental principles and major features as VALMIN. They are also broadly consistent with Generally Accepted Valuation Principles (GAVP) making them amenable to any eventual international harmonization.

3.3.2 Principles
Modeled after VALMIN, CIMVal’s five tenets are: Materiality, Competence, Independence, Transparency, and Reasonableness. These terms have equivalent meanings to those defined under the VALMIN Code as described in Section 3.2.2.

3.3.3 Qualifications for valuators
CIMVal Standards require that valuation reporting be undertaken only by a Qualified Valuator (QV) who must assume overall responsibility for the Valuation Report. The QV may in turn be assisted by or rely on the work of a Qualified Person (QP) who has specific technical knowledge. The QP concept is borrowed from the NI 43-101 definition and has an identical meaning under CIMVal. The definition requires a QP to be an engineer or geoscientist with at least five years of relevant experience who is a member of a professional association. Similarly, a QV must have “extensive” mineral property valuation experience
and be a member of a professional association or self-regulatory organization. Acceptable self-regulatory organizations are detailed in the CIMVal Guidelines.\footnote{In addition to those organizations meeting the definition of a Professional Association and Self-Regulatory Organizations, CIMVal Guidelines explicitly recognize the Canadian Institute of Chartered Business Valuators (CICBV) and the Investment Dealers Association of Canada (IDA)}.

CIMVal provides an exception to the independence rule when “the particular circumstance does not require the Qualified Valuator to be independent”. In this case, the reason why independence is not required must be explained, and the exact nature of the QV’s ties to the commissioning entity must be disclosed.

### 3.3.4 Report Contents

The Standards identify twenty areas which must be addressed in the contents of a valuation report. Based on these areas, the CIMVal Guidelines outline a recommended table of contents corresponding to the twenty sections. The Guidelines provide detailed recommendations regarding what each section should discuss. These areas relate generally to property details including ownership and history, geology, reserves and resources, metallurgy, mining and processing, environmental considerations, key assumption risks and limitations, valuation approaches and methods, and valuation conclusions.

The commissioning of a Valuation Report triggers Section 4.2(1) of NI 43-101, a provision which requires the filing of a current Technical Report whenever a Valuation is required. The Technical Report may be appended to or incorporated by reference in the Valuation Report.

### 3.3.5 Valuation Approaches

CIMVal Standards provide specific guidance on the selection of valuation approaches, which is further supplemented by more detailed recommendations in the non-mandatory Guidelines section. Ultimately, the Valuator maintains discretion over the approaches selected. The Standards specify that all three valuation approaches (Income, Market, and Cost) must be considered and discussed, and at least two...
should be selected. A discussion of the limitations of the chosen methods is also required. A Valuator’s choice to exclude an approach, or to rely on a single approach, must be explained.

CIMVal Guidelines summarize the valuation approaches in terms of their applicability to mineral properties at different stages of development, and provide a ranking of methodologies based on their reliability and general acceptance.

Table 4 CIMVal valuation approaches by stage of mineral property development [24]

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<tr>
<td>Income</td>
<td>No</td>
<td>In some cases</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Market</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Cost</td>
<td>Yes</td>
<td>In some cases</td>
<td>No</td>
<td>No</td>
</tr>
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</table>

In addition, CIMVal Guidelines describe generally accepted valuation principles to be used in the estimation of FMV. Among those discussed are highest-and-best-use (HABU) considerations and the necessity of market based inputs in the construction of the discount rate. There is one method among those described which is regarded as “not acceptable” for valuation analyses, the “Gross in-situ Metal Value” method (a type of Market Approach).

3.3.6 Valuation Conclusions

With respect to the overall valuation conclusions, CIMVal’s requirement to consider and discuss the income, cost, and market approaches, as well as its requirement to state the estimate value as a range, enhances the accuracy and dependability of the estimate. The Standards also require reconciliation with any previous valuation reports published within twenty-four months of the current report.

3.3.7 Distinguishing features

The CIMVal Standards have the following distinguishing features:

- **Additional qualification check**: when the work of a Qualified Person is relied upon in a Valuation, the Qualified Valuator must ensure that the QP is appropriately qualified and experienced.
• **Sign off by a corporate entity**: a Valuation Report can be signed by an entity which may include a corporation, partnership, or limited partnership as long as the valuation is supervised by a Qualified Valuator.

• **Exception to independence**: a QV can override independence requirements if clear justification is given.

• **Detailed valuation method selection**: Multiple valuation approaches should be considered, or a reason must be given as to why a single approach was relied on. Limitations of methods selected should be explained.

• **Suggested report outline**: CIMVal Guidelines include a proposed outline with detailed content requirement for each section; following a similar format to NI 43-101 F1.

• **Overview of valuation approaches and methods**: CIMVal Guidelines summarize valuation approaches in relation to the stage of mineral development of a property, and rank methods in terms of general acceptance

### 3.3.8 Benefits

The CIMVal Standards were developed with an awareness of existing national valuation codes as well as the ongoing effort to develop a harmonized international valuation standard. Consequently, the code is compatible with the generally accepted valuation principles and is amenable to international harmonization.

The simple structure of the CIMVal Standards, including its small number of sections, makes the code a simple and comprehensible reference. By supplementing the Standards with an adequate level of detail, Guidelines are structured such that its sections can form a table of contents for a standardized valuation report format.

### 3.3.9 Shortfalls

CIMVal lacks provisions forcing the Qualified Valuator to perform secondary checks on technical data obtained from other reports beyond those checks already performed in the preparation of the technical
data under NI 43-101 requirements. Further, there is no provision for site inspections or tenement confirmation. The terms “shall” and “must” are used repeatedly to instruct on what are described as “highly recommended” though not mandatory Guidelines. This language is inconsistent with the intended purpose of the Guidelines and can lead to confusion as to their proper interpretation.

3.3.10 Enforceability

There are several scenarios which may require the valuation of a mineral property, each being governed by specific areas of law. These include insurance claims, accounting purposes, taxation purposes, fairness opinions, mergers and acquisitions, and various stock market transactions.

Under Canadian securities laws, a valuation is required when a “special transaction” occurs. Special transactions include takeover bids by insiders, business combinations, related-party transactions, and issuer bids. Because securities legislation is within provincial jurisdiction in Canada, requirements to perform valuations vary. To synchronize between provinces Multilateral Instruments (MI) are sometimes used, however these do not necessarily apply to all jurisdictions. As of 2013 there are two MIs governing valuations in cases of special transactions; MI 62-104: “Take-Over Bids and Issuer Bids” (the bid rule in all provinces and territories except Ontario) and MI 61-101: “Protection of Minority Security Holders in Special Transactions” (Ontario and Quebec only). In Ontario, Ontario Securities Commission (OSC) Rule 62-504: “Take-Over Bids and Issuer Bids” also triggers the need for a valuation report.

In the event of an issuer bid or a take-over bid where the bidder is an insider, both MI 62-101 and OSC Rule 62-504 require a valuation to be disclosed in a bid circular. Where a take-over involves a party likely to have undisclosed material information about the target company MI 61-101 also forces the issuer to provide a valuation.

None of the aforementioned instances explicitly reference or require a CIMVal compliant valuation. However, regulators may refer to CIMVal in determining what constitutes valuation best-practices for mineral asset valuations.
3.3.11 Toronto Stock Exchange Appendix 3G

In addition to requirements under provincial securities legislation, the Toronto Stock Exchange (TSX) regulates valuation reports to be filed by their issuers. Requirements for issuers on the TSX Venture Exchange are governed by the *TSX Venture Exchange- Corporate Finance Manual- Appendix 3G ‘Valuation Standards and Guidelines for Minerals Properties’*, commonly referred to as Appendix 3G [42]. Appendix 3G requires a CIMVal compliant valuation of a mineral property to be prepared in support of the issuance of Value Securities⁵ in the case of a Non Arm’s Length acquisition or disposition, Change of Control transaction, Reverse Take Over, or a Reviewable Transaction or Fundamental Acquisition.

Appendix 3G adds significant additional restrictions on the valuation such that a CIMVal compliant valuation may not satisfy Appendix 3G requirements. Appendix 3G removes the valuators’ discretion by prescribing the “primary” valuation methods to be used in relation to the mineral property type. Section 4 of Appendix 3G categorizes mineral properties into two types; properties with mineral reserves and properties without mineral reserves. For properties with mineral reserves, a DCF method, i.e. an “income” approach, must be used as the “primary” valuation method. Mineral resources cannot be included in the DCF model, and the model must be supported by “at least a current and relevant prefeasibility study”. For properties without mineral reserves, the Comparable Transactions method or a Modified Appraised Value, i.e. a market or cost approach, method must be used as the “primary” valuation method.

Appendix 3G Section 4 also tightens the independence requirement of the valuator which effectively restricts the use of the independence opt-out clause in CIMVal. The stated purpose of these limitations is to reduce the subjectivity inherent to valuations and to “maintain fairness and consistency, and avoid misuse, bias and misapplication of valuation methods”. A valuation prepared in conformity with Appendix 3G may be referred to as an Appendix 3G compliant valuation, as distinct from a CIMVal compliant valuation.

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⁵ A security is deemed to be a Value Security “if the supportable value of the asset or property for which the securities are being issued, equals or exceeds the deemed value of the securities to be issued”.

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3.3.12 Distinctions between N43-101 and CIMVal

CIMVal applies strictly to valuation reports, and has not been adopted by Canadian securities administrators. By contrast, NI 43-101 applies to the technical reporting of reserves and resources, and is legally enforceable by Canadian securities administrators. Despite the fact that CIMVal makes multiple references to NI 43-101, NI 43-101 makes no reference to CIMVal nor does it contain any requirement to perform a valuation. The word valuation appears only once in section 4.2(1)(g) which defines an issuer’s obligation to file a technical report if a valuation is required under securities legislation. A public issuer filing a “Technical Report” as defined in and required under NI 43-101, must provide an “Economic Analysis” in the report. This analysis, as detailed by NI 43-101F1 Item 22 can be classified as an evaluation, in contrast to a valuation. For a more detailed discussion on the distinction between evaluations and valuations, see Section 2.2.
3.4 Samval

3.4.1 Overview
Samval governs ‘Public Reports’ regarding mineral asset valuation as required by the *Companies Act (S.A.)*. The definition of a Public Report is sufficiently broad as to include annual and quarterly reports, prospectuses, and any other report prepared for the purpose of informing investors. Samval does not apply to the reporting of oil and gas asset valuations. The brief sixteen page Samval Code [43] outlines responsibilities and required qualifications of the valuator, valuation approaches as they apply to different mineral asset types, and provides a basic valuation report outline.

