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**To the CSA member Commission, as follows:**

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Financial and Consumer Affairs Authority of Saskatchewan  
Manitoba Securities Commission  
Ontario Securities Commission  
Autorité des marchés financiers  
Financial and Consumer Services Commission, New Brunswick  
Superintendent of Securities, Department of Justice and Public Safety, Prince Edward Island  
Nova Scotia Securities Commission  
Office of the Superintendent of Securities, Service NL  
Northwest Territories Office of the Superintendent of Securities  
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The Joint Ore Reserves Committee (JORC) of Australasia would like to thank the CSA Member Commissions for the opportunity to comment on the CSA Consultation Paper 43-101.

JORC would like to advise that a comprehensive review of the JORC Code (2012) is underway and note that several items listed for comment are items that JORC is also reviewing. JORC is currently preparing preliminary draft updates to the JORC Code and commencing stakeholder review in the third quarter of 2022.

JORC submits the comments to each of the numbered items in the following pages.

Yours sincerely,

A handwritten signature in blue ink, appearing to read "S. Hunt".

**Steve Hunt**  
**JORC Chair**  
[chair@jorc.org](mailto:chair@jorc.org)

## A. Improvement and Modernization of NI 43-101

NI 43-101	Form 43-101F1 Technical Report
<p>Requirements Applicable to Written Disclosure of Exploration Information</p> <p>3.3 (1) If an issuer discloses in writing exploration information about a mineral project on a property material to the issuer, the issuer must include in the written disclosure a summary of</p> <p>(a) the material results of surveys and investigations regarding the property;</p> <p>(b) the interpretation of the exploration information; and</p> <p>(c) the quality assurance program and quality control measures applied during the execution of the work being reported on.</p> <p>(2) If an issuer discloses in writing sample, analytical or testing results on a property material to the issuer, the issuer must include in the written disclosure, with respect to the results being disclosed,</p> <p>(a) the location and type of the samples;</p> <p>(b) the location, azimuth, and dip of the drill holes and the depth of the sample intervals;</p> <p>(c) a summary of the relevant analytical values, widths, and to the extent known, the true widths of the mineralized zone;</p> <p>(d) the results of any significantly higher grade intervals within a lower grade intersection;</p> <p>(e) any drilling, sampling, recovery, or other factors that could materially affect the accuracy or reliability of the data referred to in this subsection; and</p> <p>(f) a summary description of the type of analytical or testing procedures utilized, sample size, the name and location of each analytical or testing laboratory used, and any relationship of the laboratory to the issuer.</p>	<p>Item 1: Summary</p> <p>Item 2: Introduction</p> <p>Item 3: Reliance on Other Experts</p> <p>Item 4: Property Description and Location</p> <p>Item 5: Accessibility, Climate, Local Resources, Infrastructure and Physiography</p> <p>Item 6: History</p> <p>Item 7: Geological Setting and Mineralization</p> <p>Item 8: Deposit Types</p> <p>Item 9: Exploration</p> <p><i>Briefly describe the nature and extent of all relevant exploration work other than drilling, conducted by or on behalf of, the issuer, including</i></p> <p><i>(a) the procedures and parameters relating to the surveys and investigations;</i></p> <p><i>(b) the sampling methods and sample quality, including whether the samples are representative, and any factors that may have resulted in sample biases;</i></p> <p><i>(c) relevant information of location, number, type, nature, and spacing or density of samples collected, and the size of the area covered; and (d) the significant results and interpretation of the exploration information.</i></p> <p>Item 10: Drilling</p> <p>Item 11: Sample Preparation, Analyses and Security</p> <p>Item 12: Data Verification</p> <p>Item 13: Mineral Processing and Metallurgical Testing</p>

1. Do the disclosure requirements in the Form for a pre-mineral resource stage project provide information or context necessary to protect investors and fully inform investment decisions? Please explain.

JORC considers that items 3.3 (1) & (2) are very brief and would recommend expanding requirements. It is recommended to review the CRIRSCO Template Table 1 requirements and JORC response to Item 24 which describe the level of detail and disclosure JORC is considering adapting in its next version of the JORC Code (subject to stakeholder feedback).

2. a) Is there an alternate way to present relevant technical information that would be easier, clearer, and more accessible for investors to use than the Form? For example, would it be better to provide the necessary information in a condensed format in other continuous disclosure documents, such as a news release, annual information form or annual management's discussion and analysis, or, when required, in a prospectus?

JORC considers the completion and issuance of the relevant technical information in the required Technical Report appropriate however it would be beneficial to have that information available at the time of issue of the announcement, rather than the current requirement of delayed release.

- b) If so, for which stages of mineral projects could this alternative be appropriate, and why?

JORC considers the timely disclosure of material information at all stages of mineral projects, is important for investors to understand the context of the announcement.

3. a) Should we consider greater alignment of NI 43-101 disclosure requirements with the disclosure requirements in other influential mining jurisdictions?

JORC notes that it is only the CSA and SEC that now requires a Technical Report to be published, the trend of CRIRSCO codes is for the Competent (Qualified) Person to address all relevant and material factors as listed in Table 1 (which each jurisdiction can adapt from the CRIRSCO Template).

JORC would recommend reviewing the CRIRSCO Table 1 Template against Form 43-101F1 to identify any areas that within Form 43-101F1 that could be enhanced to provide further granularity of reporting requirements.

It is also noted that clear, concise and effective (CC&E) reporting is becoming a requirement across numerous jurisdictions, as a way to ensure investors understand the context and materiality of reported content.

- b) If so, which jurisdictions and which aspects of the disclosure requirements in those jurisdictions should be aligned, and why?

JORC would recommend reviewing Code / Reporting guidelines from the CRIRSCO members that have recently been reviewed, or are under review (e.g. PERC, JORC) to gain an understanding of reporting trends. Noting that Table 1 requirements are intended to provide greater level of guidance as to the required criteria for reporting.

4. Paragraph 4.2(5)(a) of NI 43-101 permits an issuer to delay up to 45 days the filing of a technical report to support the disclosure in circumstances outlined in paragraph 4.2(1)(j) of NI 43-101. Please explain whether this length of time is still necessary, or if we should consider reducing the 45-day period.

JORC understands that the delay of 45-day filing of the Technical Report appears to be currently necessary due to the legal due diligence that may be conducted on the Technical report after the announcement. However JORC would consider that although this appears necessary, it would be beneficial for this 45-day delay not to be required, and that the Technical Report disclosed at the time of the announcement.

**In recent years, CSA staff have observed mining issuers making use of new technologies to conduct exploration on their properties, including the use of drones. During the COVID-19 pandemic, we received inquiries from qualified persons about the possible use of remote technologies to conduct the current personal inspection.**

- 5. a) Can the investor protection function of the current personal inspection requirement still be achieved through the application of innovative technologies without requiring the qualified person to conduct a physical visit to the project?**

JORC remains supportive of the requirement for the Competent (Qualified) Person to conduct a personal site visit. JORC would consider application of innovative technologies, to be in support of a personal inspection, not a replacement of the requirement.

However, JORC would question the definition of the term 'current' in the context of 'current personal inspection, further guidance as to the timing of the inspection with regard to the activities being conducted, and consideration as to whether it is the site or the activities that are being inspected, and whether these are in support of Exploration, or Mineral Resource or Mineral Reserve estimation.

