

July 5, 2019  
IMIC

**INDIAN MINERAL INDUSTRY CODE (IMIC)**  
**For Reporting Exploration Results, Mineral Resources and  
Mineral Reserves**

**Prepared by:**  
**National Committee for Reporting Mineral Resources and  
Reserves in India**  
**(NACRI)**

**July 2019**

## **Background information and evolution of IMIC**

*The declaration of National Mineral Policy 2008, amendments to MMDR Act 2015, and recent reforms in mining legislation viz. MEMC Rules 2015, National Mineral Exploration Policy 2016, Mineral Auction Rules 2015, NMET Rules 2015, and Mineral Concession Rules 2016 etc. were primarily aimed at attracting private investment and the latest technology in the mineral sector, assurance of uniform lease period, dealing with low exploration expenditure and eliminating procedural delays. However, despite these efforts, India was not successful in this regard. The geological/ resource reports provided to the prospective bidders on the auctionable blocks were not sufficient to take definitive investment decisions, as the information provided was primarily on the geological axis (that too G4/ G3 level) and does not deal with the modifying factors required in detail for financial evaluation and deposit valuation. Technical feasibility and economic viability studies of a deposit will ensure that sufficient exploration data inputs are available for making necessary assumptions to present a pre-feasibility/ feasibility report. Such studies will also enhance the confidence in the reports and valuation of the auctionable blocks and in turn help the government maximise economic value from the auctioned mineral blocks.*

*In light of the prevailing resource industry scenario, a few professionals from the Indian mineral industry took the initiative to approach and bring together all the professional bodies representing the mineral industry in the country to explore the possibility of developing an Indian Code for reporting Mineral Resources and Reserves that would eventually get worldwide recognition. The Mining Engineers' Association of India (MEAI) lent its support to this initiative by hosting a roundtable conference of domain experts on December 18<sup>th</sup> 2014 at Hyderabad that was attended by representatives from the resource industry, SEBI, GSI, IBM, and most of the leading Professional organisations (MEAI, SGAT, Geological Society of India) representing the Indian mineral industry. The domain experts attending the meeting concluded that there was an immediate need for the Indian mineral industry to develop its own mineral resource and reserves reporting code that is recognized by the global stock exchanges to attract the investments from the overseas investors. The leading mine owners' representative body in India viz. Federation of Indian Mineral Industries (FIMI) and professional organizations such as Mining Geological and Metallurgical Institute of India (MGMI), SGAT and Geological Society of India (GS) also came forward subsequently in support of this initiative. Professionals from leading public and private sector mining companies, prominent consulting companies and premier academic institutions came on board to endorse this national mission.*

*On March 10, 2015 CRIRSCO recognized and appointed Dr Abani Samal (USA) and Dr PV Rao (India) as its representatives in India to work and identify a National Reporting Organisation (NRO) that would meet the CRIRSCO admission criteria and also identify a national professional body for inclusion as a Professional Organisation (PO) under the CRIRSCO family of codes. The CRIRSCO representatives in India have extensively consulted with the professional bodies (MEAI, MGMI, SGAT, Geological Society of India) and FIMI to enlist their support for the initiative and enlisted the favour of MEAI to provide leadership to the professional bodies. A National Core Committee (NCC) was formed with the domain experts from the mineral industry and representatives from the supporting professional organisations. The NCC held its first meeting at Hyderabad on November 19, 2015 where the MEAI President and the two CRIRSCO representatives in India were elected as its Co-Chairs. The NCC also formed six sub-committees (under the leadership of Mr Arun Kothari, Dr Annavarapu Srikant, Dr AK Sarangi, Mr Shameek Chattopadhyay, Mr KS Solanki and Mr Deepak Rathod) to develop a draft Indian code viz. Indian Mineral Industry Code (IMIC). The draft IMIC prepared by the six sub-committees was reviewed by the NCC in an exclusive meeting called for the purpose on April 21-22, 2017 at Hyderabad.*

*Meanwhile, the two CRIRSCO representatives in India attended the CRIRSCO Annual Meeting held in Brazil on November 30 - December 3, 2015 to present the Indian progress to*

CRIRSCO members. On February 14, 2016, CRIRSCO signed an MoU with the MEAI (represented by the three NCC Co-Chairs) in Phoenix, USA to facilitate India joining the CRIRSCO by November 2017.

On June 10-11, 2016, a professional development program on Mineral Resource classification and Reporting Standards, supported by the CRIRSCO and SME-USA, was successfully organised by Dr Harry Parker (CRIRSCO Chairperson) and Dr Abani Samal from USA and Dr PV Rao from India as faculty. The program was an outright success.

The NCC, with the support of MEAI Jaipur Chapter, hosted the CRIRSCO Annual Meeting 2016 on November 7-10, 2016 at Jaipur, where two representatives each from the CRIRSCO member countries and representatives from India, China, Indonesia and Philippines as invitees, participated in the closed sessions. For the benefit of the professionals from the Indian resource industry, a two-day open session was organised to interact with the CRIRSCO experts. Secretary, Ministry of Mines (MoM), Government of India (GoI) was the Chief Guest and Controller General, Indian Bureau of Mines (IBM) and Director General, Geological Survey of India (GSI) were the guests of honour. Secretary, MoM acknowledged the Government of India (GoI) intent to adopt CRIRSCO standards by the India mineral industry. As a follow-up, Dr Abani Samal met the Secretary and Joint Secretary, MoM in their office to discuss and develop strategy for adopting CRIRSCO compliant reporting standards for India.

A four-day professional development program on “Mineral Deposit evaluation: estimation, classification and reporting” conducted jointly by the GeoGlobal of USA and MEAI on April 17-20, 2017 at Hyderabad received overwhelming response from the Indian mineral industry. A large number of executives attended the Foundation course from GSI, NMDC, Vedanta, Tata Steel, MECL, Aditya Birla Group, Triveni, Dalmia cements, Sesa Goa, IMFA, Datamine, EDS etc.

In a meeting held on April 21-22, 2017 at Hyderabad, the members of the NCC unanimously proposed to rename the NCC as NACRI (National Committee for Reporting Mineral Resources and Reserves in India).

The Indian mineral industry has been backing the initiatives taken by as “National Core Committee for Reporting Mineral Resources and Reserves in India” (NACRI). With the endorsement of support from MEAI, MGMI, FIMI, ASSOCHAM and major mining companies, the NACRI enlisted the wide-ranging support of the Indian mining industry, thereby fulfilling one of the main requirements of CRIRSCO to become a member.

### Note to the Readers

The Clauses consist of the following fonts:

- Important terms and their definitions are highlighted in **bold text**.
- The Code is written using normal font.
- Paragraphs presented in *italics* provide directions on how to interpret definitions and guidelines.

Clause #	Clause
<b>Scope</b>	
1	<p>The IMIC indicates the required minimum standard for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves and is recommended as a minimum standard for other reporting. Companies are encouraged to provide information in their Public Reports, which is as comprehensive as possible.</p> <p>The principles governing the operation and application of the IMIC are transparency, materiality and competence.</p> <ul style="list-style-type: none"> <li>• <b>Transparency</b> requires that the reader of a Public Report is provided with sufficient information, the presentation of which is clear and unambiguous, so as to understand the report and not to be misled.</li> <li>• <b>Materiality</b> requires that a Public Report contains all the relevant information which investors and their professional advisers would reasonably require, and reasonably expect to find in a Public Report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Mineral Reserves being reported.</li> <li>• <b>Competence</b> requires that the Public Report be based on work that is the responsibility of suitably qualified and experienced persons who are subject to an enforceable professional code of ethics and rules of conduct.(The Registered Competent Person or RCP)</li> </ul> <p>Transparency and Materiality are guiding principles of the Code, and the Registered Competent Person must provide explanatory commentary on the material assumptions underlying the declaration of Exploration Results, Mineral Resources or Mineral Reserves.</p> <p>In particular, the Registered Competent Person must consider that the benchmark of Materiality is that which includes all aspects relating to the Exploration Results, Mineral Resources or Mineral Reserves that an investor or their advisers would reasonably expect to see explicit comment on from the Registered Competent Person. The Registered Competent Person must not remain silent on any material aspect for which the presence or absence of comment could affect the public perception or value of the mineral occurrence.</p> <p>Table 1 provides a checklist or reference of criteria to be considered by the Registered Competent Person in developing their documentation and in preparing the Public Report.</p>

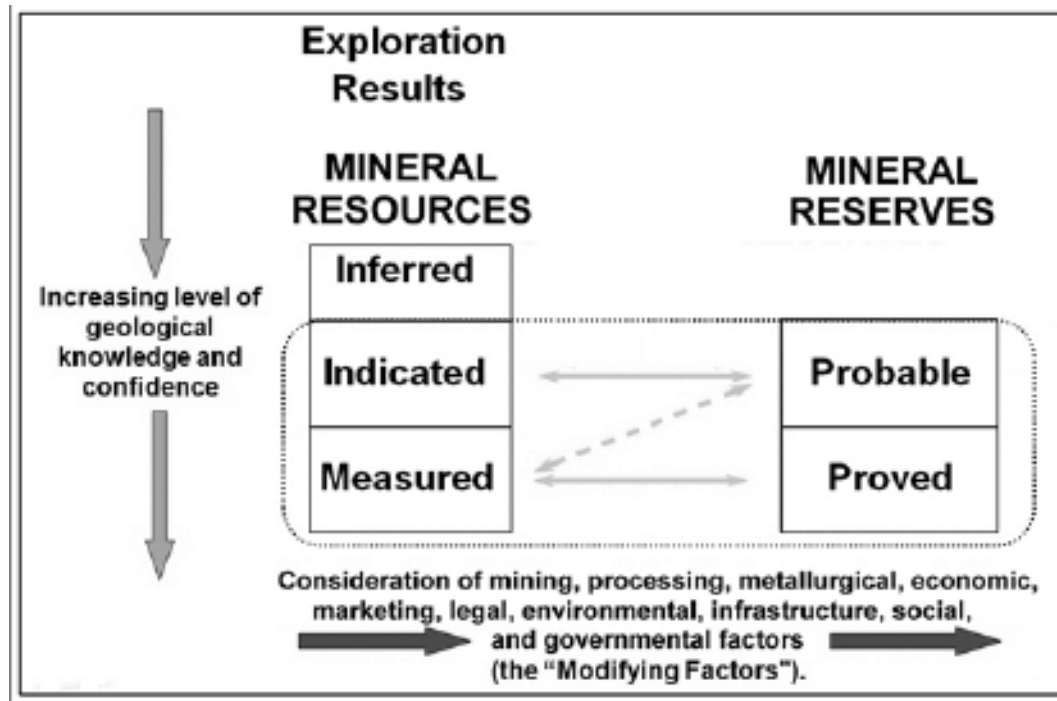
	<p>In the context of complying with the principles of the Code, comments relating to the items in the relevant sections of Table 1 must be provided on an "if not, why not" basis within the Registered Competent Person's documentation. Additionally comments related to the relevant sections of Table 1 must be complied with on an "if not, why not" basis within Public Reporting for significant projects (see <b>Appendix 1</b> Generic Terms and Related Terms) when reporting Exploration Results, Mineral Resources or Mineral Reserves for the first time. Table 1 also applies in instances where these items have materially changed from when they were last Publicly Reported. Reporting on an "if not, why not" basis is to ensure that it is clear to an investor whether items have been considered and deemed of low consequence or are not yet addressed or resolved.</p> <p>For the purposes of the IMIC the phrase "if not, why not" means that each item listed in the relevant section of Table 1 must be discussed, and if it is not discussed then the Registered Competent Person must explain why it has been omitted from the documentation.</p> <p><i>The Code requires in Clauses 18, 25 and 33 that reporting of first time or materially changed Exploration Results, Mineral Resources or Mineral Reserves estimates be accompanied by a technical summary of all relevant sections of Table 1 on an "if not, why not" basis as an appendix to the Public Report.</i></p> <p><i>A material change could be a change in the estimated tonnage or grade or in the classification of the Mineral Resources or Mineral Reserves. Whether there has been a material change in relation to a significant project must be considered by taking into account all of the relevant circumstances, including the style of mineralisation. This includes considering whether the change in estimates is likely to have a material effect on the price or value of the company's securities.</i></p>
2	<p><b>Public Reports are reports prepared for the purpose of informing investors or potential investors and their advisers on <u>Exploration Results, Mineral Resources or Mineral Reserves</u>. They include, but are not limited to, annual and quarterly company reports, press releases, information memoranda, technical papers, website postings and public presentations.</b></p> <p>The IMIC indicates the required minimum standard for Public Reporting and is recommended as a minimum standard for other reporting. Companies are encouraged to provide information in their Public Reports, which is as comprehensive as possible, and clearly demonstrates the competence of the RCP author(s).</p> <p>Public Reports include but are not limited to: company annual reports, quarterly reports and other reports to regulatory authorities, or as required by law. The IMIC applies to other publicly released company information in the form of postings on company web sites, press releases and briefings for shareholders, stockbrokers and investment analysts. The IMIC also applies to any reports that have been prepared for the purposes described in Clause 2, such as environmental statements; Information Memoranda; Expert Reports, and technical papers referring to Exploration Results, Mineral Resources or Mineral Reserves. They may also be for the purpose of satisfying regulatory requirements.</p> <p><i>For companies issuing concise or similar annual reports, or other summary reports, inclusion of all material information relating to Exploration Results, Mineral Resources and Mineral Reserves is recommended. In cases where summary information is presented it should be clearly stated it is a summary, and a reference attached giving the source and location of the IMIC-compliant Public Reports or Public Reporting on which the summary is based.</i></p>

	<p><i>It is recognised that companies can be required to issue reports into more than one regulatory jurisdiction, with compliance standards that may differ from the IMIC. It is recommended that such reports include a statement alerting the reader to this situation.</i></p> <p><i>Reference in the IMIC to “documentation” is to internal company documents prepared as a basis for, or to support, a Public Report.</i></p> <p><i>It is recognised that situations may arise where documentation prepared by Registered Competent Persons (refer to Clause 8) for internal company or similar non-public purposes does not comply with the IMIC. In such situations, it is recommended that the document include a prominent statement to this effect. This will make it less likely that non-complying documentation will be used to compile Public Reports, since the IMIC requires Public Reports to fairly reflect Exploration Results, Mineral Resource and/or Mineral Reserve estimates, and supporting documentation, prepared by a Registered Competent Person.</i></p> <p><i>While every effort has been made within the IMIC to cover most situations likely to be encountered in Public Reporting, there may be occasions when doubt exists as to the appropriate form of disclosure. On such occasions, users of the IMIC and those compiling reports to comply with the IMIC should be guided by its intent, which is to provide a minimum standard for Public Reporting, and to ensure that such reporting contains all information which investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making of a reasoned and balanced judgement regarding the Exploration Results, Mineral Resources or Mineral Reserves being reported.</i></p> <p><i>Estimation of Mineral Resources and Mineral Reserves is inherently subject to some level of uncertainty and inaccuracy. Considerable skill and experience may be needed to interpret pieces of information, such as geological maps and analytical results based on samples that commonly only represent a small part of a mineral deposit. The uncertainty in the estimates should be discussed in documentation and, where material, in Public Reports, and reflected in the appropriate choice of Mineral Reserve and Mineral Resource categories.</i></p>
<p><b>3</b></p>	<p>The IMIC is applicable to all solid mineral raw materials for which Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves is required by the relevant regulatory authorities. Solid raw materials include but are not limited to;</p> <p>Metalliferous minerals;</p> <p>Coal.</p> <p>Diamonds and other gemstones;</p> <p>Industrial Minerals;</p> <p>Cement feed materials and construction raw materials; and</p> <p>Other mineral raw materials;</p> <p>In addition, The IMIC is applicable to:</p> <ul style="list-style-type: none"><li>• Oil shales, oil sands and other energy minerals extracted by mining;</li><li>• Metallic or non-metallic minerals extracted by solution mining methods.</li></ul> <p>A Mineral is any substance occurring naturally in or on the Earth, in or under water or in tailings, residue or stock piles, having been formed by or subjected to a geological process and includes sand, stone aggregates, gravel, clay, and soil but excludes, water, oil and gas .</p>

4 NACRI (National Committee for Reporting Mineral Resources and Reserves in India) recognises that further review of the Code and Guidelines will be required from time to time.