3.4.2 Principles
The Samval Code has three principles; Materiality, Transparency, and Competency. These principles are modeled after those in CIMVal and VALMIN, but lack the same level of detail in their individual definitions. For example, while VALMIN and CIMVal provide strict experience requirements for valuators, Samval does not require valuators to hold any minimum number of years of experience.

3.4.3 Qualifications for valuators
A valuation must be performed by or under the supervision of a Competent Valuator (CV) who accepts overall responsibility for the valuation and signs off on the final report. To meet the requirements of a CV, a valuator must “possess the necessary qualifications, ability and sufficient relevant experience”, and must “be clearly satisfied in his own mind that he is able to face his peers and demonstrate competence in the valuation”. A CV must also be a member of one of the six organizations represented on the Samrec/Samval Committee (SSC) or another organization recognized by the SSC⁶. Notably, no demonstration of independence is required of the CV.

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⁶ These organization include the Geological Society of South Africa, the Geostatistical Association of South Africa, and the South African Council for Professional Land Surveyors and Technical Surveyors
3.4.4 Report Contents

Samval provides a summary of required reporting and assessment criteria which are intended to serve as a “high level checklist” for the valuator. These criteria form a table of contents for a valuation report; however it is not prescriptive and is intended only as a guide to the valuator. The nineteen proposed criteria closely follow the proposed report contents detailed in CIMVal. These template Tables of Content can be found in Appendix 7.6

3.4.5 Valuation approaches and conclusions

Samval briefly describes the three main valuation approaches and requires that at least two of the approaches be used to perform any valuation. Any difference in the values yielded by each approach must be reconciled, and a final estimated value range must be given. Conditions and assumptions which affect the valuation must also be discussed.

Valuation methodologies are summarized in table form organized by the applicability of each method with regard to a given mineral property’s stage of development. The classifications are similar to those presented in the CIMVal Guidelines.

Table 5 Samval designation of valuation approaches by stage of mineral property development [43]
3.4.6 **Distinguishing features**

The following features distinguish Samval from other valuation codes:

- **Independence not required:** The valuator is not required to be independent of the commissioning entity, but must disclose his/her relation to the commissioning entity as well as any interest in the subject property.
- **Loosely defined experience requirement:** The valuator is not required to have a fixed number of years of experience. There is a requirement that the valuator “possess sufficient relevant experience […] and be satisfied in his own mind that he is able to face his peers and demonstrate competence in the valuation undertaken” [43]
- **Formal review process:** SSC maintains a Reader’s Panel which reviews all mineral valuation reports submitted to the JSE to ensure compliance with Samcode. The review process is summarized in Table 6.

Table 6 Samval compliance review process indicating relationship between the Johannesburg Securities Exchange and the Samrec Committee [31]

<table>
<thead>
<tr>
<th>JSE</th>
<th>Samrec</th>
<th>Panel of readers</th>
<th>Panel of readers</th>
<th>JSE</th>
<th>Samrec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refers draft prospectus to Samrec</td>
<td>Nominates readers</td>
<td>Reader signs agreement</td>
<td>1. Reader reviews and checks for compliance with the Samrec Code and JSE rules</td>
<td>1. Acknowledges Readers report and recommendations</td>
<td>1. Co-ordinator reviews prospectus/report for compliance to JSE</td>
</tr>
<tr>
<td></td>
<td></td>
<td>and confidentiality, conflict</td>
<td>2. Recommends to JSE modifications, acceptance or rejection</td>
<td>2. Recommends to the JSE modifications, acceptance or rejection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>of interest, responsibilities and deadlines</td>
<td>3. Assures anonymity of readers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Accepts/rejects reviewed document for listing</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>5. Informs Samrec of all outcomes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.4.7 **Samval benefits**

Samval demonstrates the benefits of having been developed with two major national codes already in existence. Samval shares many key principals and criteria of these existing codes making it largely compatible with them. The timing of its development also allowed the authors of Samval to make it
reconcilable with the international harmonization effort. Specifically, Samval employs definitions and terms which are not materially different from those employed in the IVS or IASB standards.

The greatest benefit of Samval is its incorporation into JSE Listing Rules (Section 12) [44]. In addition to making the code legally enforceable, the listing requirements provide a formal review process for all valuation reports submitted to the JSE in support of a prospectus filing as outlined in Table 6.

Finally, the combination of SAMREC and Samval into a single document, SAMCODE, is advantageous as it integrates technical and valuation reporting by sharing common concepts and definitions within a single document.

3.4.8 Samval shortfalls

Many of Samval’s shortfalls relate to definitional ambiguities, which in several cases arise from an attempt to grant too much discretion and flexibility to the valuator.

The standards of Materiality, Transparency, and Competency lack specific criteria through which the valuator or commissioning entity can demonstrate that the principles have been complied with. This is particularly apparent in the code’s competency requirement, which lacks a quantitative standard of experience.

The definition of ‘mineral assets’ includes securities of an entity which holds mineral assets. The code is not suited for corporate valuations. The code is likely intended to be used in support of a corporate valuation where the entity holds mineral assets, however not as the primary reference for the valuation as a whole.

The code’s most serious shortfall is its poorly constructed definition of ‘value’ which precludes the use of valuation methods that do not fall under the Income Approach. A complete discussion of this issue is provided in Section 3.8.2.
3.5 International Valuation Standards (IVS) Guidance Note 14 (GN-14)

3.5.1 Overview

*IVS Guidance Note No. 14 Valuation of Properties in the Extractive Industries* was designed to guide valuators in applying the IVS to mineral property valuations in light of the unique considerations involved. The Guidance Note was structured and written to be compatible with the 2005 edition of the IVS. A critical review process commissioned by the IVSC in 2006 resulted in major changes to the IVS structure, style, and content, and as an outcome of the review, all guidance notes were withdrawn, including GN-14 in 2010. The content and principles of some guidance notes were reincorporated into new sections of the revised 2011 IVS. However, the extractives industry guidance provided by GN-14 was not re-incorporated into subsequent editions (2011 and 2013).

GN-14 differed from existing national MAVCs in that valuation principles, engagement requirements, and high level report content requirements were addressed externally (within the IVS section ‘Concepts Fundamental to Generally Accepted Valuation Principles’). These considerations were addressed within the main structure of the IVS. This section provides a summary and analysis of the content contained within GN-14. For an overview of the IVS in its entirety readers are referred to Section 4.5.

3.5.2 Contents

GN-14 was divided into five main sections: Introduction, Scope & Definitions, Relation to Accounting Standards, and Guidance. The Introduction characterized the extractives industry with regard to the unique technical characteristics which have implications for valuations, such as the uncertainty surrounding the ultimate quantity of resources or reserves. The section also described in very general terms how extraction activity could be divided into stages, each involving unique risks and assumptions for valuations.

The Scope and Definitions section addresses the range of application of the Guidance Note as well as those terms unique to the extractives industry such as ‘mineral resource’, ‘feasibility study’, and
‘technical expert’ (roughly equivalent to a CIMVal *Qualified Person* or VALMIN *Expert*). Specific guidance regarding the IVS in relation to accounting standards highlighted relevant IFRS/IASs, and provided specific guidance on valuation compatibility with IFRS 6, 16 and 38 [45] [46] [47].

Finally, the Guidance section of GN-14 addressed valuation concepts, competence and impartiality requirements, disclosure requirements, and special considerations of extractive industries valuations. The selection of a valuation approach was described in relation to the stage of development of the mineral property where mineral properties were defined as exploration properties, resource properties, development properties, and production properties.

The Guidance Note required that Market Value as defined in the IVS Framework should be used as the default basis of value. Other bases of value defined in the IVS Framework were allowed, but were required to be stated and defined in the introduction of the report. Particular guidance was provided on incorporating market inputs into the chosen valuation approaches, and caution was given towards reliance on methods which may yield non-market estimates of value (ie. Investment Value).

The content requirements for a valuation report outlined in GN-14 are similar to those described in VALMIN. A specific table of contents was not provided; however areas which have bearing on the value estimate and which should be discussed are identified; such as legal status of tenements, capital and operating expenditures, rehabilitation costs, taxes, and royalties.

### 3.5.3 Distinguishing features and benefits

The distinguishing features of GN-14 are related both to the contents of the guidance note itself and more broadly to its integration into the more general IVS:

- **Guidance on applying valuation approaches:** Specific guidance on how to apply income, cost and market approach so as to obtain an estimate of Market Value and not Investment Value.
- **Valuation concepts and principles defined externally:** Key valuation concepts and definitions are given by reference to relevant IVS sections and are not contained within GN-14.
• **IFRS/IAS compatibility guidance:** Various definitions are common to both accounting standards and valuation standards. GN-14 ensures that an asset’s value as estimated using GN-14 is equivalent to an asset’s value as estimated under various IFRS/IAS.

• **Supplement universal IVS:** Mining companies hold multiple asset types in addition to or as part of the mineral asset which may include intangible assets, plants and equipment, financial instruments, and business interests. Inclusion of GN-14 as part of a universal valuation code provides a single source code for the valuator to use, maintaining consistency across asset types.
3.6 Comparative analysis of codes

The key features, convergences and divergences of the four codes are compared and contrasted in Table 7. The comparison reveals that the codes are broadly consistent, sharing many common elements including valuation principles, requirements of valuators, resource and reserve estimation standards, and high level content requirements.