- b) If remote technologies are acceptable, what parameters need to be in place in order to maintain the integrity of the current personal inspection requirement?**

JORC would consider application of innovative technologies to be in support of a personal inspection, not a replacement. The requirement of the current personal inspection is considered to be a mandatory requirement; however it is noted that over the last 2 years with international travel restrictions having been in place, there are examples of personal inspections being managed by a team approach of Competent (Qualified) Persons (QP), whereby local QPs worked in collaboration with internationally located QPs with clear responsibility identified and accepted.

JORC also notes that the consideration of innovative technology is something that all reporting bodies should consider and is appreciative of the CSA for raising this forward-looking topic.

## B. Data Verification Disclosure Requirements

NI 43-101	Form 43-101F1 Technical Report
1.1 “data verification” means the process of confirming that data has been generated with proper procedures, has been accurately transcribed from the original source and is suitable to be used;	Item 2: Introduction - Include a description of (d) the details of the personal inspection on the property by each qualified person or, if applicable, the reason why a personal inspection has not been completed.
3.2 If an issuer discloses in writing scientific or technical information about a mineral project on a property material to the issuer, the issuer must include in the written disclosure (a) a statement whether a qualified person has verified the data disclosed, including sampling, analytical, and test data underlying the information or opinions contained in the written disclosure; (b) a description of how the data was verified and any limitations on the verification process; and (c) an explanation of any failure to verify the data.	Item 12: Data Verification of the Form addresses a core principle of NI 43-101 and is a primary function of qualified persons. Mining Reviews demonstrate that disclosure in this item is often non-compliant. For example, we do not consider any of the following to be adequate data verification procedures by the qualified person: <ul style="list-style-type: none"> <li>• QA/QC measures conducted by the issuer or laboratory;</li> <li>• database cross-checking to ensure the functionality of mining software;</li> <li>• reliance on data verification by the issuer or other qualified persons related to previously filed technical reports; and</li> </ul>

6. Is the current definition of data verification adequate, and are the disclosure requirements in section 3.2 of NI 43-101 sufficiently clear?

JORC considers the definition of the wording **data verification** "means the process of confirming that data has been generated with proper procedures" to be broad and not explicitly clear, but that the wording "has been accurately transcribed from the original source and is suitable to be used;" is clear but interpreted to limit its meaning to assay results.

7. How can we improve the disclosure of data verification procedures in Item 12 of the Form to allow the investing public to better understand how the qualified person ascertained that the data was suitable for use in the technical report?

Within the current JORC Code review process, JORC is also considering the issue of disclosure requirements of data verification. Although in draft form and currently under review, JORC is considering enhancing the requirements for data verification by listing additional requirements listed within its Table 1, that must be addressed on an 'if not, why not' basis.

We note similarities between the non-compliance issues CSA has encountered, and the additional information JORC is seeking to require, as provided below.

The following requirements are under review, but are included in this submission to provide context and to provide the content JORC is considering (also refer to response to Question 24):

<b>3.1 Exploration</b>	3.1.1	Data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e., geological observations, remote sensing results, stratigraphy, lithology, structure, alteration, mineralisation, hydrological, geophysical, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content, bulk samples etc.).
	3.1.2	Indirect methods of measurement (e.g., remote sensing, geophysical methods), with attention given to the confidence of interpretation. Reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used for instance 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. .
	3.1.3	Acknowledgement and appraisal of data from other parties, and reference to all data and information used from other sources.
	3.1.4	Distinction between data / information from the property under discussion and that derived from surrounding properties.
	3.1.5	Data sets with all relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc. included in the Competent Persons documentation
	3.1.6	Presentation of representative models and / or maps and cross sections or other two or three-dimensional illustrations of results showing location of samples, accurate drill hole collar positions, downhole surveys, exploration pits, underground workings, relevant geological data, etc.
<b>3.2 Drilling Techniques</b>	3.2.1	Type of drilling undertaken (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Banka, sonic, etc.) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit, or other type, whether core is oriented and if so, by what method, etc.).
	3.2.2	The methods for collar and downhole survey, techniques and expected accuracies of data as well as the grid system used.
<b>3.3 Primary Sample type</b>	3.3.1	A description of the nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld or fixed-position XRF instruments, etc.), These examples should not be taken as limiting the broad meaning of sampling.
<b>3.4 Sampling Method and Process</b>	3.4.1	A description of the sampling processes, including sub-sampling stages to maximise representivity of samples, whether sample sizes are appropriate to the grain size of the material being sampled and any sample compositing. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.
	3.4.2	A description of the method of recording and assessing core and chip sample recoveries and the results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples, 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.
	3.4.3	The nature of the geometry of the mineralisation with respect to the drill hole angle (if known) and the orientation of sampling to achieve unbiased sampling of possible structures, considering the deposit type. The intersection angle. The downhole lengths if the intersection angle is not known. The geometry of the mineralisation with respect to the drill hole angle and collar location, because of the importance of the relationships between mineralisation widths and intercept lengths. Justification if only downhole lengths are reported.
<b>3.5 Sample Preparation</b>	3.5.1	The cutting of a drill-core sample, e.g., whether it was split or sawn and whether quarter, half or full core was submitted for analysis.

	3.5.2	Non-core sampling, e.g., whether the sample was riffled, tube sampled, rotary split etc.; whether it was sampled wet or dry; the impact of water table or flow rates on recovery and introduction of sampling biases or contamination from above.
	3.5.3	A description of the process and method used for sample preparation, sub-sampling and size reduction (e.g. pulverize, mineral separation etc), and the likelihood of inadequate or non-representative samples (i.e., improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.).
<b>3.6 Sample Analysis</b>	3.6.1	The identity of the laboratory(s) and its accreditation status and Registration Number (e.g NATA).
	3.6.2	The analytical method, its nature, the quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.
	3.6.3	A flow chart to show sample preparation and analytical stages (if applicable).
<b>3.7 QA/QC</b>	3.7.1	The verification techniques (QA/QC) for field sampling process, e.g., the level of duplicates, blanks, reference material standards, process audits, analysis, etc.
	3.7.2	The steps taken by the Competent Person to ensure the results from the laboratory are of an acceptable quality.
<b>3.8 Sampling Governance</b>	3.8.1	The governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading, selective losses or contamination, any evidence of sample oxidation or degradation, and whether this affected sample preparation, core/hole diameter, internal and external QA/QC, and any other factors that may have resulted in or identified sample bias.
	3.8.2	The measures taken to ensure sample security and the Chain of Custody. [add external guidance]
	3.8.3	A description of retention policy and storage of physical samples (e.g., core, sample reject, etc.).
<b>3.9 Bulk Density</b>	3.9.1	The method of bulk density determination with reference to the frequency of measurements, the size, nature, and representativeness of the samples.
	3.9.2	Preliminary estimates or basis of assumptions made for bulk density.
	3.9.3	The representivity of bulk density samples.
	3.9.4	The measurement of bulk density for bulk material using methods that adequately account for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the deposit.
<b>3.10 Bulk Sampling and/or trial-mining</b>	3.10.1	The location of individual samples (including map).
	3.10.2	The size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.
	3.10.3	The method of mining and treatment.
	3.10.4	The degree to which the samples are representative of the various types and styles of mineralisation and the mineral deposit as a whole.
<b>3.11 Data Management</b>	3.11.1	The primary data elements (observation and measurements) used for the project and a description of the management and verification of these data or the database. Description of the following relevant processes: acquisition (capture or transfer), validation, integration, control, storage, retrieval and backup processes.
	3.11.2	Description of database used to load and store sample data and assay results [add external guidance on database good practice]
	3.11.3	A description of each data set recorded (e.g., geology, grade, density, quality, geo-metallurgical characteristics, and potential environmental geochemical hazards etc.), location, sample type, sample-size selection and collection methods and storage.