5 Relationship between Definitions: Figure 1 sets out the framework for classifying Exploration Results, Mineral Resources and Mineral Reserves.

**Figure 1: General relationship between Exploration Results, Mineral Resources and Mineral Reserves**



The relationships in Figure 1 reflect different levels of geoscientific knowledge and different degrees of technical and economic evaluation.

Mineral Resources can be estimated on the basis of geoscientific information with input from other disciplines to establish reasonable prospects for eventual economic extraction.

Mineral Reserves, which are a modified sub-set of the Indicated and Measured Mineral Resources, require consideration of those factors affecting extraction, including mining, metallurgical, economic, marketing, legal, environmental, infrastructure, social and governmental factors, and should in most cases be estimated with input from a range of disciplines.

In certain situations, Measured Mineral Resources could convert to Probable Mineral Reserves rather than to Proved Mineral Reserves because of uncertainties associated with Modifying Factors which are taken into account in the conversion from Mineral Resources to Mineral Reserves. This relationship is shown by the broken arrow in Figure 1. In such situations, these Modifying Factors should be fully explained.

In certain situations, previously reported Mineral Reserves could convert back to Mineral Resources because of new Modifying Factor information according to which a Mineral Reserve can no longer be reported. The resulting two-way relationship is shown by the two-headed arrows in Figure 1. Although the trend of the broken arrow includes a vertical component, it does not, in this instance, imply a reduction in the level of geological

	<p><i>knowledge or confidence. In such a situation these Modifying Factors should be fully explained.</i></p> <p><i>Refer also to the guidelines to Clause 28.</i></p>
<b>Competence and Responsibility</b>	
6	<p><b><i>A Registered Competent Person is a minerals industry professional who is a Member of a Professional Organisation headquartered in India and approved by NACRI or a Member of a “Recognised Professional Organisation” (RPO), as included in a list of similar bodies headquartered outside India available on the NACRI websites. These organisations have enforceable disciplinary processes including the powers to suspend or expel a member.</i></b></p> <p><b><i>A Registered Competent Person must have a minimum of ten years professional experience, which includes five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity, which that person is undertaking.</i></b></p> <p><i>If the Registered Competent Person is preparing documentation on Exploration Results, the relevant experience must be in exploration. If the Registered Competent Person is estimating, or supervising the estimation of Mineral Resources, the relevant experience must be in the estimation, assessment and evaluation of Mineral Resources. If the Registered Competent Person is estimating, or supervising the estimation of Mineral Reserves, the relevant experience must be in the estimation, assessment, evaluation and economic extraction of Mineral Reserves.</i></p> <p><i>The key qualifier in the definition of a Registered Competent Person is the word “relevant”. Determination of what constitutes relevant experience can be a difficult area and common sense has to be exercised. For example, in estimating Mineral Resources for vein gold mineralisation, experience in a high-nugget, vein-type mineralisation (such as tin, uranium, etc) may be relevant, whereas experience in (say) massive base metal deposits may not be. As a second example, to qualify as a Registered Competent Person in the estimation of Mineral Reserves for alluvial gold deposits, considerable (at least five years) experience in the evaluation and economic extraction of this type of mineralisation may be needed. This is due to the properties of gold in alluvial systems, the particle sizing of the host sediment, and the low grades involved. Experience with placer deposits containing minerals other than gold may not necessarily provide appropriate relevant experience.</i></p> <p><i>The key word “relevant” also means that it is not always necessary for a person to have a minimum of ten years professional experience, which includes five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity to act as a Registered Competent Person if that person has relevant experience in other deposit types. For example, a person with (say) 20 years of experience in estimating Mineral Resources for a variety of metalliferous hard-rock deposit types may not require five years specific experience in (say) porphyry copper deposits to act as a Registered Competent Person. Relevant experience in the other deposit types could count towards the required experience in relation to porphyry copper deposits.</i></p> <p><i>In addition to experience in the style of mineralisation, a Registered Competent Person taking responsibility for the compilation of Exploration Results or Mineral Resource estimates should have sufficient experience in the sampling and analytical techniques relevant to the deposit under consideration to be aware of problems that could affect the reliability of data. Some appreciation of extraction and processing techniques applicable to that deposit type may also be important.</i></p>



	<p><i>As a general guide, a person being called upon to act as a Registered Competent Person should be clearly satisfied in their own minds that they could face their peers and demonstrate competence in the commodity, type of deposit and situation under consideration. If doubt exists, the person should either seek opinions from appropriately experienced peers or should decline to act as a Registered Competent Person.</i></p> <p><i>Estimation of Mineral Resources may be a team effort (for example, involving one person or team collecting the data and another person or team preparing the estimate). Estimation of Mineral Reserves is very commonly a team effort involving several technical disciplines. It is recommended that, where there is clear division of responsibility within a team, each Registered Competent Person and his or her contribution should be identified, and responsibility accepted for that particular contribution. If only one Registered Competent Person signs the Mineral Resource or Mineral Reserve documentation, that person is responsible and accountable for the whole of the documentation under the Code. It is important in this situation that the Registered Competent Person accepting overall responsibility for a Mineral Resource or Mineral Reserve estimate and supporting documentation prepared in whole or in part by others, is satisfied that the work of the other contributors is acceptable.</i></p> <p><i>Complaints made with respect to the professional work of a Registered Competent Person will be dealt with under the disciplinary procedures of the Professional Organisation to which the Registered Competent Person belongs.</i></p> <p><i>When an Indian Stock Exchange listed company with overseas interests wishes to report overseas Exploration Results, Mineral Resource or Mineral Reserve estimates prepared by a person who is not a member of a PO or a RPO, it is necessary for the company to nominate a Registered Competent Person or Persons recognized by NACRI to take responsibility for the Exploration Results, Mineral Resource or Mineral Reserve estimate.</i></p> <p><i>The Registered Competent Person undertaking this activity should appreciate that they are accepting full responsibility for the estimate and supporting documentation under Securities Exchange Board of India (SEBI) listing rules and should not treat the procedure merely as a "rubber-stamping" exercise.</i></p>
7	<p>A Public Report concerning a company's Exploration Targets, Exploration Results, Mineral Resources or Mineral Reserves is the responsibility of the company acting through its Board of Directors. Any such report must be based on, and fairly reflect, the information and supporting documentation prepared by a Registered Competent Person or Persons.</p> <p>A company issuing a Public Report shall disclose the name(s) of the Registered Competent Person, state whether the Registered Competent Person is a full-time employee of the company, and, if not, name the Registered Competent Person's employer.</p> <p>Any potential for a conflict of interest by the Registered Competent Person or a related party must be disclosed in accordance with the Transparency principle. Any other relationship of the Registered Competent Person with the Company making the report must also be disclosed in the Public Report. The report must be issued with the prior written consent of the Registered Competent Person as to the form and context in which it appears.</p> <p>Where a company is re-issuing information previously issued with the written consent of the Registered Competent Person, it must state the original report name, the name(s) of the Registered Competent Person responsible for the original report, and state the date and reference the location of the original source public report for public access. In these circumstances the Company is not required to obtain the Registered Competent</p>

	<p>Person's prior written consent as to the form and context in which the information appears, provided:</p> <ul style="list-style-type: none"> <li>• The company confirms in the subsequent public presentation that it is not aware of any new information or data that materially affects the information included in the relevant market announcement. In the case of estimates of Mineral Resources or Mineral Reserves, the company confirms that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed.</li> <li>• The company confirms that the form and context in which the Registered Competent Person's findings are presented have not been materially modified. Note that for the subsequent public presentation, it is the responsibility of the company acting through its Board of Directors to ensure the form and context has not been materially altered.</li> </ul> <p>This relaxation of the requirement to obtain the Registered Competent Person's prior written consent does not apply to the requirements for annual reporting of Mineral Resources and Mineral Reserves contained in Clause 13.</p> <p><i>All such public disclosure should be specifically reviewed by the company to ensure that the form and context in which the Registered Competent Person's findings are presented have not been materially modified, and to ensure that the previously issued Exploration Results, Mineral Resources or Mineral Reserves remain valid in the light of any more recently-acquired data.</i></p> <p><i>Examples of appropriate forms of compliance statements are provided in <b>Appendix 3</b>.</i></p> <p><i>In order to assist Registered Competent Persons and companies to comply with these requirements a Registered Competent Person's Consent Form has been devised that incorporates the requirements of the Code. The Registered Competent Person's Consent Form is provided in <b>Appendix 2</b>.</i></p> <p><i>The completion of a consent form, whether in the format provided or in an equivalent form, is recommended as good practice and provides readily available evidence that the required prior consent has been obtained.</i></p> <p><i>The Registered Competent Person's Consent Form(s), or other evidence of the Registered Competent Person's written consent, should be retained by the company and the Registered Competent Person to ensure that the written consent can be promptly provided if required.</i></p>
8	<p>Documentation detailing Exploration Results, Mineral Resource and Mineral Reserve estimates, on which a Public Report on Exploration Results, Mineral Resources and Mineral Reserves is based, must be prepared by, or under the direction of, and signed by, a Registered Competent Person or Persons. The documentation must provide a fair representation of the Exploration Results, Mineral Resources or Mineral Reserves being reported.</p>
9	<p>A company issuing a Public Report shall disclose the name(s) of the Registered Competent Person or Persons, their qualifications, professional and corporate affiliations and relevant experience. The report shall be issued with the written consent of the Registered Competent Person or Persons as to the form and context in which it appears.</p>
<p><b>Reporting Terminology</b></p>	
10	<p>Public Reports dealing with Exploration Results, Mineral Resources or Mineral Reserves must observe the correct application and use of the terms set out in Figure 1.</p>

	<p><b>“Modifying Factors” are considerations used to convert Mineral Resources to Mineral Reserves. These include, but are not restricted to, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governmental factors.</b></p> <p><i>Refer to Clauses 5 and 28.</i></p>
<h3>Reporting General</h3>	
11	Public Reports concerning a company’s Exploration Results, Mineral Resources and/or Mineral Reserves must include a description of the style and nature of mineralisation.
12	A company must disclose all relevant information concerning Exploration Results, Mineral Resources or Mineral Reserves that could materially influence the economic value of those Exploration Results, Mineral Resources or Mineral Reserves to the company. A company must promptly report any material changes in its Mineral Resources or Mineral Reserves.
13	Companies must review and publicly report their Mineral Resources and Mineral Reserves annually. The annual review date must be nominated by the Company in its Public Reports of Mineral Resources and Mineral Reserves, and the effective date of each Mineral Resource and Mineral Reserve statement must be shown. The Company must discuss any material changes to previously reported Mineral Resources and Mineral Reserves at the time of publishing updated Mineral Resources and Mineral Reserves.
14	Throughout the Code, if appropriate, “quality” may be substituted for “grade”, and “volume” may be substituted for “tonnage”. (Refer to <b>Appendix 1</b> Generic Terms and Related Terms.)
<h3>Reporting of Exploration Targets</h3>	
15	<p><b>An Exploration Target is a statement or estimate of the exploration potential of a mineral deposit in a defined geological setting where the statement or estimate, quoted as a range of tonnes and a range of grade or quality, relates to mineralisation for which there has been insufficient exploration to estimate <u>Mineral Resources</u>.</b></p> <p><i>It is recognized that it is common practice for an entity to comment on and discuss its exploration strategy in terms of target size and type.</i></p> <p>Any such information relating to an Exploration Target must, however, be expressed so that it cannot be misrepresented or misconstrued as an estimate of a Mineral Resource or Reserve. The terms Resource or Reserve must not be used in this context. Details of the Exploration Target should not appear in any tabulation of Mineral Resources or Mineral Reserves.</p> <p>A Public Report that includes an Exploration Target must be accompanied by the Registered Competent Person’s statement taking responsibility for the form and context in which the Exploration Target appears.</p> <p>In any statement referring to potential quantity and grade of the Exploration Target, both must be expressed as ranges and must include:</p> <ul style="list-style-type: none"> <li>• a detailed explanation of the basis for the statement, including specific description of the level of exploration activity already completed, the geological model on which</li> </ul>

	<p>it is based, and the procedures used to estimate ranges of tonnage and grade or quality; and</p> <ul style="list-style-type: none"><li>• a clarification statement within the same paragraph as the first reference of the Exploration Target in the Public Report, stating that the potential quantity and grade is conceptual in nature, that there has been insufficient exploration to estimate a Mineral Resource and that it is uncertain if further exploration will result in the estimation of a Mineral Resource.</li></ul> <p>The detailed explanation of the basis for the statement of a target must to the extent possible discuss the geological setting, exploration strategy, exploration activity already completed and the presence of or lack of the following attributes:</p> <ul style="list-style-type: none"><li>• mineralised outcrops and assays,</li><li>• surface geochemical and physical sampling results,</li><li>• surface and subsurface geophysical survey results, and</li><li>• drill holes, test pits and underground workings.</li></ul> <p>If a Public Report includes an Exploration Target, the proposed exploration activities designed to test the validity of an exploration target must be detailed and the timeframe within which these activities are expected to be completed must be specified.</p> <p><i>For an Exploration Target based on Exploration Results, a summary of the relevant exploration data available and the nature of the results should also be stated, including a disclosure of the current drill hole or sampling spacing and relevant plans or sections. In any subsequent upgraded or modified statements on the Exploration Target, the Registered Competent Person should discuss any material changes to potential scale or quality arising from completed exploration activities.</i></p>
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## REPORTING OF EXPLORATION RESULTS

16	<p><b>Exploration Results include data and information generated by mineral exploration programmes that might be of use to investors, but which do not form part of a declaration of <u>Mineral Resources</u> or <u>Mineral Reserves</u>.</b></p> <p><i>This is common in the early stages of exploration when the distribution and quantity of data available is generally not sufficient to allow any reasonable estimates of tonnage and grade to be made. Examples include:</i></p> <ul style="list-style-type: none"><li>• <i>results of outcrop sampling,</i></li><li>• <i>geological mapping,</i></li><li>• <i>assays of drill hole intercepts,</i></li><li>• <i>geochemical and physical test results, and</i></li><li>• <i>geophysical survey results.</i></li></ul> <p>Exploration Results must include relevant data and information relating to the mineral property – both positive and negative.</p> <p>The assumed continuity of the mineralisation on the property of the interest must be based on at least some physical information and justified by the Registered Competent Person. Historical data and information may also be included if, in the considered opinion of the Registered Competent Person, it is relevant and reliable, giving reasons for such conclusions.</p> <p><i>It should be made clear in public reports that contain Exploration Results, that it is inappropriate to use such information to derive estimates of tonnage and grade. It is recommended that such reports carry a continuing statement along the following lines:</i></p>
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	<i>"The information provided in this report/statement/release constitutes Exploration Results as defined in the Indian Mineral Industry Code, Clause 16. It is inappropriate to use such information for deriving estimates of tonnage and grade".</i>
17	If a Company reports Exploration Results in relation to mineralisation not classified as a Mineral Resource or Mineral Reserve, then estimates of tonnage and associated average grade must not be reported, unless the situation is covered by Clause 15, and then only in strict accordance with the requirements of that Clause.
18	<p>Public Reports of Exploration Results relating to mineralisation not classified as a Mineral Resource or Mineral Reserve must contain sufficient information to allow a considered and balanced judgement of the significance of the results.</p> <p>Public reports of Exploration Results must include relevant information including exploration context, type and method of sampling, sampling intervals and methods, relevant sample locations, distribution, dimensions and relative location of all relevant assay and physical data, data aggregation methods, land tenure status plus information on any of the other criteria listed in Table 1 that are material to such an assessment. However, Public Reports of Exploration Results must not be presented so as to unreasonably imply that potentially economic mineralisation has been discovered.</p> <p>If appropriate to the deposit type, true widths of mineralised zones must be reported. Where true widths cannot be reported, an appropriate qualification must be included in the Public Report.</p> <p>Where assay and analytical results are reported, they must be reported using one of the following methods, selected as the most appropriate by the Registered Competent Person:</p> <ul style="list-style-type: none"> <li>• either by listing all results, along with sample intervals (or size, in the case of bulk samples), or</li> <li>• by reporting weighted average grades of mineralized zones, indicating clearly how the grades were calculated.</li> </ul> <p>Clear diagrams and maps designed to represent the geological context must be included in the report. These must include, but not be limited to a plan view of material drill hole collar locations with geological features and appropriate sectional views including these geologic boundaries. If drill holes are not considered to be material by the Registered Competent Person, this must be explained in the Public Report.</p> <p><i>Reporting of selected information such as isolated assays, isolated drill holes, assays of panned concentrates or supergene enriched soils or surface samples, without placing them in perspective in the report is unacceptable.</i></p> <p><i>Table 1 contains a checklist and guideline to which those preparing reports on Exploration Results should refer. The checklist is not prescriptive and, as always transparency and materiality are overriding principles, which determine what information should be reported publicly.</i></p>
<b>Reporting of Mineral Resources</b>	
19	<b>A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade, quality and quantity that there are reasonable prospects for eventual economic extraction.</b>

**The location, quantity, grade, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.**

Mineral Resources are subdivided, in order of increasing geological confidence into Inferred, Indicated and Measured categories.