3.6.1 Scope, requirements of parties, and report commissioning

Among the national MAVCs, the VALMIN Code has the broadest range of application as it is intended to apply to valuation of oil and gas properties in addition to mineral properties. With respect to the types of reports covered by the codes, the VALMIN Code and Samval (together with Samrec) apply to technical reporting in addition to valuation reporting. By contrast, CIMVAI applies only to valuation reporting. As a former part of the general IVS which apply to valuation reporting of all asset types, GN-14 was intended as a mineral asset specific supplement.

Valuator qualification requirements are also broadly consistent among the codes. The codes require the valuator to possess sufficient knowledge and experience in addition to holding membership in a recognized mineral or valuation professional organization. While Samval and GN-14 define these requirements qualitatively, CIMVAI and VALMIN hold quantitative experience requirements. Irrespective of the valuators qualification, all of the codes contain requirements to verify technical information which is relied upon in the valuation. Each code also requires proper referencing to the technical information relied upon in the valuation report.

With the exception of Samval, all of the codes provide details of the report commissioning or engagement process. These including declarations of the roles and responsibilities of both the valuator and the commissioning entity as well as details of the work to be undertaken such as scope, timeline, and cost.
3.6.2 Specific content requirements
Requirements for reporting resources and resources on which a valuation is based are consistent across the codes. While each code references the use of its respective regional classification scheme, i.e. NI 43-101, JORC, Samrec; the schemes contain definitions which hold equivalent meanings.

CIMVal and Samval provide specific report requirements in the form of a report outline. The sections addressed by these outlines are largely similar, and cover all areas related to the valuation - from physical and technical characteristics of the asset to the presentation of the valuation conclusions. GN-14 and VALMIN do not provide a table of contents, but the provisions contained within the codes provide guidance on the same valuation areas at a higher level.

3.6.3 Valuation approaches
With the exception of VALMIN, all of the codes identify a mineral property’s stage of development as the main driver in the selection of an appropriate valuation approach. To support this requirement, the codes provide descriptive classifications of different development stage categories. CIMVal and GN-14 divide properties into four categories, exploration properties, resource properties, development properties, and production properties. Samval divides properties into five categories: exploration properties, development properties, production properties, dormant properties, and defunct properties.

VALMIN, CIMVal, and Samval require that at least two valuation approaches be employed in the valuation, and further require that the selected valuation approaches be explained. GN-14 also includes a requirement to explain the selection of a valuation method, but does not require the use of multiple valuation methods. A discussion on the discrepancies in the basis of value employed by each code is presented in Section 3.7.
Table 7 Summary of mineral asset valuation codes’ key features

<table>
<thead>
<tr>
<th>Scope-Types of Assets</th>
<th>CIMVal</th>
<th>VALMIN</th>
<th>Samval</th>
<th>IVS GN-14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Types of Assets</td>
<td>Mineral properties excluding oil and gas</td>
<td>Mineral properties including oil and gas</td>
<td>Mineral assets excluding oil and gas (includes valuation of securities or entities which hold or have interest in mineral properties)</td>
<td>Assets or property interests held by entities involved in Extractives Industry including oil and gas.</td>
</tr>
<tr>
<td><strong>Scope-Types of Reports</strong></td>
<td>Valuation Reports</td>
<td>Technical Reports, Valuation Reports, Fairness and Reasonableness Reports</td>
<td>Valuation Reports (“Public Reports”)</td>
<td>Valuation Reports</td>
</tr>
<tr>
<td><strong>Qualifications of valuator</strong></td>
<td>Qualified Valuator: a) Extensive experience in valuation of mineral properties b) Relevant experience to mineral properties or rely on technical report by QP c) Member of good standing in professional association</td>
<td>Individual Expert: a) 10+ years relevant and recent experience in mining and petroleum b) 5+ years in relevant and recent valuation of mineral/petroleum assets/securities c) Hold appropriate licenses d) Member of good standing in professional association</td>
<td>Competent Valuator: a) Registered with specified professional organization b) Sufficient relevant experience</td>
<td>Technical Expert a) Appropriate relevant experience b) State licensed as required c) Member in good standing of professional association</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th></th>
<th>CIMVal</th>
<th>VALMIN</th>
<th>Samval</th>
<th>IVS GN-14</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Commissioning Process</strong></td>
<td>• Detailed engagement letter</td>
<td>• Detailed engagement letter</td>
<td>• No guidance</td>
<td>• Detailed guidance (part of IVS Standards)</td>
</tr>
<tr>
<td></td>
<td>• Confidentiality clause</td>
<td>• Confidentiality clause</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Balance of responsibilities</strong></td>
<td>• Onus on both commissioning entity and QV to demonstrate competence and independence</td>
<td>• Onus on both commissioning entity and QV to demonstrate competence and independence</td>
<td>• No explicit onus on commissioning entity to ensure CV competence or independence</td>
<td>• Not directly addressed</td>
</tr>
<tr>
<td><strong>Report outline</strong></td>
<td>• Detailed outline proposed</td>
<td>• Detailed outline proposed</td>
<td>• General outline proposed</td>
<td>• None</td>
</tr>
<tr>
<td><strong>Resource/reserve estimates</strong></td>
<td>• Mineral reserves and resources must conform to NI 43-101</td>
<td>• Mineral reserves and resources should conform to JORC</td>
<td>• Mineral reserves and resources must conform to SAMREC</td>
<td>• Mineral reserves and resources must conform or be reconciled to CRISCO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Petroleum reserves and resources must conform to SPE/WPC/AAPG</td>
<td></td>
<td>• Petroleum Reserves must conform to SPE/WPC</td>
</tr>
<tr>
<td><strong>Standard of value</strong></td>
<td>• ‘Fair Market Value’</td>
<td>• ‘Technical Value’</td>
<td>• ‘Value’ (NPV)</td>
<td>• ‘Market Value’</td>
</tr>
<tr>
<td></td>
<td>• ‘Fair Market Value’</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Valuation Process</strong></td>
<td>• Must use at least two approaches or justify single approach</td>
<td>• Should use two or more approaches</td>
<td>• Must use at least two approaches</td>
<td>• Should explain preference for method</td>
</tr>
<tr>
<td></td>
<td>• Must explain each method chosen and explain exclusion of methods not chosen</td>
<td>• Should express value as a range</td>
<td>• Must reconcile differences between each approach</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Must express value as a range, or explain single value</td>
<td>• Outlines zero value, and negative value cases</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CIMVal</td>
<td>VALMIN</td>
<td>Samval</td>
<td>IVS GN-14</td>
</tr>
<tr>
<td>---------------------------</td>
<td>------------------------------------------------------------------------</td>
<td>----------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Ranking of approaches/methods** | • Approaches summarized by applicability to stage of mineral development  
• Methods ranked as primary or secondary based on industry acceptance | • None   | • Approaches summarized by applicability to stage of mineral development | • No ranking, valuator advised that selection of approach dependent on stage of mineral development |
| **Prohibited Valuation Methods** | • Gross in-situ value                                                 | • None   | • Gross in-situ value                                                 | • None                                                                   |
| **Valuing inferred resources** | • Can include in DCF if reserves also exist and inferred resource does represent majority of asset | • No guidance | • Can include in DCF if mine plan exists  
• If inferred resources form majority of value, comparison of value with vs. without resources required | • No guidance |
| **Distinguishing Features** | • Additional qualification check  
• Sign off by a corporate entity  
• Exception to independence  
• Detailed valuation method selection  
• Detailed report outline  
• Overview of valuation approaches and methods | • A broad range of application  
• Provisions for dealing with confidential information  
• Onus to demonstrate compliance  
• Formal commissioning process  
• Layman clause  
• No specific valuation methodology | • Independence not required  
• Loosely defined experience requirement  
• Formal review process  
• Must use multiple valuation approaches-no exception | • Guidance on applying valuation approaches  
• Valuation concepts and principles defined by reference to IVS  
• IFRS/IAS compatibility guidance  
• Integrated within general asset valuation standards (IVS) |
| **Enforceability** | • TSX Venture listing requirements: Appendix 3G | • AusIMM, AIGA internal disciplinary process for members | • JSE Listing Regulations Section 12  
• SAIMM internal disciplinary process | • None |

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3.7 Value

3.71 Basis of value

The type of value being estimated in a mineral asset valuation report depends on the report’s intended use. In the majority of cases, Market Value is the most relevant and targeted one. Recall that this is an estimate of the value which the seller might reasonably expect to receive for a mineral asset in an open market, given certain conditions. These conditions are specified in the definition of value given in each code. Small nuances in this definition can have significant implications for the selection and application of Valuation Approaches thus greatly affecting the compatibility of different codes. This section reviews and compares the definitions of value under VALMIN, CIMVal, Samval, IVS, and IFRS. The common elements of these definitions are summarized in Table 8.

3.8 VALMIN 2005

The VALMIN code provides two bases of value; Fair Market Value and Technical Value. The use of multiple bases of value arises from the fact that the VALMIN code applies to both technical and valuation reports. In a technical report the objective is to provide an estimate of the economic benefit that the mineral asset will yield. This economic benefit is called the Technical Value in VALMIN and is equal to the NPV of the mineral asset. Specifically,

“Technical Value is an assessment of a Mineral or Petroleum Asset’s future net economic benefit at the Valuation Date under a set of assumptions deemed most appropriate by an Expert or Specialist, excluding any premium or discount to account for such factors as market or strategic considerations.” [6]

In contrast, a VALMIN fairness or valuation report is intended to estimate Fair Market Value defined as,

“the amount of money [...] that the Mineral or Petroleum Asset or Security should change hands [for] on the Valuation Date in an open and unrestricted market between a willing buyer and a
willing seller in an “arm’s length” transaction, with each party acting knowledgeably, prudently and without compulsion.” [6]

Since the amount that another entity is willing to pay for an asset is directly related to what that asset can earn, the Fair Market Value will be directly related to the Technical Value. The amount by which the two values differ represents the premium or discount. As the code describes,

“In times of high commodity prices and/or buoyant share market conditions or in the cases of a forced sale or liquidation, the Fair Market Values ascribed to Mineral or Petroleum Assets or Securities may be higher or lower than their Technical Value and be more likely to change with time”. [6]

The Code requires that the Expert explain the calculation of the adjustment made for the above stated conditions and detail how it is applied to the Technical Value in order to arrive at the Fair Market Value.

