



**Assessment of Valuation Codes for Mineral Deposits**

**and**

**a draft basis for**

**Mongolian Mineral Property Valuation Standards  
("The MONVAL Code")**

*July 2016*

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## ABBREVIATIONS AND ACRONYMS

<b>AIG</b>	Australian Institute of Geoscientists
<b>AIM</b>	Alternative Investment Market, London Stock Exchange's international market for smaller growing companies
<b>AIPG</b>	American Institute of Professional Geologists
<b>AMEP</b>	Australia-Mongolia Extractives Program
<b>ASIC</b>	Australian Securities & Investments Commission
<b>ASX</b>	Australian Stock Exchange
<b>AusIMM</b>	Australasian Institute of Mining and Metallurgy
<b>BCSC</b>	British Columbia Securities Commission
<b>CBRR</b>	Brazilian Commission for Resources and Reserves
<b>CEng</b>	Chartered Engineer member of Institute of Materials, Minerals and Mining
<b>CGeol</b>	Chartered Geologist of Geological Society of London
<b>CIMVAL</b>	Standards and Guidelines for the Valuation of Mineral Properties: Special Committee of the Canadian Institute of Mining, Metallurgy and Petroleum on Valuation of Mineral Properties
<b>CIM</b>	Canadian Institute of Mining, Metallurgy and Petroleum
<b>CPG</b>	Certified Professional Geologist member of American Institute of Professional Geologists
<b>CP</b>	Competent Person
<b>CPEng</b>	Chartered Professional Engineer (Australia or New Zealand)
<b>CRIRSCO</b>	Committee for Mineral Reserves International Reporting Standards
<b>CSA</b>	Canadian Securities Administrators
<b>CSCI</b>	Chartered Scientist Geological Society of London
<b>CV</b>	Competent Valuer
<b>DFAT</b>	Australian Department of Foreign Affairs and Trade
<b>EBRD</b>	European Bank for Reconstruction and Development
<b>ECSA</b>	Engineering Council of South Africa
<b>EFG</b>	European Federation of Geologists
<b>ESMA</b>	European Securities and Markets Authority
<b>EuroGeol</b>	European Geologist
<b>FAIG</b>	Fellow of Australian Institute of Geoscientists
<b>FAIG RPGeo</b>	Fellow Registered Professional Geologist of Australian Institute of Professional Geoscientists
<b>FAusIMM</b>	Fellow of the Australasian Institute of Mining and Metallurgy
<b>FIMMM</b>	Fellow of Institute of Materials, Minerals and Mining
<b>FRCM</b>	Financial Regulatory Commission of Mongolia
<b>FSAIMM</b>	Fellow of the Southern Africa Institute of Mining and Metallurgy
<b>GSL</b>	Geological Society of London
<b>IASB</b>	International Accounting Standards Board
<b>ICMM</b>	International Council for Mining and Metals
<b>IFRS</b>	International Financial Reporting Standards
<b>IGI</b>	Institute of Geologists of Ireland
<b>IIMA</b>	International Institute of Mineral Appraisers
<b>IMVAL</b>	International Mineral Valuation Committee
<b>IPENZ</b>	Institution of Professional Engineers of New Zealand
<b>IVS</b>	International Valuation Standards
<b>IVSC</b>	International Valuation Standards Committee

<b>JORC</b>	Joint Ore Reserves Committee (Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, The JORC Code)
<b>JSE</b>	Johannesburg Stock Exchange
<b>KAZRC</b>	Kazakhstan Association for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The Kazakhstan Reporting Code)
<b>LSE</b>	London Stock Exchange
<b>MAIG</b>	Member of Australian Institute of Geoscientists
<b>MAIG RPGeo</b>	Registered Professional Geoscience Member of Australian Institute of Geoscientists
<b>MAusIMM(CP) or FAusIMM(CP)</b>	Chartered Professional Member or Fellow of the Australasian Institute of Mining and Metallurgy
<b>MCA</b>	Minerals Council of Australia
<b>MICA</b>	Mineral Industry Consultants Association
<b>MIMMM</b>	Member of Institute of Materials, Minerals and Mining
<b>MIT</b>	Massachusetts Institute of Technology
<b>MMSA</b>	Mining and Metallurgical Society of America
<b>MONVAL</b>	Mongolian Code for Valuation of Mineral Properties
<b>MoM</b>	Mongolian Ministry of Mining
<b>MPIGM</b>	Mongolian Professional Institute of Geosciences and Mining
<b>MRAM</b>	Mongolian state administrative agency responsible for geology and mining
<b>MRC</b>	Mongolian Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The MRC Code, 2014)
<b>MSPCMR</b>	Mongolian State Professional Committee on Mineral Resources
<b>NAEN</b>	Russian National Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The NAEN Code)
<b>NGO</b>	Non-governmental Organisation
<b>NI 43-101</b>	National Instrument 43-101, developed by the Canadian Securities Administrators (CSA) to establish standards for public disclosure of scientific and technical information concerning mineral properties/projects.
<b>NRO</b>	National Reporting Organisation (to CRIRSCO)
<b>NYSE</b>	New York Stock Exchange
<b>NZX</b>	New Zealand Stock Exchange
<b>OERN</b>	Russian Society of Subsoil Use Experts
<b>OSC</b>	Ontario Securities Commission
<b>PDF</b>	Portable Document Format
<b>PERC</b>	Pan-European Reserves and Resources Committee
<b>PESA</b>	Petroleum Exploration Society of Australia
<b>PGeo or P.Geol.</b>	Professional Geologist
<b>P. Eng. or Pr.Eng. or Pr.Cert.Eng</b>	Professional Engineer or Professional Certified Engineer
<b>PLATO</b>	South African Council for Professional and Technical Surveyors
<b>PMC</b>	Professional Mineral Council
<b>POLVAL</b>	Polish Code for the Valuation of Mineral Assets (The POLVAL Code)
<b>PONEN</b>	Kazakhstan Professional Organisation for Competent Persons preparing Public Reports
<b>QP</b>	Qualified Person under NI 43-101 or Qualified Professional member of Mining and Metallurgical Society of America
<b>RPO</b>	Recognised Professional Organisation
<b>SACNASP</b>	South African Council for Natural Scientific Professions

<b>SAIMM</b>	Southern African Institute of Mining and Metallurgy
<b>SAMREC</b>	South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves
<b>SAMVAL</b>	South African Code for the Reporting of Mineral Asset Valuation
<b>SEC</b>	United States Securities and Exchange Commission
<b>SIA</b>	Securities Institute of Australia
<b>SME</b>	Society for Mining, Metallurgy & Exploration (SME Valuation Standards)
<b>SSC</b>	SAMREC/SAMVAL Committee
<b>ToR</b>	Terms of Reference
<b>TSX</b>	Toronto Stock Exchange
<b>UNCF</b>	United Nations Framework Classification
<b>USPAP</b>	Uniform Standards of Professional Appraisal Practice
<b>VALMIN</b>	Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets

## **VALUATION**

The estimation of the Value of a Mineral Property in money or monetary equivalent. “The word ‘valuation’ can be used to refer to the estimated value (the Valuation conclusion) or to refer to the preparation of the estimated Value (the act of valuing)” - IVS Framework 9 and International Valuation Standards Template (“IMVAL Template”), Second Edition, July 2016, Section 4.34, page 17.

## **EVALUATION**

*A broad physical, technical, legal, economic, and other assessment of a Mineral Property that is generally sought for an investment decision. Evaluations include feasibility studies, prefeasibility studies, preliminary economic assessments, and scoping studies. For clarity, Evaluation is *distinct* from Valuation – IMVAL Template, Second Edition, July 2016, Section 4.7, page 13.*

## 1. AMEP Mineral Deposit Valuation Activity Description

The Governments of Australia and Mongolia are undertaking the Australia-Mongolia Extractives Program (AMEP) with the goal of helping to ensure that Mongolia's citizens experience equitable and sustainable growth from their mineral resources.

One AMEP Activity addresses the intention of the Mongolian government to implement international standards and practices for the valuation<sup>1</sup> of the country's mineral deposits as announced in Article 3.1.9 of the *State Minerals Sector Policy (2014-2025)*<sup>2</sup> approved by the Mongolian Parliament in January 2014. This AMEP Activity is titled *assessment of mineral deposit valuation codes, and introduction of appropriate mineral deposit valuation system in Mongolia*. The **objective** is:

***To support the Government of Mongolia to conduct an assessment of mineral deposit valuation codes and methodologies, and select an appropriate methodology for introduction in Mongolia.***<sup>3</sup>

The Mongolian partner agency is the Policy Coordination and Implementation Department of the Ministry of Mining (MoM) for which the Activity is led by Mr. Bataa BATKHUU, Director-General. Adam Smith International is the Implementation Service Provider, which has followed the Operations Manual of AMEP for engaging the services of a team consisting of an international mining valuation expert, a Mongolian mineral deposit valuation expert and a Mongolian mineral economist, with coordination and government liaison very ably provided by the AMEP project adviser. The Activity commenced in late March 2016 and had a 4-month timeline.

### 1.1 Rationale for the AMEP Mineral Deposit Valuation Activity

The rationale for introduction of international standards for competent professionals to follow when preparing reports that assign a fair value for the sale or exchange of mineral property interests (Valuation Reports) is to enhance public credibility of the mining industry and to protect the investing public from fraudulent valuations. For such standards to be effective in gaining international acceptance by securities regulators of Mongolian professionals for filing Valuation Reports on mineral properties in Mongolia or elsewhere, one or more Mongolian professional associations must be able to demonstrate that they have a mandate for ensuring that members are competent in their discipline and that the association or associations are enforcing the standards by disciplinary measures, including suspension and expulsion from membership.

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<sup>1</sup> The AMEP Activity Proposal uses the term *valuation*, but other translations from Mongolian use *evaluation* or *evaluates* because there is only one Mongolian word for *evaluate* and *valuate*, namely, *uneleh* (see other translations of the *State Minerals Sector Policy* at <http://en.mongolianminingjournal.com/content/54797.shtml> and <http://ehoganlovells.com/cv/fa32bfa3b19d1bfc8af8a4e84dbe8017be92309a/p=7420099>). This Policy refers to "international standards" and Mongolia already has adopted the appended MRC Code which follows established international standards for estimating mineral reserves and resources, a key evaluation step. There are no international codes for evaluation other than the resource-reserve codes on which the MRC Code was modelled. Thus, by default, it is the international valuation codes to which this AMEP Activity is addressed.

<sup>2</sup> *State Minerals Sector Policy (2014-2025), Resolution of the State Great Khural, 16 January 2014, Number 18*, Ulaanbaatar City, On Adoption of the State Minerals Sector Policy, Speaker of State Great Khural, Z. ENKHBOLD, and *Addendum to the Resolution No. 18, 2014 of the State Great Khural of Mongolia*, an approved translation funded by the Australian Department of Foreign Affairs and Trade (DFAT) upon request of Mr. Otgochuluu, then Director General of the Ministry of Mining. Also see <http://en.mongolianminingjournal.com/content/54797.shtml>

<sup>3</sup> Appendix 1: AMEP Activity Proposal\_Mongolia: Regulatory reform assessment of minerals deposit valuation codes, and introduction of appropriate mineral deposit valuation system in Mongolia, 2016

By following internationally accepted methodology and reporting in a transparent manner, efficiency of the negotiation process is increased and employment as well as government and company revenue benefits accrue earlier than if parties are using different valuation standards.

The above rationale has provided the basis for using internationally accepted valuation standards for determining *Market Value*, *Fair Value* or *Value*<sup>4</sup> in drafting a set of guidelines for drafting Mongolian Mineral Property Valuation Standards (“MONVAL”).

## 1.2 Context of the AMEP Mineral Deposit Valuation Activity

All the widely used valuation codes, namely, those of Australia, Canada, South Africa and the United States, are applied as a component of the regulatory framework of the country. For example, the Australasian VALMIN Code<sup>5</sup> relies on application of the JORC (Joint Ore Reserves Committee) Code<sup>6</sup> for Mineral Resource and Reserve estimates. In turn, the Australian Securities & Investments Commission (ASIC) and the Australian Securities Exchange (ASX) cite the JORC and VALMIN Codes in their regulatory guides<sup>7</sup>, listing and disclosure rules<sup>8</sup> which companies must follow.

The *Mongolian Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The MRC Code, 2014 - APPENDIX II of this report)*, which is consistent with the JORC code, states that it was *prepared by the Mineral Resources and Reserves Committee (MRC) of the Mongolian Professional Institute of Geosciences and Mining (MPIGM) with participation of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) and the Mongolian State Professional Committee on Mineral Resources (MSPCMR)*.

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<sup>4</sup> **Market Value**, **Fair Value** and **Value** have the same meaning as explained in the VALMIN Code, 2015 Edition, Clause 8.1 and in Clause 14, *Definitions*, which state **Market Value** is the estimated amount (or the cash equivalent of some other consideration) for which the Mineral Asset should exchange on the date of Valuation between a willing buyer and a willing seller in an arm's length transaction after appropriate marketing where the parties had each acted knowledgeably, prudently and without compulsion. The term **Market Value** has the same intended meaning and context as the IVSC term of the same name (IVSC is an acronym for International Valuation Standards Committee). This has the same meaning as **Fair Value** in RG 111 (Australian Securities & Investments Commission (ASIC) Regulatory Guide (RG)). **Value** means the Market Value of a Mineral Asset. **Valuation** is defined in Clause 4.33 of the IMVAL 2015 template as the estimation of the Value of a Mineral Property in money or monetary equivalent. “The word ‘valuation’ can be used to refer to the estimated value (the Valuation conclusion) or to refer to the preparation of the estimated Value (the act of valuing)” (IVS Framework 9). The word ‘valuation’ is synonymous with the word ‘appraisal’ as used in certain jurisdictions, including the USA and Canada. In contrast, the word ‘appraisal’ is used in Australia for the broader activity of Evaluation, including the preparation of Mineral Resource and Mineral Reserve estimates.

<sup>5</sup> The VALMIN CODE, 2015 Edition, Australasian Code for Public Reporting of Technical Assessments and Valuations of Mineral Assets, prepared by The VALMIN Committee, a joint committee of the Australasian Institute of Mining and Metallurgy (AusIMM) and the Australian Institute of Geoscientists (AIG), effective 30 January 2016 and mandatory for AusIMM and AIG members from 1 July 2016, [http://www.valmin.org/docs/VALMIN\\_Code\\_2015\\_final.pdf](http://www.valmin.org/docs/VALMIN_Code_2015_final.pdf)

<sup>6</sup> The JORC Code, 2012 Edition, Joint Ore Reserves Committee of AusIMM and AIG, effective 20 December 2012 and mandatory from 1 December 2013, [http://www.jorc.org/docs/jorc\\_code2012.pdf](http://www.jorc.org/docs/jorc_code2012.pdf)

<sup>7</sup> <http://asic.gov.au/regulatory-resources/find-a-document/regulatory-guides/>

<sup>8</sup> <http://www.asx.com.au/regulation/compliance/asx-mining-reporting-faqs.htm>



Countries which have become members of CRIRSCO and developed similar resource-reserve reporting standards<sup>9</sup> (in some cases referred to as “codes”) are Australia, Canada, South Africa, European Union, Mongolia, Russia, United States of America, Chile and Brazil. Poland also has a mineral property valuation code (POLVAL) that was adopted in 2008, but with little, if any, international recognition or acceptance because the reserve-resource definition system is not consistent with the CRIRSCO standard<sup>10</sup>.

### 1.3 Steps to adoption of MONVAL Code and international regulator acceptance of reports

Internationally accepted national standards for resource-reserve estimation and evidence of enforcement by professional association(s) are essential prerequisites for a valuation code to be more than just a document giving certified professionals credibility within their own country.

A “MONVAL Code” would be a companion to the foundational MRC Code and require a repeat of many of the steps leading to the MRC Code adoption (see Figure 1).

A record of certification and disciplinary actions by MPIGM and any other Mongolian professional associations designated by government to implement and enforce both MRC and MONVAL Codes would be the final and critical step in gaining international securities regulator acceptance of public reports by professionals certified by one or more professional associations in Mongolia.

There is a possibility that international securities regulator acceptance of the MRC Code and any MONVAL Code may be complicated by Mongolian resource-reserve definitions in the Annex to Decree #203 of Minister of Mining, dated 11 September 2015 and titled *Minerals Deposits Resources and Reserve Classification and Identification Guidelines* (see APPNDIX III). Nevertheless, it is anticipated that this potential issue would be resolved over several years as has been the case with respect to the Russian NAEN Code which became a member of the CRIRSCO family of exploration and resource-reserve reporting codes in 2011.<sup>11</sup>

To illustrate the possible time required for wide international securities regulator acceptance, the Canadian Securities Administrators (CSA) issued a notice on 25 February 2016 that the Russian NAEN Code (2011) meets the criteria of an “*acceptable foreign code*”<sup>12</sup> as defined under NI 43-101.<sup>13</sup> The same CSA notice states that *we are of the view that the Russian Society of Subsoil Use Experts (OERN) with members holding the designation of Expert meet the Tests* under NI 43-101 for a “*professional association*” and that the membership designation meets the criteria in the definition of “*qualified person*”. Prior to this the NAEN Code had gained recognition by the European Securities and Markets Authority (ESMA) and OERN had gained recognition by

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<sup>9</sup> <http://www.criresco.com/national.asp> and <http://www.criresco.com/news.asp>

<sup>10</sup> Krzysztof Galos, Marek Nieć, Piotr W. Saluga and Robert Uberman, "The basic problems of mineral resources valuation methodologies within the framework of System of Integrated Environmental and Economic Accounts", *Gospodarka surowcami mineralnymi – mineral resources management*, Volume 31, Issue 4, 2015, Pages 5–20, <https://www.min-pan.krakow.pl/pliki/czasopisma/gospodarka%20surowcami%20mineralnymi/GSM20152/galos-niec-saluga-uberman.pdf>

<sup>11</sup> <http://www.criresco.com/national.asp>, Russian and English versions can be downloaded in pdf format

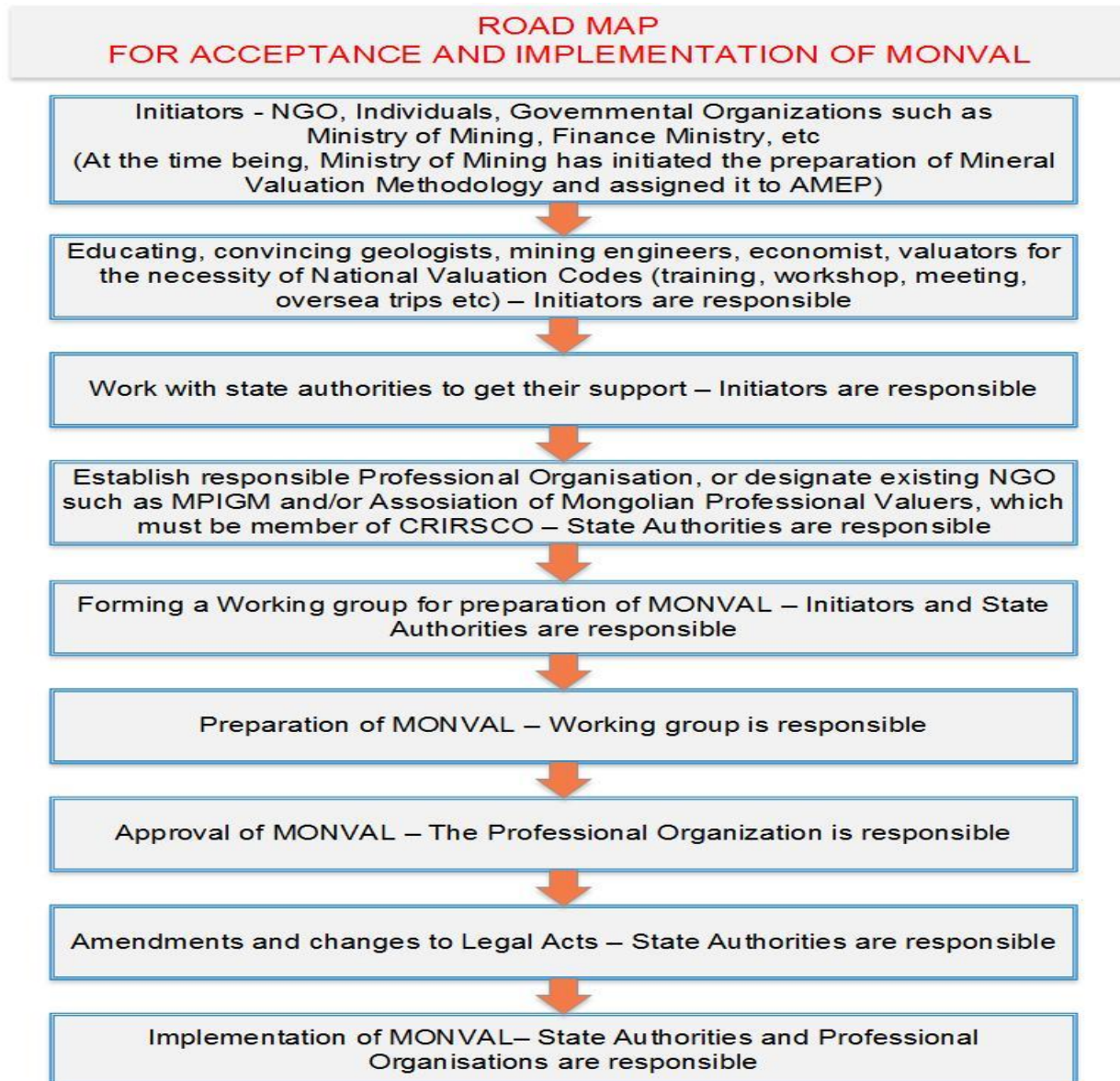
<sup>12</sup> [http://www.osc.gov.on.ca/en/SecuritiesLaw\\_csa\\_20160225\\_43-101\\_changes-cp-mineral-projects.htm](http://www.osc.gov.on.ca/en/SecuritiesLaw_csa_20160225_43-101_changes-cp-mineral-projects.htm), download the CSA notice in pdf format.