Portions of a mineral deposit that do not have reasonable prospects for eventual economic extraction must not be included in a Mineral Resource.

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

*The term “reasonable prospects for eventual economic extraction” implies a judgement (albeit preliminary) by the Registered Competent Person in respect of the technical and economic factors likely to influence the prospect of economic extraction, including the approximate mining, processing and other relevant parameters. In other words, a Mineral Resource is not an inventory of all mineralisation drilled or sampled, regardless of cut-off grade, likely mining dimension, location or continuity. It is a realistic inventory of mineralisation which, under assumed and justifiable technical and economic conditions, might, in whole or in part, become economically extractable.*

*The term “reasonable prospects” also implies that Measured, Indicated and Inferred Mineral Resources are constrained within pit shells for surface mining methods and constrained to coherent zones for underground extraction, both of which support mining, processing and future development cost estimates. A deposit model is required, which may be a computer-generated block model or a model based on maps, plans or sections. If necessary, viable beneficiation process (es) should be identified to meet the criteria for reasonable prospects. Economic criteria should be applied in like manner to all classes of Mineral Resources.*

Where untested practices are applied in the determination of reasonable prospects, the use of the proposed practices for reporting of the Mineral Resource must be justified by the Registered Competent Person in the Public Report.

*The basis for the reasonable prospects assumption is always a matter of professional judgment, and any material assumptions made in determining the “reasonable prospects for eventual economic extraction” should be clearly stated by the Registered Competent Person in the Public Report.*

*Where considered appropriate by the Registered Competent Person, Mineral Resource estimates may include material below the selected cut-off grade to ensure that the Mineral Resources comprise bodies of mineralisation of adequate size and continuity to properly consider the most appropriate approach to mining. Documentation of Mineral Resource estimates should clearly identify any diluting material included, and Public Reports should include commentary on the matter if considered material.*

*Interpretation of the word “eventual” in this context may vary depending on the commodity or mineral involved. For example, for some coal, iron ore, bauxite and other bulk minerals or commodities, it may be reasonable to envisage “eventual economic extraction” as covering time periods in excess of 50 years. However for many gold deposits, application of the concept would normally be restricted to perhaps 10 to 15 years, and frequently to much shorter periods of time. In all cases, the considered time frame should be disclosed and discussed by the Registered Competent Person.*

*Commodity prices used in Mineral Resource reporting should be based on a reasonable and supportable range of commodity prices. If prices used for Mineral Resource*

	<p><i>estimation differ from those used for Mineral Reserve reporting, these differences should be documented and justified.</i></p> <p><i>Any adjustment made to the data for the purpose of making the Mineral Resource estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.</i></p> <p><i>Stopes filled with mineralised material, mineralised in situ remnants, shaft and stope pillars left for ground support purposes, and stockpiles of mineralised material, old dumps and tailings can be considered when reporting Mineral Resources provided they have reasonable prospects for eventual economic extraction.</i></p> <p><i>Table 1 contains a checklist and guidelines to which those preparing reports on Mineral Resources should refer (in particular, uncertainties with respect to geological interpretations, the geometry of mineralisation boundaries, sampling and assay data, and estimates of grade and tonnage). The checklist is not prescriptive and, as always transparency and materiality are overriding principles which determine what information should be reported publicly.</i></p> <p><i>Certain reports (e.g. inventory reports, exploration reports to government and other similar reports not intended primarily for providing information for investment purposes) may require full disclosure of all mineralisation, including some material that does not have reasonable prospects for eventual economic extraction. Such estimates of mineralisation would not qualify as Mineral Resources or Mineral Reserves under the IMIC.</i></p>
20	<p><b>An Inferred Mineral Resource is that part of a <u>Mineral Resource</u> for which quantity and grade or quality are estimated on the basis of limited geological evidence and sampling.</b></p> <p><b>Geological evidence is sufficient to imply but not verify geological and grade continuity.</b></p> <p><b>It is based on exploration, sampling and testing information gathered through appropriate techniques from locations such as outcrops, trenches, pits, workings and drill holes.</b></p> <p><b>An Inferred Resource has a lower level of confidence than that applying to an <u>Indicated Mineral Resource</u> and must not be converted to a <u>Mineral Reserve</u>. It is reasonably expected that the majority of Inferred Mineral Resources could be upgraded to <u>Indicated Mineral Resources</u> with continued exploration.</b></p> <p><i>The Inferred category is intended to cover situations where a mineral concentration or occurrence has been identified and limited measurements and sampling completed, but where the data are insufficient to allow the geological and/or grade continuity to be confidently interpreted. Commonly, it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration. However, due to the uncertainty of Inferred Mineral resources, it should not be assumed that such upgrading will always occur.</i></p> <p><i>Confidence in the estimate is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning. For this reason, there is no direct link from an Inferred Resource to any category of Mineral Reserves (see Figure 1).</i></p> <p><i>Caution should be exercised if Inferred Mineral Resources are considered to support technical and economic studies.</i></p>

	<p>Where the Mineral Resource being reported is predominantly an Inferred Mineral Resource, sufficient supporting information must be provided to enable the reader to evaluate and assess the risk associated with the reported Mineral Resource.</p> <p>In circumstances where the estimation of the Inferred Mineral Resource is presented on the basis of extrapolation beyond the nominal sampling spacing and taking into account the style of mineralization, the report must contain sufficient information to inform the reader of:</p> <ul style="list-style-type: none"> <li>• the maximum distance that the resource is extrapolated beyond the sample points;</li> <li>• the proportion of the resource that is based on extrapolated data;</li> <li>• the basis on which the resource is extrapolated to these limits; and</li> <li>• a diagrammatic representation of the Inferred Mineral Resource showing clearly the extrapolated part of the estimated resource.</li> </ul> <p><i>Inferred Mineral Resources should exclude material for which there are insufficient data to allow the inference of geological and grade continuity.</i></p>
<p>21</p>	<p><b>An Indicated Mineral Resource is that part of a <u>Mineral Resource</u> for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of <u>Modifying Factors</u> in sufficient detail to support mine planning and evaluation of the economic viability of the deposit.</b></p> <p><b>Geological evidence is derived from adequately detailed and reliable exploration, sampling and testing and is sufficient to assume geological and grade continuity between points of observation.</b></p> <p><b>An Indicated Mineral Resource has a lower level of confidence than that applying to a <u>Measured Mineral Resource</u> and may only be converted to a <u>Probable Mineral Reserve</u>.</b></p> <p>An Indicated Mineral Resource has a lower level of confidence than that applying to a Measured Mineral Resource, but has a higher level of confidence than that applying to an Inferred Mineral Resource.</p> <p><i>A deposit or part of a deposit may be classified as an Indicated Mineral Resource when the nature, quality, amount and distribution of data are such as to allow the Registered Competent Person determining the Mineral Resource to confidently interpret the geological framework and to assume physical continuity of mineralisation.</i></p> <p><i>Confidence in the estimate is sufficient to allow the appropriate application of technical and economic parameters to prepare incremental mine plans (typically annual or phases) and production schedules and to enable an evaluation of economic viability. Overall confidence in the global estimates is high, while local confidence is reasonable.</i></p> <p>The Registered Competent Person must recognise the importance of the Indicated Mineral Resource class to the advancement of the viability of the project.</p> <p><i>An Indicated Mineral Resource estimate is of sufficient quality to support detailed technical and economic studies leading to Probable Mineral Reserves which can serve as the basis for major development decisions.</i></p> <p>In assessing continuity between points of observation, the Registered Competent Person must consider the likely cut-off grade and geometric limits that would be used to prepare incremental (e.g. annual or phases) mine plans.</p>
<p>22</p>	<p><b>A “Measured Mineral Resource” is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with sufficient confidence to allow the application of <u>Modifying Factors</u></b></p>



	<p><b>to support detailed mine planning and final evaluation of the economic viability of the deposit.</b></p> <p><b>Geological evidence is derived from detailed and reliable exploration, sampling and testing and is sufficient to confirm geological and grade or quality continuity between points of observation.</b></p> <p><b>A Measured Mineral Resource has a higher level of confidence than that applying to either an <u>Indicated Mineral Resource</u> or an <u>Inferred Mineral Resource</u>. It may be converted to a <u>Proved Mineral Reserve</u> or to a <u>Probable Mineral Reserve</u>.</b></p> <p><i>Mineralisation may be classified as a Measured Mineral Resource when the nature, quality, amount and distribution of data are such as to leave no reasonable doubt, in the opinion of the Registered Competent Person determining the Mineral Resource, that the tonnage, grade, and geometry of production planning and scheduling increments can be estimated within close limits and that any variation from the estimate would not significantly affect potential economic viability of individual increments (typically quarterly or smaller).</i></p> <p><i>This category requires a high level of confidence in, and understanding of, the geology and controls of the mineral deposit.</i></p> <p><i>Confidence in the estimate is sufficient to allow the application of technical and economic parameters and to enable an evaluation of economic viability with a high level of confidence.</i></p> <p><i>A Measured Mineral Resource estimate is of sufficient quality to support detailed technical and economic studies leading to Mineral Reserves which can serve as the basis for major development decisions with no additional sampling or other geological definition required to support these decisions.</i></p>
<p><b>23</b></p>	<p>The choice of the appropriate class of Mineral Resource depends upon the quantity, distribution and quality of data available, and the level of confidence that attaches to those data. The appropriate Mineral Resource class must be determined by the Registered Competent Person.</p> <p><i>Mineral Resource classification is a matter for skilled judgment, and the Registered Competent Person should take into account those items in Table 1, which relate to confidence in Mineral Resource estimation.</i></p> <p><i>In deciding between Measured Mineral Resource and Indicated Mineral Resource, the Registered Competent Person may find it useful to consider the following guidelines:</i></p> <ul style="list-style-type: none"> <li>• <i>In addition to the phrases relating to geological and grade continuity in Clauses 21 and 22, the phrase in the guideline to the definition for Measured Mineral Resource: “... any variation from the estimate would not significantly affect potential economic viability of individual increments (typically quarterly or smaller)”;</i> and</li> <li>• <i>the guideline to the definition for Indicated Mineral Resource in Clause 21: “...Confidence in the estimate is sufficient to allow the appropriate application of technical and economic parameters to prepare incremental plans (typically annual or phases) and production schedules and to enable an evaluation of economic viability”.</i></li> </ul> <p><i>In deciding between Indicated Mineral Resources and Inferred Mineral Resources, Registered Competent Persons may wish to take into account, in addition to the phrases in the two definitions in Clauses 20 and 21 relating to geological and grade continuity, that part of the definition for Indicated Mineral Resources: “sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit”, which contrasts with the guideline to</i></p>

	<p><i>the definition for Inferred Mineral Resources: “confidence in the estimate of Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning through Pre-Feasibility (Clause 36) or Feasibility (Clause 37) Studies” and “Caution should be exercised if Inferred Mineral Resources are used to support technical and economic studies such as Scoping Studies (refer to Clause 35)”.</i></p> <p><i>The Registered Competent Person should take into consideration the style of mineralisation and cut-off grade when assessing geological and grade continuity for the purposes of classifying the resource.</i></p> <p><i>Cut-off grades chosen for the estimation should be realistic in relation to the style of mineralisation and the anticipated mining and processing development options.</i></p> <p>Where deleterious elements/minerals are present that may have an impact on application of the Modifying Factors; their impact must be taken into account when classifying the Mineral Resources as Inferred, Indicated, or Measured.</p>
<p><b>24</b></p>	<p>Mineral Resource estimates are not precise calculations, being dependent on the interpretation of limited information on the location, shape and continuity of the occurrence and on the available sampling results. Reporting of tonnage and grade figures should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures and, in the case of Inferred Mineral Resources, by qualification with terms such as “approximately”.</p> <p><i>In most situations, rounding to the second significant figure should be sufficient. For example 10,863,000 tonnes at 8.23 per cent should be stated as 11 million tonnes at 8.2 per cent. There will be occasions, however, where rounding to the first significant figure may be necessary in order to convey properly the uncertainties in estimation. This would usually be the case with Inferred Mineral Resources.</i></p> <p><i>To emphasise the imprecise nature of a Mineral Resource estimate, the final result should always be referred to as an estimate not a calculation.</i></p> <p><i>Registered Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and/or confidence of the Mineral Resource estimates. The statement should specify whether it relates to global (whole of resource) or local estimates (a subset of the resource for which the accuracy and/or confidence might differ from the whole of the resource), and, if local, state the relevant tonnage or volume. Where a statement of the relative accuracy and/or confidence is not possible, a qualitative discussion of the uncertainties should be provided (refer to Table 1).</i></p>
<p><b>25</b></p>	<p>Public Reports of Mineral Resources must specify one or more of the categories of “Inferred”, “Indicated” and “Measured”. Categories must not be reported in a combined form unless details for the individual categories are also provided. Mineral Resources must not be reported in terms of contained metal or mineral content unless corresponding tonnages and grades are also presented. Mineral Resources must not be aggregated with Mineral Reserves.</p> <p>Public Reporting of tonnages and grades outside the categories covered by the Code is not permitted unless the situation is covered by Clause 15, and then only in strict accordance with the requirements of that Clause.</p> <p><i>Estimates of tonnage and grade outside of the categories covered by the Code may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports is not permitted.</i></p>