3.8.1 CIMVal 2003
CIMVal employs a single basis of value, Fair Market Value, which is defined as,

“The highest price, expressed in terms of money or money’s worth, obtainable in an open and unrestricted market between knowledgeable, informed and prudent parties, acting at arm’s length, neither party being under any compulsion to transact (Income Tax Act of Canada).” [24]

To maintain consistency with accounting standards as well as general valuation practice, this definition is identical to the Canadian Income Tax Act definition. Canadian legal precedence relating to the Income Tax Act definition of FMV has established that adjustments should be made for current market conditions [23] [20]. CIMVal does not provide any specific guidance as to how adjustments should be made, nor is there a requirement to discuss how such adjustments were applied.

3.8.2 Samval 2009
Samval employs a single basis of value, referred to simply as, ‘Value’. The code states that,
“Value relates to future expectations and is the present value (or economic worth) of all future benefits expected to be received.” [24]

It is unclear whether future benefits are expected to accrue to the current owner, a specific buyer, or an average market participant. Notably absent from the definition are references to the terms, ‘market’, ‘buyer’, ‘seller’, and ‘price’. The use of the term “present value” implies that ‘Value’ as defined in Samval is equal to NPV and is therefore equivalent to ‘Technical Value’ as defined in VALMIN. Because NPV can only be calculated using the Income Approach, it is not possible to employ at least two valuation Approaches as Samval requires. The contradiction between the definition of value and the requirement to employ multiple valuation approaches suggests that an improved definition is required.

3.8.3  IVS 2011

The IVS Framework provides highly detailed definitions for several bases of value; Market Value, Investment Value, Fair Value, and Special Value. The selection of a single basis of value is dependent on the purpose and intended use of the valuation, and the type of asset being valued. The bases of value most relevant to mineral asset valuation are ‘Market Value’ and ‘Investment Value’. ‘Market Value’ is defined as,

“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 and where the parties had each acted knowledgeably, prudently and without compulsion.” [2]

With respect to adjustment for current market conditions, IVS allows for the inclusion of ‘special assumptions’, which “highlight to a valuation user that the valuation conclusion is contingent upon a change in the current circumstances or that it reflects a view that would not be taken by market participants generally on the valuation date.” [2].

Additionally, IVS introduces the term ‘Fair Value’ as “the estimated price for the transfer of an asset or liability between identified knowledgeable and willing parties that reflects the respective interests of those
parties.” The IVS Framework notes that this definition of ‘Fair Value’ is not equivalent to the IFRS definition of ‘Fair Value’. IVS ‘Fair Value’ represents a transaction price as determined between specific parties in a market which does not meet the criteria of being “open”. IVS ‘Fair Value’ includes value arising from the specific interests of the parties involved and may include benefits which are not available to an average market participant. This additional value which can be realized only by specific parties and not by market participants generally is referred to as ‘Special Value’.

3.8.4 IFRS 13 2013

The integrated relationship between financial reporting and asset valuation requires consistent definitions across both areas. A move towards ‘mark-to-market’ accounting standards\(^7\) has made the harmonization of definitions more pressing as the extractives companies may face the need to provide up to date valuation on a semi-annual or even a quarterly basis [48].

International Financial Reporting Standards (IFRSs), published by the International Accounting Standards Board (IASB), are a globally accepted set of accounting standards. As of 2013, almost 120 countries permit or require the use of IFRSs [49]. While no comprehensive minerals industry specific IFRS currently exist, IFRS 13 ‘Fair Value Measurement’ provides a general definition and framework for measurement of ‘Fair Value’. IFRS 13 was developed by the IASB in co-operation with the US Financial Accounting Standards Board (FASB) and is intended to provide common requirements for measuring fair value that are consistent with US Generally Accepted Accounting Principles (GAAP) [35].

The basis of value described in IFRS 13 is ‘Fair Value’ defined as, “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date (ie. an exit price).” IFRS 13 specifies that a ‘Fair Value’ measurement must employ the same assumptions that market participants would use, including assumptions about risk. For non-financial

\(^7\) Mark-to-market accounting standards refer to the practice of recording assets on a company’s books at fair market value rather than historical value.
assets, such as mineral properties, highest-and-best-use must also be considered. This concept is discussed in Section 3.9.

IFRS stresses that Fair Value explicitly addresses situations in which market transactions or market information might not be available. Such situations are common in extractive industries markets. IFRS 13 is clear that the objective is always “to estimate the price at which an orderly transaction would take place between market participants at the measurement date under current market conditions […]” [46]. The overriding principle is to use a valuation technique which maximises the use of relevant observable inputs and minimises the use of unobservable inputs.

As clarified in an IASB opinion paper, “when the market transaction volume decreases so significantly that the observed value no longer reflects the price which would result from a transaction concluded under normal terms and conditions, a more detailed review of this transaction is required, and the price may need to be adjusted” [50]. That is, when market conditions violate the conditions for an orderly transaction, IFRS 13 ‘Fair Value’ will be different from observed market transactions.
Table 8 Comparison of definitions of value

<table>
<thead>
<tr>
<th>Requirement</th>
<th>VALMIN</th>
<th>CIMVal</th>
<th>Samval</th>
<th>IVS</th>
<th>IFRS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basis of value</td>
<td>Fair Market Value</td>
<td>Fair Market Value</td>
<td>Value</td>
<td>Market Value</td>
<td>Fair Value</td>
</tr>
<tr>
<td>Alternative bases of value allowed</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Value expressed as range</td>
<td>Yes</td>
<td>Yes</td>
<td>Not specified</td>
<td>Implied</td>
<td>Not specified</td>
</tr>
<tr>
<td>Language</td>
<td>“preferred value”</td>
<td>“highest price”</td>
<td>Not specified</td>
<td>“estimated amount”,</td>
<td>“the price”</td>
</tr>
<tr>
<td>Adjustment for market conditions</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Criteria for market condition</td>
<td>“buoyant share market”</td>
<td>unspecified</td>
<td>unspecified</td>
<td>Compulsion OR special assumptions</td>
<td>“disorderly transaction”</td>
</tr>
<tr>
<td>adjustment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exposure time</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Highest and best use</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

3.9 Common elements

While the specific language of each definition varies, the definitions of Fair Market Value share common key features summarized in Table 8. Generally, FMV is defined by a notional market wherein informed parties act at arm’s length without compulsions to buy or to sell, and where consideration is given to current market conditions. The concept of Highest and Best Use (HABU) is also employed by CIMVal, IVS, and IFRS. HABU requires the valuator to consider if the development of the mineral asset is its economically optimal use. For a mineral property, the HABU is almost always its current use as a mineral development [22] as discussed in Section 2.5.

IVS ‘Market Value’ is generally consistent with IFRS ‘Fair Value’, VALMIN ‘Fair Market Value’ and CIMVal ‘Fair Market Value’ with the notable distinction that IVS ‘Market Value’ includes a requirement for exposure time for proper marketing.
Chapter 4

Analysis-International Harmonization

4.1 Overview

Development of an international MAVC which incorporates the common elements of VALMIN, CIMVal, and Samval is both feasible and advantageous to all market participants. Interviews with various valuation professionals in combination with a review of existing valuation reporting practices indicated the industry would be best served by adopting the 2013 International Valuation Standards (IVS) and developing an Extractives Industry Asset Standard as well as a corresponding Extractives Industry Technical Paper. The move would serve to harmonize global mineral asset valuation reporting, and bring the industry in line with global valuation best practices common to other industries. Because the IVS already embodies definitions, requirements, and principles shared by VALMIN, CIMVal, and Samval, the development of an entirely new MAVC is unnecessary. Adopting the IVS with the additions proposed below presents the most time and cost effective solution. This chapter outlines the 2013 IVS and explains how they can be made to accommodate mineral valuation reporting, while also addressing the concerns of mineral valuation professionals. A framework for an Extractives Industry Asset Standard and Technical Information Paper is presented in conjunction with an action plan to support the development, and adoption of the IVS and proposed additions.

4.2 Recent developments

Efforts to develop an international MAVC have gained new momentum in recent years. Following the withdrawal of GN-14 in 2010, the IVSC convened a new Extractive Industries Expert Group in 2011 to resume the work of developing minerals industry specific valuation guidance. In 2012, the newly convened IVS Expert Group published a Discussion Paper inviting comments on a range of issues facing the development of extractive industries guidance [51]. In the same year following the 2012 VALMIN Seminar Series in Brisbane, a new international effort emerged spearheaded by South African minerals
industry representatives. This initiative aimed at coordinating the updates of CIMVal, VALMIN, and Samval. The initiative was subsequently named the International Mineral Valuation (IMVAL) Committee. The IMVAL Committee consists of representatives from relevant committees of CIMVal, VALMIN, Samval, IVSC, and the SME. Publication of a draft IMVAL Code is expected in 2014.

4.3 Reasoning for proposal

The structures, definitions, and key principles of the CIMVal, VALMIN, and Samval codes are highly similar and broadly consistent with IVS. Rather than developing a new code to integrate the existing three codes, the IMVAL Committee’s efforts would be better placed if combined with the IVSC Extractives Industry Expert Group to develop a mineral specific Asset Standard and Technical Paper [52]. The proposed additions would provide the necessary industry specific guidance within the context of a fully developed valuation structure that addresses all existing components of national MAVCs. This would be preferable to developing another standalone MAVC for several reasons.

First, valuators are often tasked with valuing a mining business as a whole which includes assets other than the mineral property [52]. For example, valuations of mining securities as are commonly performed in support of equity issuances, or in respect of a take-over bid, involve the valuation of mineral assets as well as other business interests, financial assets, and non-tangible assets. In general, a valuation which involves mineral assets may also involve several IVS categories including intangible assets, plants and equipment, financial instruments, and business interests. By adopting the IVS in its entirety, valuators would have a single code to follow in the valuation of all assets related to a mining business.