<sup>13</sup> <http://www.osc.gov.on.ca/en/15019.htm> for download of NI 43-101 and related notices.

Comision Minera, the Pan-European Reserves and Resources Committee (PERC), the South African Committee SAMREC/SAMVAL, the SME, and, the JORC Committee.<sup>14</sup>

In order for the track record of certification and disciplinary actions to be confirmed to the satisfaction of international securities regulators as expeditiously as possible, the Financial Regulatory Commission of Mongolia will have adopted and enforced regulations incorporating MRC and MONVAL Code provisions for public reporting. Compliance would be required under the regulations for listing of company shares, issuance of additional shares, disclosure of a mineral resource or reserve and disclosure of other information considered material to the company.

Figure 1: The prerequisite steps toward adoption of a “MONVAL Code”



<sup>14</sup> [http://www.crirSCO.com/docs/Russia\\_NAEN\\_Update.pdf](http://www.crirSCO.com/docs/Russia_NAEN_Update.pdf) or <http://www.crirSCO.com/news.asp> and download *Russia NAEN Update* under heading *November 30, 2015 – Afternoon Session*.

*Competence, Materiality and Transparency* are the three fundamental principles which are common to both valuation and resource-reserve codes or standards for public reporting in the countries with widely used codes. Over the years since issuance of the Australasian VALMIN Code in 1995, the first valuation code, language has been considerably harmonised with CIMVAL (Canada) and SAMVAL (South Africa), as was the case between JORC and its Canadian and South African equivalents. This harmonising has resulted in an IMVAL (International Mineral Valuation) Template<sup>15</sup> being issued in July 2016 by a joint committee as a guide for other countries in their planning. The SME Standards adopted in the United States in January 2016 closely follow the IMVAL Template, May 2015 Final Exposure Draft.

Both valuation and resource-reserve estimation codes are principles based in all of the above-cited countries and they are required to be used by competent professionals to comply with the regulatory framework of the respective countries. As mentioned previously, in Australia, for example, competent professionals must follow the VALMIN and JORC Codes to comply with regulatory reporting requirements under the Corporations Act 2001; ASIC RG 55, 111, 112, 170, 228 and 230; ASX Listing Rules, Guidance Note 31; and, ASX Mining Reporting – Frequently Asked Questions (FAQs).<sup>16</sup> In turn, the professional associations of which the professionals are members are required by law to certify, discipline and enforce the standards set out in the respective codes, and, to demonstrate that they are doing so.

The IMVAL template has served as a model for the AMEP team in preparing the “Mongolian Mineral Property Guidelines Draft (MONVAL)” appended to this report.

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<sup>15</sup> A First Edition of the Template was issued in late June 2016 and was superseded in early July by a Second Edition which incorporated minor edits (reference: e-mails of 29 June and 4 July 2016 to Dallas Davis for informing AMEP at direction of IMVAL Committee Chairman, Dr. William Roscoe). The IMVAL Template, Second Edition, July 2016, is posted on the CIM web site - <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374>

<sup>16</sup> Corporations Act 2001 <https://www.legislation.gov.au/Details/C2016C00368> ; ASX Mining Reporting - Frequently Asked Questions (FAQs) <http://www.asx.com.au/regulation/compliance/asx-mining-reporting-faqs.htm> ; Australian Securities & Investments Commission (ASIC) Regulatory Guides (RG) <http://asic.gov.au/regulatory-resources/find-a-document/regulatory-guides/> ; RG 55 Statements in disclosure documents and Product Disclosure Statements (PDSs): Consent to quote <http://download.asic.gov.au/media/3578443/rg55-published-17-march-2016.pdf> ; RG 111 Content of expert reports <http://download.asic.gov.au/media/1240152/rg111-30032011.pdf> ; RG 112 Independence of experts <http://download.asic.gov.au/media/3336169/rg112-published-25-august-2015.pdf> ; RG 170 Prospective financial information <http://download.asic.gov.au/media/1240943/rg170-010411.pdf> ; RG 228 Prospectuses: Effective disclosure for retail investors <http://download.asic.gov.au/media/3578447/rg228-published-17-march-2016.pdf> ; RG 230 Disclosing non-IFRS financial information <http://download.asic.gov.au/media/1241462/rg230-published-9-december-2011.pdf>

One of the main objectives of MoM is the preparation of the final version of MONVAL based on the this proposed Guidance Draft and study under the AMEP program, and, thereafter, to designate the professional association(s) for implementation and ensuring membership compliance with the MONVAL final version for the valuation of Mineral Properties in Mongolia.

## 2. Mineral Property Valuation Standards Widely Accepted Internationally

### 2.1 History of valuation, standards development and harmonisation

The beginning step toward development of the world's first national professional standards for the technical assessment and valuation of mineral assets was taken in 1991 with the formation of a Mineral Valuation Committee representing AusIMM, MICA, AIG, ASIC, ASX, MCA, PESA and SIA<sup>17</sup>. In 1995, AusIMM, formally adopted the product of the Committee's work, namely, the *VALMIN Code and Guidelines for Technical Assessment and/or Valuation of Mineral Assets*. This Australian development was a consequence to enactment of the Australian Corporations Act 1989. This legislation changed the regulatory approach by devolving or passing down responsibilities to the relevant professional bodies, such as AusIMM<sup>18</sup> and AIG. In turn, the ASIC would reference the standards or codes issued by the relevant professional body or bodies.

Although there had been no national codes of practice prior to 1995, the development of standards and methodologies for valuation of mineral properties has a history dating to before 1877 when H. D. Hoskold published *The Engineer's Valuing Assistant: Being a Practical Treatise on the Valuation of Collieries and Other Mines*. In the opening part of the book, Hoskold stated that *Value is the quality in anything which fits it to be given and received in exchange. The value of all exchangeable articles of utility must, however, be determined by the money worth set upon each commodity when brought into the market.*<sup>19</sup>

Many papers and books were written on mineral property valuation after 1877, but the first to become a classic for university courses and for valuation practitioners was published in 1933 by Charles H. Baxter and Roland D. Parks. It was based on their lecture materials at the Michigan College of Mining and Technology and titled *Mine Examination and Valuation*. Other editions were published in 1939, 1949 and 1957, the latter two when Parks was at the Massachusetts Institute of Technology (MIT).<sup>20</sup> In Michigan, teaching a course on mineral property valuation was a natural consequence of the state constitution requirement for annual tax assessments of properties, including mineral properties, at their *cash value*. The legislature interpreted *cash value* in the general tax law as the *usual selling price at the place where the property to which the term is applied shall be at the time of the assessment, being the price which could be obtained at private sale and not at forced or auction sale.*<sup>21</sup>

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<sup>17</sup> Acronyms new to this report: "MICA" for "Mineral Industry Consultants Association", "MCA" for "Minerals Council of Australia", "PESA" for "Petroleum Exploration Society of Australia" and "SIA" for "Securities Institute of Australia"

<sup>18</sup> Michael J. Lawrence, "The VALMIN Code – the Australian experience", presented at "Valuation Session" Mining Millenium 2000, PDAC/CIM, 5-10 March 2000, Toronto, <http://web.cim.org/mes/pdf/VALDAYMikeLawrence.pdf>

<sup>19</sup> H. D. Hoskold, "The Engineer's Valuing Assistant", Longmans, Green & Co., London, 1877 & 1905, Part I, page 3 (available at Google Books for reading online)

<sup>20</sup> Ronald D. Parks, "Examination and Valuation of Mineral Property", Addison-Wesley Cambridge, MA, Third Edition, 504 pages, 1949, available on [www.Amazon.com](http://www.Amazon.com). This and a 1957 edition updated editions published by the Michigan College of Mining in 1933 and 1939 by the same author and Charles H. Baxter. The 1949 edition can be downloaded at <http://tera-3.ul.cs.cmu.edu/NASD/01cf394d-c0ee-4090-918f-a8413fe96bee/China/disk6/73/151-251/31007115/PDF/book.pdf>

<sup>21</sup> Ibid, 1957 edition, page 448.

Any valuer is advised by Parks<sup>22</sup>:

*...to report a valuation that represents his judgement of the value of the property. Whether for buyer or seller, his report should contain the same basic facts. To evaluate these basic facts without bias may require courage, and always demands clear thinking and a lively regard for the good name of the profession.*

*In valuing of a mine for bond issue or a loan it falls to the engineer to be especially conservative. The same is true if the valuation is to be used to induce the sale of stock. In this instance, the examiner should bear in mind the many problems that may occur between the ore in the ground and the realization of profit from this ore.”*

Following adoption in 1995 of the VALMIN Code and the first revisions in 1998 to include provisions for technical reports and valuations of petroleum resources, the International Valuation Standards Committee (IVSC) first convened an Extractive Industries Task Force of international mining and petroleum industry valuation experts in early 2001. This was followed in March 2003 by The Canadian Institute of Mining, Metallurgy and Petroleum (CIM) adopting the CIMVAL *Standards and Guidelines for Valuation of Mineral Properties*.

The following subsequent developments led to formation of The International Mineral Valuation Committee (IMVAL) in July 2012 with the goal of developing a mineral asset valuation template along the lines of the *International Reporting Template* of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO):

- The IVSC's Guidance Note 14 (GN 14), *Valuation of Properties in the Extractive Industries*, was first published in January 2005, in the IVSs Seventh Edition. It was republished in 2007 in the Eighth Edition.
- In April 2008, the South African SAMVAL Code, titled *The South African Code for the Reporting of Mineral Asset Valuation*, was officially released. It was developed through a working group led by the Southern African Institute of Mining and Metallurgy (SAIMM). An amendment was issued in July 2009.
- In February 2010, the IVSC Standards Board withdrew GN 14 pending the outcome of its Extractive Industries Project. Development of a revision based on that outcome has been indefinitely postponed.
- In April 2012, discussions were held in Brisbane to establish a harmonisation project for the mineral valuation codes, VALMIN, SAMVAL, and CIMVAL, and when and where appropriate, USPAP, the IVSs, and the *International Financial Reporting Standards (IFRSs)*.

In May 2015, a Final Exposure Draft of the IMVAL Template was issued with an invitation for comments by the international community of mining professionals.

In January 2016, the USA-based Society for Mining, Metallurgy, and Exploration, Inc. (SME) published its first edition of the *SME Valuation Standards*. These are closely aligned with the May 2015 exposure draft of the template developed by IMVAL. In mid-2015, the USA-based International Institute of Mineral Appraisers (IIMA) approved in principle the adoption of a set

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<sup>22</sup> Ibid, 1957, pages 4 & 5.



of valuation standards based on the IMVAL template.

The VALMIN Code, 2015 edition, which becomes effective 1 July 2016 is *broadly consistent in terms of fundamental principles and general approach with relevant international codes, templates, standards and guidelines (eg SAMVAL – South African Code for the Reporting of Mineral Asset Valuation, CIMVAL – Standards and Guidelines for Valuation of Mineral Properties, CRIRSCO – Committee for Mineral Reserves International Reporting Standards template and the IMVAL Template – International Mineral Valuation Standards template)*.<sup>23</sup>

The CIMVAL 2003 *Standards and Guidelines for Valuation of Mineral Properties* also is being updated in furtherance of the international harmonisation initiative.<sup>24</sup>

A June 2016 Final Draft of the IMVAL Template was reported<sup>25</sup> to have been circulated to members of the respective VALMIN, SAMVAL, SMEVAL and CIMVAL committee members. As noted in Section 1.2 of this report, the AMEP team has received the ultimate products of committee vetting, namely, the IMVAL Template, First and Second Editions, respectively dated June and July 2016. On 11 July 2016, the Second Edition was posted on the CIM website - <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374> .

## **2.2 Relationship between CRIRSCO Resource/Reserve codes and IMVAL codes**

The four widely used Valuation codes have principles, approaches and definitions in common with those in the IMVAL Template and also have definitions and principles in common with the respective CRIRSCO-based codes for reporting Exploration Results, Mineral Resources and Mineral Reserves. These CRIRSCO and IMVAL-based codes are companion and interdependent documents which rely on the accredited professional associations in the respective jurisdictions to certify, discipline and, if necessary, expel members who do not adhere to the underlying principles which these codes have in common, namely Competence, Materiality and Transparency.

Although the VALMIN Code was formally adopted in 1995, the foundation for it and for the *CRIRSCO International Reporting Template for the public reporting of Exploration Results, Mineral Resources and Mineral Reserves* (latest edition November 2013) had been established with release in February 1989 of the first version of the *JORC Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves*. It was immediately incorporated into Australian Stock Exchange (ASX) listing rules, thereby becoming binding on companies listed on the ASX and it was also immediately adopted by AusIMM as an Institute Code, and therefore became binding on members of AusIMM. Through these processes, it became mandatory for both individuals and companies to conform with the Code and this has been the dominant factor underpinning its success. It was adopted as an AIG Code in 1992 and, in the same year, was incorporated into New Zealand Stock Exchange (NZX) listing rules. The latest edition of the JORC

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<sup>23</sup> The VALMIN Code, 2015 edition, page 8.

<sup>24</sup> Dr. William Roscoe, chair of IMVAL & co-chair of CIMVAL Committees, personal communication, May 2016

<sup>25</sup> Stephen Gemell, VALMIN Committee Member, personal communication, 10 June 2016

Code was issued in 2012.<sup>26</sup>

The process which led to development of the JORC Code began in 1971 with formation of the Joint Ore Reserves Committee (JORC) by the Australian Mining Industry Council (now the Minerals Council of Australia). Professional credibility had been challenged by unacceptable reporting practices during the Western Australia nickel exploration boom of the 1960s. The opportunity for professional organisations to develop standards of practice and become self-regulating bodies had thus presented itself. *Between 1972 and 1989, a number of reports were issued by JORC which made recommendations on public reporting and Ore Reserve classification and which gradually developed the principles now incorporated in the JORC Code. The recommendations had the status of guidelines only, but were over time gradually adopted by most Australasian mining and exploration companies. The core concept on which the Code is built, the Competent Person, was introduced in JORC's first publication in 1972.*<sup>27</sup>

The VALMIN Code, as stated in the preface to the 2015 edition, *is a companion to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). The VALMIN Code provides guidance on matters that may be subject to Australian regulations, other provisions of law and the published policies and guidance of the Australian Securities and Investments Commission (ASIC) and the Listing Rules of the Australian Securities Exchange (ASX) or of other relevant securities exchanges.*

*The VALMIN Code is written from a Minerals perspective and uses terminology consistent with the JORC Code.*<sup>28</sup>

The SAMVAL Code, 2016 edition draft, was issued in February 2016 by the South African Mineral Asset Valuation Committee (SAMVAL) Working Group. The introduction states that it *forms a part of the SAMCODE document, and as such relies upon the requirements of the SAMREC Code (The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves) for the reporting of Mineral Resources and Mineral Reserves, where necessary, and it draws on, and cross-references to, definitions and principles embodied within the SAMREC Code..... A fundamental premise of this revision is to align to international Valuation Standards, as far as is possible and practical, as is the recommendation and intent of IMVAL, particularly with respect to definitions and principles. The review was undertaken under the auspices of the SSC<sup>29</sup>, by the SAMVAL Working Group and its various sub-committees.*<sup>30</sup>

As is the case of the VALMIN Code, *SAMVAL-compliant valuations shall be based on Resources and Reserves prepared in accordance with the SAMREC or any other CRIRSCO-affiliated Mineral Resource and Mineral Reserve Reporting Code as required by the Commissioning Entity and the*

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<sup>26</sup> <http://www.jorc.org/development.asp>

<sup>27</sup> [Ibid.](#)

<sup>28</sup> VALMIN Code, 2015 Edition, Preface, <http://www.valmin.org>

<sup>29</sup> SSC is an acronym for SAMREC/SAMVAL Committee

<sup>30</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015, pages 4 & 5. <http://www.samcode.co.za> or <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%202%20revised%20Samval%20Code.pdf>

respective area of jurisdiction. The Valuation Report shall therefore refer to the Code(s) upon which the valuation is reliant, as well as the reason for using this Code.<sup>31</sup>

## 2.3 Members of CRIRSCO<sup>32</sup> and IMVAL<sup>33</sup>

### 2.3.1 CRIRSCO

Kazakhstan was *unanimously elected in June 2016 to be the tenth member of CRIRSCO, the Committee for Mineral Reserves International Reporting Standards...The National Reporting Organisation<sup>34</sup> for Kazakhstan will be the KAZRC Association, which has developed the Kazakhstan Reporting Code (KAZRC). The Recognised Professional Organisation for Competent Persons preparing Public Reports will be PONEN.<sup>35</sup>* Kazakhstan had signed a Memorandum of Understanding with CRIRSCO in November 2015 when they had sent representatives to the annual meeting in Brazil and announced the establishment of a National Reporting Organisation, the Kazakhstan Association of Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves.<sup>36</sup>

The CRIRSCO announcement of June 14<sup>th</sup> was preceded on 6 May 2016 by a European Bank for Reconstruction and Development (EBRD) invitation<sup>37</sup> for expressions of interest to provide, among other things, *expert advice.. in relation to...implementation of Kazakhstani Code for the Public Reporting of Exploration Results relating to Mineral Resource and Mineral Reserve as required by the CRIRSCO International Committee, and, on 11 May 2016, by another which stated that the German mining consulting company DMT sealed a cooperation agreement with Kazakhstan's national geological exploration company Kazgeology. The aim of the collaboration is to develop the evaluation of mineral deposits in Kazakhstan to recognised international standards. 'Kazakhstan plans to evaluate its deposits in accordance with the international CRIRSCO*

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<sup>31</sup> Ibid, page 8,

<sup>32</sup> *The aim of CRIRSCO (Committee for Mineral Reserves International Reporting Standards) is to contribute to earning and maintaining that trust by promoting high standards of reporting of mineral deposit estimates (Mineral Resources and Mineral Reserves) and of exploration progress (Exploration Results), <http://www.crirSCO.com/welcome.asp> and see <http://www.crirSCO.com/national.asp> for all National Reporting Standards for the public reporting of Exploration Results, Mineral Resources and Mineral Reserves in accordance with the principles of the CRIRSCO Template.*

<sup>33</sup> <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374> for download of *INTERNATIONAL MINERAL PROPERTY VALUATION STANDARDS TEMPLATE ("IMVAL Template") (Includes Petroleum) Second Edition, July 2016*

<sup>34</sup> *National Reporting Organisations (NROs) are bodies responsible for developing mineral reporting codes, standards and guidelines for a single country or grouping of countries. The member NROs, such as CIM, nominate two representatives to the Committee (CRIRSCO) who offer their service on a voluntary basis.* Quote from Deborah McCombe, past chair of CRIRSCO, [http://www.crirSCO.com/docs/cim\\_magazine\\_may2016.pdf](http://www.crirSCO.com/docs/cim_magazine_may2016.pdf) , May 2016, page 51.