<p>26</p>	<p>Table 1 provides, in a summary form, a list of the main criteria which must be considered when preparing reports on Exploration Results, Mineral Resources and Mineral Reserves.</p> <p><i>The importance of each item will vary with the project, and it is recognized that, for some projects, other items may be relevant which are not on the list. The Table should be considered a guide to facilitate a rational and orderly approach to evaluation; as always, relevance, transparency and materiality are overriding principles that determine what information should be reported publicly.</i></p> <p>It is necessary, when publicly reporting initial or materially changed, Mineral Resources, to comment on each item in Table 1, where discussion of any matters which might materially affect the reader's understanding or interpretation of the results or estimates being reported.</p> <p><i>This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources and/or Mineral Reserves; for example, poor sample recovery, poor repeatability of assay or laboratory results, limited information on bulk densities etc. Items in Table 1 that are judged by the Competent Person to be not relevant or material should be done on an "if not, why not" basis.</i></p> <p><i>If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.</i></p> <p><i>Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over-statement of Mineral Resources should be disclosed.</i></p> <p><i>Mineral Resource estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Mineral Resources and the nature of the adjustment or modification described.</i></p>
<p>27</p>	<p>The words "ore" and "reserves" must not be used in stating Mineral Resource estimates (except in the context of common usage such as "iron ore" etc) as the terms imply that technical feasibility and economic viability have been demonstrated and are only appropriate when all relevant mining, processing, metallurgical, economic, marketing, legal, environmental, infrastructure, social and governmental factors have been considered. Reports and statements should continue to refer to the appropriate category or categories of Mineral Resources until technical feasibility and economic viability have been established. If re-evaluation indicates that the any part of the Mineral Reserves is no longer viable, such Mineral Reserves must be re-classified as Mineral Resources or removed from the Mineral Resource/Mineral Reserve statements.</p> <p><i>It is not intended that reclassification from Mineral Reserves to Mineral Resources should be applied as a result of changes expected to be of a short-term or temporary nature, or where management has made a deliberate decision to operate on a non-economic basis. Examples of such situations might be a commodity price decrease expected to be of short duration, mine emergency of a non-permanent nature, transport strike, etc.</i></p>
<p><b>Reporting of Mineral Reserves</b></p>	
<p>28</p>	<p><b>A Mineral Reserve is the economically mineable part of a <u>Measured</u> and/or <u>Indicated Mineral Resource</u>.</b></p> <p><b>It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at <u>Pre-Feasibility</u> or <u>Feasibility</u> level as appropriate that include application of <u>Modifying Factors</u>.</b></p>

	<p><b>Such studies demonstrate that, at the time of reporting, extraction could reasonably be justified.</b></p> <p><b>The reference point at which Reserves are defined, usually the point where the ore is delivered to the processing plant, must be stated. It is important that, in all situations where the reference point is different, such as for a saleable product, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.</b></p> <p>The key underlying assumptions and outcomes of the Pre-Feasibility Study (clause 36) or Feasibility Study (clause 37) must be disclosed at the time of reporting of a new or materially changed Mineral Reserve.</p> <p>Mineral Reserves are sub-divided in order of increasing confidence into Probable Mineral Reserves and Proved Mineral Reserves.</p> <p>In reporting Mineral Reserves, information on estimated mineral processing recovery factors is very important and must always be included in Public Reports.</p> <p><i>Mineral Reserves are those portions of Mineral Resources that result in an estimated tonnage and grade which, in the opinion of the Registered Competent Person making the estimates, can be the basis of an economically viable project after taking account of all relevant Modifying Factors.</i></p> <p><i>The term “economically viable” implies that extraction of the Mineral Reserve has been established or analytically demonstrated (e.g. such as by a cash flow in the study) to be viable and justifiable under reasonable investment and market assumptions. The term Mineral Reserve need not necessarily signify that extraction facilities are in place or operative or that all governmental approvals have been received. It does signify that there are reasonable expectations of timely approvals.</i></p> <p><i>At operating properties (brownfield projects), an economic life of mine plan can be considered as the appropriate level of study for the reporting of Mineral Reserves, unless those reserves require significant new infrastructure, such as a new shaft or a new processing method and associated plant.</i></p> <p><i>The terms “Ore Reserves” and “Mineral Reserves” can be used interchangeably where it is customary to do so, usually for metallic deposits and some industrial minerals. The terms “Coal Reserves” and “Mineral Reserves” can be used interchangeably where it is customary to do so for coal deposits.</i></p> <p>Table 1 contains a checklist and guidelines to which those preparing reports on Mineral Reserves must refer.</p> <p><i>The checklist is not prescriptive and, as always transparency and materiality are overriding principles that determine what information should be reported publicly.</i></p>
29	<p><b>A Probable Mineral Reserve is the economically mineable part of an Indicated, and in some circumstances, a <u>Measured Mineral Resource</u>.</b></p> <p><b>The confidence in the <u>Modifying Factors</u> applying to a Probable Mineral Reserve is lower than that applying to a <u>Proved Mineral Reserve</u>.</b></p> <p>A Probable Mineral Reserve has a lower level of confidence than a Proved Mineral Reserve but is of sufficient quality to serve as the basis for a decision on the development of the deposit.</p> <p><i>When the confidence in the Modifying Factor(s) becomes lower, a Measured Mineral Resource may be converted to a Probable Mineral Reserve after taking account of all relevant Modifying Factors.</i></p>

	<p>In cases where the technical and economic viability can no longer be justified by the existing Pre-feasibility or Feasibility studies, the Indicated and Measured Mineral Resources shall not be converted to Mineral Reserves.</p>
<p><b>30</b></p>	<p><b>A Proved Mineral Reserve is the economically mineable part of a <u>Measured Mineral Resource</u>. A Proved Mineral Reserve implies a high degree of confidence in the <u>Modifying Factors</u>.</b></p> <p>A Proved Mineral Reserve represents the highest degree of confidence the estimate.</p> <p><i>The style of mineralisation or other factors could mean that Proved Mineral Reserve cannot be demonstrated in some deposits. Registered Competent Persons should be aware of the consequences of declaring a Proved Mineral Reserve before satisfying themselves that all of the relevant Mineral Resource parameters and Modifying Factors have been established at a similarly high level of confidence. Subsequent retraction of a publicly reported Proved Mineral Reserve can lead to investor uncertainty and lack of corporate confidence.</i></p> <p><i>Issues with the confidence in the Modifying Factors could mean that some Measured Mineral Resources may not be converted to a Proved Mineral Reserve.</i></p>
<p><b>31</b></p>	<p>The choice of the appropriate category of Mineral Reserve is determined primarily by the relevant level of confidence in the Mineral Resource and after considering any uncertainties in the modifying factors. Allocation of the appropriate category must be made by the Registered Competent Person.</p> <p><i>The IMIC provides for a direct relationship between Indicated Mineral Resources and Probable Mineral Reserves and between Measured Mineral Resources and Proved Mineral Reserves. In other words, the level of geological confidence for Probable Mineral Reserves is similar to that required for the determination of Indicated Mineral Resources. The level of geological confidence for Proved Mineral Reserves is similar to that required for the determination of Measured Mineral Resources. Inferred Mineral Resources are always additional to Mineral Reserves. Under no circumstances can an Inferred Mineral Resource be converted directly to a Proved Mineral Reserve or to a Probable Mineral Reserve (see Figure 1).</i></p> <p><i>The IMIC also provides for a two-way relationship between Measured Mineral Resources and Probable Mineral Reserves. This is to cover a situation where uncertainties associated with any of the Modifying Factors considered when converting Mineral Resources to Mineral Reserves may result in there being a lower degree of confidence in the Mineral Reserves than in the corresponding Mineral Resources. Such a conversion would not imply a reduction in the level of geological knowledge or confidence.</i></p> <p><i>A Probable Mineral Reserve derived from a Measured Mineral Resource may be converted to a Proved Mineral Reserve if the uncertainties in the Modifying Factors are removed. No amount of confidence in the Modifying Factors for conversion of a Mineral Resource to a Mineral Reserve can override the upper level of confidence that exists in the Mineral Resource.</i></p>
<p><b>32</b></p>	<p>Mineral Reserve estimates are not precise calculations. Reporting of tonnage and grade figures should reflect the relative uncertainty of the estimate by rounding off to appropriately significant figures. Refer also to Clause 24.</p> <p><i>To emphasise the imprecise nature of a Mineral Reserve, the final result should always be referred to as an estimate not a calculation.</i></p>

	<p><i>Registered Competent Persons should, where appropriate, discuss the relative accuracy and/or confidence of the Mineral Reserve estimates. The statement should specify whether it relates to global (whole of reserve) or local estimates (a subset of the reserve for which the accuracy and/or confidence might differ from the whole of the reserve), and, if local, state the relevant tonnage or volume. Where a statement of the relative accuracy and/or confidence is not possible, a qualitative discussion of the uncertainties should be provided (refer to Table 1 and to the Guidelines under Clause 19-22 and Table 2).</i></p>
<p><b>33</b></p>	<p>Public Reports of Mineral Reserves must specify one or both of the categories of “Proved” and “Probable”. Categories must not be reported in a combined Proved and Probable Mineral Reserve unless the relevant figures for each of the categories are also provided. Reports must not present metal or mineral content figures unless corresponding tonnage and grade figures are also given. Mineral Reserves must not be aggregated with Mineral Resources.</p> <p>Public Reporting of tonnage and grade outside the categories covered by the IMIC is not permitted.</p> <p>Estimates of tonnage and grade outside of the categories covered by the IMIC may be useful for a company in its internal calculations and evaluation processes, but their inclusion in Public Reports could cause confusion, and is not permitted.</p> <p><i>Mineral Reserves may incorporate material (dilution) which is not part of the original Mineral Resource. It is essential that this fundamental difference between Mineral Resources and Mineral Reserves is borne in mind and caution exercised if attempting to draw conclusions from a comparison of the two.</i></p> <p><i>When revised Mineral Reserve and Mineral Resource statements are publicly reported they should be accompanied by reconciliation with previous statements. A detailed account of differences between the figures is not essential, but sufficient comment should be made to enable significant changes to be understood by the reader.</i></p> <p>In a Public Report of a Mineral Reserve estimate for a significant project for the first time, or when those estimates have materially changed from when they were last reported, a brief summary of the information in relevant sections of Table 1 must be provided or, if a particular criterion is not relevant or material, a disclosure that it is not relevant or material and a brief explanation of why this is the case must be provided.</p> <p>For a significant project, when Mineral Reserve estimates are first Publicly Reported or when a material change occurs (including classification changes), there is an increased need for transparent discussion of the basis for the new Mineral Reserve estimate in order that investors are appropriately informed of the basis for the changes.</p> <p><i>The IMIC specifies reporting against relevant sections of Table 1 in this Clause. This may be satisfied by reporting against section 4 on the presumption that matters related to sections 1, 2 and 3 will already have been included in a still current Public Report and this Report can be referenced. If this is not the case, then these sections are also relevant and should be included in the Public Report.</i></p> <p><i>The Technical summary based on Table 1 criteria should be presented as an appendix to the Public Report.</i></p> <p><i>Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Mineral Reserves (for example, limited geotechnical information, complex orebody metallurgy, uncertainty in the permitting process, etc.) those unresolved issues should also be reported.</i></p>

	<p><i>If there is doubt about what should be reported, it is better to err on the side of providing too much information rather than too little.</i></p> <p><i>Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over-statement of Mineral Reserves should be disclosed.</i></p> <p><i>Mineral Reserve estimates are sometimes reported after adjustment from reconciliation with production data.</i></p> <p><i>Such adjustments should be clearly stated in a Public Report of Mineral Reserves and the nature of the adjustment or modification described.</i></p>
<p><b>34</b></p>	<p>In situations where figures for both Mineral Resources and Mineral Reserves are reported, a statement must be included in the report which clearly indicates whether the Mineral Resources are inclusive of, or additional to the Mineral Reserves.</p> <p>Mineral Reserve estimates must not be added to Mineral Resource estimates to report a single combined figure.</p> <p><i>In some situations, there are reasons for reporting Mineral Resources inclusive of Mineral Reserves and in other situations for reporting Mineral Resources additional to Mineral Reserves. It must be made clear which form of reporting has been adopted. Appropriate forms of clarifying statements may be:</i></p> <p><i>“The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Mineral Reserves.”</i></p> <p><i>or</i></p> <p><i>“The Measured and Indicated Mineral Resources are additional to the Mineral Reserves.”</i></p> <p><i>In the former case, if any Measured and Indicated Mineral Resources have not been modified to produce Mineral Reserves for economic or other reasons, the relevant details of these unmodified Mineral Resources should be included in the report. This is to assist the reader of the report in making a judgement of the likelihood of the unmodified Measured and Indicated Mineral Resources eventually being converted to Mineral Reserves.</i></p> <p><i>Inferred Mineral Resources are by definition always additional to Mineral Reserves.</i></p> <p>For reasons stated in the guidelines to Clause 31 and in this paragraph, the reported Mineral Reserve figures must not be added to the reported Mineral Resource figures. The resulting total is misleading and is capable of being misunderstood or of being misused to give a false impression of a company’s prospects.</p> <p>Public reporting of a Mineral Reserve will normally indicate that a Registered Competent Person has determined that extraction could be reasonably justified.</p> <p><i>Where Mineral Reserves have been defined but are scheduled to be mined at a date some distance in the future, sufficient assurance should be available on an annual basis that, in the judgment of the Registered Competent Person, and endorsed by the company, that application of the Modifying Factors can still support the publicly reported reserves.</i></p> <p><i>Table 1 shows typical assessment criteria for Technical Studies. Table 2 shows the range of accuracy of cost estimates for Technical Studies.</i></p> <p><i>Formal assessment of relevant criteria, as listed in Tables 1 and 2, is required in order to determine how much available Measured and Indicated Mineral Resource may be converted to Mineral Reserves.</i></p>

## Technical Studies

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

For all Scoping Studies, the entity must include a cautionary statement in the same paragraph as, or immediately following, the disclosure of the Scoping Study.

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

If the outcome of a Scoping Study is partially supported by Inferred Mineral Resources, the Public Report must state both the proportion and relative sequencing of the Inferred Mineral Resources. Scoping Studies must not include Exploration Targets as part of the mine plan or economic analysis.

*An example cautionary statement follows:*

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

*Scoping Studies are commonly early economic evaluations of a project and may be based on a combination of directly gathered project data together with assumptions sourced from similar deposits or operations to the case envisaged. Scoping Studies are also commonly used internally by entities for comparative and planning purposes. Reporting the general results of a Scoping Study needs to be undertaken with care and should include appropriate cautionary statements to ensure there is no implication that Mineral Reserves have been established or that economic development is assured. In this regard it may be appropriate to indicate the Mineral Resource inputs to the Scoping Study and the processes applied.*

If the Scoping Study is partially or wholly supported by Inferred Mineral Resources, this must be clearly stated, and a cautionary statement must be included.