Second, the 2013 IVS is a well-established and widely used general asset valuation standard with a wealth of global user experience [53]. The responsibility to maintain, update, and promote the use of the code would therefore be shared by a broader global community of valuation professionals not limited to the mining industry. Leveraging the size and reputation of the IVSC would also broaden the reach of
harmonization in the extractives industry by providing an accessible standard to valuators in countries without well-developed extractives or valuation industry professional organizations.

Third, the restrictions created by state and local licensing barriers were highlighted by valuation professionals as a major impediment to the provision of valuation services [52]. Integrating mineral asset valuation standards would bring minerals industry valuation practices more closely in line with GAVP, thereby expanding the marketplace for valuation services.

Fourth, the IVS are principles based, rather than rules based. Valuation professionals highlighted overly prescriptive rules for valuation reporting as a major difficulty in conducting valuations [54]. The principles based nature of the IVS grant professional discretion in the valuation of mineral assets which, owing to their unique considerations, are not amenable to prescriptive valuation rules.

While this proposition first emerged following the ‘VALMIN ’01-Mineral Asset Valuation Issues’ conference in Sydney in 2001, the previously cumbersome nature of the IVS’s 400 plus pages led to resistance among valuation professionals [52]. The drastic reduction in size and reorganization of the IVS in 2011 has deflated the argument for a stand-alone mineral asset valuation code thereby making a single international valuation code both conceivable and practical to design and adopt.

### 4.4 Additional concerns expressed by valuation professionals

Valuation professionals interviewed expressed specific concerns regarding the standardization of valuation reporting. While development of an international standard was generally viewed as being desirable, individuals expressed the need to ensure that any proposed code addressed the unique challenges of mineral valuations. Concerns were largely related to the valuator’s discretion, inclusion of inferred resources, valuation approaches, definitions of value, and complexity of the overall rule structure.

The most common concern expressed by mineral valuation professionals was the need to preserve the valuator’s professional discretion. The ability of the valuator to select valuation approaches and inputs to
valuations was considered paramount [55]. Overly prescriptive guidelines, or requirements that were not founded in generally accepted mineral valuation practice were seen to restrict the validity of the valuation. Specifically, valuators saw the flexibility to select a valuation approach on the basis of the circumstances dictated by the particular valuation as critical. Similar concerns were also voiced regarding the need to allow value to be assigned to inferred resources, whether these resources represented a portion or the entirety of the asset under valuation [54]

With respect to the valuation approach or approaches selected, valuators stressed the importance of requiring high degrees of reasonableness and transparency [56]. This includes the identification of all valuation assumptions, as well as details of the model, and an explanation of the method and calculation which contains sufficient detail as to allow the estimate to be reproduced on the basis of the description. Whichever approach is relied upon, the need to include market based inputs in the calculation of fair market value estimations was also highlighted [52]. As a best practice, some valuation professionals explicitly defined the basis of value being estimated in the valuation report [53].

Overall, mandating standards for mineral asset valuation reporting was considered to be in the best interest of the industry [57]. Specifically, MAVCs were credited with greatly improving the quality and consistency of valuation reporting, as well as increasing the reliability of valuation estimates [58]. However, strict licensing or certification for mineral valuators was not seen as desirable [54]. Relying on the self-regulatory capacity of mineral professional organizations to certify members was proposed as an alternative [58]. Some valuators indicated that the overly complicated rules or reference to accounting standards and definitions may deter adoption of an international standard [55]. To avoid this, and to develop sensible, representative, and comprehensive reporting standards, the inclusion of mineral professional organizations in the development process was considered essential.
4.5 Current structure of the 2013 IVS

In order to understand how a mineral asset specific valuation guidance can be incorporated and appropriately structure within the IVS, it is necessary to examine its existing structure. This section provides a brief overview of the IVS’s major components.

In 2006, the International Valuation Standards Council (then the International Valuation Standards Committee) formed a Critical Review Group to evaluate the current state of the International Valuation Standards [51]. The Report of the Critical Review Group, which incorporated feedback from its consultation process, resulted in major changes to the IVS structure, content, and style as it existed under the 2007 IVS. Prior to the rewrite, IVS 2007 and previous editions included five main sections which totalled over 400 pages [33]:

1. Concepts Fundamental to Generally Accepted Valuation Principles
2. Property Types
3. International Valuation Standards (IVS 1-3)
4. International Valuation Applications (IVA 1-3)
5. Guidance Notes (GN1-17)

The restructured and condensed version of the IVS was reflected in IVS version 2011, and later in IVS 2013. The current 2013 IVS include five redesigned sections, plus Technical Information Papers which supplement the IVS [33]:

1. IVS Definitions
2. IVS Framework
3. General Standards
   IVS 101 Scope of Work
   IVS 102 Implementation
   IVS 103 Reporting
4. Asset Standards

IVS 200 Businesses and Business Interests
IVS 210 Intangible Assets
IVS 220 Plant and Equipment
IVS 230 Real Property Interests
IVS 233 Investment Property under Construction
IVS 250 Financial Instruments

5. Valuation Applications

IVS 300 Valuation for Financial Reporting
IVS 310 Valuations of Real Property Interests for Secured Lending

Supplement - Technical Information Papers

TIP 1 The Discounted Cash Flow Method
TIP 2 The Cost Approach for Tangible Assets
TIP 3 The Valuation of Intangible Assets
TIP 4 Valuation Uncertainty

The IVS Framework outlines general valuation principles including requirements of the valuator, definitions of value, and valuation approaches, while the IVS General Standards outline the engagement process and provides broad content requirements which apply to valuations of all asset types. The IVS Asset Standards identify five asset types, and describe specific valuation requirements for each type based on the characteristics of the asset. Particularly, the Asset Standards describe how the IVS General Standards should be modified or supplemented to suit the particular asset type.

IVS Valuation Applications address how IVS General Standards apply to valuations undertaken for specific purposes. In 2013 IVS, only two such applications were identified; Valuation for Financial Reporting and Valuation of a Real Property Interest for Secured Lending. As an addition to the IVS’s five
sections, Technical Information Papers supplement the 2013 IVS by providing additional guidance on the application of valuation approaches to a specific asset type by further detailing the valuation approach or the asset type.

### 4.6 IVS for the Extractives Industry

The following section outlines a proposed framework including major sections and sub sections to be addressed by a proposed IVS Asset Standard and Technical Information Paper (TIP). The proposed frameworks follow the same structures as existing Asset Standards and TIPs. The IVS Definitions, Framework, and General Standards already address the majority of areas covered by national MAVCs. Therefore, the proposed additions address only those areas which require further elucidation.

The 2013 IVS structure addresses the weaknesses of VALMIN, CIMVal, and Samval, by providing clear definitions or requirements which are lacking or inconsistent among these codes. These weaknesses and discrepancies were related to the definition of value and the selection of a valuation approach. The IVS Framework provides a comprehensive definition of Market Value, as distinct from Investment Value, Fair Value, and Special Value [2]. The Framework also provides guidance on how the selection of valuation approach affects the determination of the basis of value being estimated.

The 2013 IVS outline similar valuation principles, approaches, engagement requirements, and report content requirements consistent with VALMIN, CIMVal, and Samval. The high level guidance provided by the IVS is designed to apply to all industry types and all global markets, and is therefore principles-based in order to accommodate a range of valuation circumstances.

#### 4.6.1 Framework for IVS Asset Standard: IVS 260

The unique characteristics of mineral assets do not allow them to be neatly categorized into the asset types respectively addressed by existing Asset Standards. In light of this, an ‘IVS Asset Standard 260-Extractives Industry Assets’ is proposed which would address the application of the IVS General
Standards to mineral assets. An outline for the framework, in line with the structure of existing asset standards, is proposed as follows:
IVS Asset Standard 260-Extractives Industry Assets

Scope of Work

-requirement to identify the subject mineral asset(s) per IVS 101

Implementation

-requirement to perform a site visit if applicable

-requirement to ensure reserve/resource is compliant

-requirement to reconcile or explain multiple technical reports and corresponding resource/reserve estimates

-requirement to verify technical data is reasonable and was compiled by an appropriately qualified person

Reporting

-requirement to reference technical report used to support the reserve/resource estimate

-requirement to provide additional technical information necessary to describing the asset (e.g. maps)

Commentary

-requirements to comment on:

  Characteristics of Mineral Assets
  -uncertainty regarding commodity prices
  -uncertainty regarding quantity of resource/reserve
  -uncertainty regarding recovery (extraction and processing)

Valuation Approaches

-classification of Principle Type of Mineral Property (exploration property, resource property, development property, and production property)

-Appropriateness of Income, Cost, Market approach to the type of mineral property

Multiple Approaches

-reasons for selection or exclusion of an approach

Special Considerations for Financial Reporting

-(this section would need to reflect requirements of a comprehensive extractives industry IFRS, to be developed by the IASB)
4.6.2 Framework for a Technical Information Paper (TIP 5) for Extractives Industry

In general, TIPs are intended to provide high level explanations of general valuation principles and practices. A TIP is intended to aid experienced valuators and is not meant to teach individuals how to perform specific valuations [33]. Specifically, as outlined in the Scope and Content of the International Valuation Standards, a TIP is intended to [33]:

1. “Provide information on the characteristics of different types of assets that are relevant to value
2. Provide information on appropriate valuation methods and their application in different situations
3. Provide additional detail on matters identified in another standard
4. Provide information to support the judgment required in reaching a valuation conclusion”

A list of considerations for a Technical Information Paper on the Extractives Industry were presented in the IVSC’s Extractive Industries Discussion Paper published in 2011 [51]. Combining these considerations with the common elements of VALMIN, CIMVal, and Samval as identified in Chapter 3, as well as opinions expressed by valuators, the following framework for an Extractives Industry TIP is proposed to provide additional guidance to valuators:
Technical Information Paper 5- Extractives Industry Valuations

Introduction

Definitions


-Qualified Person, Pre Feasibility Study, Feasibility Study

-commentary to be provided on:

Valuation Process

-special considerations for income, cost and market approaches

-applicable methods (gross in-situ value method generally not considered)

-methods most appropriate to each stage of mineral development

Assumptions

-commodities prices analysis and forecasting

-production rate forecasting; variables involved

-capex, opex

-incorporation of risk; (considerations for country risk, stage of development, technical risks)

Reliance on Technical Reporting

-qualifications of persons reporting technical information, including verification undertaken by the valuator

-site visits

-resource/reserve estimates

-non compliant or historical resource/reserve estimates-Multiple reserve estimates

Additional considerations
- Asset retirement obligations (AROs), environmental, social, legal issues

- Regulatory approval (stage and requirements)

- Availability of financing
4.7 Action Plan

This section includes two suggested action plans. The first action plan outlines the steps that would be required to develop the proposed Extractives Industry Asset Standard and Technical Paper. The second action plan outlines the actions that would be required to support the adoption and long term success of the proposed IVS within the minerals industry.