<sup>35</sup> <http://www.crirSCO.com/news.asp>

<sup>36</sup> Deborah McCombe, [http://www.crirSCO.com/docs/cim\\_magazine\\_may2016.pdf](http://www.crirSCO.com/docs/cim_magazine_may2016.pdf) , May 2016, page 51.

<sup>37</sup> <http://www.ebrd.com/work-with-us/procurement/pn-63486.html>



standards in the future, in order to attract international investors to the country,' explains DMT Managing Director Prof. Eiko Råkers.<sup>38</sup>

The other nine members of the CRIRSCO family of codes are the founding members Australasia (JORC), Canada (CIM), South Africa (SAMREC) and United States (SME) plus those which have joined subsequent to the founding in 1994, namely, Europe (PERC), Chile (National Committee), Russia (NAEN), Mongolia (MPIGM) and Brazil (CBRR). Other countries that are currently at different stages of professional association(s) organization or designation and code drafting are India, Peru, Columbia and Argentina.

### 2.3.2 IMVAL

The CIM web site on which the IMVAL Template, Second Edition, July 2016, was posted on 11 July 2016 states that:<sup>39</sup>

*Concepts, principles and definitions were taken from three existing mineral valuation codes or standards (VALMIN for Australasia, SAMVAL for South Africa, and CIMVal for Canada) and aligned with those of the International Valuation Standards (IVS) to form the IMVAL Template. It is designed as a principles-based, high level document to guide and underpin national codes or standards. It is intended for it to have similar usage and stature as the CRIRSCO TEMPLATE for reserves and resources.*

The international committee which developed the IMVAL Template is comprised of representatives of SAMVAL (South Africa), CIMVal (Canada), VALMIN (Australasia), the SME Valuation Standards Committee (USA), and IIMA (USA).

Not all countries with Mineral Resource/Reserve codes have adopted Valuation codes, standards or guidelines. For example, PERC (Pan-European Reserves & Resources Reporting Committee) has chosen to be *not directly involved with valuation, but recommend the use of existing valuation codes such as VALMIN (Australia), SAMVAL (South Africa) and CIMVAL (Canada), which have all been developed in conjunction with CRIRSCO-aligned reporting standards.*<sup>40</sup>

Poland adopted the *Polish Code for the Valuation of Mineral Assets (The POLVAL Code)* in 2008. It was prepared by *A Special Committee of the Polish Association of Mineral Asset Valuers for Development of the POLVAL Code.*<sup>41</sup> Although POLVAL embodies principles and approaches in the IMVAL-based codes, it has not gained recognition outside Poland because it does not provide for use of the CRIRSCO standards and guidelines<sup>42</sup> even though Poland is a member of the European Community and the CRIRSCO-aligned *PERC Reporting Code*, also issued in 2008 (revised in 2013), is the *Pan-European Standard for Reporting of Exploration Results, Mineral*

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<sup>38</sup> <http://www.dmt-group.com/en/news-info/press/press-release/archive/2016/05/11/dmt-to-assist-in-deposit-evaluation-in-kazakhstan.html>

<sup>39</sup> <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374> for download of *INTERNATIONAL MINERAL PROPERTY VALUATION STANDARDS TEMPLATE ("IMVAL Template") (Includes Petroleum) Second Edition, July 2016*

<sup>40</sup> <http://www.vmine.net/perc/archive.asp>, download *IVSC consultation submission* (Oct.2012)

<sup>41</sup> <http://polval.pl/sites/default/files/POLVAL-Code.pdf>

<sup>42</sup> Krzysztof Galos, Marek Nieć, Piotr W. Saluga and Robert Uberman, "The basic problems of mineral resources valuation methodologies within the framework of System of Integrated Environmental and Economic Accounts", *Gospodarka surowcami mineralnymi – Mineral Resources Management*, Volume 31, Issue 4, 2015, Pages 5–20, <https://www.min-pan.krakow.pl/pliki/czasopisma/gospodarka%20surowcami%20mineralnymi/GSM20152/galos-niec-saluga-uberman.pdf>

*Resources and Reserves.*<sup>43</sup> One large Polish mining company, KGHM Polska Miedz S.A., listed on the Warsaw Stock Exchange and with mines in a number of countries in addition to Poland, reports Mineral Resources and Reserves according to the CIM Definition Standards for Mineral Resources and Mineral Reserves as embodied in the CSA NI 43-101.<sup>44</sup>

Table 1: Widely used reporting standards or codes of practice, professional associations and government regulatory authorities which reference codes in their regulations.

<b>Widely Used and Accepted Reporting Standards or Codes for Mineral Resources, Reserves, Exploration and Valuation</b>				
<b>Country OR Region</b>	<b>Professional Standard or Code of Practice</b>		<b>Professional Associations Prepare Codes &amp; Standards Certify &amp; Discipline or Expel Members, Including Competent/Qualified Persons</b>	<b>Government Regulatory Bodies Reference Professional Codes &amp; Enforce Regulations on Trading of Securities and Company Practices</b>
	<b>Mineral Resource/Reserve Estimation &amp; Exploration Reporting Components of Mineral Property Evaluation</b>	<b>Valuation of Mineral Properties at any Stage of Evaluation or Production</b>		
<b>Australasia</b>	JORC Code, 2012 Edition	VALMIN Code, 2015 Edition	AusIMM & AIG	ASIC, ASX & Corporations Act
<b>Canada</b>	CIM Definition Standards, 2014	CIMVal Standards & Guidelines, 2003	Provincial associations of engineers & geoscientists	CSA (NI 43-101), TSX and Provincial securities regulators
<b>South Africa</b>	SAMREC Code, 2016	SAMVAL Code, 2016 Edition	SAIMM & GSSA	ECSA, SACNASP, PLATO, JSE Companies Act
<b>USA</b>	The 2014 Guide	SME Standards & Guidelines, 2016	SME & IIMA(USA)	SEC 7 and other State & Federal NYSE & NASDAQ
<b>International Model Templates of standards or codes</b>	CRIRSCO, November 2013 version of Template first published in 2006 CRIRSCO - 9 member 'countries' ICMM is a strategic partner	IMVAL, May 2015 Final Exposure Draft Concepts, principles & definitions from VALMIN-SAMVAL-CIMVal & aligned with the International Valuation Standards(IVS)	CRIRSCO and IMVAL committee members are representatives of member professional associations	Not applicable as Templates are just 'living documents' refined as new national codes or standards and guidelines are developed
<b>Mongolia</b>	The MRC Code, 2014	MONVAL, under development AMEP guidelines draw on IMVAL May 2015	MPIGM and other associations?	MoM and FRMC regulations under development

Notes: 1) In Canada, provincial or territorial associations of engineers and geoscientists do not prepare the codes or standards, but they certify, discipline or expel members.

2) Government securities regulatory bodies periodically add to lists of foreign **Recognised Professional Organisations (RPOs)** and membership categories that will be accepted for public reporting. An example such addition by the CSA states "After considering submissions received, in staff's view the organization identified below meets the definition of a 'professional association' in NI 43-101, and the membership designation below meets the criteria in paragraph (e) of the definition of 'qualified person' in NI 43-101". For the Australian RPO list, see Table 2 in this report.

3) Mongolia's MPIGM has not been added to RPO lists of CSA, ASIC or JSE because time is required for MPIGM to demonstrate that it adequately addresses certification and disciplinary functions.

MPIGM is accepted as the Mongolian CRIRSCO member and National Reporting Organisation (NRO)<sup>45</sup> concerning implementation of the MRC Code. Acceptance by international securities regulators of the MRC Code and MPIGM members certified as competent under the MRC Code will determine international acceptance of valuation reports by MPIGM members under a MONVAL Code. For the time being, the process leading to international regulator acceptance would be more expeditious if government were to refrain from designating any other Mongolian professional associations for certifying members to conduct mineral property valuations under a MONVAL Code (see information in the following section of this report).

<sup>43</sup> <http://www.vmine.net/perc/code.asp> ; also note on this web site that a new consultation draft is now available for download. **DOWNLOAD CONSULTATION DRAFT: NEW PERC STANDARD 2016**

<sup>44</sup> <http://kghm.com/en/kghm-resources-and-reserves-report> which can be downloaded at <http://kghm.com/en/media/events-speeches-presentations> , See pages 7-9 and 32-35 for discussion of methodology for conversion from the Polish system of classification to compliance with the CIM Definition Standards for Mineral Resources and Mineral Reserves as embodied in the CSA NI 43-101.

<sup>45</sup> <http://www.crirSCO.com/news.asp> - download *Mongolia MPIGM Update from November 30, 2015 - Afternoon Session* which states on Slide 14 that MPIGM has been *officially nominated as the Professional NGO to give accreditation to mining and geology professionals indicated by Mineral's Law.*

Professional associations other than MPIGM which have been suggested to the AMEP team for certification of members as competent to conduct valuations under any MONVAL Code (and to discipline members) include the *Mongolian National Association of Certified Professional and Consulting Engineers of Mining Industry* and the *Mongolian Institute of Certified Appraisers*.

## 2.4 Acceptance by securities regulators of foreign codes and foreign-authored reports

Stock exchanges in Canada (TSX/TSX Venture), Australia (ASX), South Africa (JSE) and England (LSE/AIM) are the primary sources of public funding for companies which explore for minerals and for their equity portion of the capital expenditure needed to bring mines into production. Certain government securities regulators, which are equivalents of the Financial Regulatory Commission of Mongolia, have designated acceptable foreign codes, professional associations and membership categories of professionals who can prepare and file technical, valuation and other public reports for companies listed on the stock exchanges under their jurisdiction.

### 2.4.1 International reciprocity of codes for technical and valuation reporting

The CSA's NI 43-101 which is posted on the securities commission web site of each Canadian province or territory, such as that of the Ontario Securities Commission (OSC) states that: *"acceptable foreign code" means the JORC Code, the PERC Code, the SAMREC Code, SEC Industry Guide 7<sup>46</sup>, the Certification Code<sup>47</sup>, or any other code, generally accepted in a foreign jurisdiction, that defines mineral resources and mineral reserves in a manner that is consistent with mineral resource and mineral reserve definitions and categories set out in sections 1.2 and 1.3.<sup>48</sup> On 25 February 2016, the Russian Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (NAEN Code)<sup>49</sup> was added to the list of acceptable foreign codes.<sup>50</sup>*

In Annex B of the CSA notice of 25 February 2016, it is stated that *other foreign codes will generally meet the test in the definition if they (a) have been adopted or recognized by appropriate government authorities or professional organizations in the foreign jurisdiction; and, (b) use mineral resource and mineral reserve categories that are based on the CRIRSCO Template, and are substantially the same as the CIM definitions mandated in the Instrument, the JORC Code, the PERC Code, the SAMREC Code, and the Certification Code, as amended and supplemented.*

The Mineral Resource and Reserve definitions in sections 1.2 and 1.3 of NI 43-101 are:

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<sup>46</sup> [http://web.cim.org/standards/documents/Block474\\_Doc32.pdf](http://web.cim.org/standards/documents/Block474_Doc32.pdf) - *United States Securities and Exchange Commission (SEC) Industry Guide 7*

<sup>47</sup> <http://web.cim.org/standards/MenuPage.cfm?sections=177,183&menu=222> - *Certification Code for Exploration Prospects, Mineral Resources and Ore Reserves*, Institute of Mining Engineers of Chile (IIMCH) December 2004

<sup>48</sup> <http://www.osc.gov.on.ca/en/15019.htm> (download May 9, 2016 *National Instrument 43-101 Standards of Disclosure for Mineral Projects*)

<sup>49</sup> <http://www.criusco.com/national.asp> , Russian and English versions can be downloaded in pdf format

<sup>50</sup> [http://www.osc.gov.on.ca/en/SecuritiesLaw\\_csa\\_20160225\\_43-101\\_changes-cp-mineral-projects.htm](http://www.osc.gov.on.ca/en/SecuritiesLaw_csa_20160225_43-101_changes-cp-mineral-projects.htm) (download the pdf, note heading *List of Acceptable Foreign Codes* and see *Annex B*)

**Mineral Resource.** In this Instrument, the terms “mineral resource”, “inferred mineral resource”, “indicated mineral resource” and “measured mineral resource” have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended.

**Mineral Reserve.** In this Instrument, the terms “mineral reserve”, “probable mineral reserve” and “proven mineral reserve” have the meanings ascribed to those terms by the Canadian Institute of Mining, Metallurgy and Petroleum, as the CIM Definition Standards on Mineral Resources and Mineral Reserves adopted by CIM Council, as amended.

Depending on the stage of exploration and mineral property development, the mineral resource and reserve estimates would be included in a Technical Report (NI 43-101 terminology) or a Technical Assessment Report (Australian VALMIN 2016 terminology). Under NI 43-101, “technical report” means a report prepared and filed in accordance with this Instrument and Form 43-101F1 Technical Report<sup>51</sup> that includes, in summary form, all material scientific and technical information in respect of the subject property as of the effective date of the technical report. Such a report would not only include Mineral Resource and Reserve estimates, but also mining methods, mineral processing metallurgical recovery methods, project infrastructure, market studies, contracts, capital and operating costs, data verification, environmental studies, permitting and social impact, other relevant information and an economic analysis.

The technical report as prepared according to Form 43-101F1 would be an evaluation report whereas a valuation report would draw upon information in the technical report and estimate the market value range for the mineral property in monetary terms on a specified valuation date. Under NI 43-101, if a valuation is required to be prepared and filed under securities legislation, a technical report also must be filed to support scientific or technical information that relates to a mineral project on a property material to the issuer.<sup>52</sup>

VALMIN 2016 defines “Technical Assessment” as an evaluation prepared by a Specialist of the technical aspects of a Mineral Asset. Depending on the development status of the Mineral Asset, a Technical Assessment may include the review of geology, mining methods, metallurgical processes and recoveries, provision of infrastructure and environmental aspects. A Technical Assessment Report involves the Technical Assessments of elements that may affect the economic benefit of a Mineral Asset.

With respect to use of a foreign code, Part 7 of NI 43-101 provides that:<sup>53</sup>

*Despite section 2.2, an issuer may make disclosure and file a technical report that uses the mineral resource and mineral reserve categories of an acceptable foreign code, if the issuer*

1. (a) is incorporated or organized in a foreign jurisdiction; or
2. (b) is incorporated or organized under the laws of Canada or a jurisdiction of Canada, for its properties located in a foreign jurisdiction.

*If an issuer relies on subsection (1), the issuer must include in the technical report a reconciliation of any material differences between the mineral resource and mineral reserve categories used and the categories set out in sections 1.2 and 1.3.*

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<sup>51</sup> [https://www.bcsc.bc.ca/Securities\\_Law/Policies/Policy4/PDF/43-101F1\\_F\\_June\\_24\\_2011/](https://www.bcsc.bc.ca/Securities_Law/Policies/Policy4/PDF/43-101F1_F_June_24_2011/)

<sup>52</sup> [http://www.osc.gov.on.ca/documents/en/Securities-Category4/ni\\_20160509\\_43-101\\_mineral-projects.pdf](http://www.osc.gov.on.ca/documents/en/Securities-Category4/ni_20160509_43-101_mineral-projects.pdf), p. 11, 4.2(1)(g)

<sup>53</sup> [http://www.osc.gov.on.ca/documents/en/Securities-Category4/ni\\_20160509\\_43-101\\_mineral-projects.pdf](http://www.osc.gov.on.ca/documents/en/Securities-Category4/ni_20160509_43-101_mineral-projects.pdf), p. 17



The SAMVAL Code, 2016 edition, states that:<sup>54</sup>

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

#### **2.4.2 International reciprocity of Competent or Qualified Persons**

In 2003, The Australian Securities Exchange (ASX) introduced a procedure for identifying 'Recognised Professional Organisations' (RPOs) as accredited organisations to which Competent Persons must belong for the purpose of preparing reports on Exploration Results, Mineral Resources and Ore Reserves for submission to the ASX (if they are not members of the AusIMM or AIG). Likewise, other securities regulatory authorities which govern stock exchanges with numerous mining share listings began to do the same and publish lists similar to the Australian list on the following page.

The ASX and JORC criteria for accepting an RPO are that it must:

- *be a self-regulatory organisation covering professionals in the mining and/or exploration industry;*
- *admit members primarily on the basis of their academic qualifications and professional experience;*
- *require compliance with the professional standards of competence and ethics established by the organisation anywhere in the World (not just within the home jurisdiction of the organisation); and*
- *have disciplinary powers, including the power to suspend or expel a member for breaches of professional standards of competence or ethics anywhere in the World.*

*It is envisaged that further applications will be received from professional organisations seeking to become a RPO. Upon receipt of an application, the application will be considered by the ROPO task force made up of representatives of JORC and its parent bodies. The task force then makes a recommendation to the JORC Committee and its parent bodies (The AusIMM, AIG and MCA) before making a recommendation to the ASX regarding any addition to the RPOs list.*

*The RPO process applies in respect of reports prepared under the JORC Code. It does not address the issue of companies wishing to report to the ASX under reporting standards other than the JORC Code as provided for in ASX Listing Rules 5.10 to 5.12 other than the Competent Person's statement required under Listing Rule 5.12.10.*

*Any members of a RPO wishing to act as a Competent Person must also be able to satisfy the other JORC Code requirements for a Competent Person.*

*As part of the agreement to establish the RPO system, the ASX required that RPOs should not only be capable of dealing with ethical complaints made in respect of Competent Persons and the JORC Code, but that they are seen to be actively implementing this capability if any such complaints are made. Therefore each RPO has an obligation that if one of its members, acting as*

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<sup>54</sup> <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%20%20revised%20Samval%20Code.pdf>

a Competent Person under the JORC Code, is reported to the RPO for alleged non-compliance with the JORC Code, and the RPO's investigations uphold the alleged non-compliance, this finding should be communicated to the Chair of JORC when requested annually.<sup>55</sup>

Lists of the RPOs accepted by Australian and Canadian securities regulators are presented in Tables 2 and 3, respectively.

Mongolia's MPIGM has not been added to RPO lists of CSA, ASIC or JSE because time is required for MPIGM to demonstrate that it adequately addresses certification and disciplinary functions.