*Scoping Studies also have been called Conceptual Studies. “Order of magnitude” as used herein typically implies that cost estimates will have an accuracy level of approximately  $\pm 50\%$  (see Table 2)*

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



	<p><i>As noted in Clause 28, formal assessment of all Modifying Factors is required in order to determine how much available Measured and Indicated Mineral Resources can be converted to Mineral Reserves.</i></p> <p><i>Assessments of environmental and socio-economic impacts and requirements should be well advanced.</i></p> <p><i>A Pre-Feasibility Study will consider the application and description of all the Modifying factors (as outlined in Table 1, section 4) to demonstrate economic viability of Measured and Indicated Mineral Resources to support declaration of a Mineral Reserve. Inferred Mineral Resources must be excluded from demonstration of economic viability in support of declaration of a Mineral Reserve. A Pre-Feasibility Study will identify the preferred mining, processing, infrastructure requirements and capacities, but may not have finalized these matters. Assessments of environmental and socio-economic impacts and requirements will be well advanced. The Pre-Feasibility Study will also highlight areas that require further refinement within the final study stage.</i></p>
<p><b>37</b></p>	<p><b>A Feasibility Study is a comprehensive technical and economic study of the selected development option for a mineral project that includes appropriately detailed assessments of applicable <u>Modifying Factors</u> together with any other relevant operational factors and detailed financial analysis that are necessary to demonstrate at the time of reporting that extraction is reasonably justified (economically mineable). The results of the study may reasonably serve as the basis for a final decision by a proponent or financial institution to proceed with, or finance, the development of the project. The confidence level of the study will be higher than that of a <u>Pre-Feasibility Study</u>.</b></p> <p>The Code does not require that a full Feasibility Study has been undertaken to convert Mineral Resources to Mineral Reserves, but it does require that at least a Pre-Feasibility Study will have been carried out that will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.</p> <p><i>Terms such as “Bankable Feasibility Study” and “Definitive Feasibility Study” are noted as being equivalent to a Feasibility Study as defined in this clause.</i></p> <p><i>A Feasibility Study is of a higher level of confidence than a Pre-Feasibility Study and would normally contain mining, infrastructure and process designs completed with sufficient rigour to serve as the basis for an investment decision or to support project financing. Social, environmental and governmental approvals, permits and agreements will be in place, or will be approaching finalisation within the expected development timeframe. The Feasibility Study will contain the application and description of all Modifying factors (as outlined in Table 1, section 4) in a more detailed form than in the Pre-Feasibility Study, and may address implementation issues such as detailed mining schedules, construction ramp up, and project execution plans.</i></p>
<p><b>38</b></p>	<p>Table 1 provides, in a summary form, a list of the criteria which must be considered when preparing reports on Exploration Results, Mineral Resources and Mineral Reserves.</p> <p>In the context of complying with the principles of the Code, comments relating to the items in the relevant sections of Table 1 must be provided on an ‘if not, why not’ basis within the Registered Competent Person’s documentation.</p> <p>Additionally comments related to the relevant sections of Table 1 must be complied with on an “if not, why not” basis within Public Reporting for significant projects (see <b>Appendix 1</b> Generic Terms and Related Terms) when reporting Exploration Results, Mineral Resources or Mineral Reserves for the first time.</p>

	<p>Table 1 also applies in instances where these items have materially changed from when they were last Publicly Reported. Reporting on an "if not, why not" basis is to ensure that it is clear to an investor whether items have been considered and deemed of low consequence or are not yet addressed or resolved.</p> <p>For the purposes of the IMIC the phrase "if not, why not" means that each item listed in the relevant section of Table 1 must be discussed, and if it is not discussed then the Registered Competent Person must explain why it has been omitted from the documentation.</p> <p>Changes in any of the modifying factors may be the basis for significant changes in Mineral Reserves and should be reported accordingly.</p> <p>Table 2, included at the end of the Code, provides a range of expected accuracies for capital and operating cost estimates relative to the three study levels outlined in the Code for the reporting of Mineral Resources and Mineral Reserves. Scoping studies are mining studies at a conceptual level, and may be utilized to identify options for project development and to define and support future work programs to enable conversion of Mineral Resources to Mineral Reserves, whereas the more comprehensive Pre-Feasibility and Feasibility studies must be used to support declaration of Mineral Reserves.</p>
	<p><b>Reporting of Mineralised Fill, Pillars, Low Grade Mineralisation, Stockpiles, Dumps and Tailings</b></p>
<p><b>39</b></p>	<p>The IMIC applies to the reporting of all potentially economic mineralized material. This can include mineralized fill, remnants, pillars, low grade mineralisation, stockpiles, dumps and tailings (remnant materials) where there are reasonable prospects for eventual economic extraction in the case of Mineral Resources, and where extraction is reasonably justifiable in the case of Mineral Reserves. Unless otherwise stated, all other clauses of the IMIC (including Figure 1) apply.</p> <p><i>Any mineralised material as described in this clause can be considered to be similar to in situ mineralisation for the purposes of reporting Mineral Resources and Mineral Reserves. Reserves. Judgements about the mineability of such mineralised material should be made by professionals with relevant experience.</i></p> <p><i>If there are no reasonable prospects for the eventual economic extraction of all or part of the mineralised material as described in this clause, then this material cannot be classified as either Mineral Resources or Mineral Reserves. If some portion of the mineralised material is currently sub-economic, but there is a reasonable expectation that it will become economic, then this material may be classified as a Mineral Resource. If technical and economic studies have demonstrated that economic extraction could reasonably be justified under realistically assumed conditions, then the material may be classified as a Mineral Reserve.</i></p> <p><i>The above guidelines apply equally to low grade in situ mineralisation, sometimes referred to as "mineralised waste" or "marginal grade material", and often intended for stockpiling and treatment towards the end of mine life. For clarity of understanding, it is recommended that tonnage and grade estimates of such material be itemised separately in Public Reports, although they may also be aggregated with total Mineral Resource and Mineral Reserve figures.</i></p> <p><i>Stockpiles are defined to include both surface and underground stockpiles, including broken ore in stopes, and can include ore currently in the ore storage system. Mineralised material in the course of being processed (including leaching), if reported, should be reported separately.</i></p>

	<p><i>If some portion is currently sub-economic, but there is a reasonable expectation that it will become economic, then this material may be classified as a Mineral Resource. Such stockpile material may include old dumps and tailings storage facility material. If technical and economic studies have demonstrated that economic extraction could reasonably be justified under realistically assumed conditions, then the material may be classified as a Mineral Reserve.</i></p> <p><i>Mineralised remnants, shaft pillars and mining pillars which are potentially mineable and meet the requirements of having reasonable prospects for eventual economic extraction are included in the IMIC definitions of Mineral Resources and Mineral Reserves.</i></p> <p><i>Because processing recoveries for previously mined material (mineralized fill, stockpiles, dumps, and tailings) are usually different from those expected from un-mined in situ material, the Registered Competent Person should make a judgment regarding the required direct sampling and test work to support processing recoveries that can be expected from these types of materials.</i></p> <p><i>For historic tailings, surface or underground stockpiles and waste dumps, production records may not be available describing these materials in sufficient detail. In these cases, the contained grade(s) of the material must be defined by additional sampling. In some cases it may be difficult to define the grade adequately due to sampling issues. In such cases the Registered Competent Person should use caution in defining the estimated grade and the classification of this material. For clarity of understanding, it is recommended that tonnage and grade estimates of such materials be itemized separately in Public Reports if they are of material quantity.</i></p>
	<p><b>Reporting of Coal Exploration Results, Resources and Reserves</b></p>
<p><b>40</b></p>	<p>Clauses 40 to 42 of the Code address matters that relate specifically to the Public Reporting of Coal Exploration Results, Coal Resources and Coal Reserves.</p> <p>Coal generally is sold on the basis of product specifications and market acceptance. Such factors as quality and marketability are therefore important and should be considered carefully before declaring Coal Resources or Coal Reserves. Unless otherwise stated, all other clauses in this Code, including Figure 1 and Tables 1 and 2, apply to Exploration Results, Exploration Targets, Mineral Resources and Mineral Reserves for coal. Coal Resources must have reasonable prospects for eventual economic extraction. For coal the technical and economic parameters considered to assess “reasonable prospects” may emphasize geological continuity, strategic value in terms of land position, accessibility to markets, price and markets for products that might be produced and sold.</p> <p><i>When reporting information and estimates for coal deposits, the key principles and purpose of the Code apply and should be borne in mind. The requirements for coal are generally similar to those for other commodities with the replacement of terms such as “mineral” by “coal” and “grade” by “quality”. The pre-existing guidelines for coal exploration, estimation of Coal Resources and Reserves in India shall not override the provisions and intentions of the IMIC for Public Reporting. The Registered Competent Persons should as always exercise their judgement in the application of these guidelines to ensure they are appropriate to the circumstances being reported.</i></p>
<p><b>41</b></p>	<p>The terms “Mineral Resource(s)” and “Mineral Reserve(s)”, and the subdivisions of these as defined above, apply also to coal reporting, but if preferred by the reporting</p>

	<p>company, the terms “Coal Resource(s)” and “Coal Reserve(s)” and the appropriate subdivisions may be substituted.</p> <p>When reporting Coal Reserves, a clear distinction must be made between reserves where mining losses have been taken into account (sometimes described as “recoverable” or “run-of-mine”) and saleable product where both mining and processing losses have been included (sometimes referred to as marketable reserves). All reserves, by definition, include mining losses and dilution, and the use of superfluous description is discouraged. For Coal Resources, the Registered Competent Person should comment on the expected dilution and mining recovery that would occur during operations.</p>
<p><b>42</b></p>	<p>“Marketable Coal Reserves”, representing beneficiated or otherwise enhanced coal product where modifications due to processing have been considered in addition to mining factors such as dilution, may be publicly reported in conjunction with, but not instead of, reports of Coal Reserves. The basis of the predicted yield to achieve Marketable Coal Reserves should be stated.</p> <p>Since investors need to be informed on the products intended to be sold, reporting of Marketable Coal Reserves is required.</p> <p><i>Reference to the terms “coking coal” or “metallurgical coal”, or any reference to coking properties, should not be made unless specific coking properties are demonstrated by analytical results for samples from a deposit.</i></p> <p><i>Some criteria listed in Table 1 which may be critical to the evaluation of other mineral deposits, such as base metals or precious metals, will not apply to the evaluation of coal deposits. Such criteria as coal quality, cost to markets including transportation cost, location and quality of competing coal reserves, and ability to compete with such Coal Reserves to access the market, are important and should be carefully considered before declaring a Coal Reserve.</i></p> <p><i>Geological similarity between neighboring coal deposits can greatly simplify demonstration of a new Coal Resource, as well as reduce the technical and economic study requirements needed to demonstrate a Coal Reserve next to an operating mine.</i></p> <p>Geological similarity must be demonstrated by means of drill holes, mapping or other deposit-specific geoscientific evidence to a suitable level of confidence required to declare Measured and/or Indicated Resources.</p> <p><i>Mere inference of the continuity of coal thickness and quality from an operating mine onto a neighboring block or property is not sufficient to declare Measured and Indicated Resources and subsequently a Proved and Probable Reserve.</i></p> <p><i>Demonstration of geological similarity or analogy with an operating mine is usually not sufficient to demonstrate technical and economic feasibility.</i></p> <p>Factors such as access to the deposit and permitting constraints are likely to be project specific. It is the responsibility of the Registered Competent Person to ascertain that there is sufficient information to demonstrate geological similarity and to determine which Modifying Factors must be taken into account to demonstrate technical and economic feasibility with a reasonable level of confidence.</p> <p><i>When a coal deposit is scheduled to be mined at a date some distance in the future, declaration of a Coal Reserve implies reasonable expectation at the time of reporting that the necessary permits will be obtained as needed.</i></p> <p><i>Coal reserves may be held and reported by mineral property owners or managers for their strategic asset value with the specific intent for future mining by themselves or others.</i></p>

	<p>Coal Reserves must be reported as saleable product (washed coal) in addition to run-of-mine coal, or as run-of-mine coal where this is the saleable product.</p> <p><i>For coal deposits, it is common practice to report a saleable product rather than the “as mined” product, which is traditionally regarded as the Mineral Reserve for most minerals. It is important that a clarifying statement is included to ensure that the reader is fully informed as to what is being reported and the reference point at which the sale occurs. Some coal deposits may be capable of yielding products suitable for more than one application and/or specification. If considered material by the reporting entity, such multiple products should be quantified and reported.</i></p>
<p><b>Reporting of Diamond and Other Gemstone Exploration Results, Mineral Resources and Mineral Reserves</b></p>	
<p><b>43</b></p>	<p>Clauses 43 to 46 of the IMIC address matters that relate specifically to the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves for diamonds and other gemstones. Unless otherwise stated, Clauses 1 to 39 of this IMIC (including Figure 1) apply. Table 1, as part of the guidelines, should be considered persuasive when reporting Exploration Results, Mineral Resources and Mineral Reserves for diamonds and other gemstones.</p> <p><i>For the purposes of Public Reporting, the requirements for diamonds have some similarity to those of other commodities with the replacement of terms such as “mineral” by “diamond”. The term grade refers specifically to diamond content and should always be quoted in conjunction with a bottom cut-off for diamond size expressed in mm or equivalent diamond sieve. Information on diamond value (related to colour, shape, clarity and size) should be quoted in conjunction with grade estimates at the same bottom cut-off. A grade estimate may be disclosed in early stage sampling using macro diamond estimation to give a global estimate of grade before an estimate of diamond value can be made.</i></p> <p><i>Micro-diamonds typically are less than 1 mm in size and are recovered by total liberation methods applied to small samples only. Total liberation generally refers to acidization or caustic fusion of samples for micro-diamond recovery. Micro-diamond grade estimation may be used to support macro-diamond estimation once a robust and reliable micro- to macro-diamond relationship has been established.</i></p> <p><i>Diamond grade is generally quoted in carats per tonne (cpt) carats per hundred tonnes (cpht); carats per m<sup>3</sup>, or in the case of offshore and some onshore alluvial deposits the term “planar grade” in carats per m<sup>2</sup> may be used.</i></p> <p><i>The term quality should not be substituted for “grade”, since in diamond deposits these have distinctly separate meanings.</i></p> <p><i>Supplementary guidelines are available in the SAMREC Code under the Reporting of Diamond Exploration Results, Diamond Resources and Diamond Reserves (and other Gemstones, where relevant)</i></p> <p><i>The Registered Competent Persons should as always exercise their judgement in the application of these guidelines to ensure that they are appropriate to the circumstances being reported.</i></p>
<p><b>44</b></p>	<p>For Public Reports dealing with diamonds it is a requirement that any reported valuation of a parcel of diamonds be accompanied by a statement verifying the independence of the valuation and that the accompanying value (price) estimate is based on a report from a demonstrably reputable and qualified expert, with beyond the usual experience of a Registered Competent Person. The effective date of the valuation must be stated, and it must be clearly stated whether the reported estimated value (price) is actual or</p>

	<p>modeled and, in the latter case, how the modeling was carried out and by whom. Reports of diamonds recovered from sampling programs must provide material information relating to the basis on which the sample was taken and the method of recovery of the diamonds. The valuation of diamonds must state the bottom cut-off (sieve size in mm or diamond sieve number) of the diamond recovery process and whether the diamond value includes all categories of diamonds recovered above a bottom cut-off. The bottom cut-off should coincide with that used to disclose diamond grade. Values should not be reported for parcels of microdiamonds.</p> <p><i>There may be cases where valuation of macro-diamonds recovered from total liberation processes may be useful to the Registered Competent Person and may have been used in the estimation of a modeled diamond value. If such valuations were to be disclosed, then this disclosure must be done in the correct context and carefully qualified so as not to be misleading.</i></p> <p><i>In order to demonstrate that a resource has reasonable prospects for economic extraction, some appreciation of the likely stone size distribution and price is necessary, however preliminary. To determine an Inferred Resource in simple, single-facies or single-phase deposits, such information may be obtainable by representative large diameter drilling. More often, some form of bulk sampling, such as pitting and trenching, would be employed to provide larger sample parcels.</i></p> <p><i>The stone size distribution and value of diamonds per sieve-size class are critical components in the estimation of diamond value. At an early exploration stage, sampling and delineation drilling usually will not provide the required information on diamond value, which relies initially on large diameter drilling. As a project moves beyond the conceptual stage, conventional bulk sampling such as pitting, trenching or exploratory underground development will be done. It is recognized, however, that even bulk sampling will likely not recover sufficient diamonds to establish a representative diamond value, and modeling will still be required.</i></p> <p><i>Ideally the valuation parcel should be representative of size, shape, quality and color assortment of the diamonds in each geological unit of the resource. This representivity is rarely achieved, and in most instances the diamond value used in a resource estimate is a "modeled value" which should be derived by a qualified expert. The expert should provide evidence to demonstrate the geological representivity of the value by for example, stating the proportion of carats attributed to each geological unit in the resource and in the parcel being valued or modeled.</i></p> <p><i>It is also important to qualify whether a parcel for which value is to be publicized, is "run-of-mine", if any selection has taken place, and if the parcel has been separated into different categories e.g., gem, near gem, industrial or by "selling mix", prior to valuation.</i></p> <p><i>In order to progress to an Indicated Resource, and from there to a Probable Reserve, it is likely that much more extensive bulk sampling would be needed to fully determine the stone size distribution and value. Commonly such bulk samples would be obtained by underground development designed to obtain sufficient diamonds to enable a confident estimate of price.</i></p> <p>In complex deposits, it may be very difficult to ensure that the bulk samples taken are truly representative of the whole deposit. The lack of direct bulk sampling, and the uncertainty in demonstrating spatial continuity of size and price relationships should be persuasive in determining the appropriate resource category.</p>
<p><b>45</b></p>	<p>Where Diamond Resource or Diamond Reserve grades (carats per tonne) are based on correlations between the frequency of occurrence of micro-diamonds and of</p>