4.7.1 Actions to develop proposed IVS

In order to best serve their common goals, IMVAL should combine efforts with the IVSC Extractive Industries Expert Group, and concentrate their combined efforts on developing an extractive industries Asset Standard and Technical Information Paper. This combined body should:

1. Convene a global mineral valuation conference, inviting participation from national mineral and valuation associations to develop an exposure draft of the proposed Asset Standard and Technical Information Paper
2. Engage in an industry consultation process by soliciting global industry feedback on the exposure drafts
3. Co-ordinate with the IASB to align release of final Asset Standard and Technical Information Paper with the release of a comprehensive minerals industry IFRS

4.7.2 Actions to support the adoption and long term success of the IVS

As an international non-governmental organization, the IVSC does not have the ability to mandate the use of IVS. In order to make the development and adoption of the proposed IVS possible, it is incumbent upon professional organizations, regulators, securities exchanges, and valuators to take specific actions. In order to make the development and adoption of an international MAVC possible, and to ensure that:

1. Securities regulators and securities exchanges adopt the IVS, making them enforceable for listed companies as part of disclosure standards.
2. A list of mining and geological professional member associations is compiled by countries at an international level to allow parties to easily verify the Competent/Qualified Person membership requirements. An alliance of national minerals industry professional organization would be best placed to develop a register or Recognized Professional Organizations (RPO).

3. State level licensing for valuators is eliminated, while country level licensing is made internationally compatible to facilitate free flow of valuation services.

4. A comprehensive, publicly accessible database is established detailing all mineral property transaction data. Several commercially available databases are currently compiled by research agencies such as Inteirra RMG, Wood Mackenzie (Brook Hunt), and SNL Metals Economics Group. The proprietary nature and limited extent of these databases restricts their usefulness.

5. The IASB publishes a comprehensive mineral industry IFRS which appropriately acknowledges the difficulties associated with current cost accounting in the minerals industry.

6. Mineral valuation literature will be further developed, ideally in the form of a comprehensive mineral valuation handbook. This will require sponsorship from national mineral industry organizations, universities or other public/private educational institutions, and professional valuators. MICA in Australia, the AIMA in the US, CIM Management and Economics Society in Canada, and SAIMM in South Africa all possess the necessary knowledge pool required to produce such a textbook and should consider this as potential future project.
Chapter 5
The Business Case

5.1 Overview

In order to finance mineral development activities, mining companies require ongoing access to global capital markets. The capital intensive nature of the industry means that the proper and efficient operation of these markets is critical to the continued success and future growth of the industry. In the past, instances of fraud, further perpetuated by insufficient requirements for technical reporting, served as the impetus for developing regulated resource and reserve reporting. The most notable among these events being the Bre-X gold fraud. This event caused irreversible damage to public perception and investor confidence in the industry [28] [59]. Building on the early success and rapid adoption of technical reporting codes for resources and reserves, mineral valuation codes are a logical and proactive progression in the effort to provide comprehensive reporting standards for the mineral industry. The objective of mineral valuation codes is to facilitate the proper functioning of capital markets by providing materially complete, accurate, and transparent reporting through clearly defined reporting requirements [60]. This section describes how all market participants can be better served by working in an internationally standardized valuation reporting environment.

5.2 Access to capital

The Global Financial Crisis (GFC) of 2008/2009 highlighted just how reliant the mining sector is on the health of global capital markets. As sources of debt and equity shrunk drastically in the midst of the GFC, mining companies across the geographic, commodity, and size spectrum were forced to compete vigorously for remaining sources of capital. While market conditions improved in 2010 and 2011, recent adverse global macroeconomic conditions, including a steep decline in commodity prices since 2011, have put the mining industry under renewed financial stress. Research undertaken by Ernst and Young’s
Global Metals and Mining Center, is summarized in Table 9, highlighting recent trends in mining financings.

Table 9 Composition by USD value of mining sector capital raisings [61]

<table>
<thead>
<tr>
<th></th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>9M13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loans</td>
<td>110,787</td>
<td>171,691</td>
<td>62,420</td>
<td>183,875</td>
<td>187,059</td>
<td>105,981</td>
<td>115,154</td>
</tr>
<tr>
<td>Bonds</td>
<td>36,358</td>
<td>38,146</td>
<td>61,016</td>
<td>72,502</td>
<td>83,804</td>
<td>112,539</td>
<td>68,188</td>
</tr>
<tr>
<td>Convertibles</td>
<td>12,865</td>
<td>12,238</td>
<td>14,431</td>
<td>5,477</td>
<td>2,365</td>
<td>3,537</td>
<td>6,151</td>
</tr>
<tr>
<td>Follow-ons</td>
<td>66,802</td>
<td>48,751</td>
<td>73,806</td>
<td>49,705</td>
<td>49,745</td>
<td>25,950</td>
<td>15,954</td>
</tr>
<tr>
<td>IPOs</td>
<td>21,400</td>
<td>12,406</td>
<td>2,987</td>
<td>17,948</td>
<td>17,449</td>
<td>1,388</td>
<td>626</td>
</tr>
</tbody>
</table>

The Ernst and Young research indicates that current conditions for financings are worse than those experienced in 2009, as evidenced by the steep decline in both primary and secondary offerings. Similar research by PricewaterhouseCoopers (PWC), summarized in Table 10 highlights the recent trends in mining sector deal activity.

Table 10 Global mining M&A volume and value trends [62]

The PWC research also indicated negative financing conditions, similar to those identified by Ernst and Young. Merger and acquisition activity in 2013 decreases in both aggregate volume and value terms in to below 2009 levels. Whether this picture of global capital markets represents a new paradigm for mining
industry financing remains to be seen. However, it is clear that the industry currently faces intense competition for capital, and will likely face such circumstances again due to the cyclicality of the industry. As companies continue to compete for traditional forms of capital while also exploring new and alternative forms of financing, any proposition which might increase their attractiveness to prospective capital sources should be considered.

One major potential source of capital that is noticeably lacking from the mining industry is private equity (PE). The small number of PE firms that have emerged in recent years to serve the mining sector are almost exclusively run by former industry insiders [63]. Notable new funds include X2 Partners led by Mick Davis, the former CEO of Xstrata Resources, Magris Resources led by Aaron Regent, the former CEO of Barrick Gold, and B&A Mineracao, led in part by Roger Agnello, the former CEO of Vale.

Traditional PE firms continue to stay away from the sector, preferring lower risk investment alternatives. As noted by PricewaterhouseCoopers (PWC), private equity firms have “very high information demands during the due diligence process to help them understand risk” [64]. Further explanations for the lack of private equity capital in mining markets revolve around the specialized knowledge required to invest in the sector [61]. Standardized valuation codes for mineral assets would help satisfy these information demands by lessening the burden of specialized knowledge required to analyze mining assets. By bringing mineral asset valuation reporting in line with other industries in which private equity firms currently operate, PE capital might be encouraged to flow to the sector. Since the environment in which PE firms operate is highly globalized, any mineral valuation reporting would have to be similarly consistent across borders. This could be met by a mineral specific valuation reporting code incorporated into an existing general asset valuation code already in use, such as the IVS.

5.3 Preference for standardized reporting

In 2013, PWC published an industry survey entitled, “What do investment professionals need from mining company reporting?” It provides an insider view of how industry investors and analysts look at
reporting [65]. The survey included 27 participants reflecting a global mix of mining industry investors and analysts. The report highlights a quote which captures the general sentiment of respondents, ‘I can’t guarantee that good disclosure will get you a higher share price, but I can guarantee that bad disclosure will get you a lower one’ [65]. Among the conclusions from the survey, investors consider reporting quality to be a proxy for management quality. When presented with the statement, “the quality and integrity of reporting impacts my perception of the quality and integrity of management”, 69% of respondents “strongly agreed” and further 19% “agreed”. While the survey focused on Annual Reports and related regulatory reporting, it was indicative of strong support for structured reporting. Similarly, when presented with the statement, “I would be happy to remove the requirement for companies to produce an annual report”, 67% “strongly disagreed” and 11% “disagreed”. This research indicates that adopting structured valuation reporting would result in very real benefits in terms of investment interest.

5.4 Effects on the market for valuation services

The advantages of codified mineral valuation reporting can be enhanced by developing a single international code rather than relying on multiple national codes. Because mining companies operate globally, often with listings in multiple jurisdictions, a single international code would greatly reduce the cost of regulatory compliance in two ways. Firstly, in a standardized reporting environment, a single valuation report can serve domestic and international markets eliminating the need to prepare jurisdiction-specific reports. Secondly, the cost of valuation services would decrease under an internationally standardized reporting regime. An international valuation code with general qualifications requirements and provisions for certification equivalency will expand the marketplace for valuation services through the removal of licensing or regulatory restrictions which hamper the free flow of professional valuation services across jurisdictions. The net effect would be an increase in the supply of valuation services available and a lower price for such services. The creation of an unrestricted global marketplace for valuation services would be of enormous benefit not just to report commissioning entities, but also to valuators whose services would no longer be limited to domestic or regional markets.
In addition to financing and regulatory savings, valuation codes offer mining company executives and directors a strong and demonstrable due-diligence defense [66]. By ensuring that valuators are sufficiently competent and properly qualified, companies can rely on valuation conclusions with more confidence. This similarly applies to professional valuators. When adhered to, mineral valuation codes provide a strong due-diligence defence, thereby limiting personal liability claims. Benefits to the professional valuator however are not limited to liability defenses. A properly designed code firmly establishes the independence and professional discretion of the valuator by outlining the responsibilities and obligations of all parties. Valuation codes can therefore be an effective shield to undue influence from the commissioning entity as well as an effective means of recourse.