Table 2: ASX and JORC list of Recognised Professional Organisations (RPOs)

<b>Recognised Professional Organisation</b>	<b>Minimum membership class required</b>
Institute of Materials, Minerals and Mining	Member (MIMMM) or Fellow (FIMMM)
Geological Society of London	Chartered Geologist (CGeol), Chartered Scientist (CSci) or European Geologist (EurGeol)
Institute of Geologists of Ireland	Professional Geologist (PGeo)
European Federation of Geologists	European Geologist (EurGeol)
Mining and Metallurgical Society of America	Qualified Professional (QP)
American Institute of Professional Geologists	Certified Professional Geologist (CPG)
Society for Mining, Metallurgy & Exploration	SME Registered Member
Engineering Council of South Africa	Professional Engineer (Pr Eng)
South African Council for Natural Scientific Professions	Professional Natural Scientist (Pr.Sci.Nat.)
Geological Society of South Africa	Member or Fellow
The Southern African Institute of Mining and Metallurgy	Member or Fellow
South African Council for Professional and Technical Surveyors	Mine Surveyors and Professional Mine Surveyors
Professional Engineers Ontario	P.Eng.
Association of Professional Engineers and Geoscientists of British Columbia	P.Geo. or P.Eng.
Association of Professional Engineers and Geoscientists of Manitoba	P.Geo. or P.Eng.
Association of Professional Geoscientists of Ontario	P.Geo., P.Geo.(limited), P.Geo.(Temporary)
Association of Professional Engineers and Geoscientists of Newfoundland and Labrador	P.Eng., P.Geo.
Association of Professional Engineers, Geologists and Geophysicists of the Northwest Territories	P.Eng, P.Geo (or P.Geol., P.Geoph.)
Association of Professional Geoscientists of Nova Scotia	P.Geo.
Association of Professional Engineers and Geoscientists of New Brunswick	P.Geo., P.Eng.
Association of Professional Engineers, Geologists and Geophysicists of Alberta.	P.Eng., P.Geo., P.Geoph.
Association of Professional Engineers and Geoscientists of Saskatchewan	P.Geo. or P.Eng.
Ordre des Géologues du Québec	P.Geo., géo.
Ordre des Ingénieurs du Québec	P. Eng. or ing.
Comisión Calificadora de Competencias en Recursos y Reservas Mineras (Chilean Mining Commission or Comisión Minera)	Registered Member
Russian Society of Subsoil Use Experts (OERN)	Expert

12 March 2014.

<sup>55</sup> <http://www.asx.com.au/documents/regulation/list-recognised-professional-orgs-march-2014.pdf>

Table 3: Canadian Securities Administrators (CSA) list of acceptable foreign associations (i.e. RPOs) and membership designations

<b>Foreign Association</b>	<b>Membership Designation</b>
American Institute of Professional Geologists (AIPG)	Certified Professional Geologist (CPG)
The Society for Mining, Metallurgy and Exploration, Inc. (SME)	Registered Member
Mining and Metallurgical Society of America (MMSA)	Qualified Professional (QP)
Any state in the United States of America	Licensed or certified as a professional engineer
European Federation of Geologists (EFG)	European Geologist (EurGeol)
Institute of Geologists of Ireland (IGI)	Professional Member (PGeo)
Institute of Materials, Minerals and Mining (IMMM)	Professional Member (MIMMM), Fellow (FIMMM), Chartered Scientist (CSci MIMMM), or Chartered Engineer (CEng MIMMM)
Geological Society of London (GSL)	Chartered Geologist (CGeol)
Australasian Institute of Mining and Metallurgy (AusIMM)	Fellow (FAusIMM) or Chartered Professional Member or Fellow [MAusIMM (CP), FAusIMM (CP)]
Australian Institute of Geoscientists (AIG)	Member (MAIG), Fellow (FAIG) or Registered Professional Geoscientist Member or Fellow (MAIG RPGeo, FAIG RPGeo)
<u>The Institution of Engineers Australia</u> [1] (Engineers Australia)	<u>Chartered Professional Engineer (CPEng)</u>
<u>The Institution of Professional Engineers New Zealand</u> [2] (Engineers New Zealand, IPENZ)	<u>Chartered Professional Engineer (CPEng)</u>
Southern African Institute of Mining and Metallurgy (SAIMM)	Fellow (FSAIMM)
South African Council for Natural Scientific Professions (SACNASP)	Professional Natural Scientist (Pr.Sci.Nat.)
Engineering Council of South Africa (ECSA)	Professional Engineer (Pr.Eng.) or Professional Certificated Engineer (Pr.Cert.Eng.)
Comisión Calificadora de Competencias en Recursos y Reservas Mineras (Chilean Mining Commission)	Registered Member
<u>Russian Society of Subsoil Use Experts</u> [3] (OERN)	<u>Expert</u>

**Accepted by Canadian Securities Administrators (CSA):**

[1] As of August 16, 2012.

[2] As of February 21, 2013.

[3] As of February 25, 2016.



## 2.5 Comparison of widely used and accepted valuation codes

Except for the number of provisions which are mandatory and degree to which the codes are prescriptive, the widely used mineral-related valuation reporting standards or codes are similar in principles and scope as can be inferred from the previous sections that describe international reciprocity in acceptance by securities regulators of the CRIRSCO family of codes and, by extension, the valuation codes of those CRIRSCO-member countries where such codes or standards have been adopted.

### 2.5.1 Fundamental principles requiring mandatory adherence, and, guiding principles

All the codes are based on the three fundamental principles of competence, materiality and transparency which are to be followed and upon which Competent or Qualified Valuers base their professional judgement and are able to justify Valuations to their peers. Guiding principles of objectivity, independence and reasonableness also are applicable, each with the degree of emphasis and importance varying somewhat from code to code (see Table 5) and which serve as ethics-based guidance to the Valuer .

### 2.5.2 Alignment of valuation codes with an internationally accepted template

The VALMIN and SAMVAL Codes have been revised and new editions issued in the past year and a first edition of the *SME Valuation Standards and Guidelines for Valuation of Mineral Properties* was prepared by the SME Valuation Standards Committee of the USA Society for Mining, Metallurgy, and Exploration, Inc. (smenet.org) and adopted in February 2016. The *CIMVAL 2003 Standards and Guidelines for Valuation of Mineral Properties* are currently being revised. All revisions have been guided or influenced by the IMVAL Template, May 2015 Exposure Draft and/or subsequent drafts. The IMVAL Template, Second Edition, July 2016, represents the final consensus among IMVAL Committee members from Australia, Canada, South Africa, the USA and the respective professional associations which they represent.

In turn, the IMVAL Template aligns with the generally accepted valuation concepts, principles, and definitions set forth in the IVSs 2013 Edition and would be intended to be updated to align with subsequent editions. References prefixed IVS are made throughout this template to IVS Definitions and Framework Standards, and are numbered as per the 2013 Edition.

The VALMIN Code, 2015 Edition, states that it is *considered to be broadly consistent in terms of fundamental principles and general approach with relevant international codes, templates, standards and guidelines (eg SAMVAL – South African Code for the Reporting of Mineral Asset Valuation, CIMVal – Standards and Guidelines for Valuation of Mineral Properties, CRIRSCO – Committee for Mineral Reserves International Reporting Standards template and the IMVAL Template – International Mineral Valuation Standards template)*.<sup>56</sup>

Likewise, the SAMVAL Code, 2016 Edition, states that: *A fundamental premise of this revision is to align to international Valuation Standards, as far as is possible and practical, as is the recommendation and intent of IMVAL, particularly with respect to definitions and principles. ....such that where it is used in other jurisdictions (say, within joint venture valuations) it should be reconcilable with all other codes. Cognisance has been taken of international developments in terms of the IMVAL Code. Further, SAMVAL-compliant valuations shall be based on Resources and Reserves prepared in accordance with the SAMREC or any other CRIRSCO-affiliated Mineral Resource and Mineral Reserve Reporting Code as required by the Commissioning Entity and the*

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<sup>56</sup> The VALMIN Code, 2015 Edition, page 8. <http://www.valmin.org/code2015.asp>



respective area of jurisdiction. The Valuation Report shall therefore refer to the Code(s) upon which the valuation is reliant, as well as the reason for using this Code.<sup>57</sup>

The SME Valuation Standards, First Edition, 2016, echoes the VALMIN and SAMVAL statements with: *The “Final Exposure Draft” of the International Mineral Property Valuation Standards Template (IMVAL Template) released by IMVAL in May – July 2015 for global public exposure is the initial harmonization outcome of this chronology of standards development events for mineral property valuation. The SME Valuation Standards Committee has taken this version of the IMVAL Template and prepared the SME Valuation Standards for use by SME Members. This preparation has included evaluation by the SME Valuation Standards Committee of all comments submitted to IMVAL and SME on the exposure drafts released of both the IMVAL Template and the SME Valuation Standards..... Updating of the SME Standards will be considered whenever the IMVAL Template is updated, or earlier if a reason indicates that updating may be appropriate.*<sup>58</sup>

### 2.5.3 Degree to which valuation codes are prescriptive

In VALMIN 2015, SME Standards 2016, CIMVAL 2003, POLVAL 2008 and the MONVAL Guidelines Draft, the word **‘must’** denotes a mandatory requirement that has to be followed unless it would result in a breach of a law or regulation of the country in which the Valuation Report is issued. The SAMVAL Code follows the United Nations Framework Classification (UNCF) terminology in which **‘shall’** is used where a provision is mandatory, **‘should’** is used where a provision is preferred, and **‘may’** is used where alternatives are equally acceptable.<sup>59</sup> In the other codes, usage of the words **‘should’** or **‘may’** indicates some discretion is permitted, providing that the fundamental principles are not violated.

The degree to which each code is prescriptive is reflected by the number of times the mandatory words **‘must’** or **‘shall’** as well as the word **‘should’** are used in the text, excluding usage in explaining the terms and as a footnote of pages (VALMIN 2015). It is apparent from Table 4 that the degree of prescriptiveness is greatest in the VALMIN and SAMVAL Codes.

Table 4: Number of times mandatory and discretionary words are used in the IMVAL 2016 Template, Second Edition, July 2016, compared with usage in the three most recent Valuation Code editions, the IMVAL Exposure Draft of May 2015 and the AMEP MONVAL Guidelines

TERMS	VALMIN 2015	SAMVAL 2016	POLVAL 2008	CIMVAL 2003	MONVAL Draft	SMEVAL 2016	IMVAL 2015 Exposure Draft	IMVAL 2016, 2 <sup>nd</sup> Edition
<b>must</b> or <b>shall</b>	109	98	65	51	39	34	32	31
<b>should</b>	71	72	21	19	22	16	18	27
<b>may</b>	79	71	34	29	25	28	25	25

<sup>57</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015, pages 5 & 8. <http://www.samcode.co.za> or <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%20%20revised%20Samval%20Code.pdf>

<sup>58</sup> The SME Valuation Standards, First Edition, 2016, pages 2 and 3. <http://www.smenet.org/publications-resources/resources/sme-valuation-standards>

<sup>59</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015, page 6. <http://www.samcode.co.za> or <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%20%20revised%20Samval%20Code.pdf>

Total	259	241	120	99	86	78	75	83
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#### 2.5.4 Rationale for AMEP MONVAL Guidelines Draft being less prescriptive than VALMIN

There are two philosophies reflected in the Valuation Codes that are widely used internationally, One sets the professional practice ethics and gives broad guidance on Valuation Approaches and Methodologies in the Code. National securities regulators issue detailed regulations, incorporating or referencing the Code and adding many prescriptive provisions such as embodied in the CSA's *NI 43-101 Standards of Disclosure for Mineral Projects*.<sup>60</sup> The second more prescriptive philosophy results in Valuation and Resource-Reserve Codes that incorporate more of the provisions that the national securities regulators would otherwise include in their regulations,

The first philosophy is embodied in the IMVAL Template, CIMVAL and SMEVAL. Each sets ethically and technically responsible principles and disclosure requirements for enabling a professional association to certify members as Competent/Qualified Persons and standards against which complaints or regulatory infractions can be addressed for disciplining of members. Valuation Approaches and Methodologies guidance is provided for the Competent Valuer in choosing those combinations that are most appropriate based on purpose of the Valuation and the Valuer's experience and understanding of risks and limitations with respect to the geological character and location of the Mineral Property being Valued.

The second philosophy is typified by VALMIN and JORC Codes and by the SAMREC/SAMVAL Codes which in both cases were developed by committees representing mining industry professional associations, but with participation of the securities regulators. On the VALMIN web site, the involvement is explained as follows:<sup>61</sup>

*The VALMIN Committee is a joint committee of The Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists with the participation of the Australian Securities and Investment Commission, the Australian Stock Exchange Limited, the Minerals Council of Australia, the Petroleum Exploration Society of Australia, the Securities Association of Australia and representatives from the Australian finance sector.*

The AMEP MONVAL Guidelines Draft in Appendix I and Appendix II on Valuation Approaches and Methodologies provide a sound and internationally compatible starting point and a basis for finalizing the Code by a committee representing a government mandated association (or associations) of mining-related professionals in consultation with appropriate government representatives. Like the AMEP MONVAL Guidelines Draft, the SME Valuation Standards and Guidelines, First Edition, adopted in the United States in February 2016 also closely follows the IMVAL Template, Final Exposure Draft, May 2015, Both are less prescriptive than VALMIN 2015 and SAMVAL 2016. Section 1.2 of the SME Valuation Standards states that: <sup>62</sup>

*The IMVAL Template is intended as a set of principles-based over-arching standards and guidelines for the valuation of Real Property mineral assets (Mineral Property), to be recognized globally as a reference and adoption for national code or standards development. The IMVAL Template represents a consensus of current best practices recommended as a basis for national codes or standards. Accordingly, it is expected to be*

<sup>60</sup> <http://www.osc.gov.on.ca/en/15019.htm> and

<http://web.cim.org/standards/MenuPage.cfm?sections=177,181&menu=229>

<sup>61</sup> <http://www.valmin.org/committee.asp>

<sup>62</sup> <http://www.smenet.org/publications-resources/resources/sme-valuation-standards>

*updated from time to time. The IMVAL Template is not intended to be a stand-alone international reporting code, but to influence and complement national codes or standards. It does not supersede existing national reporting standards.*

The MONVAL Guidelines Draft and securities regulations of other countries which have similar valuation standards and CRIRSCO-aligned resource/reserve codes will provide guidance for drafting the related Mongolian securities regulations. Such drafting also would be in consideration of the maturity and nature of the equity financing market in Mongolia as well as the government objectives with respect to equity financing of exploration and mining ventures.

MONVAL finalization, formal adoption and development of securities regulations which either incorporate all or aspects of both MRC and MONVAL Codes would be accomplished by drawing upon and thus providing training through the participation by mining industry professional association members, representatives of the Financial Regulatory Commission of Mongolia and from the appropriate government ministry or ministries.

Wide recognition and integration of Mongolian mining and regulatory professionals internationally would be most speedily accomplished if there were continued support of training from AusIMM/AIG, and, if not already initiated, there were a similar liaison between Mongolian securities regulatory representatives and those from Australia.

Table 5: Key features and mandatory “must” provisions in the IMVAL Template, Second Edition, July 2016, compared with recent editions of widely used Valuation Codes and the AMEP MONVAL Guidelines Draft.

VALUATION CODE OR STANDARD	VALMIN15	SAMVAL16	SMEVAL16	IMVAL16	MONVAL draft
<b>IVS Referenced &amp; Aligned</b>	Yes & IFRS	Yes	Yes	Yes	Yes
<b>Fundamental Principles that MUST be followed (IMVAL Template, July 2016)</b>	IMVAL 2003 not included because it is not yet revised in consideration of IMVAL Template, 2nd ed., July 2016				
Competence	Yes	Yes	Yes	Yes	Yes
Materiality	Yes	Yes	Yes	Yes	Yes
Transparency	Yes	Yes	Yes	Yes	Yes
<b>Additional Principles that MAY be in national codes or standards (IMVAL July 16)</b>					
Objectivity	Yes	Yes (Should)	Fundamental	Yes (May)	Yes (Should)
Independence	Yes (May)	Yes (May)	Yes (May)	Yes (May)	Yes (Should)
Reasonableness	Yes	Fundamental	Yes (May)	Yes (May)	Yes (Should)
<b>SHALL or MUST (IMVAL Template, July 2016)</b>	Mandatory is indicated by "MUST" or "SHALL" in Codes				
Must comply with relevant jurisdiction laws	Yes	Yes	Yes	Yes	Yes
Must be able to demonstrate valuer competency	Yes	Yes	Yes	Yes	Yes
Must be assisted for competency by expert/specialist	Yes	Yes	Yes	Yes	Yes
Must disclose expert assistance in valuation report	Yes	Yes	Yes	Yes	Yes
Must address and reference all material information	Yes	Yes	Yes	Yes	Yes
Must state all material assumptions inputs, risks, etc.	Yes	Yes	Yes	Yes	Yes
Must be transparent, unambiguous & understandable	Yes	Yes	Yes	Yes	Yes
Must disclose key assumptions interaction in valuation	Yes	Yes	Yes	No	Yes
Must be independent, if required by law or regulation	Yes	Yes	Yes	Yes	Yes
Must ensure reasonableness of the valuation	Yes	Yes	Yes	Yes	Yes
Must give details of property or interest being valued	Yes	Yes	Yes	Yes	Yes
Must report scope of work details	Yes	Yes	Yes	Yes	Yes
Must clearly disclose intended use unless confidential	Yes	Yes	Yes	Yes	Yes
Must use CIRISCO standards to explain why not	JORC/Yes	Yes	Yes	Yes	Yes
Must determine highest & best use where applicable	No	Yes	Yes	Yes	Yes
Must clearly state basis of value, definition & source	Yes	Yes	Yes	Yes	Yes
Must minimum 19 topic headings in valuation report	Yes	Yes	Yes	Yes	Yes
Must state opinion if any data may be unreliable	Yes	Yes	Yes	Yes	Yes
Must disclose any special assumptions	Yes	Yes	Yes	Yes	Yes
Must be valuer independent of valuation outcome	Yes	Yes	Yes	Yes	Yes
Must form opinion that is reasonable in circumstances	Yes	Yes	Yes	Yes	Yes
Must be appropriate valuation for intended purpose	Yes	Yes	Yes	Yes	Yes
<b>Relevant Experience in Years</b>	10 total	Unspecified	Unspecified	Ref CIRISCO	5V; 10E
<b>Valuation Approaches</b>					
Cost	Yes	Yes	Yes	Yes	Yes
Income	Yes	Yes	Yes	Yes	Yes
Market	Yes	Yes	Yes	Yes	Yes
<b>Valuation Methods for each Approach</b>	Ref IFRS 13	Refer IVS	Refer IVS	Ref IVS	Yes

Note: Yes in smaller letters and paler green signifies an implicit "Must"

Table 6: Additional mandatory “must” provisions that are in the VALMIN 2015 Code.

VALMIN 2015 mandatory “must” provisions that are additional to MVAL 2016 template
Must be acceptance of responsibility by each report contributor for their own contribution
Must not have material effect if departure from the Code
Must state where impossible to obtain reliable data
Must clearly set out methodology or methodologies
Must state sources of all material information and data
Must not rely uncritically on the data and information
Must clearly state reliance on third parties and their identity
Must be written agreement with commissioning entity
Must include scope and purpose in the agreement with commissioning entity
Must not be compromised by time and cost constraints
Must report any restrictions lessening depth of analysis
Must disclose the cost of a public valuation report
Must seek from commissioning entity any prior reports
Must obtain written confirmation from commissioning entity whether any information confidential
Must take reasonable steps to obtain confidential information
Must review what aspects need to be in public report
Must verify tenure independent of the commissioning entity
Must base tenure information on a sufficiently recent inquiry
Must include in valuation report a list of all material tenure information
Must comment on quality & reasonableness of the mineral resource and/or reserve estimates
Must apply reasonable grounds requirement re exploration and production target statements
Must review operating, environmental & social practices
Must disclose any material existing or potential obstacles
Must apply reasonableness of estimate of capital & operating cost estimates & adjust, if necessary
Must set out a reasonable basis for price-related assumptions applying to any mine products
Must apply reasonableness of estimate and adjust revenues, if necessary
Must state nature of the value(s) determined and their valuation date(s)
Must not be influenced by the commissioning entity
Must use valuation methods suitable for the particular mineral asset
Must disclose & discuss the valuation methods used so other valuers would have similar conclusion
Must determine high, most likely and low valuations
Must state reasons if no sensitivity analysis is included in the valuation report
Must account for market value premiums or discounts
Must state basis for taxes, royalties, exchange rates, etc.
Must declare reasons if a site visit was not made
Must not allow commissioning entity to decide whether a site visit is required
Must keep records for 7 years of correspondence, etc.
Must disclose nature and material details of any liability indemnity by commissioning entity
Must declare that any public valuation report is in accordance with VALMIN
Must sign statements of qualification, etc. in the valuation report
Must be less than 12 mo between valuation date & valuation report

Table 7: Key preferred or “should” provisions in the IMVAL 2016 Template, second edition, compared with recent Valuation Code editions and the AMEP MONVAL Guidelines Draft.