	3.11.4	The validation procedures used to ensure the integrity of the data to the database, e.g., transcription, input, or other errors, between its initial collection and its future use for modelling (e.g., geology, grade, density, etc.). QA/QC procedures used to check databases augmented with 'new' data have not disturbed previous versions containing 'old' data.
	3.11.5	The data audit process and frequency (including dates of these audits) and disclose any material risks identified.
<b>3.12 Quality Management System</b>	3.12.1	Whether standard operating procedures (SOP) are available for each sampling or measurement point and whether these conform to best practice.
	3.12.2	Whether the processes have been audited by the Competent Person and deemed to be conducted in accordance with those SOPs.
	3.12.3	Where no SOPs are available, whether the audit has demonstrated good practices.
	3.12.4	Whether checks and balances are continually reviewed as part of the quality control process for each sampling or measurement point.
	3.12.5	Whether the review of quality control data confirms that all sampling and measurement systems were always in control, and where they were not the Competent Person should comment on its implications with respect to the data quality objective and purpose of the data.
	3.12.6	Whether statistically significant biases exist in the sampling or measurement data. The Competent Person must comment on the impact of such biases with respect to the data quality objective and the purpose of the data.
	3.12.7	How precision is determined from the data and whether precision of the sampling or measurement data is acceptable for the style of mineralization and the purpose of the data.
	3.12.8	External laboratory checks, and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established
	3.12.9	The audit process and frequency (including dates of these audits) and disclose any material risks identified.



8. Given that the current personal inspection is integral to the data verification, should we consider integrating disclosure about the current personal inspection into Item 12 of the Form rather than Item 2(d) of the Form?

JORC considers this an interesting question, and that it is directly related to the definition of 'current personal inspection'. That is, perhaps the requirement of 'current personal inspection' be expanded to specify what the QP should assess whilst conducting the personal inspection.

It is noted that there may be overlap between what JORC calls 'site inspection' and 'audit' and that perhaps the elements of both requirements be combined, with specific activities clearly described.

For example, JORC is considering the inclusion of the following for Mineral Resource estimates, which would be required to be addressed on an 'if not, why not' basis:

<b>Introduction</b>	x	The details of the personal inspection on the property by each Competent Person or, if applicable, the reason why a personal inspection has not been completed
<b>7.1 Reviews</b>	7.1.1	Type of review (e.g. peer, internal, external), area (e.g. laboratory, drilling, data, environmental compliance, social impacts, exit/closure risks etc.), date and name of the reviewer(s) together with their recognised professional qualifications. The level of review (desk-top, on-site comparison with standard procedures, or endorsement where reviewer has checked the work to the extent they stand behind it as if it were their own work).
	7.1.2	The level and conclusions of relevant reviews. Significant deficiencies and remedial actions required
<b>7.2 Audits</b>	7.2.1	Type of audit (e.g., independent, external), area (e.g., laboratory, drilling, data, environmental compliance, social impacts, exit/closure risks etc.), date and name of the auditor(s) together with their recognised professional qualifications. The level of audit (desk-top, on-site comparison with standard procedures, or endorsement where auditor has checked the work to the extent they stand behind it as if it were their own work).
	7.2.2	The level and conclusions of relevant audits. Significant deficiencies and remedial actions required.

## C. Historical Estimate Disclosure Requirements

NI 43-101	JORC / ASX
<p>Definitions 1.1 “historical estimate” means an estimate of the quantity, grade, or metal or mineral content of a deposit that an issuer has not verified as a current mineral resource or mineral reserve, and which was prepared before the issuer acquiring, or entering into an agreement to acquire, an interest in the property that contains the deposit;</p>	<p>ASX definition An estimate of quantity and grade of mineralisation that is based on information and supporting documentation that was prepared prior to the introduction of the JORC Code and which an entity has not verified as mineral resources or ore reserves in accordance with the JORC Code</p>
<p>Disclosure of Historical Estimates 2.4 Despite section 2.2, an issuer may disclose an historical estimate, using the original terminology, if the disclosure</p> <p>(a) identifies the source and date of the historical estimate, including any existing technical report; (b) comments on the relevance and reliability of the historical estimate; (c) to the extent known, provides the key assumptions, parameters, and methods used to prepare the historical estimate; (d) states whether the historical estimate uses categories other than the ones set out in sections 1.2 and 1.3 and, if so, includes an explanation of the differences; (e) includes any more recent estimates or data available to the issuer; (f) comments on what work needs to be done to upgrade or verify the historical estimate as current mineral resources or mineral reserves; and (g) states with equal prominence that (i) a qualified person has not done sufficient work to classify the historical estimate as current mineral resources or mineral reserves; and (ii) the issuer is not treating the historical estimate as current mineral resources or mineral reserves.</p> <p>Item 6: History - To the extent known, describe (a) the prior ownership of the property and ownership changes; (b) the type, amount, quantity and general results of exploration and development work undertaken by any previous owners or operators; (c) any significant historical mineral resource and mineral reserve estimates in accordance with section 2.4 of the Instrument; and (d) any production from the property.</p>	<p>from ASX LR 5.12 Must include:</p> <ul style="list-style-type: none"> <li>• The source and date of the historical estimate</li> <li>• Whether the historical estimates use categories of mineralisation other than those defined in the JORC Code and if so, an explanation of the differences</li> <li>• The relevance and materiality of the historic estimates to the entity</li> <li>• The reliability of the historical estimates including by reference to any of the criteria in Table 1 which are relevant to understanding the reliability of the historical estimates</li> <li>• To the extent known, a summary of the work programs on which the historical estimates are based and a summary of the key assumptions, mining and processing parameters and methods used to prepare the historical estimates</li> <li>• Any more recent estimates of data relevant to the reported mineralisation available to the entity</li> <li>• The evaluation and/or exploration work that needs to be completed to verify the historical estimates as mineral resources or ore reserves in accordance with JORC Code</li> <li>• The proposed timing of any evaluation and/or any exploration work that the entity intends to undertake and a comment on how the entity intends to fund the work</li> <li>• A cautionary statement proximate to and with equal prominence as, the reported historical estimates stating that: <ul style="list-style-type: none"> <li>○ The estimates are historical estimates and not reported in accordance with the JORC Code</li> <li>○ A competent person has not done sufficient work to classify the historical estimates as mineral resources or ore reserves in accordance with the JORC Code, and</li> <li>○ It is uncertain that following evaluation and/or further exploration that the historical estimates will be able to be reported as mineral resources or ore reserves in accordance with the JORC Code</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• A statement by a named competent person or persons that the information in the market announcement, that the above listed rules is an accurate representation of the available data and studies for the material mining project.</li> </ul>
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9. Is the current definition of historical estimate sufficiently clear? If not, how could we modify the definition?

JORC considers the current definition to be generally sufficient, noting that perhaps addition of wording 'in accordance with NI 43-101' could be added, and to include situations where an estimate was prepared prior to the introduction of NI43-101.

*“historical estimate” means an estimate of the quantity, grade, or metal or mineral content of a deposit which was prepared before the issuer acquiring, or entering into an agreement to acquire, an interest in the property that contains the deposit; or **prepared prior to the introduction of NI 43-101, and that an issuer has not verified as a current mineral resource or mineral reserve in accordance with NI43-101.***

A related issue JORC is also considering, is to whether an estimate has an 'expiry date'. JORC has encountered situations where an estimate was prepared under a previous JORC Code and if re-estimated under current requirements it may lead to a material difference in that estimate.