5.5 Regulators, exchanges, and investors

There are significant benefits to securities administrators, securities exchanges, and the investing public more generally. For securities administrators whose purpose it is to protect the investing public, mineral valuation codes are industry tailored tools reflecting the unique technical and economic aspects of the minerals industry. By tailoring valuation codes to the minerals industry and developing them in coordination with industry groups and professionals, regulators can facilitate greater acceptance when compared to equivalent ‘black letter law’ approaches [66]. Whether the approach to development and enforcement of codes follows a self-regulatory model as in Australia, or a more direct regulatory approach as in South Africa, a shared approach involving both industry and regulators has led to more readily accepted and comprehensive valuation codes.

For securities exchanges whose purpose it is to facilitate liquid markets while balancing the need to attract new listings from increasingly competitive and globalized markets, international mineral valuation codes make it easier for foreign entities or those seeking multi-listing status to obtain a listing by reducing the cost of regulatory compliance. For the investing public who rely on valuation reports to make informed
and prudent investment decisions, technical reporting standards for reserves and resources were strongly welcomed [59]. These codes, namely JORC, NI 43-101, and SAMREC are designed to ensure that such reports are complete, accurate, and reasonable in their conclusions. Implementation of mineral valuation codes will compliment these already existing technical codes by providing a comprehensive reporting environment.

5.6 Empirical support

The advantages of MAVCs, which include the expansion of the market for valuation services, protections for both valuators and commissioning entities, and greater investor confidence in the industry, are empirically supported by the wide scale adoption of existing national codes by mineral professional organisations and securities exchanges. In 1995 the AusIMM, MICA, and AIG adopted the first version of the VALMIN Code making them the first organizations globally to do so. This early support prompted the development and adoption of CIMVal in 2003 by the CIM, and later the development and adoption of Samval by various South African mineral professional organizations in 2008. In 2003, the TSX Venture Exchange incorporated CIMVal into Appendix 3G listing and continuous disclosure requirements, although with restrictive modifications, and in 2008 the JSE adopted Samval in conjunction with a detailed review process. Most recently, the Hong Kong Stock Exchange incorporated Canadian CIMVal Standards into its own listing and continuous disclosure requirements [20].

The merits of MAVCs are also strongly affirmed by the opinions of various valuation professionals as expressed in several notable papers. ‘Working with VALMIN A practitioner's view’ (2000) by Appleyard [58], states that in the Australian case, the benefits of the VALMIN Code have far outweighed any potential costs arising from the additional time and effort required to conduct a compliant report. ‘Should the VALMIN Code be Mandatory?’ (2001) by Bourassa [67] expresses similar views regarding standardized reporting as well as ‘Independent review of the VALMIN code’ (2002) by Onley, Goddard,

5.7 Conclusions

The advantages of an international MAVC are clear. Simply put, the benefits accruing to all stakeholders strongly outweigh any potential costs. First, the adoption of an international MAVC has the potential to encourage capital to flow from traditional sources while also increasing the attractiveness of the industry to new and alternative sources of financing. Second, an international MAVC would improve the market for valuation services by eliminating barriers to the free flow of services for what is a highly globalized industry benefiting both valuators and those commissioning their services. Third, an international MAVC would simplify regulation of the minerals industry for both market regulators and securities exchanges while also establishing important protections and responsibilities for those involved in the reporting process. Lastly, an international MAVC would improve the quality of disclosure to the investing public and prevent potential future abuses of information. These contentions are strongly supported by empirical evidence arising from early adoption of national codes as discussed in Section 5.6, as well as the opinions expressed by valuation professionals including Ellis [1], Bourassa [66], Spence [12], Carmichael [10], Appleyard [58], and Macfarlane [31]. In conclusion, the adoption of an international MAVC would strongly benefit the industry as a whole by complimenting the benefits of existing technical reporting standards including Canada’s NI 43-101, JORC Code, and Samcode.
Chapter 6
Conclusions and Recommendations

6.1 Summary
This thesis presents a framework for an international MAVC which addresses the needs of the global minerals industry and ensures materially complete, accurate, and timely disclosure of information. A series of interviews were conducted in order to assess the viability of an international mineral asset valuation code, and to determine the current state of valuation reporting standards. Interviewees included market regulators, valuation professionals, representatives of minerals professional organizations, and other individuals identified as key persons in the development of mineral asset valuation codes. These interviews in combination with a review of existing valuation reporting codes and practices formed the basis of the argument for a universal code proposed in this thesis. The timing of the proposal coincides with the emergence of the joint IMVAL Committee and the IVSC Extractive Industries Expert Group. The proposed international MAVC is intended to create a more comprehensive reporting environment for the global minerals industry by acting as a single international standard for the valuation of mineral assets, replacing existing national valuation codes and tying together technical reporting of reserve and resources with more general established asset valuation standards.

6.2 Existing MAVCs
A review of VALMIN, CIMVal, and Samval revealed broad compatibility among the existing national codes in terms of structure and valuation principles. A comparison of each codes requirements in terms of major principles, key requirements, valuation approaches, and apparent shortfalls and benefits was conducted in order to draw out common elements for inclusion in a harmonized code. Discrepancies between codes were mainly related to definitions of value as discussed in Chapter 3. These discrepancies, as well as the shortfalls of each existing code were addressed in the proposed international MAVC framework.
6.3 IVS with proposed Extractives Industry Standard and Technical Information Paper

A framework for an IVS Extractives Industry Asset Standard and Technical Information Paper was presented in Chapter 4. The Extractives Industry Asset Standard, draws on the structures, valuation principles, and key definitions from VALMIN, CIMVal, Samval, GN-14, and the 2013 IVS, and incorporates common concerns expressed by valuation professionals. The proposed Technical Information Paper is intended to guide valuators in the application of the 2013 IVS to mineral assets. Integrating mineral asset specific valuation guidance within the IVS poses several advantages including a more seamless valuation process for business valuations involving mineral assets as well as related securities.

6.4 The Business Case

A review of the current health of the minerals industry revealed severe access to capital constraints faced by the industry in 2013, in combination with generally declining market conditions. The review indicated a need to attract alternative forms of financing which would be better facilitated through improved reporting. The expansion of the market for valuation services and reduced regulatory compliance costs were also identified as key benefits to mining companies, valuation professionals, and securities exchanges. Finally, the review indicated strong empirical support for standardized valuation reporting.

6.5 Action Plans

Key actions to develop the proposed Extractives Industry Asset Standard and Technical Paper, as well as to support the adoption and long term success of the combined IVS, were outlined in Chapter 4. Briefly, these were:

1. Convene a global mineral valuation conference which brings together representatives of national valuation code committees of CIMVal, VALMIN, and Samval, as well as representatives of the IVSC and major mining exchanges including Toronto, Hong Kong, and London. The aim of the conference would be to communicate the business case for an international valuation code
harmonized under the IVS, and to seek input on a proposed draft of the IVS Asset Standard and Technical Information.

2. Engage in an industry consultation process spearheaded by the IMVAL Committee in co-operation with national and international mining associations such as the International Council on Mining and Metals and the Global Mining Standards and Guidelines Committee (GMSG).

3. IVS representatives should co-ordinate with the IASB in order to align development of any future extractives industry IFRS with specific extractives industry valuation considerations as highlighted in the proposed IVS Asset Standard and Technical Information Paper. The IVS should seek early review privileges with respect to any proposed IFRS.

4. Publish revised IVS including Extractives Industry Asset Standard and TIP

5. Securities regulators and securities exchanges should adopt the IVS. This process may involve legal and political considerations which are beyond the scope of this thesis.

6. Eliminate state level licensing where practical. This would require lobbying efforts by mineral valuation professionals and their representative bodies.

7. Develop a list of Recognized Professional Organizations (RPO) to allow parties to easily verify the Competent/Qualified Person membership requirements. An alliance of national minerals industry professional organization would be best placed to develop a register or Recognized Professional Organizations (RPO).

8. Develop mineral valuation literature. This would require sponsorship from national mineral industry organizations, universities or other public/private educational institutions, and professional valuators. MICA in Australia, the AIMA in the US, CIM Management and Economics Society in Canada, and SAIMM in South Africa all possess the necessary knowledge pool required to produce such a textbook and should consider this as potential future project.
Chapter 7  Works Cited


[61] Ernst & Young, "Mining in rapid-growth economies," Ernst & Young, 2013.