VALUATION CODE OR STANDARD	VALMIN15	SAMVAL16	SMEVAL16	IMVAL16	MONVAL Draft
<b>Should</b> (IMVAL Template, 2nd Ed., July 2016)					
Approach to Valuation with Objectivity	Must	Yes	Yes	Yes	Yes
Use assumptions & methods reasonable in the context and purpose of the valuation	Must	Yes	Yes	Yes	Yes
Determine Scope of Work in consultation with Commissioning Entity	Must	Shall	Yes	Yes	Yes
Use CRISCO Resource & Reserve Definitions and, if not, reconcile to extent possible	JORC/Yes	Yes	Yes	Yes	Yes
Retain Experts competent in vetting and development of certain technical & other inputs	Yes	Yes	Yes	Yes	Yes
Determine that all Material Info considered	Yes	Yes	Yes	Yes	Yes
Not present minimal or unclear info from which incorrect conclusions could be drawn	Yes	Yes	Yes	Yes	Yes
Disclose implications of more thorough valuation or investigation of Material Issues	No	No	Yes	Yes	Yes
Disclose interaction of key assumptions on which valuation conclusion depends	Must	Shall	Must	Yes	Must
Disclose title or rights, and encumbrances	Yes	Shall	Yes	Yes	Yes
Use at least two of three Valuation Approaches	Yes	Shall	Yes	Yes	Yes
Analyse and reconcile results for concluding opinion of Value	Yes	Yes	Yes	Yes	Yes
State reasons for higher weighting to one or eliminating any outlier value	No	Yes	Yes	Yes	Yes
Attempt to ensure that inputs to all Valuation Methods applied are derived from relevant marketplace	Yes	Yes	Yes	Yes	Yes

**Note:** “Shall” or “Must” signify a mandatory provision.

## 2.5.5 Comparison of responsibilities of the Mineral Property Valuer

Although terms used for the Competent Valuer differ in the case of VALMIN and CIMVAL, the meanings are the same as in the IMVAL Template and other codes, and, the overall responsibilities of the Valuer are essentially the same. The following sections are copied from each of the widely used Valuation Codes and can be readily compared with the AMEP MONVAL Draft Guidelines and the IMVAL Final Exposure Draft, May 2015, which served as the guide for drafting the AMEP MONVAL Guidelines Draft, the SME Standards and Guidelines 2016 and the SAMVAL 2016 Code. The Sections following Section 2.5.5.2 below, the sections and clauses (bold and underlined) defining responsibilities of the Valuer are listed for each Valuation code and can be readily compared.

### 2.5.5.1 AMEP MONVAL Guidelines Draft (Appendix I of this report)

#### **Section 2.3, Responsibilities of Valuer**

*The Valuer is responsible for the Valuation and the overall Valuation Report, including the following:*

- (a) Selecting Valuation Approaches and Methods.*
- (b) Ensuring that any Expert(s) assisting with review of technical information and the Valuation are appropriately qualified and experienced, that their assistance is disclosed in the Valuation Report, and that their consents are obtained for any description of their assistance in the form and context in which it appears in the report.*
- (c) Adhering to the requirements of this Guidance Draft, and to other principles as applicable.*
- (d) Assessing the Reasonableness of technical data and information, technical interpretations, technical discussions and conclusions, forecasts, and parameters used in the Mineral Property Valuation.*
- (e) Adhering to the legal and regulatory requirements applicable to Mineral Property Valuations and Valuation Reports of Mongolia and/or other relevant jurisdictions.*
- (f) Signing the Valuation Report to indicate the Valuer's responsibility for the Valuation and the overall Valuation Report.*

### 2.5.5.2 IMVAL Template, Final Exposure Draft, May 2015<sup>63</sup>

#### **Section 2.9, Responsibilities of Valuer**

*The Valuer is responsible for the Valuation and the overall Valuation Report, including the following:*

- (a) Selecting Valuation Approaches and Methods.*
- (b) Ensuring that any Expert(s) assisting with review of technical information and the Valuation are appropriately qualified and experienced, that their assistance is disclosed in*

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<sup>63</sup> [http://www.cim.org/~media/Files/PDF/IMVAL\\_Template\\_Final\\_Exposure\\_Draft\\_May2015.ashx?la=en](http://www.cim.org/~media/Files/PDF/IMVAL_Template_Final_Exposure_Draft_May2015.ashx?la=en)



the Valuation Report, and that their consents are obtained for any description of their assistance in the form and context in which it appears in the report.

(c) Adhering to the requirements of these standards, and to other principles as applicable.

(d) Assessing the Reasonableness of technical data and information, technical interpretations, technical discussions and conclusions, forecasts, and parameters used in the Mineral Property Valuation.

(e) Adhering to the legal and regulatory requirements applicable to Mineral Property Valuations and Valuation Reports, in the relevant jurisdictions.

(f) Signing within the Valuation Report as responsible for the Valuation and the overall Valuation Report.

### 2.5.5.3 CIMVAL Standards and Guidelines, February 2003<sup>64</sup>

**Responsibility** (as listed in Sections of CIMVAL as indicated by bold print)

**S7.1** The **Qualified Valuator** has the **responsibility** to decide which **Valuation approaches and methods to use**. The choice of the specific approaches and methods used, or excluded, must be justified and explained by the Qualified Valuator. The limitations of each method must be explained.

**S5.1** A Qualified Valuator is responsible for the overall Valuation of a Mineral Property and the preparation of the Valuation Report. The Qualified Valuator may be assisted in, or rely on, various aspects of the Valuation and the Valuation Report by one or more Qualified Persons.

**S5.2** In situations where a Qualified Valuator is not a **Qualified Person** as defined in NI 43-101, all technical data relating to the Mineral Property being valued is subject to Data Verification by one or more Qualified Persons. If a Current Technical Report already exists, the Qualified Valuator may rely on a Current Technical Report to support the Valuation, and shall clearly disclose in the Valuation Report the extent to which such reliance is made.

**S5.3** The Qualified Valuator is responsible for assuring that the Qualified Persons who contribute to the Valuation, or upon whom the Qualified Valuator relies, are appropriately qualified and experienced.

**S5.4** The Qualified Valuator must be Independent, except for circumstances specified in S5.5. There must be clear, full, and plain disclosure of any past, present or anticipated business relationships, direct or indirect, between the Qualified Valuator and the Commissioning Entity or other interested parties which may be relevant to the Qualified Valuator's Independence, or a lack thereof.

**S5.5** If a Valuation is undertaken, which under the particular circumstances does not require the Qualified Valuator to be Independent, the Qualified Valuator must clearly disclose in the introduction and in the summary of the Valuation Report: (i) why Independence of the Qualified Valuator is not required in the particular circumstances; (ii)

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<sup>64</sup> <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=230>



that he or she is not Independent; and (iii) his or her relationship to the Commissioning Entity, to the holder of any right, title or interest to the Mineral Property, and/or to the Mineral Property, as the case may be.

**S5.6** A Qualified Valuator must certify in the Valuation Report that he or she meets all of the attributes of the definition of “Qualified Valuator”, and must stamp the Valuation Report with his or her professional seal, if applicable. In addition, non-Canadian valuers must certify and provide evidence that their professional organization meets all of the attributes of a Professional Association or a Self-Regulatory Professional Organization.

**S5.7** The Qualified Valuator is responsible for adhering to the tenets of Materiality, Transparency and Reasonableness in the Valuation of the subject Mineral Property and in the Valuation Report.

**S5.8** The Qualified Valuator shall retain his or her work file and all supporting data relating to a Valuation and to a Valuation Report for a minimum of five years after the Report Date.

#### 2.5.5.4 VALMIN Code, 2015 Edition, effective 30 January 2016, mandatory for AusIMM and AIG members from 1 July 2016<sup>65</sup>

**Responsibility** (as listed in Sections of the VALMIN Code indicated by bold print)

**Preface.** The VALMIN Code does not constitute legal advice and may not consider all matters relevant to the preparation of a Public Report. It is the **responsibility** of **Practitioners** to determine their legal obligations in relation to the preparation of a Public Report and to seek legal advice when necessary.

**2.1** A **Practitioner** is an Expert as defined in the Corporations Act, who prepares a Public Report on a Technical Assessment or Valuation Report for Mineral Assets or Securities. **This collective term includes Specialists and Securities Experts.** The following categories of Expert are recognised and are broadly aligned with ASIC Regulatory Guide 112:

(a) **Specialists** are persons whose profession, reputation and relevant industry experience in a technical discipline (such as geology, mine engineering or metallurgy) provides them with the authority to assess or value Mineral Assets, and who prepare and accept **responsibility** for a Public Report.

(b) **Securities Experts** are persons whose profession, reputation or experience provides them with the authority to assess or value Securities, and who prepare and accept **responsibility** for a Public Report.

**2.2** If only one **Specialist** signs the Technical Assessment or Valuation, that person is **responsible** and accountable for the whole of the documentation under the VALMIN Code. It is important in this situation that the **Specialist** accepting overall **responsibility** for a Technical Assessment or Valuation and supporting documentation is satisfied that the work of the other contributors is acceptable.

**5.2(d)** The **Specialist** must accept **responsibility** for assessing the technical data and information, interpretations, discussions and conclusions, forecasts and parameters used

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<sup>65</sup> <http://www.valmin.org/code2015.asp>

in a Technical Assessment or Valuation of a Mineral Asset. For Mineral Asset Valuations undertaken by the Specialist, the Specialist must also accept **responsibility** for the **Valuation Approach, Valuation Methods and Public Report conclusion**.

Technical Assessments and Valuations of Mineral Assets may be a collaborative effort. Where there is a clear **division of responsibilities**, each person must accept **responsibility** for their own contribution.

The **Practitioner** must clearly state within the Public Report under what conditions the work of other third parties has been relied upon and identify such other persons.

**12.1 A Practitioner** must declare in a Public Report that the report has been prepared in accordance with the VALMIN Code or indicate those areas where the report is not and explain why this is so. The name of the **Practitioner responsible** for the Public Report must be included and the **Practitioner** must sign off on the Public Report.

#### 2.5.5.5 SAMVAL Code, 2016 Edition, as amended 20 July 2015<sup>66</sup>

##### **3.5 Responsibility**

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

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

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

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

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

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

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<sup>66</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015. <http://www.samcode.co.za> or <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%202%20revised%20Samval%20Code.pdf>

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

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

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

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

#### **2.5.5.6 SME Valuation Standards, First Edition, February 2016<sup>67</sup>**

##### **2.9 Responsibilities of Valuer**

The Valuer is responsible for the Valuation and the overall Valuation Report, including the following:

(a) Selecting Valuation Approaches and Methods.

(b) Ensuring that any Expert(s) assisting with review of technical information and the Valuation are appropriately qualified and experienced, that their assistance is disclosed in the Valuation Report, and their consents are obtained for any description of their assistance in the form and context in which it appears in the report.

(c) Adhering to the requirements of these standards, and to other principles as applicable.

(d) Assessing the Reasonableness of technical data and information, technical interpretations, technical discussions and conclusions, forecasts, and parameters used in the Mineral Property Valuation.

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<sup>67</sup> <http://www.smenet.org/publications-resources/resources/sme-valuation-standards>

(e) Adhering to the legal and regulatory requirements applicable to Mineral Property Valuations and Valuation Reports in the relevant jurisdictions for the conduct of the Valuation and submission and use of the report.

(f) Signing within the Valuation Report as responsible for the Valuation and the overall Valuation Report.

### **2.5.5.7 IMVAL Template, Second Edition, July 2016<sup>68</sup>**

#### **2.9 Responsibilities of Valuer**

*The Valuer is responsible for the Valuation and the overall Valuation Report, including the following:*

(a) *Selecting Valuation Approaches and Methods.*

(b) *Ensuring that any Expert(s) assisting with review of information and the Valuation are appropriately qualified and experienced, that their assistance is disclosed in the Valuation Report, and that their consents are obtained for any description of their assistance in the form and context in which it appears in the report.*

(c) *Adhering to the requirements of this Template or the applicable code or standard, and to other principles as applicable.*

(d) *Assessing the Reasonableness of the relevant information, interpretations, discussions and conclusions, forecasts, and parameters used in the Valuation.*

(e) *Adhering to the legal and regulatory requirements applicable to Valuations and Valuation Reports in the relevant jurisdictions.*

(f) *Statement that the named Valuer is responsible for the Valuation and the Valuation Report.*

### **2.5.6 Purposes and intended uses of Mineral Property Valuations**

The purpose of the Valuation and the intended use are aspects which are required to be disclosed according to each of the widely used Valuation Codes or Standards, the IMVAL Template 2015 exposure draft, the INVAL 2016 second edition, and, the AMEP MONVAL Guidelines Draft. None of the latter list examples of purposes or intended uses. However, VALMIN 2015 and SAMVAL 2016 both provide the following lists which could be incorporated in the MONVAL Code or Standards should it be considered advisable by members of the government and mandated professional associations

#### **2.5.6.1 SAMVAL 2016, Section 1.9, Purposes of Valuations<sup>69</sup>**

*The use and purpose of the Valuation Report prepared in accordance with the SAMVAL Code*

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<sup>68</sup> <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374>

<sup>69</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015, pages 4 & 5. <http://www.samcode.co.za> or <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%20%20revised%20Samval%20Code.pdf>

should be clearly stated by the Commissioning Entity. Once the Commissioning Entity requests that the report be compiled in accordance with the SAMVAL Code, it then becomes binding on the CV.

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

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

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

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

#### **2.5.6.2 VALMIN 2015, Section 5.5<sup>70</sup>**

*The purposes for which the Code may apply include, but are not limited to:*

- (a) compensation for compulsory acquisitions,*
- (b) protection of the rights of shareholders in transactions between associated parties,*
- (c) public floats,*
- (d) 'fairness and reasonableness' reports (RG111) relating to an expressed opinion on a proposed acquisition or disposal of an asset or Securities,*
- (e) the justification for raising debt or equity finance from an outside party,*
- (f) facilitating negotiations between partners,*
- (g) the assessment of Government charges and taxes,*
- (h) estate settlements,*
- (i) litigation,*
- (j) reports for receivers and administrators, or*
- (k) accounting and financial reporting.*

#### **2.5.7 Valuation Approaches**

The AMEP MONVAL Guidelines Draft (Appendix I, herewith), is supplemented by a more comprehensive description of both Valuation Approaches and Valuation Methods (Appendix II, herewith) than is provided in the IMVAL Template and Valuation codes that are widely used internationally. This is because of the apparent unfamiliarity of Mongolian mining professionals with the concepts and practice of Mineral Property Valuation for the purposes for which it is applied in the prominent mining and mine financing countries, namely, Australia, Canada, South Africa and the United States.

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<sup>70</sup> <http://www.valmin.org/code2015.asp>



Valuation Approaches of all the codes or standards widely used internationally are the same three, namely, the:

- 1) **Market Approach** which is a sales comparison approach based on the recent selling price of geologically equivalent Mineral Properties in markets or jurisdictions with similar risks and where infrastructure and other Material factors are comparable;
- 2) **Income Approach** based on the anticipation of future monetary benefits by estimating income generating capability from the Mineral Resource and/or Reserve after taxes and royalty and most commonly using the Discounted Cash Flow (DCF) method of forecasting Internal Rate of Return (IRR) and Net Present Value at a discount rate appropriate for the mineral commodity and reflective of risks; and,
- 3) **Cost Approach** relies on historical amounts spent exploring or developing an exploration-stage or dormant Mineral Property being indicative of the Value after discounting the amounts if development potential is judged by the Valuer to be limited, or, if judged to have upside potential, adding an amount based on estimated cost to confirm the potential.

The SME 2016 Standards and Guidelines, the AMEP MONVAL Guidelines Draft and the IMVAL Template, Second Edition, July 2016 (of which relevant section numbers are below in bold and underlined) provide very little detail about each of the three approaches other than to make reference to sources such as the International Valuation Standards (IVS)<sup>71</sup>, VALMIN 2015, *Section 8.2 Common Valuation Approaches*, advises that *Guidance on Valuation Approaches and Valuation Methods may be obtained from International Financial Reporting Standard number 13.*<sup>72</sup> Also, in VALMIN 2015, *Section 8.3* advises that: *For papers on valuation in the minerals sector, refer to the OneMine Global Library on the AusIMM web site (<http://www.ausimm.com.au>) and the Publications section of the AIG web site (<http://www.aig.org.au>).*<sup>73</sup>

**2.8 Valuation Approaches** (IMVAL Template, Second Edition, July 2016)<sup>74</sup> states that: *More than one Valuation Approach **must** be applied in the Valuation of the subject Mineral Property, if it is reasonably possible and appropriate to apply them, **unless** constrained by the Scope of Work agreed to with the Commissioning Entity. The resulting Valuation estimates should be reconciled. If only one Approach is used, the Valuation Report **must** provide an explanation for why more than one is not used.*

**3.9 Valuation Process** (IMVAL Template) describes **Valuation Approaches** as follows:

*The three generally accepted Valuation Approaches are:*

• **Market Approach** • **Income Approach** • **Cost Approach**

*Further guidance on the Valuation Approaches is provided in the IVSs.*

*Each Valuation is time and circumstance specific. The most appropriate Valuation Approach will depend on several factors, including the stage of development, the highest and best use, the Basis of Value, the availability of Valuation Inputs and data, and on the Approaches and Methods used by the market. For a particular Mineral Property, Valuation*

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<sup>71</sup> For download - <https://www.ivsc.org/standards/download-standards>

<sup>72</sup> For download - <http://www.ifrs.org/IFRSs/Pages/IFRS.aspx>

<sup>73</sup> For download - <http://www.valmin.org/code2015.asp>

<sup>74</sup> For download - <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374>

*Methods from at least two of the three Valuation Approaches should be used. There are a variety of Valuation Methods within the Valuation Approaches, each of which may be more suited to the Valuation at hand than others.*

*The results from the Valuation Approaches and Methods employed should be analysed and reconciled into a concluding opinion of Value. The reasons for giving a higher weighting to one Valuation Approach or Method over another, including any elimination of an outlier value, should be stated. The opinion of Value can be stated as a range of Values and/or as a single Value.*

*When the Basis of Value to be determined is Market Value, the Valuer should attempt to ensure that Inputs to all Valuation Methods applied are derived from the relevant market place, including the expectations and perceptions of the applicable market participants.*

See also IVS Framework 19 and 20.<sup>75</sup>

#### **4.0 Definitions** of the three Valuation Approaches (IMVAL Template)

##### **4.15 Market Approach**

*"Provides an indication of value by comparing the subject asset with identical or similar assets for which price information is available" (IVS definitions). The Market Approach is also known as the "sales comparison approach."*

##### **4.11 Income Approach**

*"Provides an indication of value by converting future cash flows to a single current capital value" (IVS Definitions).*

##### **4.5 Cost Approach**

*"Provides an indication of value using the economic principle that a buyer will pay no more for an asset than the cost to obtain an asset of equal utility, whether by purchase or by construction" (IVS Definitions), and includes methods based on expenditures.*

Table 8 is an amalgamation of tables copied from each of the three Valuation codes (CIMVAL 2003<sup>76</sup>, VALMIN 2015<sup>80</sup> and SAMVAL 2016<sup>77</sup>) which have tables that suggest appropriateness of the type of Valuation Approach for the stage to which a Mineral Property has been evaluated. The Valuer, however, must be cognizant of the fact that **each Valuation is time- and circumstance-specific** and that these are only **a general guide to the applicability of each Valuation**

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<sup>75</sup> The SME Valuation Standards and guidelines, February 2016, incorporates the same section as in the IMVAL Template on **Valuation Process** and adds the following direction from IVS Framework 19 and 20:

The **IVS Framework 19** states, in part:

*"In undertaking a market-based valuation, matters that are specific to the current owner or to one particular potential buyer are not relevant because both the willing seller and the willing buyer are hypothetical individuals or entities with the attributes of a typical market participant."*

The **IVS Framework 20** states, in part:

*"The factors that are specific to a particular buyer or seller and not available to market participants generally are excluded from the inputs used in a market-based valuation."*

<sup>76</sup> See Section G3.3, p 21-2 of CIMVAL 2003 which can be downloaded at

<http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=230>

<sup>77</sup> See Section 4.4, p 13-4 of SAMVAL 2016 which can be downloaded at . <http://www.samcode.co.za> or

<https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%202%20revised%20Samval%20Code.pdf>

**Approach.**<sup>78</sup>

The Valuation codes have been written by Competent Valuers and appear to have been written for those who through experience of working with Competent Valuers would fulfill the competency requirement and already be familiar with the approaches and methodology from which they would choose as most appropriate for the particular circumstances. This inference is supported by the paucity of methodology details in the principles-based *Requirements* or *Standards* sections of the codes, the separate *Guidance* section and in the *Definitions* that are common to all the Valuation codes. Even though there may be differences in terminology, all of the Valuation codes convey the same intent or meanings and have in common a similar level of detail on procedures and methods.