10. Do the disclosure requirements in section 2.4 of NI 43-101 sufficiently protect investors from misrepresentation of historical estimates? Please explain.

JORC considers the intent and requirements of 2.4 are clear but suggests that the cautionary language in (f) & (g) could be more specific.

## D. Preliminary Economic Assessments

NI 43-101	Form 43-101F1 Technical Report
<p>Definitions 1.1 “preliminary economic assessment” means a study, other than a pre-feasibility or feasibility study, that includes an economic analysis of the potential viability of mineral resources;</p>	
<p>Restricted Disclosure 2.3 (3) Despite paragraph (1)(b), an issuer may disclose the results of a preliminary economic assessment that includes or is based on inferred mineral resources if the disclosure (a) states with equal prominence that the preliminary economic assessment is preliminary in nature, that it includes inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves, and there is no certainty that the preliminary economic assessment will be realized; (b) states the basis for the preliminary economic assessment and any qualifications and assumptions made by the qualified person; and (c) describes the impact of the preliminary economic assessment on the results of any pre-feasibility or feasibility study in respect of the subject property.</p>	

11. Should we consider modifying the definition of preliminary economic assessment to enhance the study’s precision? If so, how? For example, should we introduce disclosure requirements related to cost estimation parameters or the amount of engineering completed?

JORC commends CSA on asking this question, as early economic assessment is also an area JORC is reviewing albeit in relation to extent and use of a Scoping Study. JORC recognises that the outcomes are forward-looking and inclusion of disclaimers as to the forward-looking statements are necessary to protect the investor and any disclosure should not breach the jurisdictions Corporations Law.

JORC is very concerned however when it comes to the discussion of increasing precision of something based on Inferred Resources. Based on its very definition, Inferred Resources have an inherent level of uncertainty, and any addition of ‘precise’ economic parameters would surely have the potential to mislead investors as to the certainty of such economics, and indeed as to the finality of any engineering completed.

JORC would therefore be supportive of additional guidance to cost estimation parameters and engineering completed and makes reference to CRIRSCO Template Table 2, which attempts to provide guidance related to study levels. JORC has held much discussion related to the inclusions in this Table 2 and are yet to finalise its position on how to present such information as guidance material in support of the JORC Code.

12. Does the current cautionary statement disclosure required by subsection 2.3(3) of NI 43-101 adequately inform investors of the full extent of the risks associated with the disclosure of a preliminary economic assessment? Why or why not?

JORC would again reiterate that no amount of cautionary language can overcome the potential damage of precise economic statements based on Inferred Resources and low confidence level assessments.

13. Subparagraph 5.3(1)(c)(ii) of NI 43-101 triggers an independence requirement that may not apply to significant changes to preliminary economic assessments. Should we introduce a specific independence requirement for significant changes to preliminary economic assessments that is unrelated to changes to the mineral resource estimate? If so, what would be a suitable significance threshold?

NI 43-101	Form 43-101F1 Technical Report
<p>5.3 (1) A technical report required under any of the following provisions of this Instrument must be prepared by or under the supervision of one or more qualified persons that are, at the effective and filing dates of the technical report, all independent of the issuer:</p> <p>(c)(i) for the first time mineral resources, mineral reserves or the results of a preliminary economic assessment on a property material to the issuer, or</p> <p>(ii) a 100 percent or greater change in the total mineral resources or total mineral reserves on a property material to the issuer, since the issuer's most recently filed independent technical report in respect of the property.</p>	

JORC has no firm standpoint on this question, other than noting that the requirement for independence is not something that JORC considers a requirement, for preparation of Exploration Target, Mineral Resources of Mineral (Ore) Reserves.

14. Should we preclude the disclosure of preliminary economic assessments on a mineral project if current mineral reserves have been established?

JORC considers this question on preclusion dependent on how the cashflow of the mineral reserves were estimated and reported and would highlight that mineral reserves should be based on the outcomes of a higher level feasibility study (PFS or FS) so any reporting of preliminary economic assessments in this scenario should be clearly and transparently described including statements of uncertainty, so as not to mislead the reader in any way.

15. Should NI 43-101 prohibit including by-products in cash flow models used for the economic analysis component of a preliminary economic assessment that have not been categorized as measured, indicated, or inferred mineral resources? Please explain.

JORC would not consider it necessary to prohibit the inclusion of by-products on the proviso that there is adequate disclosure of the reasonable grounds for their inclusion in the preliminary economic assessment.

## E. Qualified Person Definition

NI 43-101	CIM Standard definitions 2014
<p>“qualified person” means an individual who</p> <p>(a) is an engineer or geoscientist with a university degree, or equivalent accreditation, in an area of geoscience, or engineering, relating to mineral exploration or mining;</p> <p>(b) has at least five years of experience in mineral exploration, mine development or operation, or mineral project assessment, or any combination of these, that is relevant to his or her professional degree or area of practice;</p> <p>(c) has experience relevant to the subject matter of the mineral project and the technical report;</p> <p>(d) is in good standing with a professional association; and</p> <p>(e) in the case of a professional association in a foreign jurisdiction, has a membership designation that</p> <p>(i) requires attainment of a position of responsibility in their profession that requires the exercise of independent judgment; and</p> <p>(ii) requires</p> <p>A. a favourable confidential peer evaluation of the individual’s character, professional judgement, experience, and ethical fitness; or</p> <p>B. a recommendation for membership by at least two peers, and demonstrated prominence or expertise in the field of mineral exploration or mining;</p>	<p>The Qualified Person(s) should be clearly satisfied that they could face their peers and demonstrate competence and relevant experience in the commodity, type of deposit and situation under consideration. If doubt exists, the person must either seek or obtain opinions from other colleagues or demonstrate that he or she has obtained assistance from experts in areas where he or she lacked the necessary expertise.</p> <p>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 mineralization, experience in a high nugget, vein-type mineralization such as tin, uranium etc. Should be relevant whereas experience in massive base metal deposits may not be. As a second example, for a person to qualify as a Qualified Person in the estimation of Mineral Reserves for alluvial gold deposits, he or she would need to have relevant experience in the evaluation and extraction of such deposits. Experience with placer deposits containing minerals other than gold, may not necessarily provide appropriate relevant experience for gold.</p>

16. Is there anything missing or unclear in the current qualified person definition? If so, please explain what changes could be made to enhance the definition.

JORC makes note of the current CRIRSCO Template standard definition for Competent Person being:

*A Competent Person is a minerals industry professional, who is a [National Reporting Organisation (NRO) to insert appropriate membership class and name of Professional Organisation (PO)] or other Recognised Professional Organisations (RPOs) with enforceable disciplinary processes including the powers to suspend or expel a member. A Competent Person must have a minimum of five years relevant experience in the style of mineralisation or type of deposit under consideration and in the activity which that person is undertaking.*

JORC would recommend CSA consider the wording of definition item (b) and (c) as the effect of the difference is that, in Canada, a professional could qualify as a Qualified Person with only a few weeks or months experience relevant to the situation under consideration (as long as he or she had at least five years of more general experience), whereas in Australia, South Africa, Chile and Europe a Competent Person must have at least five years’ experience relevant to the situation under consideration.