Appendix A

Development Timelines

7.1 VALMIN Development

1981- Mineral Industry Consultants Association (MICA) formed
May 1984- AusIMM/PESA conference ‘The Valuation of Mining and Petroleum Properties and Companies’
Sep. 1989- Minval ’89 conference in Sydney
Jul. 1990- NCSC Practice Note Release No. 333
Jan. 1991- NCSC becomes Australian Securities Commission (ASC); NCSC Releases no longer in effect
Apr. 1991- AusIMM organizes first meeting of Mineral Valuation (VALMIN) Committee; task to replace NCSC Release 149, examine question of an institute mineral valuation code
1992- JORC Code incorporated into New Zealand Stock Exchange (NZX)
Oct. 1994- VALMIN ’94 conference in Sydney; draft VALMIN code discussed, focus on valuation methods
1995- ASC Information Release 95-12; ASC will refer to VALMIN when reviewing mining exploration prospectuses and takeover documents
Feb. 1998- 2nd ed. of VALMIN Code published; expanded to include petroleum assets/securities
Mar. 2001- AusIMM forms VALMIN Code Review Task Force; submissions solicited
Oct. 2001- VALMIN ’01 conference, international focus; attendees from Canada, US, S.A., Chairman of IVSC
2002- VALMIN Code Review Task Force final report published [27]
2001- ASC becomes Australian Securities Investment Commission (ASIC)
Apr. 2005- 3rd ed. of VALMIN Code published
Jul. 2007- ASC Policy Statement 74 & 75 and Practice Notes 42 & 43 superseded by ASIC Regulatory Guides RG 111 ‘Content of expert reports’ and RG 112 ‘Independence of Experts’
Feb. 2011- Review of VALMIN Code initiated
Oct. 2011- VALMIN Seminar Series conference Perth; international harmonization focus; Samval review committee and IVSC attend
Apr. 2012- VALMIN Seminar Series conference Brisbane
Apr. 2012- VALMIN Review Meeting; SAIMM in attendance
7.2 **CIMVal Development**

1971- National Policies Statement 22 (NP22) ‘Use of Information and Opinion re Mining and Oil Properties by Registrants and Others’


1995- Ontario Securities Commission (OSC) begins reviews of NP22 and NP2-A

Jul. 1997- Mining Standards Task Force (MSTF) formed by TSE/OSC in wake of Bre-X scandal; task to recommend best practices for reporting of mineral exploration/mining


Oct. 1999- TSE upgrades listing requirements for natural resource companies; reinforces disclosure policies


May. 1999- CIM forms Special Committee on Valuation of Mineral Properties (CIMVal) on recommendation of MSTF

Mar. 2000- Mining Millennium 2000 conference Toronto hosted by PDAC/CIM

Feb. 2001- National Instrument 43-101 comes into effect in all jurisdictions represented by the CSA, replacing NP22 & NP2-A

Apr. 2001- CIMVal Committee publishes Draft Discussion Paper

Mar. 2003- CIM adopts CIMVal Standards

2003- TSX:V incorporates modified CIMVal into listing requirements through Appendix 3G ‘Valuation Standards and Guidelines for Mineral Properties’; restricts resource valuation

2010- CIMVal adopted by Hong Kong Stock Exchange through Chapter 18 (HKEX)
7.3 Samval Development

Jan. 1998- Southern African Institute of Mining and Metallurgy (SAIMM) forms South African Resources and Mineral Reserves Committee (Samrec)

Mar. 2000- 1st edition of Samrec published

2001- Samval Working Group of the Samrec/Samval Committee (SSC) formed under auspices of Southern African Institute of Mining and Metallurgy (SAIMM)


Mar. 2002- SAIMM convenes colloquium in Johannesburg ‘Valuation of Mineral Projects and Properties: an African perspective’ in Johannesburg, participants include AusIMM, CIM, IVSC, IASB

2007- Draft Samval code circulated for industry comment

Apr. 2008- 1st edition of Samval published

Jul. 2009- Revised Samval

Feb. 2012- SAIMM reconvenes Samval Working Group for review and update of Samval Code
7.4 International MAVC Development

1973-International Accounting Standards Committee formed (precursor to IASC and later IASB)
1981-International Assets Valuation Standards Committee (IAVSC) formed (precursor to the IVSC)

Nov. 2000- IASC publishes ‘Extractive Industries Issues Paper’
Apr. 2001- IASC becomes IASB; International Financial Reporting Standards (IFRS) complement existing International Accounting Standards (IAS)

2001- IVSC Extractive Industries (IVSC EI) Expert Group formed
2001- IASB forms team to study issues raised by IVSC EI Expert Group report
2003-IVSC requests IVSC EI Expert Group to develop EI Best Practice Technical Paper
2004-IASB published IFRS 6 ‘Exploration for and Evaluation of Mineral Resources’

2006-Committee for Mineral Reserves International Reporting Standards (CRIRSCO) published 1st version of International Reporting Template for Exploration Results, Mineral Resources and Mineral Reserves
Jan. 2007-IVSC republishes GN-14 as part of IVS 2007
2007-EI Best Practice Technical Paper completed, dispute with IVSC Standards Board
2008-EI Expert Group disbanded

Feb. 2010- IVSC withdraws GN-14; did not meet requirements for IVS 2011
Apr. 2010-IASB publishes Extractive Activities Discussion Paper

Mar. 2011-AIMA adopts Extractives Industries Best Practice Technical Paper
2011-IVSC convenes new IVSC Extractive Industries Expert Group
Aug. 2011-SAIMM initiates effort for simultaneous update of CIMVal, VALMIN, Samval
Apr. 2012-Brisbane conference results in ‘Brisbane Accord’; AusIMM, CIM, SAIMM, SME, AIMA, RICS, IVSC in attendance
Jul. 2012-new IVSC EI Expert Group publishes discussion paper

Jul. 2012-International harmonization effort named International Mineral Valuation (IMVAL) Committee

Nov. 2012-Working group established to produce draft IMVAL code based on GN-14

Dec. 2012-IASB abandons Extractive Activities project, merges efforts into Intangible Asset project

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Adapted from [29] by T.R. Ellis
7.5 Personal Communications

Godknows Njowa, Mineral Industry Advisor, Venmyn Deloitte, May 17 2013

Jonathan Bell, Managing Director, Alexander Research, April 12 2013

Robert Cushing, Real Estate Valuator, PricewaterhouseCoopers, April 6 2013

James Whyte, Senior Geologist, Corporate Finance Branch, Ontario Securities Commission, March 22 2013

Craig Waldie, Senior Geologist, Corporate Finance Branch, Ontario Securities Commission, March 27 2013

William Roscoe, Chairman Emeritus, RPA, March 21 2013

John Gustavson, Mineral Appraiser, Jan 22 2013

Trevor Ellis, Independent Minerals Appraiser, Ellis International Services Feb 5 2013

Michael Lawrence, Professional Valuer & Technical Auditor, Minval Associates May 7 2013

Curtis Clarke, Vice President, Mining-Canada, Coffey International March 25 2013

Robert Holland, Chief Mining Advisor, British Columbia Securities Commission March 21
### 7.6 Samcode required Table of Contents

<table>
<thead>
<tr>
<th>T2.1 Executive Summary</th>
<th>An Executive Summary of the Mineral Asset Valuation (the Valuation) should be provided.</th>
</tr>
</thead>
<tbody>
<tr>
<td>T2.2 Introduction and Scope</td>
<td>Introduction, and scope, specifying commissioning instructions including reference to the Valuation, engagement letter, date, purpose and intended use of the Valuation. The Competent Valuator must fully disclose any interests in the Mineral Asset or commissioning entity. Any restrictions on scope and special instructions followed by the Competent Valuator, and how these affect the reliability of the Valuation.</td>
</tr>
<tr>
<td>T2.3 Identity and Tenure</td>
<td>The identity, tenure and locations of the property interests, rights or securities to be valued (i.e. the physical, legal and economic characteristics of the property).</td>
</tr>
<tr>
<td>T2.4 History</td>
<td>History of activities, results and operations to date.</td>
</tr>
<tr>
<td>T2.5 Geological Setting</td>
<td>Geological setting and mineralization should be described.</td>
</tr>
<tr>
<td>T2.6 Mineral Resources and Mineral Reserves</td>
<td>Mineral Resource and Mineral Reserve statements should be provided. They must be signed off by a Competent Person in compliance with the SAMREC Code.</td>
</tr>
<tr>
<td>T2.7 Modifying Factors</td>
<td>A statement of modifying factors should be included, separately summarizing material issues relating to each applicable modifying factor.</td>
</tr>
<tr>
<td>T2.8 Valuation Approaches and Methods</td>
<td>The valuation approaches and methods used in the Valuation should be described and justified in full.</td>
</tr>
<tr>
<td>T2.9 Valuation Date</td>
<td>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.</td>
</tr>
<tr>
<td>T2.10 Valuation Summary and Conclusions</td>
<td>A summary of the valuation details, consolidated into single material line items. The Valuation must specify the key risks and forecasts used in the Valuation. A cautionary statement concerning all forward-looking or forecast statements should be included. The valuation 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 Competent Valuator.</td>
</tr>
</tbody>
</table>
T2.11 Sources of Information

The sources of all material information and data used in the report should be disclosed, as well as references to any published or unpublished technical papers used in the valuation, subject to confidentiality.

A reference should 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.

T2.12 Previous Valuations

The Valuation should refer to all available previous valuations of the Mineral Asset that have been performed in the previous two years and explain any material differences between then and the present valuation.

T2.13 Competent Persons and Other Experts

Names and qualifications of Competent Persons or other experts who have provided the reports on which the Valuation has relied. Written consent to use and rely on such reports should be obtained.

Significant contributions made by such experts should be highlighted individually.

T2.14 Competent Valuator

The Valuation should contain:

- The signature of the Competent Valuator.
- The Competent Valuator’s qualifications and experience in valuing mineral properties, or relevant valuation experience.
- A statement that all facts presented in the report are correct to the best of the Competent Valuator’s knowledge;
- A statement that the analyses and conclusions are limited only by the reported forecasts and conditions;
- A statement of the Competent Valuator’s present or prospective interest in the subject property or asset;
- A statement that the Competent Valuator’s compensation, employment or contractual relationship with the Commissioning Entity is not contingent on any aspect of the report;
- A statement that the Competent Valuator has no bias with respect to the assets that are the subject of the report, or to the parties involved with the assignment;
- A statement that the Competent Valuator has (or has not) made a personal inspection of the property; and
- A record of the Competent Persons and experts who have contributed to the Valuation.

T2.15 Range of Values

The valuation of a Mineral Asset must report the Competent Valuator’s estimated value. A range of values must be provided, together with the estimated value.
### T2.16 Identifiable Component Asset (ICA) Values

In some valuations, the Valuation should 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.e., 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 must 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 must be performed by suitably qualified experts, among whom may be the Competent Valuator.

If the Mineral Asset Valuation includes an ICA Valuation, the Competent Valuator must satisfy himself or herself that the ICA Valuation is reasonable before signing off the Mineral Asset Valuation.

### T2.17 Historic Verification

A historic verification of the performance parameters on which the Mineral Asset Valuation is based should be presented.

### T2.18 Market Assessment

A comprehensive market assessment should be presented.

### T2.19 Audits or Reviews

The results of any audits or reviews of the Mineral Asset Valuation should be presented, together with a commentary on the findings.