Table 8: Relationship between stages of Mineral Property development and Valuation Approach as depicted in CIMVAL 2003 (top), VALMIN 2015 (middle) and SAMVAL 2016 (bottom)

<b>Valuation Approach</b>	<b>Exploration Properties</b>	<b>Mineral Resource Properties</b>	<b>Development Properties</b>	<b>Production Properties</b>
<b>Income</b>	No	In some cases	Yes	Yes
<b>Market</b>	Yes	Yes	Yes	Yes
<b>Cost</b>	Yes	In some cases	No	No

<b>Valuation Approach</b>	<b>Exploration Projects</b>	<b>Pre-development Projects</b>	<b>Development Projects</b>	<b>Production Projects</b>
Market	Yes	Yes	Yes	Yes
Income	No	In some cases	Yes	Yes
Cost	Yes	In some cases	No	No

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

**2.5.8 Valuation Methodology**

As noted in the above section on Valuation Approaches, there is a paucity of detailed information

<sup>78</sup> See Section 8.3, p 29 of VALMIN 2015 which can be downloaded at <http://www.valmin.org/code2015.asp>



on methodology in all of the codes that are widely used internationally. Each code makes reference to International Valuation Standards (IVS) or International Financial Reporting Standards (IFRS), but these may not provide the degree of methodology details preferred by mining professionals in Mongolia.

Of all the codes, CIMVAL 2003<sup>79</sup> presents the most advice on Valuation Methods, as follows:

**G3.4** Valuation methods are, in general, subsets of Valuation approaches. For example the Income Approach includes several methods. Certain Valuation methods are more widely used and may be more generally acceptable as industry practice than others, although this could change over time. Some methods can be considered to be primary methods for Valuation while others are secondary methods or rules of thumb considered suitable only to check Valuations by primary methods.

**G3.5** Table 2 lists a number of Valuation methods for Mineral Properties, classifies them as to approach, specifies whether it is ranked as a primary or secondary Valuation method, and provides comments. Methods with no primary or secondary ranking are considered to be unreliable or are not widely accepted.

Table 9: CIMVAL 2003, Table 2. Valuation Methods for Mineral Properties

Valuation Approach	Valuation Method	Method Ranking	Comments
Income	Discounted Cash Flow (DCF)	Primary	Very widely used. Generally accepted in Canada as the preferred method.
Income	Monte Carlo Analysis	Primary	Less widely used, but gaining in acceptance
Income	Option Pricing	Primary	Not widely used and not widely understood but gaining in acceptance

<sup>79</sup> CIMVAL 2003, p 22-3 with G3.4, G3.5 and Table 2. Valuation Methods for Mineral Properties; download at <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=230>

<b>Income</b>	Probabilistic Methods		Not widely used, not much accepted
<b>Market</b>	Comparable Transactions	Primary	Widely used with variations
<b>Market</b>	Option Agreement Terms	Primary	Widely used but option aspect commonly not discounted, as it should be
<b>Market</b>	Gross "in situ" Metal Value		Not acceptable
<b>Market</b>	Net Metal Value or Value per unit of metal	Secondary	Widely used rule of thumb
<b>Market</b>	Value per Unit Area	Secondary	Used for large Exploration Properties
<b>Market</b>	Market Capitalization	Secondary	More applicable to Valuation of single property asset junior companies than to properties
<b>Cost</b>	Appraised Value	Primary	Widely used but not accepted by all regulators
<b>Cost</b>	Multiple of Exploration Expenditure	Primary	Similar to the Appraised Value Method but includes a multiplier factor. More commonly used in Australia
<b>Cost</b>	Geoscience Factor	Secondary	Not widely used

### 3. Current Status of Mineral Deposit/Asset/Property Valuation in Mongolia, Future Optimisation Opportunities and Recommendations

This chapter outlines the definition and key concepts of two different activities associated with a mineral deposit/asset/property, namely (a) valuation; and (b) evaluation. It describes their differences, current practice of application in Mongolia and suggests application improvement.

#### 3.1 Terminology usage for Valuations – Mineral Deposit, Assets or Mineral Property

Because the three terms in the title of this chapter are used interchangeably by those unfamiliar with both valuation and evaluation, it is appropriate to clarify that **Mineral Deposit** is not the internationally accepted term for these purposes. However, **Mineral Asset(s)** or **Mineral Property** are accepted internationally as interchangeable and both refer to **Real Property mineral assets** (see below for IVS definition of **Real Property**).

*A Mineral Deposit is a natural concentration of minerals in the earth's crust. Such a term is very general, and, even if used in reference to an economic concentration of minerals, does not encompass all the associated Material or Modifying factors which must be incorporated when undertaking a Valuation. Thus, rather than Mineral Deposit, usage is Mineral Resource and Mineral Reserve and the subcategories of each as in Mongolia's MRC Code and as published in the International Reporting Template of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO), edition of May 2013, as amended from time to time, and may be subject to rules and guidance contained in National Reporting Codes and Standards.<sup>80</sup>*

The term *Mineral Property* has been used in Chapters 1 and 2 of this report and in the AMEP MONVAL Guidelines Draft rather the term *Mineral Asset* because *Mineral Property* is used in the IMVAL Template, Final Exposure Draft, May 2015, and, in the IMVAL Template, Second Edition, July 2016 which states in section 1.3:

*The Template is intended as a principles-based template to be recognised as a common set of minimum requirements for national codes or standards concerning the valuation of **Real Property mineral assets (Mineral Property)**. The Template represents a consensus of current good practices and is expected to be updated from time to time.*

Section 4.18 of this IMVAL Template defines **Mineral Property** as follows:

*Any contractual or permanent right to explore for, mine or otherwise extract minerals (including petroleum) from the earth, and any interest in such a right, and any land ownership that includes or inherently provides that right. For the purpose of the Template, Mineral Property generally includes rights to explore for and extract Mineral Resources and Reserves, mining claims and other forms of mineral tenements, mineral rights, petroleum rights, royalty interests, and intellectual property such as geological data forming part of or accompanying the rights and interests referred to above.*

In Section 4.26, IMVAL (and all the widely used Valuation codes or standards) adopts the IVS definition of **Real Property** which is *All rights, interests and benefits related to the ownership of Real Estate.*

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<sup>80</sup> IMVAL, Second Edition, July 2014. <http://web.cim.org/standards/MenuPage.cfm?sections=177,182&menu=374>

Both VALMIN 2015 and SAMVAL 2016 use the term **Mineral Assets** which is defined in SAMVAL as:<sup>81</sup>

*Any contractual or permanent right to explore for, or mine (or both) or otherwise extract minerals (including petroleum) from the Earth, that has been granted or an entity holding such property or the securities of such an entity, including but not limited to, all corporeal and incorporeal property, mineral rights, mining titles, mining leases, intellectual property, personal property (including plant equipment and infrastructure), mining and exploration tenure and titles or any other right held or acquired in connection with the finding and removing of minerals located in, on or near the earth's crust. **Mineral Assets** can be classified as **Dormant Properties, Exploration Properties, Development Properties, Production Properties** or **Defunct Properties**.*

In VALMIN 2015, **Mineral Assets** are defined thus:<sup>82</sup>

***Mineral Asset** means all property including (but not limited to) tangible property, intellectual property, mining and exploration Tenure and other rights held or acquired in connection with the exploration, development of and production from those Tenures. This may include the plant, equipment and infrastructure owned or acquired for the development, extraction and processing of Minerals in connection with that Tenure.*

*Most Mineral Assets can be classified as either:*

*(a) **Early-stage Exploration Projects** – Tenure holdings where mineralisation may or may not have been identified, but where Mineral Resources have not been identified;*

*(b) **Advanced Exploration Projects** – Tenure holdings where considerable exploration has been undertaken and specific targets identified that warrant further detailed evaluation, usually by drill testing, trenching or some other form of detailed geological sampling. A Mineral Resource estimate may or may not have been made, but sufficient work will have been undertaken on at least one prospect to provide both a good understanding of the type of mineralisation present and encouragement that further work will elevate one or more of the prospects to the Mineral Resources category;*

*(c) **Pre-Development Projects** – Tenure holdings where Mineral Resources have been identified and their extent estimated (possibly incompletely), but where a decision to proceed with development has not been made. Properties at the early assessment stage, properties for which a decision has been made not to proceed with development, properties on care and maintenance and properties held on retention titles are included in this category if Mineral Resources have been identified, even if no further work is being undertaken;*

*(d) **Development Projects** – Tenure holdings for which a decision has been made to proceed with construction or production or both, but which are not yet commissioned or operating at design levels. Economic viability of Development Projects will be proven by at least a Pre-Feasibility Study;*

*(e) **Production Projects** – Tenure holdings – particularly mines, wellfields and processing plants – that have been commissioned and are in production.*

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<sup>81</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015, pages 4 & 5. <http://www.samcode.co.za> or

<https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%20%20revised%20Samval%20Code.pdf>

<sup>82</sup> <http://www.valmin.org/code2015.asp>

## 3.2 Understanding the concepts of Mineral Asset/Property Valuation and Evaluation

### 3.2.1 Valuation

The previous chapter provides detailed information on specific characteristics of Mineral Property Valuation codes or standards that are widely used internationally and a comparative analysis of these codes together with a list of their practical purposes and uses. However, as stated previously, the concept of minerals deposit valuation differs from a mining feasibility study (evaluation).

In countries with a well-developed mining sector, mineral project valuation is carried out at any stage, irrespective of whether the project is in exploration, development or production mode. The valuation is often in the form of a report for project stakeholders or for the stock exchange.

For instance, in many cases companies holding exploration licenses may commission a mineral deposit valuation when seeking new investors, or to enable continued exploration by attracting additional investment, or for appraisal of the value of corporate stock, or to sell the company which holds exploration licenses, all of which involve international benchmark practices.

For the purpose of conducting a valuation, the valuer may require the license-holding company to engage independent consulting services from a geology and engineering audit company to verify the estimation of reserves and from a law firm for documentation of mineral title or other material matters. The licence-holding company may also receive banking or financial consulting services for financial guarantees. The project valuation may then be incorporated into a valuation of the holding company after considering such issues as the other corporate assets and liabilities.

Internationally, there are many and various tools and methodologies for minerals deposit or mining project valuation. In most jurisdictions, codes mandate that a valuation must use at least two methods for an estimation of value or provide reasons why this has not been done. If the results from the two methods differ considerably, the valuer must explain the difference and justify the choice of the selected value. The result of the valuation is usually determined as a “most likely” value, within a range from a specified low value to a specified high value, both in keeping with the definition common to all the widely used codes, namely that *Valuation is the estimation of the value of a Mineral Asset in money or monetary equivalent on a Valuation Date specified in the Valuation Report.*

The three most recently updated valuation codes (SAMVAL 2016, SME Standards 2016, VALMIN 2015) and the AMEP MONVAL Guidelines Draft all provide further direction from the IVS definitions as quoted below from Section 4.10 of the IMVAL Template, Second Edition, July 2016:

*For Valuations that are not applicable to financial reporting, Fair Value is “the estimated price for the transfer of an asset or liability between identified knowledgeable and willing parties that reflect the respective interests of those parties” (IVS Definitions and Framework 38).*



*For the purpose of financial reporting, Fair Value is “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” (IVS 300 G1).*

On the other hand, an evaluation, often termed a technical report, is an assessment of engineering, geological, legal, environmental, financial and socio-economic considerations as they may affect the actual or potential economic output of a mineral asset. A technical report may be required at various stages of mining project life, such as a decision point committing to additional exploration, ore reserve approval and mining project implementation. Scoping studies, pre-feasibility studies and feasibility studies are some examples of evaluations. In international practice, there is a range of key appraisal methods for these studies, including Discounted Cash Flow (DCF), Net Present Value (NPV), Internal Rate of Return (IRR) and Pay-Back Period (PBP).

The various forms, requirements and current circumstances for acceptance and approval of feasibility studies in Mongolia are described in detail in this chapter.

In Mongolia, the concepts of valuation and evaluation are currently understood as one, and mineral deposit valuation is considered as an economic part of scoping, pre-feasibility or feasibility studies. This is shown in current legislation<sup>83</sup> that sets forth regulations for receiving a scoping study (preliminary evaluation of minerals resources), a prefeasibility study (preliminary evaluation of minerals deposit ore reserve use) and a feasibility study (technical and economic grounds for development). Each of these studies is a technical report that estimates the economic and technical viability with an increasing degree of certainty based on a database to which ongoing project exploration, processing test work, piloting and other studies have contributed more precise information.

The Mongolian government applies different requirements for mineral resource and reserve estimation reports and feasibility studies than have been adopted in 2014 for use by accredited members of the *Mongolian Professional Institute of Geosciences and Mining (MPIGM)* under the CRIRSCO-aligned *Mongolian Code for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (The MRC Code)*. Currently, the government receives and verifies an ore reserve estimation report under the Classification and Regulations of Mineral Resources and Deposit Reserves (Mining Ministry Decree 203, 11 September 2015), and a feasibility study under Basic Requirements for Preliminary Evaluation of Mineral Resources, Preliminary Assessment of Deposit Reserves Exploitation, Requirements for Design Drawings and Feasibility Studies for Mining Projects and Rules for Accepting a Feasibility Study (Mineral Resources and Energy Minister Decree 74, 17 April 2012), followed by approval and registration in the state ore reserves registry.

To conform with internationally accepted standards for mineral resource and reserve estimation such as under Australasia’s JORC, Mongolia became a member of CRIRSCO (Committee for

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<sup>83</sup> *Appendix to the Resolution 074 by the minister of Mineral Resources and Energy dated April 17, 2012.*

Mineral Reserves International Reporting Standards). In November 2015, the Minister of Mines was reported by the Mongolian/MPIGM representative at the CRIRSCO annual meeting to have *officially nominated (MPIGM) as the Professional NGO to give accreditation to mining and geology professionals indicated by Mineral's Law.*<sup>84</sup> Whether the dichotomy between government mineral resource and reserve reporting practice and that under the MRC Code continues, depends on the importance government ascribes to expeditious exploration and mining investment.

Mongolia is encountering the following hurdles due to different definitions and methods of determining mineral resources/reserves and the consequent interpretation of two concepts, namely, 1) valuation for the purpose of establishing the price range for which a mineral asset or property would sell in the particular market on a specified date, and, 2) evaluation by conducting a feasibility study for the purpose of determining the technical and economic viability and, hence, the probability of obtaining financing for developing a mine:

- Mining projects need to attract financing at the start of, or prior to completion of, exploration. As Mongolia has no generally accepted methods for deposit valuation at the exploration stage, raising financing for exploration by appraisal of potential properties and minerals deposits is difficult. Consequently, companies fail to provide sufficient information to the stock exchange. For instance, companies will find it difficult to estimate the value-adding potential of additional investment when compared to the license holder's existing investment and goodwill, and, to identify share price for the percentage of company ownership which should be offered to investors. Without a commonly understood valuation approach, these estimates cannot be effectively communicated to potential investors.
- Deposits with on-going exploration, or deposits with undeveloped mineral resources, may be unable to facilitate pre-feasibility and feasibility studies, and thereby struggle to attract investment. For instance, the Mongolian government's efforts to find international market finance by appraising strategically important mineral deposits have been fraught with difficulty.
- Mongolian authorities experience difficulties when they receive pre-feasibility and feasibility studies (evaluations) for development of strategically important deposits and seek to reach agreement with foreign investors on the government equity share and the required investment amount. Government officials convey the impression that they would expect application of valuation methodology to help resolve differences such as encountered during negotiations over upward revision of value of the proposed mine investment at both the Oyu Tolgoi copper-gold mine and the proposed Gatsuurt gold mine. In reality, valuation methodology for determining today's monetary market value of the mineral asset/property would not resolve differences which are due to inflation, outdated

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<sup>84</sup> *Mongolia MPIGM Update*, Slide 14, Gerlee Bayanjargal, Executive Director , MPIGM, Afternoon Session, 30 November 2015 Annual Meeting of CRIRSCO, Barsilia, Brazil, <http://www.crirSCO.com/docs/Mongolia MPIGM Update.pdf> which can be downloaded at <http://www.crirSCO.com/news.asp>

evaluation studies or a feasibility study which has superseded a pre-feasibility study that was based on estimates rather than firm quotes from suppliers and contractors.

### 3.2.2 Evaluation - feasibility, pre-feasibility and scoping studies

Evaluation studies appropriate for the stage of exploration and development of a mineral property are termed *Preliminary Economic Assessment* or *Scoping*, *Pre-feasibility* and *Feasibility*. Definitions vary somewhat and although some consider the three to be categories of a feasibility study, this can lead to misunderstanding about the degree to which the particular level of each type of study is definitive.

A **Scoping Study** (also commonly known as a **Preliminary Economic Assessment**) is an order-of-magnitude technical and economic study of the potential viability of Mineral Resources that includes appropriate assessments of realistically assumed modifying factors together with any other relevant operational factors that are necessary to demonstrate at the time of reporting, whether or not the project is potentially viable and if it can be reasonably justified to recommend proceeding to a Prefeasibility Study.<sup>85</sup> Accuracy is usually cited to be in the 35 to 50% range.

A **Pre-feasibility Study** is comprehensive study of the viability of a range of options for a mineral project that has advanced to a stage at which the preferred mining method in the case of underground mining, or the pit configuration in the case of an open pit, has been established and an effective method of mineral processing has been determined. It includes a financial analysis based on realistic assumptions of technical, engineering, operating, and economic factors (modifying factors) and the evaluation of other relevant factors that are sufficient for a Competent Person, acting reasonably, to determine if all or part of the Mineral Resource may be classified as a Mineral Reserve. The overall confidence of the study should be stated. A Prefeasibility Study is at a lower confidence level than a Feasibility Study.<sup>86</sup> Accuracy is usually cited to be in the 20 to 35% range.

A **Feasibility Study** is a comprehensive design and costing study of the selected option for the development of a mineral project in which appropriate assessments have been made of realistically assumed geological, mining, metallurgical, economic, marketing, legal, environmental, social, governmental, engineering, operational, and all other modifying factors that are considered in sufficient detail to demonstrate, at the time of reporting, that extraction is reasonably justified (economically mineable) and the factors reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The overall confidence of the study should be stated.<sup>87</sup> Accuracy is usually cited to be in the 10 to 20% range.

Each of the three definitions refers to **Modifying Factors** which include, but may not be limited to, premises, assumptions, restrictions (limitations), mining, metallurgical, economic, marketing, legal, environmental, social, and governmental considerations. They are applied when converting Mineral Resources to Mineral Reserves.<sup>88</sup>

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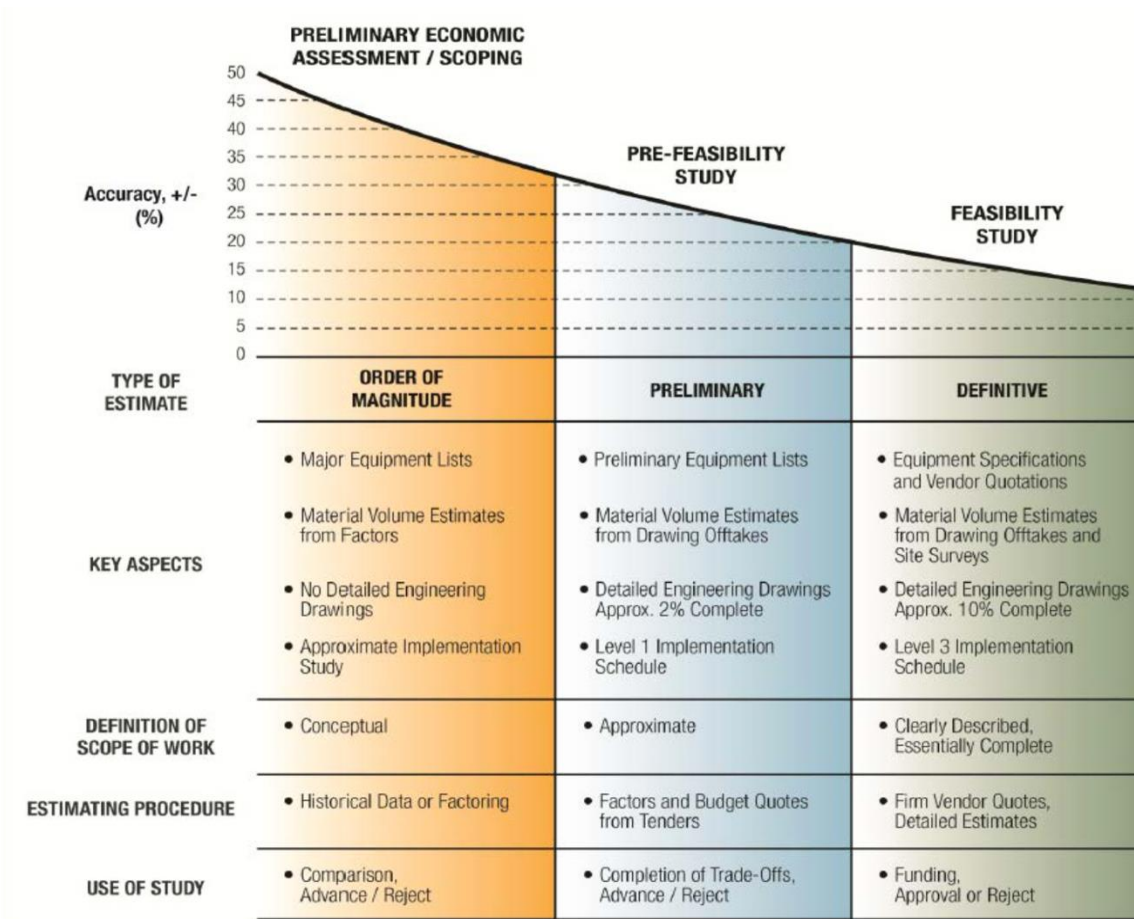
<sup>85</sup> THE South African Code for the Reporting of Mineral Asset Valuation (THE SAMVAL CODE) 2016 Edition as amended 20 July 2015, page 25. <http://www.samcode.co.za> or <https://www.jse.co.za/content/JSEAnnouncementItems/20160223%20Appendix%20%20revised%20Samval%20Code.pdf>

<sup>86</sup> *ibid*, page 25

<sup>87</sup> *ibid*, page 25

<sup>88</sup> *ibid*, page 28

Figure 2: Studies appropriate to stage of Mineral Property exploration and investigation



### 3.3 Mongolia’s legal environment concerning development of a feasibility study and provisions of respective laws

The key legal document for Mongolia’s geology and mining sector is the national Minerals Law, Article 10 of which sets the power and functions of a central state administrative agency (Mining Ministry) and Article 11 which indicates the functions of the state administrative agency (MRAM) responsible for geology and mining.