JORC considers CSA should consider bringing the Qualified Person definition into line with accepted international practice, by including the requirement for the five years relevant experience to be tied to the matters involved in the mineral project and the technical report.

The definition has and is likely to have the perverse effect of creating the situation where individuals may accept Qualified Person responsibility for Canadian reporting on a particular deposit but do not feel able to accept Competent Person responsibility for the same matters in Australia, South Africa, Chile or Europe as a result of this difference in the NI 43-101 definition. The relevant experience requirement is not, in JORC’s view, applied in a manner to provide adequate protection to investors under NI 43-101.

JORC would also note that there is a move towards non-gender specific language being adopted internationally and would therefore suggest consideration of adopting the following words (shown in bold) in item (b) *that is relevant to his or her professional degree or area of practice*’ to *that is relevant to the **individual’s** professional degree or area of practice*’.

**17. Should paragraph (a) of the qualified person definition be broadened beyond engineers and geoscientists to include other professional disciplines? If so, what disciplines should be included and why?**

JORC again notes the CRIRSCO definition does not specify requirement of engineer or geoscientist, rather *‘a minerals industry professional’*, however JORC understands that the term engineer and geoscientist have specific registration requirements, so JORC cannot comment on how a change to the definition could be achieved.

JORC would like to make CSA aware however that JORC and its parent bodies (Professional Organisations) are undertaking a considerable comprehensive review of the definition and registration /accreditation standards related to acting as a Competent Person (Qualified Person) in accordance with the JORC Code, and one such consideration presently under review is the addition of a new definition for a ‘specialist’ which would allow other technical experts (not limited to engineers, geoscientists or mineral industry professionals) to provide expertise in other areas that are implicitly linked and relevant to supporting mineral resources and mineral (ore) reserves estimates. Any information provided by a specialist would need to be accepted by the Competent (Qualified) Person as suitable for use in the context of the JORC Code requirements.

**18. Should the test for independence in section 1.5 of NI 43-101 be clarified? If so, what clarification would be helpful?**

NI 43-101	Form 43-101F1 Technical Report
Independence 1.5 In this Instrument, a qualified person is independent of an issuer if there is no circumstance that, in the opinion of a reasonable person aware of all relevant facts, could interfere with the qualified person’s judgment regarding the preparation of the technical report.	

As part of the current JORC review and in engagement with the regulator, there has been discussion as to what constitutes a ‘conflict of interest’ and how the guidance related to this can be improved.



Although the JORC Code does not necessarily require 'independence', it does require that conflicts of interest are disclosed.

The regulator has noted the following:

*We note that the Code requires practitioners to disclose any conflicts of interest and any other relationship with the company making the report. The Code however does not necessarily clarify what a conflict of interest may be. In our experience, practitioners take a narrow view on what may constitute a conflict, with many practitioners appearing to consider that conflicts of interest are limited to conflicts which may arise from potential financial gain.*

*We consider that it is appropriate for practitioners to disclose actual and perceived conflicts of interest. We consider it may assist competent persons if the Code however clarifies that conflicts of interest may not be financial in nature alone and that other present or historical relationships with the company or other parties may give rise to actual or perceived conflicts of interest.*

*As an example, we often encounter practitioners who claim there are no conflicts of interest and that they are 'independent' but then go on to disclose prior work for the company or on a mineral asset. While case by case, we consider that such work could give rise to bias or perceived bias where the practitioner may have previously declared a resource and there may be bias (actual or perceived) or an incentive (actual or perceived) to:*

- *avoid varying prior assumptions if they would negatively affect resources or reserves declared; or*
- *adopt overly optimistic assumptions to ensure a company's desires to upgrade and increase declared resources or reserves are met, in order to continue to be engaged by the company.*

*In such scenarios, we consider that the other relationship or previous work may give rise to an actual or perceived conflict and the practitioner should not be holding themselves out as conflict free or 'independent' (which, in our experience, is currently a common practice notwithstanding the risk of perceived bias). While we appreciate the Code does not necessarily require 'independence', where actual or perceived conflicts of interests are apparent we are sometimes concerned that competent persons being referred to as 'independent' can be misleading to investors. We consider further guidance on conflicts of interests in the Code may assist to alleviate this concern.*

19. Should directors and officers be disqualified from authoring any technical reports, even in circumstances where independence is not required?

JORC considers this an interesting question and notes that the JORC Code does not disqualify directors and officers from acting as Competent Person for an estimate of which it is the reporting entity, as the independence requirement does not apply when reporting under the JORC Code for exploration targets, exploration results, mineral resources, and ore (mineral) reserves.

However JORC is aware that in some circumstances the Competent (Qualified) Person could potentially be in conflict with their directors fiduciary duties, so this is an issue that needs due consideration.

## F. Current Personal Inspections

NI 43-101	Form 43-101F1 Technical Report
<p>6.2 (1) Before an issuer files a technical report, the issuer must have at least one qualified person who is responsible for preparing or supervising the preparation of all or part of the technical report complete a current inspection on the property that is the subject of the technical report.</p> <p>(2) Subsection (1) does not apply to an issuer provided that</p> <p>(a) the property that is the subject of the technical report is an early stage exploration property;</p> <p>(b) seasonal weather conditions prevent a qualified person from accessing any part of the property or obtaining beneficial information from it; and</p> <p>(c) the issuer discloses in the technical report, and in the disclosure that the technical report supports, that a personal inspection by a qualified person was not conducted, the reasons why, and the intended time frame to complete the personal inspection.</p> <p>(3) If an issuer relies on subsection (2), the issuer must</p> <p>(a) as soon as practical, have at least one qualified person who is responsible for preparing or supervising the preparation of all or part of the technical report complete a current inspection on the property that is the subject of the technical report; and</p> <p>(b) promptly file a technical report and the certificates and consents required under Part 8 of this Instrument.</p>	<p>Item 15: Mineral Reserve Estimates</p> <p>Item 16: Mining Methods</p> <p>Item 17: Recovery Methods</p> <p>Item 18: Project Infrastructure</p>

**20. Should we consider adopting a definition for a “current personal inspection”? If so, what elements are necessary or important to incorporate?**

As discussed in earlier response to Question 5 and 8, JORC would question the definition of the term ‘current’ in the context of ‘current personal inspection’, further guidance as to the timing of the inspection with regard to the activities being conducted, and consideration as to whether it is the site or the activities that are being inspected, and whether these are in support of Exploration, or Mineral Resource or Mineral Reserve estimation.

Again, perhaps the requirement of ‘current personal inspection’ be expanded to specify what the QP should assess whilst conducting the personal inspection. It is noted that there may be overlap between what JORC calls ‘site inspection’ and ‘audit’ and that perhaps the elements of both requirements be combined, with specific activities clearly described.

**21. Should the qualified person accepting responsibility for the mineral resource estimate in a technical report be required to conduct a current personal inspection, regardless of whether another report author conducts a personal inspection? Why or why not?**

JORC considers that the QP accepting responsibility for the estimate should be encouraged to conduct a current personal inspection. However, if another author conducts the inspection, the estimating QP should be satisfied that the outcomes of the visit are transparently disclosed.

22. In a technical report for an advanced property, should each qualified person accepting responsibility for Items 15-18 (inclusive) of the Form be required to conduct a current personal inspection? Why or why not?

JORC would consider it a requirement for each QP accepting responsibility for each of the items 15-18 to conduct a current personal inspection provided there is something useful to be seen by such an inspection. Again JORC would refer to previous responses (question 5, 8 and 20) whereby the purpose and intended outcomes of a current personal inspection be provided for by way of adaption of the definition or through additional guidance.