	<p>commercial size stones, this must be stated, the reliability of the procedure must be explained and the cut-off size sieve for micro-diamonds reported.</p> <p>Details of the laboratory facilities used for the processing of samples and the method for recovery of microdiamonds should also be disclosed.</p> <p><i>Diamond grade estimation using micro-diamond sampling would not be sufficient to declare a Diamond Resource unless sufficient macro-diamonds were also recovered to enable a robust estimate of diamond value and size frequency distribution. However, in the case of a producing mine or advanced development property, where Diamond Resources have been declared and sufficient macro-diamonds have been recovered to allow estimation of diamond value, and a preliminary size-frequency distribution can be modeled, it is permissible to extrapolate diamond values and size frequency distribution if geological homogeneity and continuity can be demonstrated. The Registered Competent Person must comment on the adequacy of the quantity of recovered macro-diamonds to estimate diamond value.</i></p> <p><i>Key issues in the micro-macro diamond grade modeling approach are the use of appropriate sampling protocols to ensure that dilution in the sample is sufficiently understood. The relationship between the micro- and macro-diamond portions of the total content curve (in situ size-frequency distribution) is critically affected by country rock dilution, diamond liberation, and diamond damage. The relative diamond recovery efficiencies of the sampling and subsequent mining and processing technologies must be addressed.</i></p> <p><i>It is also important to understand that the diamond value and size-frequency distribution may change as additional diamonds are recovered and added to the parcel used to estimate the value and size frequency distribution.</i></p>
<p><b>46</b></p>	<p>Diamond sampling does not provide a “total” assay as with many other mineral commodities. Conventional macro-diamond sample processing will not liberate or recover all the contained diamonds, and micro-diamond sample processing only reports diamonds above a cut-off size which varies between laboratories. The relative efficiencies of micro-diamond sampling and full-scale treatment and recovery technologies must be considered, through granulometry and ore dressing studies, to derive appropriate Modifying Factors in the estimation of Diamond Reserves from Diamond Resources.</p> <p>Diamond resource classification is based on Clauses 19 to 22 and on the following diamond-specific criteria:</p> <p>An Inferred Diamond Resource would be declared when the diamond parcel (the recovered stones from samples) is too small to be a reasonable representation of the full diamond assortment, Global grade and value estimates may be permissible if supported by adjacent geologically equivalent Indicated Resources.</p> <p>An Indicated Diamond Resource would be declared when sufficient diamonds have been recovered so that the shape, physical characteristics, grade and diamond value can be estimated with a reasonable level of confidence.</p> <p>A Measured Diamond Resource would be declared when sufficient diamonds have been recovered so that the shape, physical characteristics, grade and diamond value can be estimated with a high level of confidence. As a result of the complexity of Diamond Resource estimation, diamond deposits rarely achieve Measured Resource (or Proved Reserve) status. Sampling and estimation of placer deposits is particularly difficult and expensive, and thus even the assignment of Indicated status may prove difficult.</p>

## Reporting of Industrial Minerals Exploration Results, Mineral Resources and Mineral Reserves

<p><b>47</b></p>	<p>Clauses 47 to 48 of the Code address matters that relate specifically to the Public Reporting of industrial minerals, stone and aggregates of all forms. Unless otherwise stated, all other clauses in this Code, including Figure 1 and Tables 1 and 2, apply to Exploration Results, Mineral Resources and Mineral Reserves for industrial minerals.</p> <p>Industrial minerals are sold as mineral products that must meet customer specifications and volume demands. As a result, establishing the market for mineral products becomes the first step in evaluating an industrial mineral property. Customer physical and chemical specifications must be met for most industrial minerals. Specialty clays, fillers and extenders may require additional health and safety testing, plant trials, and consumer marketing tests. Such factors as quality and marketability are therefore very important and should be carefully considered before declaring Mineral Reserves.</p> <p><i>When reporting Exploration Results or Mineral Resource and Mineral Reserve estimates for industrial minerals, the key principles and purpose of the Code apply and should be borne in mind. Chemical analyses may not always be relevant, and other physical and chemical quality criteria may be more applicable (e.g., volume percent mineral). If criteria such as deleterious minerals or physical properties are of more relevance than the composition of the bulk mineral itself, then they should be reported accordingly.</i></p> <p><i>The factors underpinning the estimation of Mineral Resources and Mineral Reserves for industrial minerals are the same as those for other deposit types covered by the Code. It may be necessary, in preparing to report a Mineral Resource or Mineral Reserve, to take particular account of certain key characteristics or qualities such as likely product specifications, proximity to markets, and present access to market or ability to obtain access to market. Material aspects should be discussed in the Public Report. The market for industrial minerals and specialty metals frequently has supply and demand in a tight balance, and there are significant barriers to market entry. Reliability of continuous supply and quality is of as much if not more importance to the buyer as price. A credible market entry strategy must be part of any commodity price assumptions for mineral resources, and commitments from prospective buyers on price, quantities, and quality of product should support Mineral Reserve statements.</i></p> <p><i>For some industrial minerals, it is common practice to report the saleable product rather than the “as-mined” product, which is traditionally regarded as the Mineral Reserve. The preferred approach in the IMIC is that, if the saleable product is reported, it should be in conjunction with, not instead of, reporting of the Mineral Reserve. However, it is recognized that commercial sensitivities may not always permit this preferred style of reporting. It is important that, in all situations where the saleable product is reported, a clarifying statement is included to ensure that the reader is fully informed as to what is being reported.</i></p> <p><i>Some industrial mineral deposits may be capable of yielding products suitable for more than one application and/or specification. If considered material by the reporting entity, such multiple products should be quantified either separately or as a percentage of the bulk deposit.</i></p>
<p><b>48</b></p>	<p>With respect to industrial minerals, stone and aggregate, the Modifying Factors may be significantly more critical than geoscientific knowledge in determining Mineral Reserves. Such factors as quality, transportation, cost to markets, location and quality of competing deposits and ability to compete with such deposits to access the market,</p>



are important and should be carefully considered before declaring Mineral Resources and Mineral Reserves.

As a general rule, a Mineral Reserve cannot be declared unless there are reasonable expectations that all permits, ancillary rights and authorizations required for mining can be obtained and a viable market identified. For some minerals such as sand, gravel and aggregates, permitting requirements may be such that reasonable expectations can only be defined by comparison with competing reserves. When a deposit is scheduled to be mined at a date some distance in the future, declaration of a Mineral Reserve implies reasonable expectation at the time of reporting that the necessary markets and permits could be obtained when needed.

Industrial minerals may be exempt from price disclosure recommendations made in the Code if they must be kept confidential for business purposes.

*Some industrial minerals are sold in a highly competitive local, national and/or international market. For business and legal reasons, disclosure of price assumptions may be detrimental to the interest of shareholders and may not be advisable. Other requirements concerning pricing which are included in the Code are applicable to industrial minerals. This includes the requirement that prices be based on forward-looking estimates reflecting management's reasonable and supportable short- and long-term expectations, and that justification for such prices be documented. For properties producing more than one product, a combined product revenue stream should be used for economic evaluation.*

## TABLE 1

### CHECK LIST OF ASSESSMENT AND REPORTING CRITERIA

*Table 1 is a checklist and guideline that those preparing reports on Mineral Exploration Results Mineral Resources and Mineral Reserves should use as a reference. The checklist is not prescriptive and, as always, relevance and materiality are overriding principles that determine what information should be publicly reported. It is, however, important to report any matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources and/or Mineral Reserves.*

*In the context of complying with the Principles of the Code, comment on the relevant sections of Table 1 should be provided on an "if not, why not" basis within the Registered Competent Person's documentation and must be provided where required according to the specific requirements of Clauses 25 and 33 for significant projects in the Public Report. This is to ensure that it is clear to the investor whether items have been considered and deemed of low consequence or have yet to be addressed or resolved.*

*As always, relevance and Materiality are overriding principles that determine what information should be publicly reported, and the Registered Competent Person must provide sufficient comment on all matters that might materially affect a reader's understanding or interpretation of the results or estimates being reported. This is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results or an estimate of Mineral Resources or Ore Reserves.*

*The order and grouping of criteria in Table 1 reflect the normal systematic approach to exploration and evaluation. Criteria in the first group "Sampling Techniques and Data" apply to all succeeding groups. In the remainder of the checklist, criteria listed in preceding groups would often apply to succeeding groups and should be considered when estimating and reporting.*

*It is the responsibility of the Competent Person to consider all the criteria listed below and any additional criteria that should apply to the study of a particular project or operation. The relative importance of the criteria will vary with the particular project and the legal and economic conditions pertaining at the time of determination.*

*In some cases it will be appropriate for a Public Report to exclude some commercially sensitive information. A decision to exclude commercially sensitive information would be a decision for the company issuing the Public Report, and such a decision should be made in accordance with any relevant corporations regulations in that jurisdiction.*

*In cases where commercially sensitive information is excluded from a Public Report, the report should provide summary information (for example the methodology used to determine economic assumptions where the numerical value of those assumptions are commercially sensitive) and context for the purpose of informing investors or potential investors and their advisers.*

**Section 1. Sampling Techniques and Data**  
(Criteria in this group apply to all succeeding groups)

<b>Criteria</b>	<b>Explanation</b>
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>• <i>Nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma probes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</i></li> <li>• <i>Include reference to measures taken to ensure sample representativeness and the appropriate calibration of any measurement tools or systems used.</i></li> <li>• <i>Aspects of the determination of mineralisation that are Material to the Public Report. In cases where “industry standard” work has been done this would be relatively simple (e.g., “reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay”). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g. submarine nodules) may warrant disclosure of detailed information.</i></li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>• <i>Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (e.g. core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).</i></li> </ul>
<b>Drill sample recovery</b>	<ul style="list-style-type: none"> <li>• <i>Method of recording and assessing core and chip sample recoveries and results assessed.</i></li> <li>• <i>Measures taken to maximise sample recovery and ensure representative nature of the samples.</i></li> <li>• <i>Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.</i></li> </ul>
<b>Logging</b>	<ul style="list-style-type: none"> <li>• <i>Whether core and chip samples have been logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or trench, channel etc.) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>
<b>Sub-sampling Techniques and sample preparation</b>	<ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representativeness of samples.</i></li> <li>• <i>Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> <li>• <i>A statement as to the security measures taken to ensure sample security and sample integrity is recommended.</i></li> </ul>
<p><b>Quality of assay data and laboratory tests</b></p>	<ul style="list-style-type: none"> <li>• <i>The nature, quality, type and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.</i></li> <li>• <i>Nature of quality control procedures adopted (e.g. sample size standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.</i></li> <li>• <i>Mention the name and location of each analytical or testing laboratory used, and any relationship of the laboratory to the issuer.</i></li> <li>• <i>Laboratory certifications by element, analytical method, and including agency that granted certification.</i></li> </ul>
<p><b>Verification of sampling and assaying</b></p>	<ul style="list-style-type: none"> <li>• <i>The verification of significant intersections by either independent or alternative company personnel.</i></li> <li>• <i>The use of twinned hole deflections or duplicate samples</i></li> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</i></li> <li>• <i>Verification of results of any significantly higher grade intervals within a lower grade intersection</i></li> </ul>
<p><b>Location of data points</b></p>	<ul style="list-style-type: none"> <li>• <i>Accuracy and quality of surveys used to locate drill holes (collar and downhole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</i></li> <li>• <i>Specification of the grid system used.</i></li> <li>• <i>Quality and adequacy of topographic control. Locality plans</i></li> </ul>

<p><b>Data spacing and distribution</b></p>	<ul style="list-style-type: none"> <li>• <i>Data spacing for reporting of Exploration Results.</i></li> <li>• <i>Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Mineral Reserve estimation procedure(s) and classifications applied.</i></li> <li>• <i>Whether sample compositing has been applied.</i></li> </ul>
<p><b>Reporting Archives</b></p>	<ul style="list-style-type: none"> <li>• <i>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) for preparing the report.</i></li> </ul>
<p><b>Orientation of data in relation to geological structure</b></p>	<ul style="list-style-type: none"> <li>• <i>Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.</i></li> <li>• <i>If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.</i></li> </ul>
<p><b>Audits or reviews</b></p>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of sampling techniques and data.</i></li> </ul>
<p><b>Site visits</b></p>	<ul style="list-style-type: none"> <li>• <i>Comment on any site visits undertaken by the Registered Competent Person and the outcome of those visits.</i></li> <li>• <i>If no site visits have been undertaken, indicate why this is the case</i></li> </ul>
<p><b>Section 2. Reporting of Exploration Results</b> (Criteria listed in the preceding section apply also to this section)</p>	
<p><b>Mineral rights and land ownership.</b></p>	<ul style="list-style-type: none"> <li>• <i>Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.</i></li> <li>• <i>The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area</i></li> </ul>
<p><b>Location &amp; Description</b></p>	<ul style="list-style-type: none"> <li>• <i>Description of location (country, state or province, district, tehsil or taluk, village, survey No., latitude and longitude, etc.) ownership including agreements or material issues with third parties such as joint ventures partnership overriding royalties.</i></li> <li>• <i>A map showing location and access to all important features including adjacent or nearby properties, infrastructure features, any environmental sensitive zone/national parks/wildlife sanctuary/bird sanctuary/forest etc.</i></li> <li>• <i>Include and reference a location or index map and more detailed maps showing all important features described in the text, including all relevant cadastral and other infrastructure features.</i></li> </ul>

	<p><i>If adjacent or nearby properties have an important bearing to the report, then their location and common mineralised structures should be included on the maps. Reference all information used from other sources. All maps, plans and sections noted in this checklist, should be legible, and include a legend, coordinates, coordinate system, scale bar and north arrow.</i></p> <ul style="list-style-type: none"> <li>• <i>Diagrams or illustrations should be legible, annotated and explained where necessary.</i></li> <li>• <i>Precise map of the Leasehold containing geographical co-ordinates and revenue survey particulars, demarcated using appropriate survey tools such as total station and differential global positioning system and divided into forest land, land owned by the State Government and land not owned by the State Government.</i></li> </ul>
<p><b>Accessibility, Climate, and Physiography</b></p>	<ul style="list-style-type: none"> <li>• <i>General geographical features, elevation, and flora and fauna. Nearest villages, towns and cities, nearest roads, railway, sea port and airport.</i></li> <li>• <i>Climate and length of operating season.</i></li> <li>• <i>Status of surface rights for mining and processing, and allied activities</i></li> </ul>
<p><b>Legal aspects and Tenure</b></p>	<ul style="list-style-type: none"> <li>• <i>The <b>tenure</b> and description should be verified by the Registered Competent Person and he must understand tenure legalities, including</i></li> <li>• <i>Tenure granted with conditions, the nature of issuer’s rights (e.g. prospecting and/or mining) and the right to use the surface of the properties to which these rights relate.</i></li> <li>• <i>The principle terms and conditions of all existing agreements, and details of those to be obtained (such as, but not limited to, concessions, partnerships, joint ventures, access rights, leases, historical and cultural sites, wilderness or national park and environmental settings, royalties, consents, permission. Permits or authorizations)</i></li> <li>• <i>The security of the tenure held at the time of reporting or which is reasonably expected to be granted in the future along with any known impediments to obtaining the right to operate in the area.</i></li> <li>• <i>A statement of any legal proceedings that may have an influence on the rights to prospect for minerals, or an appropriate negative statement</i></li> </ul>
<p><b>Environmental Compliance and Reclamation</b></p>	<ul style="list-style-type: none"> <li>• <i>Description of Environmental factors which likely to affect the project proceedings, including contaminants in material to be disturbed and deleterious elements likely to occur in products.</i></li> <li>• <i>Grant of Environment clearance(EC) / Consent to operate (CTO)/ Forest Clearance(FC)/ Costal Regulation Zone (CRZ)</i></li> </ul>
<p><b>Infrastructure</b></p>	<ul style="list-style-type: none"> <li>• <i>Availability and sources of power, water, mining personnel, potential tailings and waste storage areas, heap leach and processing plant sites.</i></li> </ul>