Minerals Law, Clause 10.1.9, states that the state administrative agency will approve the charter to establish a Professional Mineral Council in charge of decisions and recommendations on reports of geological studies in Mongolia, feasibility studies for mining projects and processing plants, and membership structure. The Law enables establishment of the Professional Mineral Council, with rules subject to agreement by the Mining Minister.

The following also regulate activities pertaining to mining project valuation.

- Licensing Law
- Corporate Income Tax Law
- Air Pollution Fee Law
- Environmental Protection Law
- Environmental Impact Assessment Law
- Royalties (Fee for Natural Resource Exploitation) Law
- Foreign Investment Law
- Customs Tariff and Duties Law
- Subsoil Law
- Land Law
- Land Fee Law
- Prohibition of Mineral Exploration and Exploitation at Head Waters of Rivers, Protection Areas of Water Basins and Forest Areas Law
- Value Added Tax Law
- General Taxation Law
- Water Law
- Immovable Property Tax Law
- Nuclear Energy Law
- Other legislation.

Table 10 shows laws, regulations and other provisions of which the affect as modifying factors must be taken into consideration when undertaking mineral property valuation and conducting evaluations such as feasibility and pre-feasibility studies.

Table 10: Legal provisions and regulatory clauses for consideration as modifying factors when undertaking mineral property valuation and evaluation

	<b>Indicators</b>	<b>Laws, regulations, decrees and instructions</b>
1	Royalty	Royalty is imposed on total sales or sales income at a certain percentage under Article 47 of the Minerals Law
2	Operational costs, costs associated with safety, environmental	Corporate Income Tax Law, specifically: Article 12. Non-taxable costs (the following costs refer to non-production related costs): 12.1. Taxable income shall be determined after deducting the



<p>protection costs (recurring costs) + non-production costs (sales, management and organizational costs)</p>	<p>following costs from the total taxable income:</p> <ul style="list-style-type: none"> <li>12.1.1. Expenses of all types of inventories such as raw materials, primary and auxiliary materials, semi-processed products, steam, water, energy, fuel, petroleum, spare parts, and packaging and wrapping material.</li> <li>12.1.2. Salaries and base and additional wages on which social and health insurance premiums and personal income tax are imposed.</li> <li>12.1.3. Social and health insurance premiums.</li> <li>12.1.4. Employee bonuses, incentives and allowances for housing, transport, meals and fuel expenses.</li> <li>12.1.5. Depreciation and amortization expenses of non-current asset.</li> <li>12.1.6. Regular maintenance expenses.</li> <li>12.1.7. Loan interest.</li> <li>12.1.8. Realized loss from foreign currency exchange rate.</li> <li>12.1.9. Payment for work and services performed by others.</li> <li>12.1.10. Rental payments.</li> <li>12.1.11. Interest on finance lease payments.</li> <li>12.1.12. Subscriptions for professional publications.</li> <li>12.1.13. Compulsory and voluntary insurance premiums.</li> <li>12.1.14. Excise tax, immovable property tax, customs duties on imported goods, materials and raw material other than non-current assets, tax on transport vehicles, and payment and fees for use of land and natural resources as reported to pay to the budget.</li> <li>12.1.16. Resource accumulated in loan risk funds of savings and loan cooperatives and loss provision of other cooperatives.</li> <li>12.1.17. Advertising costs.</li> <li>12.1.18. Expenses incurred in relation to on-the-job training at a vocational training center.</li> <li>12.1.19. Per-diem expenses.</li> <li>12.1.20. Expenses for seed, fertilizer, livestock and animal fodder, medication and injection, and plant protection activities.</li> <li>12.1.21. Transport costs.</li> <li>12.1.22. Purchase of short-lived and low-valued assets.</li> <li>12.1.23. Expenses for occupational safety.</li> <li>12.1.24. Expenses for communications, stationery, cleaning, and security.</li> <li>12.1.25. Cost of repair of damage from disaster as specified in sub-paragraph 4.1.10 of the Disaster Management Law.</li> <li>12.1.26. Normal wear and tear of inventory.</li> <li>12.1.27. Monetary resource accumulated for purpose of natural recovery specified in sub-paragraphs 38.1.8 and 39.1.9 of the Minerals Law.</li> <li>12.1.28. Cost of provision of training environment for a vocational training center, equipment provision and repair of training facilities.</li> <li>12.1.29. Cost of teacher training.</li> <li>12.1.30. Financial assistance to vocational education and training institutions to meet demand for qualified workforce.</li> <li>2.1.31. Donations to or funding of foundations to support vocational</li> </ul>
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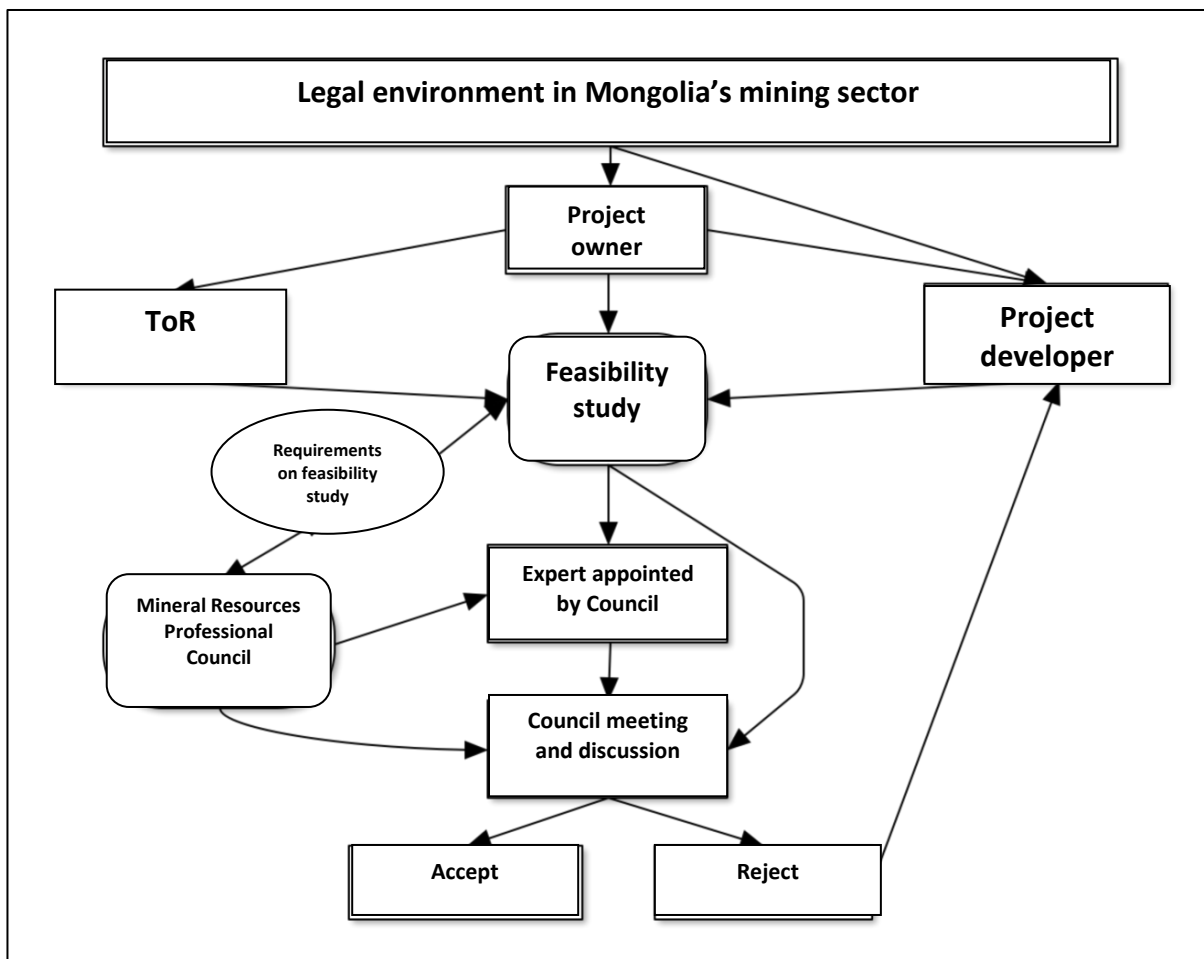
		<p>education and training.</p> <p>12.1.32. Purchase of shares or part of shares owned by the shareholder.</p> <p>12.1.33. Capital investment in building power generation and distribution system for the industry and technology park, clean water supply, sewage system, waste water treatment plant, roads and railway, and telecommunications infrastructure.</p> <p>12.1.34. Transferred payment for security and interest payment to the asset-backed security holder by special purpose company and housing finance company.</p> <p>12.1.35. Donations for reduction of air pollution.</p>
3	Fees for mine and other land	As specified in the Minerals Law, fees for mining land shall be US\$15 per hectare; fees for other types of land are regulated by the Land Law and Land Fees Law.
4	Immovable property tax	Immovable Property Tax Law, 17 November 2002
5	Vehicle tax	Vehicle and Self-Moving Means Law, amended in 2003
6	Workplace fees for foreign staff	
7	Fee for surface and ground water use	<ul style="list-style-type: none"> <li>- Water Law</li> <li>- Minister of Environment and Tourism Decree (10 November 2009) on Approval of Water Basins</li> <li>- Government of Mongolia Resolution 302 (26 October) on renewal of ecological and economic valuation of water</li> <li>- Royalties (Exploitation of Natural Resources) Law, 17 May 2012</li> </ul>
8	Customs duty on import of raw materials, spare parts and equipment	Complies with Customs Tariff and Duties Law (20 May 2008), imposed on goods imported into Mongolia at 5.5% of the value.
9	Insurance costs	
10	Mine closure and environmental rehabilitation	<ul style="list-style-type: none"> <li>- Reclamation of land eroded by mining activity; General Technical Requirement (MNS 5917:2008)</li> <li>- Stripping vegetative topsoil and storage during stripping (MNS 5916:2008)</li> <li>- Planting grass on eroded land; General Technical Requirement (MNS 5918:2008)</li> <li>- Reclamation of eroded land; terminologies and definitions (MNS 5914:2008)</li> </ul>
11	Costs of exploration carried out with government financing	
12	Amortization + Depreciation	<p>Corporate Income Tax Law, Article 13: calculation of depreciation and amortization costs</p> <p>Depreciation and amortization costs: 2.5% on immovable property (Corporate Income Tax Law, 29 June 2006). Depreciation and amortization is calculated at this percentage and the gross profit calculation does not allow inclusion of production amortization.</p>

1 3	State income tax	Corporate income tax: 10% on up to three billion MNT pre-tax revenue, 25% on revenue over MNT 3 billion (Corporate Income Tax Law, 29 June 2006)
1 4	Working capital	Working capital is calculated as equal to the cost of 2-3 months of operations.

### 3.3.1 Mongolia's process flowchart for receipt and approval of a feasibility study

The flow chart below (Figure 3) shows the overall process for developing, submitting and approving a feasibility study for a mining project in Mongolia.

Figure 3: Flow chart for development and government approval of feasibility studies



Participation levels and stakeholder obligations/duties for developing a feasibility study are presented in Table 11 in more detail.

### 3.3.2 Professional Mineral Council (PMC)

The Professional Mineral Council is a technical structure responsible for discussing and revising documents relating to geological exploration and reports of results; minerals reserves estimation reports; exploration reports with economic appraisal; feasibility studies based on minerals reserve estimation reports; reports on oil exploration and action plans, conducted in Mongolia with finance

from both government and private investors. It arrives at professional conclusions on compliance with respective legislations, regulations, survey and evaluation methods and tools, and then makes recommendations and conclusions.

The Professional Mineral Council comprises the following sub-committees:

- Sub-council for geological surveys and exploration funded by government;
- Sub-council for review and discussion of reports/documents on minerals/mining sector;
- Sub-council for review, discussion and approval of feasibility studies.

Table 11: Feasibility study preparation, with discussion and approval by the Professional Mineral Council (PMC)

#	Work order	Responsible person	Comments	Legal framework
1	Prepare ToR for feasibility study	Company implementing the project	Company implementing the project to prepare ToR	
2	Prepare feasibility study based on conclusion of Professional Mineral Council on approving the reserve	Licensed consulting company	Company to be licensed by the Construction Ministry for preparation of technical design drawings for mining projects	
3	Submit feasibility study to the Professional Mineral Council (PMC2)	Company implementing the project	Submit a formal letter to MRAM for appointment of an independent expert	Provision 3.8, Regulations for the Professional Mineral Council
4	Appoint an independent expert	Professional Mineral Council	Select an engineer qualified and experienced in the type of minerals; 2-3 experts or a team, depending on deposit type and scale	Provision 3.8, Regulations for the Professional Mineral Council; Clause 4.1.26, Minerals Law
5	Making conclusion on the submitted feasibility study	Independent expert	Expert to visit site for detailed check. Expert to comply with requirements on feasibility study	Article 6, Regulations for the Professional Mineral Council
6	Make required modifications to feasibility study for presentation to the Professional Mineral Council	Company implementing the project	Modify feasibility study as required by the expert	Article 6, Regulations for the Professional Mineral Council
7	Submit to relevant MRAM officers and make required changes and modification based on comments	Company implementing the project	MRAM officers to check the compliance with legislations	Relevant officers check feasibility study for legislative compliance followed by

				signing off on approval sheet
8	Discussion of the feasibility study by the Professional Mineral Council	Company implementing the project, Professional Mineral Council	Council members to approve feasibility by majority vote	Clause 4.1.2, Regulations for the Professional Mineral Council
9	Conclusion by the Professional Mineral Council	Professional Mineral Council	Feasibility study serves as the base document for developing Mine Plan and Detailed Environmental Impact Assessment	Article 6, Regulations for the Professional Mineral Council

As apparent from step 2, the feasibility study is prepared after first receiving PMC approval of the mineral reserve. The steps toward obtaining approval of the mineral reserve are presented in Table 12.

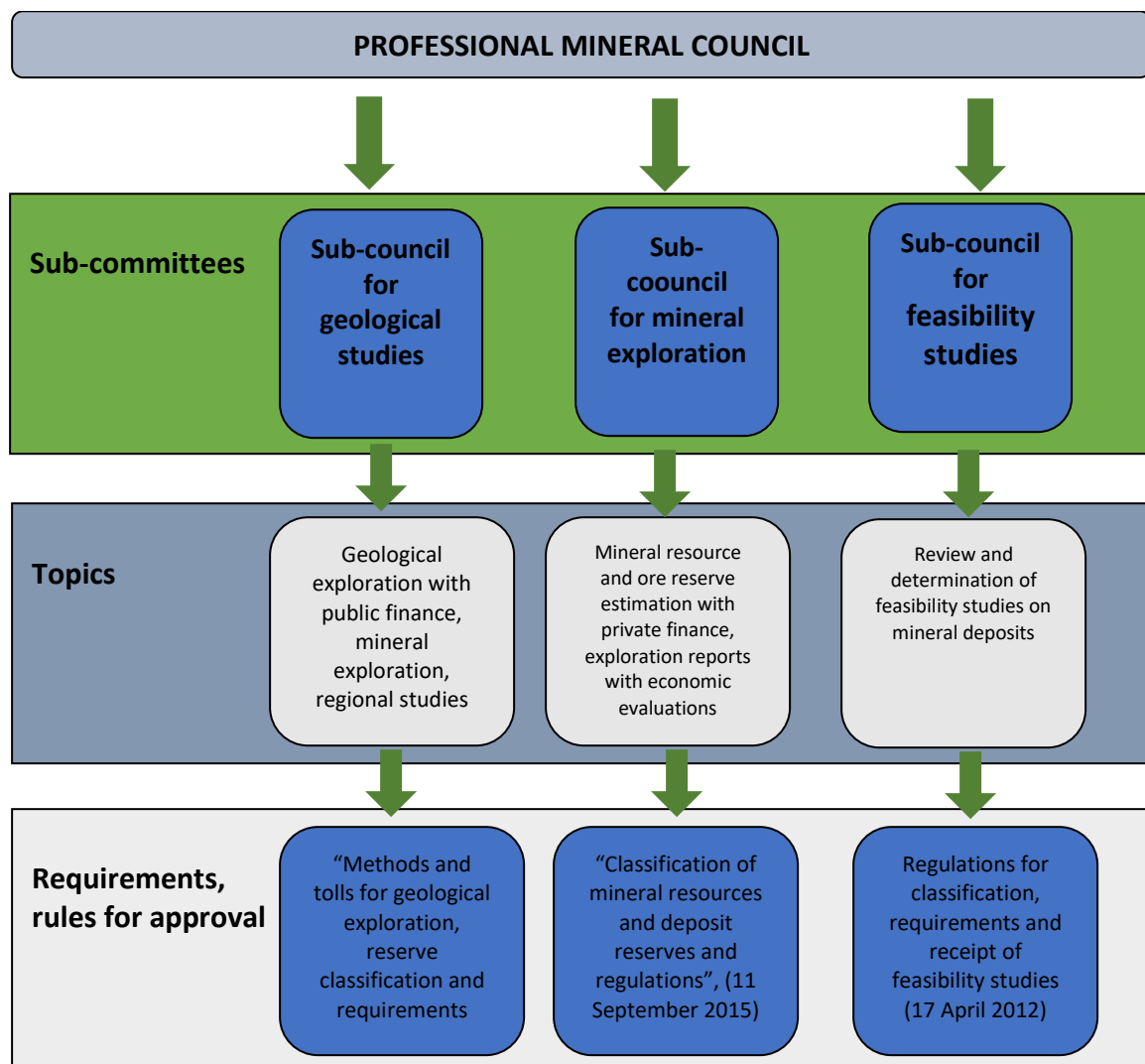
Table 12: Preparing a mineral reserves report, with discussion and approval by the Professional Mineral Council (PMC)

#	Work order	Responsible person	Comments	Legal framework
1	Obtain exploration license (for up to 12 years)	Legal entity and persons conducting exploration	MRAM to issue license	Article 19, Minerals Law
2	Pay exploration license fee and carry out necessary exploration	License holder	MRAM exercises right to annul the license in case of failure to pay fees and carry out exploration	Article X, Minerals Law
3	Prepare a mineral resource and ore reserve estimation report based on exploration results and submit report to the Professional Mineral Council	License holder, a contracted consulting company		“Classification of Mineral Resources and Deposit Reserves and Regulations” (11 September 2015)
4	Appoint independent expert	Professional Mineral Council	Select an engineer qualified and experienced in the type of mineral deposit; 2-3 experts or a team depending on deposit type and scale	Provision 3.8, Regulation for Mineral Resources National Council, Clause 4.1.26, Minerals Law
5	Independent expert makes conclusions on the submitted ore reserve report; possible demand for additional work or modification	Independent expert	Expert to visit site for detailed check. Expert to comply with “Classification of Mineral Resources and Deposit Reserves and Regulations”	Article 6, Regulation for Mineral Resources Professional Council
6	Make required	License holder	Modify the report in as	Article 6, Regulation



	modifications to the report as required by the expert and prepare for discussion at the Professional Mineral Council	or a consulting company that developed the reserves report	required by the expert	for the Professional Mineral Council
<b>7</b>	Submit exploration report to relevant MRAM officers and make necessary changes and modification based on their comments	License holder or a consulting company that developed the ore reserves report	MRAM officers to check compliance with legislations	Regulations for the Professional Mineral Council: relevant officers check feasibility study for compliance with legislations and sign off on approval sheet
<b>8</b>	Review of the ore reserve report by the Professional Mineral Council	License holder or a consulting company that developed the reserves report	Council to approve feasibility study by majority votes	Clause 4.1.2, Regulations for the Professional Mineral Council
<b>9</b>	Conclusions by the Professional Mineral Council	Professional Mineral Council	Decide on registration of reserves in the State Resources Registry and give permission to develop feasibility study based on proven and probable reserves	Article 5, Regulations for the Professional Mineral Council

Table 13: Details of responsible Professional Mineral Council (PMC) activities, compliance with regulations and procedures, and, PMC sub-committees



Regulations for classification, requirements and submission of feasibility studies in Mongolia were approved by Mineral Resources and Energy Minister Decree 74 (17 April 2012), which is currently in force.