23. Do you have any concerns if we remove subsection 6.2(2) of NI 43-101? If so, please explain.

*We expect issuers to consider the current personal inspection requirement in developing the timing and structure of their transactions and capital raising. Subsection 6.2(2) of NI 43-101 does allow an issuer to defer a current personal inspection in limited circumstances related to seasonal weather, provided that the issuer refiles a new technical report once the current personal inspection has been completed. However, this provision has been used infrequently since it was adopted in 2005. In rare circumstances where issuers do rely on this provision, CSA staff see significant non-compliance with the refiling requirement.*

JORC has no concerns in relation to removing subsection 6.2(2) as long as 6.2(1) still reflects the requirement for a current personal inspection to be completed.

## G. Exploration Information

CSA staff continue to see significant non-compliant disclosure of exploration information, including inadequate disclosure of:

- the QA/QC measures applied during the execution of the work being reported on in the technical report,
- the summary description of the type of analytical or testing procedures utilized, and
- the relevant analytical values, widths and true widths of the mineralized zone.

NI 43-101	Form 43-101F1 Technical Report
<p>Requirements Applicable to Written Disclosure of Exploration Information</p> <p>3.3</p> <p>(1) If an issuer discloses in writing exploration information about a mineral project on a property material to the issuer, the issuer must include in the written disclosure a summary of (a) the material results of surveys and investigations regarding the property;</p> <p>(b) the interpretation of the exploration information; and</p> <p>(c) the quality assurance program and quality control measures applied during the execution of the work being reported on.</p> <p>(2) If an issuer discloses in writing sample, analytical or testing results on a property material to the issuer, the issuer must include in the written disclosure, with respect to the results being disclosed,</p> <p>(a) the location and type of the samples;</p> <p>(b) the location, azimuth, and dip of the drill holes and the depth of the sample intervals;</p> <p>(c) a summary of the relevant analytical values, widths, and to the extent known, the true widths of the mineralized zone;</p> <p>(d) the results of any significantly higher grade intervals within a lower grade intersection;</p> <p>(e) any drilling, sampling, recovery, or other factors that could materially affect the accuracy or reliability of the data referred to in this subsection; and</p> <p>(f) a summary description of the type of analytical or testing procedures utilized, sample size, the name and location of each analytical or testing laboratory used, and any relationship of the laboratory to the issuer.</p>	

24. Are the current requirements in section 3.3 of NI 43-101 sufficiently clear? If not, how could we improve them?

Within the current JORC Code review process, JORC is also considering the issue of disclosure requirements of exploration data. Although in draft form and currently under review, JORC is considering enhancing the requirements by listing additional requirements listed within its Table 1, that must be addressed on an 'if not, why not' basis.

The following requirements are under review, but are included in this submission to provide context and to provide the content JORC is considering:

<b>3.1 Exploration</b>	3.1.1	Data acquisition or exploration techniques and the nature, level of detail, and confidence in the geological data used (i.e., geological observations, remote sensing results, stratigraphy, lithology, structure, alteration, mineralisation, hydrological, geophysical, geochemical, petrography, mineralogy, geochronology, bulk density, potential deleterious or contaminating substances, geotechnical and rock characteristics, moisture content, bulk samples etc.).
	3.1.2	Indirect methods of measurement (e.g., remote sensing, geophysical methods), with attention given to the confidence of interpretation. Reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used for instance 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. .
	3.1.3	Acknowledgement and appraisal of data from other parties, and reference to all data and information used from other sources.
	3.1.4	Distinction between data / information from the property under discussion and that derived from surrounding properties.
	3.1.5	Data sets with all relevant metadata, such as unique sample number, sample mass, collection date, spatial location etc. included in the Competent Persons documentation
	3.1.6	Presentation of representative models and / or maps and cross sections or other two or three-dimensional illustrations of results showing location of samples, accurate drill hole collar positions, downhole surveys, exploration pits, underground workings, relevant geological data, etc.
<b>3.2 Drilling Techniques</b>	3.2.1	Type of drilling undertaken (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Banka, sonic, etc.) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit, or other type, whether core is oriented and if so, by what method, etc.).
	3.2.2	The methods for collar and downhole survey, techniques and expected accuracies of data as well as the grid system used.
<b>3.3 Primary Sample type</b>	3.3.1	A description of the nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as downhole gamma sondes, or handheld or fixed-position XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.
<b>3.4 Sampling Method and Process</b>	3.4.1	A description of the sampling processes, including sub-sampling stages to maximise representivity of samples, whether sample sizes are appropriate to the grain size of the material being sampled and any sample compositing. Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.
	3.4.2	A description of the method of recording and assessing core and chip sample recoveries and the results assessed, measures taken to maximise sample recovery and ensure representative nature of the samples, 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.
	3.4.3	The nature of the geometry of the mineralisation with respect to the drill hole angle (if known) and the orientation of sampling to achieve unbiased sampling of possible structures, considering the deposit type. The intersection angle. The downhole lengths if the intersection angle is not known. The geometry of the mineralisation with respect to the drill hole angle and collar location, because of the importance of the relationships between mineralisation widths and intercept lengths. Justification if only downhole lengths are reported.

<b>3.5 Sample Preparation</b>	3.5.1	The cutting of a drill-core sample, e.g., whether it was split or sawn and whether quarter, half or full core was submitted for analysis.
	3.5.2	Non-core sampling, e.g., whether the sample was riffled, tube sampled, rotary split etc.; whether it was sampled wet or dry; the impact of water table or flow rates on recovery and introduction of sampling biases or contamination from above.
	3.5.3	A description of the process and method used for sample preparation, sub-sampling and size reduction (e.g. pulverize, mineral separation etc), and the likelihood of inadequate or non-representative samples (i.e., improper size reduction, contamination, screen sizes, granulometry, mass balance, etc.).
<b>3.6 Sample Analysis</b>	3.6.1	The identity of the laboratory(s) and its accreditation status and Registration Number (e.g NATA).
	3.6.2	The analytical method, its nature, the quality and appropriateness of the assaying and laboratory processes and procedures used and whether the technique is considered partial or total.
	3.6.3	A flow chart to show sample preparation and analytical stages (if applicable).
<b>3.7 QA/QC</b>	3.7.1	The verification techniques (QA/QC) for field sampling process, e.g., the level of duplicates, blanks, reference material standards, process audits, analysis, etc.
	3.7.2	The steps taken by the Competent Person to ensure the results from the laboratory are of an acceptable quality.
<b>3.8 Sampling Governance</b>	3.8.1	The governance of the sampling campaign and process, to ensure quality and representivity of samples and data, such as sample recovery, high grading, selective losses or contamination, any evidence of sample oxidation or degradation, and whether this affected sample preparation, core/hole diameter, internal and external QA/QC, and any other factors that may have resulted in or identified sample bias.
	3.8.2	The measures taken to ensure sample security and the Chain of Custody. [add external guidance]
	3.8.3	A description of retention policy and storage of physical samples (e.g., core, sample reject, etc.).
<b>3.9 Bulk Density</b>	3.9.1	The method of bulk density determination with reference to the frequency of measurements, the size, nature, and representativeness of the samples.
	3.9.2	Preliminary estimates or basis of assumptions made for bulk density.
	3.9.3	The representivity of bulk density samples.
	3.9.4	The measurement of bulk density for bulk material using methods that adequately account for void spaces (vugs, porosity etc.), moisture and differences between rock and alteration zones within the deposit.
<b>3.10 Bulk Sampling and/or trial-mining</b>	3.10.1	The location of individual samples (including map).
	3.10.2	The size of samples, spacing/density of samples recovered and whether sample sizes and distribution are appropriate to the grain size of the material being sampled.
	3.10.3	The method of mining and treatment.
	3.10.4	The degree to which the samples are representative of the various types and styles of mineralisation and the mineral deposit as a whole.
<b>3.11 Data Management</b>	3.11.1	The primary data elements (observation and measurements) used for the project and a description of the management and verification of these data or the database. Description of the following relevant processes: acquisition (capture or transfer), validation, integration, control, storage, retrieval and backup processes.
	3.11.2	Description of database used to load and store sample data and assay results [add external guidance on database good practice]