<b>History</b>	<ul style="list-style-type: none"> <li>• Provide historical background to the project and adjacent area concerned, including known results of previous exploration and mining activity details, previous ownership and changes.</li> </ul>
<b>Liability</b>	<ul style="list-style-type: none"> <li>• Describe any liabilities, including rehabilitation guarantees that are pertaining to project. Provide a description of the rehabilitation liability, including, but not limited to legislative requirements, assumptions and limitations.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>• Acknowledgment and appraisal of exploration by other parties</li> </ul>
<b>Data aggregation methods</b>	<ul style="list-style-type: none"> <li>• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually material and should be stated.</li> <li>• Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> <li>• The assumptions used for any reporting of metal equivalent values should be clearly stated.</li> </ul>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li>• These relationships are particularly important in the reporting of Exploration Results.</li> <li>• If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</li> <li>• If it is not known and only the down-hole lengths are reported, there should be a clear statement to this effect (e.g., “down-hole length, true width not known”).</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li>• Appropriate legible maps and sections (with scales) and tabulation of intercepts should be included for any significant discovery being reported. These should include but not be limited to a plan view of drill hole collar locations and appropriate sectional views.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li>• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.</li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>• Comment on any site visits undertaken by the Registered Competent Person and the outcome of those visits.</li> <li>• If no site visits have been undertaken, indicate why this is the case</li> </ul>
<b>Other substantive exploration data.</b>	<ul style="list-style-type: none"> <li>• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples - size and method of treatment; metallurgical test</li> </ul>

	<i>results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.</i>
<b>Future work</b>	<ul style="list-style-type: none"> <li>• <i>The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling).</i></li> <li>• <i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>

<p><b>Section 3. Estimation and Reporting of Mineral Resources</b> <i>(criteria listed in section 1, and where relevant in section 2, also apply to this section)</i></p>	
<b>Database integrity</b>	<ul style="list-style-type: none"> <li>• <i>Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.</i></li> <li>• <i>Data verification and/or validation procedures used.</i></li> </ul>
<b>Site visits</b>	<ul style="list-style-type: none"> <li>• <i>Comment on any site visits undertaken by the Registered Competent Person and the outcome of those visits.</i></li> <li>• <i>If no site visits have been undertaken, indicate why this is the case</i></li> </ul>
<b>Geological interpretation</b>	<ul style="list-style-type: none"> <li>• <i>Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.</i></li> <li>• <i>Nature of the data used and of any assumptions made.</i></li> <li>• <i>The use of geology in guiding and controlling Mineral Resource estimation.</i></li> <li>• <i>The effect, if any, of alternative interpretations on Mineral Resource estimation.</i></li> <li>• <i>The factors affecting continuity, both of grade and geology.</i></li> </ul>
<b>Dimensions</b>	<ul style="list-style-type: none"> <li>• <i>The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.</i></li> </ul>
<b>Estimation and modelling techniques</b>	<ul style="list-style-type: none"> <li>• <i>The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters, and maximum distance of extrapolation from data points.</i></li> <li>• <i>The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.</i></li> <li>• <i>The assumptions made regarding recovery of by-products.</i></li> <li>• <i>Estimation of deleterious elements or other non-grade variables of economic significance (e.g., sulphur for acid mine drainage characterisation).</i></li> <li>• <i>In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.</i></li> </ul>



	<ul style="list-style-type: none"> <li>• Any assumptions behind modelling of selective mining units (e.g., non-linear kriging).</li> <li>• Any assumptions about correlation between variables.</li> <li>• The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.</li> <li>• Detailed description of the method used and the assumptions made to estimate tonnages and grades (section, polygon, inverse distance, geostatistical, or other method).</li> <li>• Description of how the geological interpretation was used to control the resource estimates.</li> <li>• Discussion of basis for using or not using grade cutting or capping. If a computer method was chosen, description of programmes and parameters used.</li> <li>• Geostatistical methods are extremely varied and should be described in detail. The method chosen should be justified. The geostatistical parameters, including the variogram, and their compatibility with the geological interpretation should be discussed. Experience gained in applying geostatistics to similar deposits should be taken into account.</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li>• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.</li> </ul>
<b>Cut-off parameters</b>	<ul style="list-style-type: none"> <li>• The basis of the adopted cut-off grade(s) or quality parameters applied, including the basis, if appropriate, of equivalent metal formulae.</li> </ul>
<b>Mining factors or assumptions</b>	<ul style="list-style-type: none"> <li>• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It may not always be possible to make assumptions regarding mining methods and parameters when estimating Mineral Resources. Where no assumptions have been made, this should be reported.</li> <li>• In order to demonstrate realistic prospects for eventual economic extraction, basic assumptions are necessary. Examples include access issues (shafts, declines etc.), geotechnical parameters (pit slopes, stope dimensions etc.), infrastructure requirements and estimated mining costs. All assumptions should be clearly stated.</li> </ul>
<b>Environment Compliance and Reclamation assumption</b>	<ul style="list-style-type: none"> <li>• Description of environmental factors could have a significant impact on the project feasibility and possible means of mitigation.</li> <li>• Assumptions regarding generated waste and process residue disposal. It is always part of the process of determining reasonable prospects for eventual economic extraction and to consider the potential environmental impacts of the mining projects, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.</li> <li>• Progress of environmental, culture and socio- economic baseline studies.</li> </ul>

<b>Infrastructure</b>	<ul style="list-style-type: none"> <li>• <i>It is reasonable to assume that necessary infrastructure or facilities could be built or accessed for the project.</i></li> </ul>
<b>Social License</b>	<ul style="list-style-type: none"> <li>• <i>Discussion of Potential social or community related requirements and plans and the status of negotiations or agreements with local communities and other stakeholders.</i></li> <li>• <i>Consideration of “Conflict Minerals” regulations.</i></li> <li>• <i>Sustainable development to support advanced project drilling and sampling.</i></li> <li>• <i>Training programs.</i></li> <li>• <i>Public reports should discuss early consideration of ecological, environmental, social, health and safety impacts around the project location and its affect over neighbouring communities, employees, contractors and customers.</i></li> </ul>
<b>Others</b>	<ul style="list-style-type: none"> <li>• <i>Any other potential obstacles affecting the mining operation</i></li> </ul>
<b>Metallurgical factors or assumptions</b>	<ul style="list-style-type: none"> <li>• <i>The metallurgical process proposed and the appropriateness of that process to the type of mineralisation. It may not always be possible to make assumptions regarding metallurgical treatment processes and parameters when reporting Mineral Resources. Where no assumptions have been made, this should be reported.</i></li> <li>• <i>In order to demonstrate realistic prospects for eventual economic extraction, basic assumptions are necessary. Examples include the extent of metallurgical test work, recovery factors, and allowances for by-product credits or deleterious elements, infrastructure requirements and estimated processing costs. All assumptions should be clearly stated.</i></li> </ul>
<b>Bulk density</b>	<ul style="list-style-type: none"> <li>• <i>Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.</i></li> <li>• <i>The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity etc.) moisture and differences between rock and alteration zones within the deposit.</i></li> <li>• <i>Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.</i></li> </ul>
<b>Classification</b>	<ul style="list-style-type: none"> <li>• <i>The basis for the classification of the Mineral Resources into varying confidence categories.</i></li> <li>• <i>Whether appropriate account has been taken of all relevant factors. i.e., relative confidence in tonnage/grade computations, confidence in continuity of geology and metal values, quality, quantity and distribution of the data.</i></li> <li>• <i>Whether the result appropriately reflects the Registered Competent Person(s)’ view of the deposit.</i></li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of Mineral Resource estimates.</i></li> </ul>

<p><b>Discussion of relative accuracy /confidence</b></p>	<ul style="list-style-type: none"> <li>• Where appropriate a statement of the relative accuracy and/or confidence in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Registered Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.</li> <li>• The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages or volumes, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</li> <li>• These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</li> </ul>
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### **Section 4. Estimation and Reporting of Mineral Reserves**

*(Criteria listed in section 1, and where relevant in sections 2 and 3, also apply to this section)*

<p><b>Mineral Resource estimate for conversion to Mineral Reserves</b></p>	<ul style="list-style-type: none"> <li>• Description of the Mineral Resource estimate used as a basis for the conversion to a Mineral Reserve.</li> <li>• Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Mineral Reserves.</li> </ul>
<p><b>Site visits</b></p>	<ul style="list-style-type: none"> <li>• Comment on any site visits undertaken by the Registered Competent Person and the outcome of those visits.</li> <li>• If no site visits have been undertaken indicate why this is the case.</li> </ul>
<p><b>Study status</b></p>	<ul style="list-style-type: none"> <li>• The type and level of study undertaken to enable Mineral Resources to be converted to Mineral Reserves.</li> <li>• The IMIC does not require that a final Feasibility study has been undertaken to convert Mineral Resources to Mineral Reserves, but it does require that studies to at least Pre-Feasibility level will have determined a mine plan that is technically achievable and economically viable, and that all Modifying Factors have been considered.</li> </ul>
<p><b>Cut-off parameters</b></p>	<ul style="list-style-type: none"> <li>• The basis of the cut-off grade(s) or quality parameters applied, including the basis, if appropriate, of equivalent metal formulae. The cut-off parameter may be economic value per block rather than grade.</li> </ul>
<p><b>Mining factors or assumptions</b></p>	<ul style="list-style-type: none"> <li>• The method and assumptions used to convert the Mineral Resource to a Mineral Reserve (i.e. either by application of appropriate factors by optimisation or by preliminary or detailed design).</li> <li>• The choice of, the nature and the appropriateness of the selected mining method(s), the size of the selected mining unit (length, width, height) and other mining parameters including associated design issues such as pre-strip, access, etc.</li> </ul>

	<ul style="list-style-type: none"> <li>• <i>The assumptions made regarding geotechnical parameters (e.g., pit slopes, stope sizes, etc.), grade control and pre-production drilling.</i></li> <li>• <i>The major assumptions made and Mineral Resource model used for pit optimisation (if appropriate).</i></li> <li>• <i>The mining dilution factors, mining recovery factors, and minimum mining widths used.</i></li> <li>• <i>The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.</i></li> <li>• <i>The infrastructure requirements of the selected mining methods. Where available, the historic reliability of the performance parameters.</i></li> </ul>
<p><b>Environmental Compliance and Reclamation</b></p>	<ul style="list-style-type: none"> <li>• <i>The necessary permits have been obtained, or there is reasonable basis to believe that all permits required for the project can be obtained in a timely manner.</i></li> <li>• <i>Description of yearly environmental compliance methods and costs, including reclamation, bonding, and closure plan and costs.</i></li> <li>• <i>The status of studies of potential environmental impacts studies and status of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.</i></li> </ul>
<p><b>Infrastructure</b></p>	<ul style="list-style-type: none"> <li>• <i>Necessary infrastructure facilities have been designed (which may include processing plant, tailings dam, leaching facilities, waste dumps, road and/or rail accesses, ports, power supply, water supply, pipelines, offices, housing, security).</i></li> <li>• <i>Detailed map showing location of infrastructure.</i></li> <li>• <i>Construction schedule developed.</i></li> </ul>
<p><b>Social</b></p>	<ul style="list-style-type: none"> <li>• <i>Social management plan and program over the entire project, community and other stakeholder related requirements and agreements, and matters leading to social licence to operate.</i></li> <li>• <i>Consideration of “Conflict Minerals” regulations.</i></li> <li>• <i>Sustainable development to support construction and operation.</i></li> <li>• <i>Training programs, local vendor development plan.</i></li> <li>• <i>Evaluation of social and political risk and mitigation.</i></li> </ul>
<p><b>Other</b></p>	<ul style="list-style-type: none"> <li>• <i>To the extent relevant, the impact of the following on the likely viability of a project.</i></li> <li>• <i>While any other material information affecting the project should be discussed, no material impediments to the profitable exploitation of the property should remain.</i></li> <li>• <i>Material uncertainties about the geology, extraction, processing, metallurgical, environmental, infrastructure, marketing, social license, and legal requirements have been mitigated or eliminated so that a Registered Competent Person, acting reasonably, can determine if all or part of the Mineral Resource may be converted to a Mineral Reserve at the time of reporting.</i></li> <li>• <i>The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government</i></li> </ul>

	<p><i>and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.</i></p>
<p><b>Metallurgical factors or assumptions</b></p>	<ul style="list-style-type: none"> <li>• <i>The metallurgical process proposed and the appropriateness of that process to the style of mineralisation.</i></li> <li>• <i>Whether the metallurgical process is well-tested technology or novel in nature.</i></li> <li>• <i>The nature, amount and representativeness of metallurgical test work undertaken and the metallurgical recovery factors applied.</i></li> <li>• <i>Any assumptions or allowances made for deleterious elements.</i></li> <li>• <i>The existence of any bulk sample or pilot scale test work and the degree to which such samples are representative of the orebody as a whole.</i></li> <li>• <i>The tonnages and grades reported for Mineral Reserves should state clearly whether these are in respect of material to the plant or after recovery. Comment on existing plant and equipment, including an indication of replacement and salvage value.</i></li> </ul>
<p><b>Cost and revenue factors</b></p>	<ul style="list-style-type: none"> <li>• <i>The derivation of, or assumptions made, regarding projected capital costs in the study.</i></li> <li>• <i>The methodology used to estimate operating costs.</i></li> <li>• <i>Allowances made for the content of deleterious elements.</i></li> <li>• <i>The derivation of assumptions made of metal or commodity price(s), for the principal minerals and co- products.</i></li> <li>• <i>The source of exchange rates used in the study.</i></li> <li>• <i>Derivation of transportation charges.</i></li> <li>• <i>The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc.</i></li> <li>• <i>The allowances made for royalties payable, both Government and private.</i></li> <li>• <i>The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc.</i></li> <li>• <i>The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.</i></li> </ul>
<p><b>Market assessment</b></p>	<ul style="list-style-type: none"> <li>• <i>The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future.</i></li> <li>• <i>A customer and competitor analysis along with the identification of likely market windows for the product.</i></li> <li>• <i>Price and volume forecasts and the basis for these forecasts.</i></li> <li>• <i>For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.</i></li> </ul>
<p><b>Economic</b></p>	<ul style="list-style-type: none"> <li>• <i>The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc.</i></li> </ul>

	<ul style="list-style-type: none"> <li>• <i>NPV ranges and sensitivity to variations in the significant assumptions and inputs.</i></li> </ul>
<b>Classification</b>	<ul style="list-style-type: none"> <li>• <i>The basis for the classification of the Mineral Reserves into varying confidence categories.</i></li> <li>• <i>Whether the result appropriately reflects the Registered Competent Person(s)' view of the deposit.</i></li> <li>• <i>The proportion of Probable Mineral Reserves which have been derived from Measured Mineral Resources (if any).</i></li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>• <i>The results of any audits or reviews of Mineral Reserve estimates.</i></li> </ul>
<b>Discussion of relative accuracy/confidence</b>	<ul style="list-style-type: none"> <li>• <i>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Reserve estimate using an approach or procedure deemed appropriate by the Registered Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate.</i></li> <li>• <i>The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.</i></li> <li>• <i>Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Mineral Reserve viability, or for which there are remaining areas of uncertainty at the current study stage.</i></li> <li>• <i>It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</i></li> </ul>

**TABLE 2**  
**Study Accuracy Ranges for Capital and Operating Cost Estimates**

*Levels of effort required for components of Technical Studies and their attendant accuracy levels have been the subject of considerable debate and difference of opinion within the mining community. The IMIC has drawn on SAMREC (2016) and the 3<sup>rd</sup> Edition of the Mining Engineering Handbook (2011) to provide standards to be used by the Competent Person in preparing Technical Studies. Standards issued by AACE may also be useful. As used in the table, “historic” implies information that may be available and still relevant from similar projects. The term “benchmark” could also be interchangeably used if current data from similar projects are used. In Technical Studies, the Competent Person should provide the basis for capital and operating cost estimates and an assessment of the level of accuracy for at least the categories listed below.*