### 3.3.3 Sub-council for review and approval of feasibility studies and statistics on submitted feasibility studies

Composition of the Minerals Professional Council was established by Mining Minister Decree 82 (14 December 2012). Annex 4 of the decree stipulated the feasibility studies approval sub-council structure and membership profile.

The sub-committee for receipt, review and approval of feasibility studies has 20 members: 6 from the Mining Ministry, 8 from MRAM, 4 from professional associations, and 2 from the School of Mining Engineering (University of Science and Technology). The current sub-committee has no member with experience or qualifications in mineral property valuation.

Figure 4: Composition of PMC sub-committee on feasibility study approval

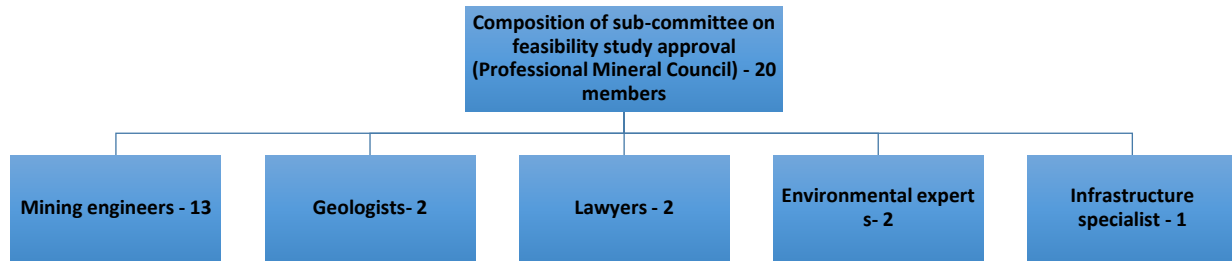
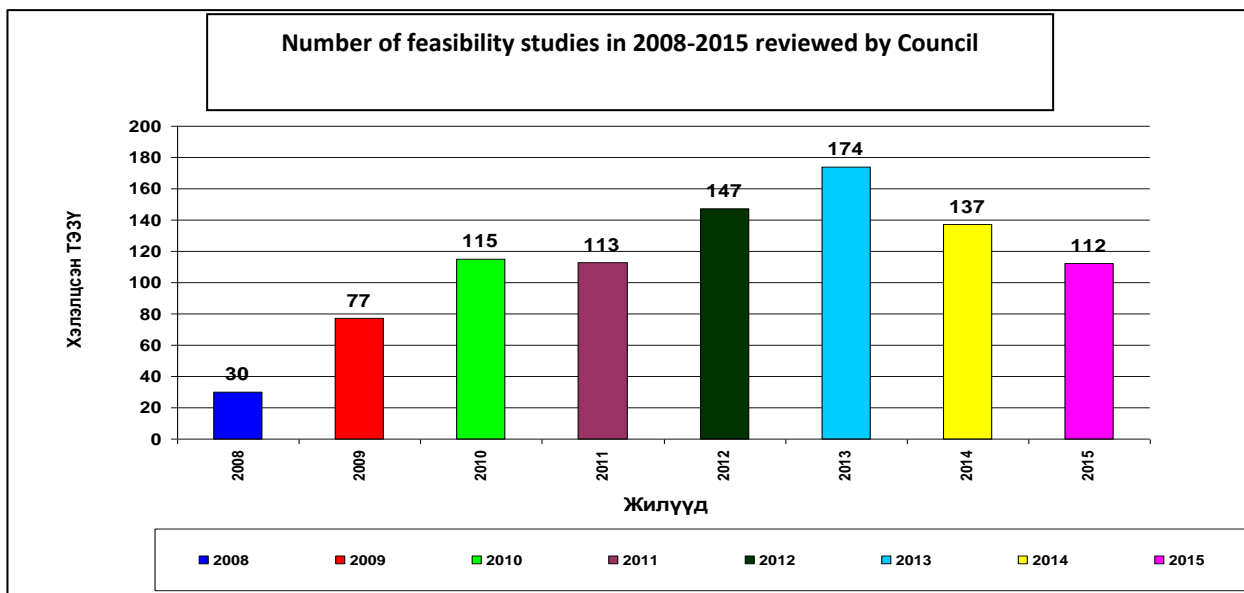


Figure 5 is a graphical depiction of the annual number of feasibility studies discussed and reviewed by the PMC in the period from 2008 through 2015.<sup>89</sup>

Figure 5: Number of feasibility studies reviewed by PMC each year, 2008-2015

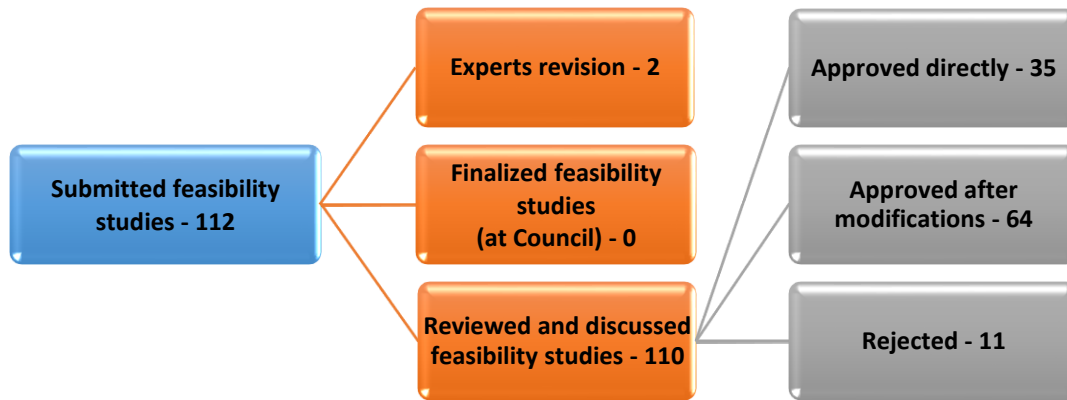


Since 2008 the Professional Mineral Council has been receiving feasibility studies for discussion and approval. In the last six years, the Council has discussed more than 110 feasibility studies each year.

In 2015, the Professional Mineral Council received 112 feasibility studies for revision; 110 were discussed and approved. Of the approved 110 studies, 35 were approved directly, 64 were approved after required modifications were made, and 11 feasibility studies were rejected as needing significant additional information and estimation.

<sup>89</sup> It is suspected that *feasibility studies* also includes *scoping* and *pre-feasibility* studies because if only *feasibility* studies, the number each year would appear to be high for a country the size of Mongolia. However, the number may not be high if a large percentage of the studies are for small mines that would not be commercially viable to develop in Australia, Canada and the United States.

Figure 6: Annual averages for submitted, approved and rejected feasibility studies

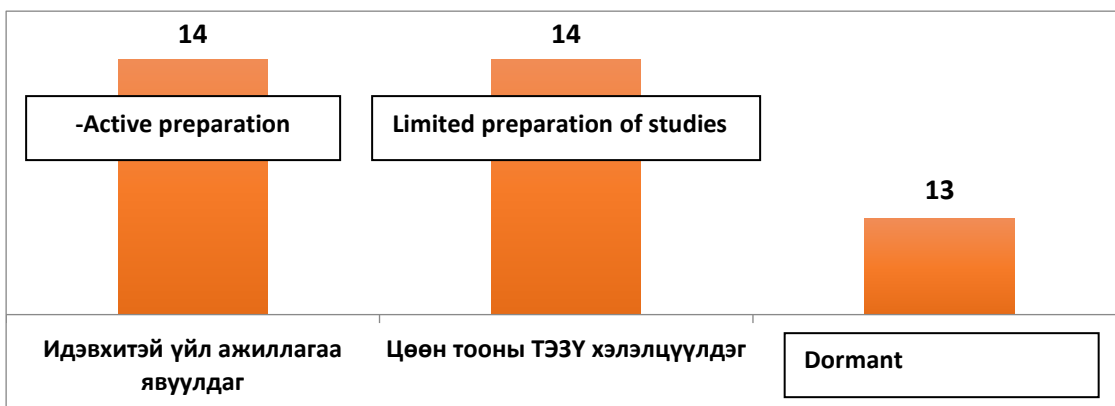


### 3.3.4 National mining consulting companies (licensed for preparing feasibility studies)

Regulations on the approval of feasibility studies for mineral deposits stipulate that they be prepared by a licensed geological and mining research organization or business entity whose team shall be chaired by a Mongolian consulting mining engineer.

At present, there are more than 100 business entities in Mongolia licensed for feasibility study preparation by the Construction Development Center of the Construction and Urban Development Ministry. Of these, 41 were officially registered with the Secretary of the Professional Mineral Council, as shown below in Figure 7

Figure 7: Entities officially registered with the PMC for preparing feasibility studies



The above graph shows that there are 14 business entities actively preparing mining project feasibility studies and another 14 preparing feasibility studies at random intervals, with 13 others inactive in this field.

When a feasibility study has been approved by the Professional Mineral Council, the responsible business entity and the independent expert who reviewed the study are held accountable for the accuracy and authenticity of the feasibility study.

### 3.3.5 Obligations and responsibilities of independent experts in a feasibility study

The Professional Mineral Council appoints an independent expert for feasibility studies submitted by licensed companies. In some cases, a team of 2 or 3 experts may be assigned to a larger scale project, while a group or panel of experts appointed by Mining Ministerial decree reviews feasibility studies for strategically important mineral deposits.

Under the regulation on submission and approval of a feasibility study, an independent expert is defined as a competent person with at least 10 years of practical experience in the geology and mining sector, or one who holds a Ph.D or Professor status and is a Mongolian consulting engineer specializing in the field.

Independent experts shall exercise the following rights and responsibilities.

- An expert shall review the submitted feasibility study in detail, visit the site if deemed necessary, provide revision and accurate conclusions, submit the study to the Professional Mineral Council Secretary and be present during report discussion at the designated Council meeting.
- If the expert is employed in the public service, any conflict of interest must be declared.
- An expert shall have complete responsibility for the quality of reports and feasibility reports that they have reviewed and supervised.
- If the expert intentionally provides a false report, draws false conclusions, omits relevant material or submits an incorrect report, the Minerals Resources Professional Council shall address the respective institution for license suspension, and the expert may be liable for criminal or administrative sanction under the relevant legislation.

In the past, the School of Mining Professional Committee licensed consulting and qualified engineers as independent experts for the review of feasibility studies, but the regulation is being modified so as to transfer this authority to the Mongolian Professional Institute for Geology and Mining (MPIGM).

**Table 14: Statistics on consulting and qualified engineers licensed as independent experts for the review of feasibility studies**

Qualification	Consulting engineer of Mongolia		Qualified engineer	
Mine surveying	7	3%	7	6%
Environmental management	13	5%	3	3%
Mining engineer	73	31%	43	36%
Coal mining technology	14	6%	4	3%
Processing engineer	45	19%	7	6%
Mine safety	6	3%	5	4%
Underground mining technology	2	1%	11	9%
Coal processing	11	5%	1	1%
Open pit mine drilling and blasting	8	3%	4	3%
Mine electricity supply	22	9%	11	9%
Open pit mine equipment repair and maintenance	28	12%	17	14%
Mining economist	8	3%	6	5%
<b>Total</b>	<b>237</b>	<b>100%</b>	<b>119</b>	<b>100%</b>



To date, 237 consulting engineers and 119 qualified engineers have been formally licensed as independent experts with the right to review and amend submitted feasibility studies. It is worth noting that MPIGM, the professional association designated by the Mining Minister for certifying and disciplining members for reporting mineral resources and reserves under the MRC Code had only 79 professional members and 9 company members as of November 2015.<sup>90</sup>

### **3.3.6 Methods for Mineral Property Valuation, level of use and importance**

Article 6.1 of the Constitution of Mongolia states, “The land, subsoil, forest, water, flora, fauna and all other natural resources shall be under the ownership of the people and the protection of the state.” The Minerals Law adopted in 2006 by the State Great Khural (Parliament) includes the concept of strategically important minerals deposits and equity shares.

To enforce the Minerals Law provisions, the State Great Khural has issued Resolution 27, which approves a list of strategically important minerals deposits and indicates government interests in the deposits and mines. As the government is entitled to an equity share in strategically important minerals deposits, there have been problems relating to appraisal based on international practices and the following actions have resulted:

- Negotiations, often over long periods, with foreign and national investors.
- Government has set equity ownership at a level considered appropriate.
- Investment by companies financed on international stock exchanges has been attracted.
- Credit from banks and financial institutions has facilitated development by local companies.
- Taxes, fees and royalties maximized for the national budget from strategically important minerals deposits.
- Plan revenue and expenditure for the national budget.
- Improve creditworthiness, loans repayment and debt management policy.

The State Policy for the Mineral Resources Sector for 2014-2025 also includes the following objectives for minerals resource and ore reserve evaluation.

- Create a legal environment for professional organizations with qualified teams of engineers for mineral resources study (3.1.8).
- Adopt international standards for minerals resources and ore reserves estimation and valuation (3.1.9).
- Modify the Professional Mineral Council system to meet international standards; with transfer of appropriate rights and duties to professional associations and qualified experts (3.1.11).

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<sup>90</sup> *Mongolia MPIGM Update*, Slide 4, Gerlee Bayanjargal, Executive Director , MPIGM, Afternoon Session, 30 November 2015 Annual Meeting of CRIRSCO, Barsilia, Brazil, <http://www.criusco.com/docs/Mongolia MPIGM Update.pdf> which can be downloaded at <http://www.criusco.com/news.asp>

- Consolidate and process reports of geological exploration and mineral resources studies applying methods that meet international standards and benchmarks, and create a national geo-scientific database (3.2.2.9).

These legal provisions and regulatory requirements indicate that Mongolia needs to develop methods and instructions on mineral deposit evaluation and valuation based on international best practice.

### **3.3.6.1 Actions taken/being taken in Mongolia on minerals deposit valuation**

The project team investigated mineral asset/deposit valuation concepts and methods with focus on three objectives (as described below), taking into consideration Mongolia's legal environment, and following meetings and consultation with stakeholders. The stakeholders consulted included government representatives, sector specialists, senior managers of mining companies and representatives of banks financing mining projects. The three objectives are:

- Understanding mineral asset/deposit valuation.
- Integration and coherence of government and non-government organizations and professional associations regarding mineral asset/deposit valuation.
- Determining action (past and future) on mineral asset/deposit valuation.

In Mongolia, property appraisal is under the Property Appraisal Law (2012); however there are no laws or regulations regarding mineral asset/deposit valuation. Rather, within the existing legislation, rules and regulations, mineral deposit valuation is considered an economic part of any feasibility study.

As minerals and oil are considered tangible assets; the subsoil where the minerals and oil are stored are immovable property. As mineral deposits are a type of property, they can be bought and sold. Many sales agreements are based on private interests; in other words, deposits or parts of a deposit can be leased or used jointly. Therefore the act of expressing the mineral deposit or associated reserves in monetary terms and the identification of the value can be understood as valuations of minerals deposits. Valuation is both a financial and legal concept and a valuation service is provided by licensed financial and professional institutions. Valuation is an expression of "value" or "determined amount" and must be legally defined, financially robust, demonstrable and well-grounded.

As regards minerals deposit valuation, the Mongolian central administration and government agencies have established the following framework.

### **3.3.6.2 Financial Regulatory Committee**

The Financial Regulatory Committee is a regulatory authority which aims to ensure stability of the financial market, regulate financial service institutions, monitor implementation of all relevant legislation, and protect the rights of investors and participants in financial markets.

In 2012, the Financial Regulatory Committee developed a process for issuing exploration and mining licenses, based on valuation in accordance with the Property Valuation Law. However, the

method has not been used as it is too generic and difficult to consistently apply to mineral projects.

In 2016, the Financial Regulatory Committee hired a national expert who developed a preliminary methodology for minerals deposit valuation consistent with the Mongolian context.

A. Munkhtsog, Financial Analyst, developed the draft Mongolian National Valuation of Mineral and Petroleum Assets Standard and Guideline, and the Mongolian Mineral Resources Valuation Code which was intended to conform with other commonly used foreign codes. The Ministry of Mining formally provided the Munkhstog report to the AMEP team for assessment.

This valuation code consists of four main components: definitions of valuation codes and terminologies; general valuation guidelines and standards; valuation contents; and ethics of the valuer. The report is written in the Mongolian language and comprises 23 pages.

The Munkhstog report aimed to provide standards and guidelines for the valuation of mineral and petroleum assets based on international experience, and to encourage the establishment of professional valuation services for those assets. The report is compiled in three sections:

- Introduction
- Valuation standard of Minerals and Petroleum assets
- Valuation guideline of Minerals and Petroleum assets

Having assessed this report, the AMEP team has determined that it represents an interim step in the preparation of a suitable Mongolian mineral asset/deposit valuation code, and that it serves to provide a reference document, particularly with respect to valuation aims and goals.

### **3.3.6.3 Considerations for bank credit risk analyses**

Mongolian commercial banks have mining finance departments to provide either equity or debt funding. Golomt, the Trade and Development Bank and the Khan Bank are the three main mining project financiers.

These three banks mainly disburse loans to mining projects that are ready for exploitation (reserves estimated and feasibility study approved), and they have internal procedures and regulations to assess the risk before making financing decisions.

Bank internal rules and risk procedures are generally the same, mainly based on completeness of project documents and compliance with legislation such as the Minerals Law and Environmental Protection Law.

Banks decide to finance a project after a risk assessment, considering internal capacity, expected project life, project capability to meet and exceed repayment requirements, the project developer's human resources, readiness of equipment and machinery, occupational health and safety, and the developer's experience and financial capability. In addition, external factors such as demand for mineral products and long term estimates for commodity prices and economic environment are considered by the Loan Committee before making a final decision.

#### **3.3.6.4 Professional Mineral Council role in Valuations**

The Professional Mineral Council reviews submitted feasibility studies, but not mineral deposit valuations. There is no applicable regulation or appropriate, formally approved method for valuation in this area. Such regulation or approval can only be implemented step-by-step by the Mining Ministry.

APPENDIX I. AMEP MONVAL Guidelines Draft

APPENDIX II. AMEP Valuation Approaches and Methods Descriptions

APPENDIX III. IMVAL Template, Final Exposure Draft, May 2015

APPENDIX IV. IMVAL Template, Second Edition, July 2016

APPENDIX V. Valuation versus Evaluation Workshop, 25-6 May 2016

APPENDIX VI. Persons and organizations consulted by AMEP team