	3.11.3	A description of each data set recorded (e.g., geology, grade, density, quality, geo-metallurgical characteristics, and potential environmental geochemical hazards etc.), location, sample type, sample-size selection and collection methods and storage.
	3.11.4	The validation procedures used to ensure the integrity of the data to the database, e.g., transcription, input, or other errors, between its initial collection and its future use for modelling (e.g., geology, grade, density, etc.). QA/QC procedures used to check databases augmented with 'new' data have not disturbed previous versions containing 'old' data.
	3.11.5	The data audit process and frequency (including dates of these audits) and disclose any material risks identified.
<b>3.12 Quality Management System</b>	3.12.1	Whether standard operating procedures (SOP) are available for each sampling or measurement point and whether these conform to best practice.
	3.12.2	Whether the processes have been audited by the Competent Person and deemed to be conducted in accordance with those SOPs.
	3.12.3	Where no SOPs are available, whether the audit has demonstrated good practices.
	3.12.4	Whether checks and balances are continually reviewed as part of the quality control process for each sampling or measurement point.
	3.12.5	Whether the review of quality control data confirms that all sampling and measurement systems were always in control, and where they were not the Competent Person should comment on its implications with respect to the data quality objective and purpose of the data.
	3.12.6	Whether statistically significant biases exist in the sampling or measurement data. The Competent Person must comment on the impact of such biases with respect to the data quality objective and the purpose of the data.
	3.12.7	How precision is determined from the data and whether precision of the sampling or measurement data is acceptable for the style of mineralization and the purpose of the data.
	3.12.8	External laboratory checks, and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established
	3.12.9	The audit process and frequency (including dates of these audits) and disclose any material risks identified.

## H. Mineral Resource / Mineral Reserve Estimation

CIM	Form 43-101F1 Technical Report
<p>6.12. Mineral Resource Statements</p> <p>By definition, a Mineral Resource must have “reasonable prospects for eventual economic extraction”. Regardless of the specific approach used or the procedures followed, the Practitioners must ensure that all Mineral Resource statements satisfy the “reasonable prospects for eventual economic extraction” requirement.</p> <ul style="list-style-type: none"> <li>• Factors significant to technical feasibility and potential economic viability must be considered and clearly stated when preparing Mineral Resource statements. These will include such items as: <ul style="list-style-type: none"> <li>• the size and legal conditions of the land tenure sufficient to fully enclose the Mineral Resource,</li> <li>• the extraction selectivity for the mining methods under consideration relative to the size and geometries of the mineralization interpretations,</li> <li>• the processing method under consideration, the expected recovery from the mined material to a commercially marketable product and the proposed production volume,</li> <li>• the price/value of the product and the market for the product at that price, and</li> <li>• the factors significant to cut-off grades or values (e.g. process recovery, smelter payability, treatment charges, operating costs, royalties, etc.) used for reporting of Mineral Resource estimates.</li> </ul> </li> </ul> <p>For a Mineral Resource, factors significant to technical feasibility and economic viability should be current, reasonably developed, and based on generally accepted industry practice and experience. The assumptions should have a reasonable basis, be clearly defined, and should reflect the level of information, knowledge and stage of development of the mineral property at the time. Tonnage and grade figures should be quoted only to the level of accuracy and precision of the estimate.</p>	<p>Item 14: Mineral Resource Estimates – A technical report disclosing mineral resources must</p> <p>(a) provide sufficient discussion of the key assumptions, parameters, and methods used to estimate the mineral resources, for a reasonably informed reader to understand the basis for the estimate and how it was generated;</p> <p>(b) comply with all disclosure requirements for mineral resources set out in the Instrument, including sections 2.2, 2.3, and 3.4;</p> <p>(c) when the grade for a multiple commodity mineral resource is reported as metal or mineral equivalent, report the individual grade of each metal or mineral and the metal prices, recoveries, and any other relevant conversion factors used to estimate the metal or mineral equivalent grade; and</p> <p>(d) include a general discussion on the extent to which the mineral resource estimates could be materially affected by any known environmental, permitting, legal, title, taxation, socio-economic, marketing, political, or other relevant factors.</p>

25. Should Item 14: Mineral Resource Estimates of the Form require specific disclosure of reasonable prospects for eventual economic extraction? Why or why not? If so, please explain the critical elements that are necessary to be disclosed.

JORC considers this an excellent question and is a topic of much discussion in the current JORC Code review.

JORC is currently considering the removal of the word ‘eventual’ so that it becomes ‘reasonable prospects for economic extraction’. This is in response to stakeholder feedback related to uncertainty and lack of clarity of the term ‘eventual’.

JORC is also considering expanding on the ‘how’ and ‘what’ to assess for reasonable prospects for economic extraction and is suggesting potential wording, such as: **‘the consideration and**



**appropriate assessment by a Competent Person of reasonably assumed Modifying Factors that are likely to influence the prospect of economic extraction. ‘**

In addition, guidance is being developed to better explain the relationship of the modifying factors, that being:

1. Application of Geological Factors to produce a Geological model
2. Application of Modifying Factors
3. Classification and Reporting

Rather than RPEE criteria being a standalone list of criteria (as included in JORC Code 2012 Table 1 section 4.3), JORC is considering adapting the CRIRSCO template Table 1 to include RPEE criteria as modifying factors, with the level of assessment increasing in relation to Exploration Targets and Results, Mineral Resources and Ore (Mineral) Reserves.

JORC hopes to be in a position to engage further with CSA (and CRIRSCO members) on the draft JORC Code Update in the coming months, as the area of reasonable prospects of economic extraction is one of much debate and international alignment of definitions and reporting criteria in this area is considered highly beneficial.

26. a) Should the qualified person responsible for the mineral resource estimate be required to conduct data verification and accept responsibility for the information used to support the mineral resource estimate? Why or why not?

JORC considers that the QP responsible for mineral resource estimate should be required to conduct data verification and accept responsibility for the information. Even in the scenario of a second QP taking responsibility for the data the estimator QP should be satisfied via due diligence that the data is of the required quality to be used.

- b) Should the qualified person responsible for the mineral resource estimate be required to conduct data verification and accept responsibility for legacy data used to support the mineral resource estimate? Specifically, should this be required if the sampling, analytical, and QA/QC information is no longer available to the current operator. Why or why not?

JORC would consider transparency be the key guiding principle in this situation, also noting that in most respects, legacy data should be treated as ‘exploration data’ (refer response to question 24) and subject to the same level of data verification. Ultimately the Qualified Person should be satisfied the legacy data is of a suitable standard for the QP to accept responsibility for, with any uncertainty related to the data, or related to the use of the data should be clearly and transparently disclosed.