*Technical Study components should be as detailed as follows:*

<b>General</b>	<b>Scoping Study</b>	<b>Pre-Feasibility Study</b>	<b>Feasibility Study</b>
<b>Resource Categories</b>	<i>Mostly Inferred</i>	<i>Mostly Indicated</i>	<i>Measured and Indicated</i>
<b>Reserve Categories</b>	<i>None</i>	<i>Mostly Probable</i>	<i>Proved and Probable</i>
<b>Mining Method and Geotechnical Constraints</b>	<i>Conceptual</i>	<i>Preliminary options</i>	<i>Detailed and optimised</i>
<b>Mine Design</b>	<i>None or high-level conceptual</i>	<i>Preliminary mine plan and schedule</i>	<i>Detailed mine plan and schedule</i>
<b>Scheduling</b>	<i>Annual Approximation</i>	<i>Quarterly to annual</i>	<i>Monthly for much of payback period</i>
<b>Mineral Processing</b>	<i>Metallurgical test work</i>	<i>Preliminary options</i>	<i>Detailed and optimised</i>
<b>Permitting- (Water, Power, Mining, Prospecting and Environmental)</b>	<i>Required permitting listed</i>	<i>Preliminary applications submitted</i>	<i>Preliminary applications submitted</i>
<b>Social Licence to Operate</b>	<i>Initial contact with local communities</i>	<i>Preliminary applications submitted</i>	<i>Contracts/agreements in place with local communities and municipalities (local government)</i>
<b>Risk Tolerance</b>	<i>High</i>	<i>Medium</i>	<i>Low</i>

<b>Capital Cost Category</b>	<b>Scoping Study</b>	<b>Pre-Feasibility Study</b>	<b>Feasibility Study</b>
<i>Basis of Estimate to include the following areas: Civil/structural, architectural, piping/HVAC, electrical, instrumentation, construction labor, productivity, material volumes/amounts, material/equipment, pricing, infrastructure</i>	<i>Order-of-magnitude, based on historic data or factoring. Engineering &lt;5% complete</i>	<i>Estimated from historic factors or percentages and vendor quotes based on material volumes. Engineering at 5 to 15% complete</i>	<i>Detailed from engineering at 15% to 25% complete, estimated material take-off quantities, and multiple vendor quotations</i>
<i>Contractors</i>	<i>Included in unit cost or as a percentage of total cost</i>	<i>Percentage of direct cost by area for contractors; historic for subcontractors</i>	<i>Written quotes from contractor and subcontractors</i>
<i>Engineering, procurement, and construction management (EPCM)</i>	<i>Percentage of estimated construction cost</i>	<i>Percentage of detailed construction cost</i>	<i>Engineered estimate derived from first principles</i>
<i>Pricing</i>	<i>FOB mine site, including taxes and duties</i>	<i>FOB mine site, including taxes and duties</i>	<i>FOB mine site, including taxes and duties</i>
<i>Owner's costs</i>	<i>Historic estimate</i>	<i>Estimate from experience, factored from similar project</i>	<i>Estimate prepared from detailed zero-based budget</i>
<i>Environmental compliance</i>	<i>Factored from historic estimate</i>	<i>Estimate from experience, factored from similar project</i>	<i>Estimate prepared from detailed zero-based budget for design engineering and specific permit requirements</i>
<i>Escalation</i>	<i>Not considered</i>	<i>Based on Company's current budget percentage</i>	<i>Based on cost area with risk</i>
<i>Accuracy Range</i>	<i>± 50%</i>	<i>± 25%</i>	<i>± 15%</i>
<i>Typical contingency (allowance for items not</i>	<i>25%</i>	<i>15%</i>	<i>10% (actual to be determined based on risk analysis)</i>



<i>specified in scope that will be needed)</i>			
<b>Operating Cost Category</b>	<b>Scoping Study</b>	<b>Pre-Feasibility Study</b>	<b>Feasibility Study.</b>
<i>Basis</i>	<i>Order-of-magnitude estimate</i>	<i>Quantified estimates with some factoring</i>	<i>Describes the basis of the estimate; detailed from zero-based budget; minimal factoring</i>
<i>Operating quantities</i>	<i>General</i>	<i>Specific estimates with some factoring</i>	<i>Detailed estimates</i>
<i>Unit costs</i>	<i>Based on historic data for factoring</i>	<i>Estimates for labour, power, and consumables, some factoring</i>	<i>Letter quotes from vendors; minimal factoring</i>
<i>Accuracy Range</i>	<i>± 35%</i>	<i>± 25%</i>	<i>± 15%</i>
<i>Typical contingency (allowance for items not specified in scope that will be needed)</i>	<i>25%</i>	<i>15%</i>	<i>10% (actual to be determined based on risk analysis)</i>

Modified from SME Mining Engineering Handbook, 3<sup>rd</sup> Edition, 2011, pages 300 and 301, Tables 5.1-1, 5.1-2 and 5.1-3.

## Appendix 1 Generic Terms and Related terms

Throughout the Code, certain words are used in a general sense when a more specific meaning might be attached to them by particular commodity groups within the industry. In order to avoid unnecessary duplication, a non- exclusive list of generic terms and related term is tabulated below together with other terms that may be regarded as synonymous for the purposes of this document.

<b>Generic Term</b>	<b>Related terms</b>	<b>Intended generalised meaning</b>
<i>assumption</i>	<i>value judgements</i>	<i>The Registered Competent Person in general makes value judgements when making assumptions regarding information not fully supported by test work.</i>
<i>Registered Competent Person</i>	<i>Qualified Person (Canada), Qualified Competent Person (Chile)</i>	<i>Refer to the Clause 11 of the Code for the definition of a Registered Competent Person. Any reference in the Code to the singular (a Registered Competent Person) includes a reference to the plural (Registered Competent Persons). It is noted that reporting in accordance with the Code is commonly a team effort.</i>
<i>cut-off grade</i>	<i>product specifications</i>	<i>The lowest grade, or quality, of mineralised material that qualifies as economically mineable and available in a given deposit. May be defined on the basis of economic evaluation, or on physical or chemical attributes that define an acceptable product specification.</i>
<i>grade</i>	<i>quality, assay, analysis (that is value returned by the analysis)</i>	<i>Any physical or chemical measurement of the characteristics of the material of interest in samples or product. Note that the term quality has special meaning for diamonds and other gemstones. The units of measurement should be stated when figures are reported.</i>
<i>metallurgy</i>	<i>processing, beneficiation, preparation, concentration</i>	<i>Physical and/or chemical separation of constituents of interest from a larger mass of material. Methods employed to prepare a final marketable product from material as mined. Examples include screening, flotation, magnetic separation, leaching, washing, roasting, etc.</i>  <i>Processing is generally regarded as broader than metallurgy and may apply to non-metallic materials where the term metallurgy would be inappropriate.</i>
<i>mineralisation</i>	<i>type of deposit, orebody, style of mineralisation.</i>	<i>Any single mineral or combination of minerals occurring in a mass, or deposit, of economic interest. The term is intended to cover all forms in which mineralisation might</i>

<b>Generic Term</b>	<b>Related terms</b>	<b>Intended generalised meaning</b>
		<i>occur, whether by class of deposit, mode of occurrence, genesis or composition.</i>
<i>mining</i>	<i>quarrying</i>	<i>All activities related to extraction of metals, minerals and gemstones from the earth whether surface or underground, and by any method (e.g., quarries, open cast, open cut, solution mining, dredging, etc)</i>
<i>Mineral Reserves</i>	<i>Ore Reserves</i>	<i>“Ore Reserves” is preferred under the JORC Code but “Mineral Reserves” is in common use in other countries and is generally accepted. Other descriptors can be used to clarify the meaning (e.g., Coal Reserves, Diamond Reserves, etc).</i>
<i>recovery</i>	<i>yield</i>	<i>The percentage of material of interest that is extracted during mining and/or processing. A measure of mining or processing efficiency.</i>
<i>significant project</i>	<i>material project</i>	<i>An exploration or mineral development project that has or could have a significant influence on the market value or operations of the listed company, and/or has specific prominence in Public Reports and announcements.</i>
<i>tonnage</i>	<i>quantity, volume</i>	<i>An expression of the amount of material of interest irrespective of the units of measurement (which should be stated when figures are reported).</i>

## **Appendix 2 Registered Competent Person's Consent Form**

*Companies reporting Exploration Targets, Exploration Results, Mineral Resources or Mineral Reserves are reminded that while a public report is the responsibility of the company acting through its Board of Directors, Clause 8 requires that any such report "must be based on, and fairly reflect the information and supporting documentation prepared by a Registered Competent Person or Person". Clause 8 also requires that the "report shall be issued with the prior written consent of the Registered Competent Person or Persons as to the form and context in which it appears".*

*To assist Registered Competent Persons and companies to comply with these requirements, and to emphasise the need for companies to obtain the prior written consent of each Registered Competent Person for their material to be included in the form and context in which it appears in the public report, NACRI have developed a registered Competent Person's Consent Form that incorporate the requirements of the IMIC.*

*The completion of a consent form, whether in the format provided or in an equivalent form, is recommended as good practice and provides readily available evidence that the required prior written consent has been obtained.*

*Having the consent form witnessed by a peer professional society member is considered leading practice and is strongly encouraged.*

*The Registered Competent Person's Consent Form(s), or other evidence of the Registered Competent Person's written consent, should be retained by the company and the Registered Competent Person to ensure that the written consent can be promptly provided if required.*

July 5, 2019  
IMIC

*[Letterhead of Registered Competent Person or Registered Competent Person's employer]*

**Registered Competent Person's Consent Form**  
Pursuant to the requirements of Clause 8 of the IMIC 2019 Edition  
(Written Consent Statement)

**Report name**

---

*(Insert name or heading of Report to be publicly released) ("Report")*

---

*(Insert name of company releasing the Report)*

---

*(Insert name of the deposit to which the Report refers)*

If there is insufficient space, complete the following sheet and sign it in the same manner as this original sheet.

---

*(Date of Report)*

July 5, 2019  
IMIC

## Statement

I/We,

---

*(Insert full name(s))*

confirm that I am the Registered Competent Person for the Report and:

- I have read and understood the requirements of the 2019 Edition of the Indian Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (IMIC, 2019 Edition).
- I am a Registered Competent Person as defined by the IMIC, 2019 Edition, having five years' experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.
- I am a Member of a Professional Organisation (PO) < insert name>, or a Recognised Professional Organisation RPO <insert name> included in a list promulgated by NACRI from time to time.
- I have reviewed the Report to which this Consent Statement applies.

I am a full time employee of

---

*(Insert company name)*

Or

I am a consultant working for

---

*(Insert company name)*

and have been engaged by

---

*(Insert company name)*

to prepare the documentation for

---

*(Insert deposit name)*

on which the Report is based, for the period ended

---

*(Insert date of Resource/Reserve statement)*

I have disclosed to the reporting company the full nature of the relationship between myself and the company. Any issue that could be perceived by investors as a conflict of interest was carefully disclosed and included in the Public Reports.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Exploration Targets, Exploration Results, Mineral Resources and/or Mineral Reserves *(select as appropriate)*.

July 5, 2019  
IMIC

## Consent

I consent to the release of the Report and this Consent Statement by the directors of:

---

*(Insert reporting company name)*

---

Signature of Registered Competent Person

---

Date:

---

Professional Membership:

---

Membership Number:

*(insert organisation name)*

---

Signature of Witness:

---

Print Witness Name and Residence:

*(e.g., town/suburb)*



July 5, 2019  
IMIC

Additional deposits covered by the Report for which the Registered Competent Person signing this form is accepting responsibility:

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Additional reports related to the deposit for which the Registered Competent Person signing this has relevant experience:

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July 5, 2019  
IMIC

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Signature of Registered Competent Person:

Date:

Professional Membership:

*(insert organisation name)*

Membership Number:

Signature of Witness:

Print Witness Name and Residence:

*(eg town/suburb)*

## Appendix 3 Compliance Statements

Appropriate forms of compliance statements should be as follows (delete bullet points which do not apply).

For Public Reports of Exploration Targets, initial or materially changed reports of Exploration Results, Mineral Resources or Mineral Reserves or company annual reports:

- *If the required information is in the report:  
“The information in this report that relates to Exploration Targets, Exploration Results, Mineral Resources or Mineral Reserves is based on information compiled by (insert name of Registered Competent Person), a Registered Competent Person who is a Member of a “Professional Organisation” (PO) or included in a list that is posted on the NACRI website from time to time (select as appropriate and insert the name of the professional organisation of which the Registered Competent Person is a member and the Registered Competent Person’s grade of membership).”*
- *If the required information is included in an attached statement:  
“The information in the report to which this statement is attached that relates to Exploration Targets, Exploration Results, Mineral Resources or Mineral Reserves is based on information compiled by (insert name of Registered Competent Person), a Registered Competent Person who is a Member of a “Professional Organisation” (PO) or included in a list posted on the NACRI website from time to time (select as appropriate and insert the name of the professional organisation of which the Registered Competent Person is a member and the Registered Competent Person’s grade of membership).”*
- *If the Registered Competent Person is a full-time employee of the company:  
“(Insert name of Registered Competent Person) is a full-time employee of the company.”*
- *If the Registered Competent Person is not a full-time employee of the company:  
“(Insert name of Registered Competent Person) is employed by (insert name of Registered Competent Person’s employer).”*
- *The full nature of the relationship between the Registered Competent Person and the reporting Company must be declared together with the Registered Competent Person’s details. This declaration must outline and clarify any issue that could be perceived by investors as a conflict of interest.*
- *For all reports:  
“(Insert name of Registered Competent Person) has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Registered Competent Person as defined in the 2018 Edition of the “Indian Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves”. (Insert name of Registered Competent Person) consents to the inclusion in the report of the matters based on his (or her) information in the form and context in which it appears.”*

For any subsequent Public Report based on a previously issued Public Report that refers to those Exploration Results or estimates of Mineral Resources or Mineral Reserves:

*Where a Registered Competent Person has previously issued the written consent to the inclusion of their findings in a report, a company re-issuing that information to the Public whether in the form*

*of a presentation or a subsequent announcement must, state the report name, date and reference the location of the original source Public Report for public access.*

- *“The information is extracted from the report entitled (name report) created on (date) and is available to view on (website name). The company confirms that it is not aware of any new information or data that materially affects the information included in the original market announcement and, in the case of estimates of Mineral Resources or Mineral Reserves that all material assumptions and technical parameters underpinning the estimates in the relevant market announcement continue to apply and have not materially changed. The company confirms that the form and context in which the Registered Competent Person’s findings are presented have not been materially modified from the original market announcement.”*

Companies should be aware this exemption does not apply to subsequent reporting of information in the company annual report.

## Appendix 4 List of Acronyms

AIG.....	The Australian Institute of Geoscientists
AusIMM.....	The Australasian Institute of Mining and Metallurgy
CBRR.....	Comissão Brasileira de Recursos e Reservas
CIM.....	Canadian Institute of Mining, Metallurgy and Petroleum
CMMI .....	Council of Mining and Metallurgical Institutes
CCRR.....	Comision Colombiana de Recursos y Reservas Minerales
CRIRSCO .....	Committee for Mineral Reserves International Reporting Standards
Comision Minera.....	Comision Calificadora de Competencias en Recursos y Reservas Mineras
ICMM .....	International Council on Mining and Metals
IMIC.....	Indian Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves
JORC.....	The Australasian Joint Ore Reserves Committee
KAZRC.....	Kazakhstan Association for the Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves
KCMI.....	The Indonesian Joint Committee for Mineral Reserves
MRC .....	Mongolian Code for public reporting of Exploration Results, Mineral Resources and Mineral Reserves
NAEN .....	National Association for Subsoil Examination
NPV.....	Net Present Value
NROs .....	National Reporting Organisations
PERC .....	Pan-European Reserves & Resources Reporting Committee
RPO.....	Recognised Professional Organisation
SAMCODE.....	The South African Mineral Reporting Codes
SAMREC.....	The South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves

SME ..... The Society for Mining, Metallurgy & Exploration Inc

UMREK.....National Resources and Reserves Reporting Committee

UNECE ..... The United Nations Economic Commission for Europe

UNFC ..... United Nations Framework Classification for Fossil Energy and Mineral Reserves and  
Resources

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