27. How can we enhance project specific risk disclosure for mining projects and estimation of mineral resources and mineral reserves?

JORC again commends the CSA on this question, and it is one JORC are currently examining in the Code review. The overall principles would require that the material risks to be specifically and prominently addressed not hidden in pages of legal universal risk factors. However JORC notes that there is a fine balance in achieving this.

JORC is considering potentially adding requirements to Table 1, however it must be acknowledged, that this section is a preliminary draft and subject to regulatory and stakeholder review.

<b>9.1 Material Threats</b>	9.1.1	<p>Disclose the material Threats that have the greatest potential for negative effects on Exploration Targets, Mineral Resources or Ore Reserves.</p> <p>Describe the nature of the Threat, its potential impact, and control measures that could prevent occurrence and mitigate impacts.</p> <p>Clarify which control measures are planned to be undertaken and which need to be planned.</p> <p>If no material Threats, then state as such.</p>
<b>9.2 Material Opportunities</b>	9.2.1	<p>Disclose the material Opportunities that have the greatest potential for positive effects on Exploration Targets, Mineral Resources or Ore Reserves.</p> <p>Describe the nature of the Opportunity, its potential impact, and control measures to manage and optimise the outcomes.</p> <p>Clarify which control measures are planned to be undertaken and which need to be planned.</p> <p>If no material Opportunities, then state as such.</p>

## I. Environmental and Social Disclosure

NI 43-101	Form 43-101F1 Technical Report
	<p>Item 4: Property Description and Location – To the extent applicable, describe</p> <ul style="list-style-type: none"> <li>(a) the area of the property in hectares or other appropriate units;</li> <li>(b) the location, reported by an easily recognizable geographic and grid location system;</li> <li>(c) the type of mineral tenure (claim, license, lease, etc.) and the identifying name or number of each;</li> <li>(d) the nature and extent of the issuer's title to, or interest in, the property including surface rights, legal access, the obligations that must be met to retain the property, and the expiration date of claims, licences, or other property tenure rights;</li> <li>(e) to the extent known, the terms of any royalties, back-in rights, payments, or other agreements and encumbrances to which the property is subject;</li> <li>(f) To the extent known, all environmental liabilities to which the property is subject;</li> <li>(g) to the extent known, the permits that must be acquired to conduct the work proposed for the property, and if the permits have been obtained; and</li> <li>(h) to the extent known, any other significant factors and risks that may affect access, title, or the right or ability to perform work on the property</li> </ul>
	<p>Item 20 : Environmental Studies, Permitting, and Social or Community Impact – Discuss reasonably available information on environmental, permitting, and social or community factors related to the project. Consider and, where relevant, include</p> <ul style="list-style-type: none"> <li>(a) a summary of the results of any environmental studies and a discussion of any known environmental issues that could materially impact the issuer's ability to extract the mineral resources or mineral reserves;</li> <li>(b) requirements and plans for waste and tailings disposal, site monitoring, and water management both during operations and post mine closure;</li> <li>(c) project permitting requirements, the status of any permit applications, and any known requirements to post performance or reclamation bonds;</li> <li>(d) a discussion of any potential social or community related requirements and plans for the project and the status of any negotiations or agreements with local communities; and</li> <li>(e) a discussion of mine closure (remediation and reclamation) requirements and costs.</li> </ul>

28. Do you think the current environmental disclosure requirements under Items 4 and 20 of the Form are adequate to allow investors to make informed investment decisions? Why or why not?

JORC considers these items inadequate and would recommend alignment with CIM ESG Guidelines (understanding this is currently under review) and awareness of significant enhancements being discussed within CRIRSCO members including the CRIRSCO ESG Sub-committee.

Again international alignment of this area would be advantageous.

29. Do you think the current social disclosure requirements under Items 4 and 20 of the Form are adequate to allow investors to make informed investment decisions? Why or why not?

JORC considers these items inadequate and would recommend alignment with CIM ESG Guidelines (understanding this is currently under review) and awareness of significant enhancements being discussed within CRIRSCO members including the CRIRSCO ESG Sub-committee.

Again international alignment of this area would be advantageous.

30. Should disclosure of community consultations be required in all stages of technical reports, including reports for early stage exploration properties?

JORC considers this disclosure to be required at all stages of reporting.

## J. Rights of Indigenous Peoples

31. What specific disclosures should be mandatory in a technical report in order for investors to fully understand and appreciate the risks and uncertainties that arise as a result of the rights of Indigenous Peoples with respect to a mineral project?
32. What specific disclosures should be mandatory in a technical report in order for investors to fully understand and appreciate all significant risks and uncertainties related to the relationship of the issuer with any Indigenous Peoples on whose traditional territory the mineral project lies?
33. Should we require the qualified person or other expert to validate the issuer's disclosure of significant risks and uncertainties related to its existing relationship with Indigenous Peoples with respect to a project? If so, how can a qualified person or other expert independently verify this information? Please explain.

For items 31-33 JORC is not in a position to comment on the specifics of the jurisdiction, other than to recommend that disclosure to be required at all stages of reporting, with transparency and materiality being the key guiding principles. JORC would recommend consideration of the CIM ESG Guidelines (understanding this is currently under review) and awareness of significant enhancements being discussed within CRIRSCO members including the CRIRSCO ESG Sub-committee.

Again international alignment of this area would be advantageous.

## K. Capital and Operating Costs, Economic Analysis

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	Item 21: Capital and Operating Costs – Provide a summary of capital and operating cost estimates, with the major components set out in tabular form. Explain and justify the basis for the cost estimates.
	Item 22: Economic Analysis – Provide an economic analysis for the project that includes (a) a clear statement of and justification for the principal assumptions; (b) cash flow forecasts on an annual basis using mineral reserves or mineral resources and an annual production schedule for the life of project; (c) a discussion of net present value (NPV), internal rate of return (IRR), and payback period of capital with imputed or actual interest; (d) a summary of the taxes, royalties, and other government levies or interests applicable to the mineral project or to production, and to revenue or income from the mineral project; and (e) sensitivity or other analysis using variants in commodity price, grade, capital and operating costs, or other significant parameters, as appropriate, and discuss the impact of the results.

34. Are the current disclosure requirements for capital and operating costs estimates in Item 21 of the Form adequate? Why or why not?

JORC considers these items inadequate and note that this is an area JORC is also currently reviewing. JORC recommends review and alignment with CRIRSCO Template Table 1 and Table 2 and in S-K 1300 requirements. It is felt that further guidance to these items would be beneficial and that ultimately the Qualified Person must provide justification for the capital and operating cost estimate assumptions used to support an estimate.

35. Should the Form be more prescriptive with respect to the disclosure of the cost estimates, for example to require disclosure of the cost estimate classification system used, such as the classification system of the Association for the Advancement of Cost Engineering (AACE International)? Why or why not?

JORC would suggest providing more guidance on this topic rather than being more prescriptive, however the Qualified Person should be transparent on the assumptions used.

36. Is the disclosure requirement for risks specific to the capital and operating cost assumptions adequate? If not, how could it be improved?

JORC has no comment on this item.

37. Are there better ways for Item 22 of the Form to require presentation of an economic analysis to facilitate this key requirement for the investing public? For example, should the Form require the disclosure of a range of standardized discount rates?

JORC has no comment on this item.

## L. Other

38. Are there other disclosure requirements in NI 43-101 or the Form that we should consider removing or modifying because they do not assist investors in making decisions or serve to protect the integrity of the mining capital markets in Canada?

JORC has no comment on this item.