

Australasian Code for Reporting of Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves

The JORC Code - Guidance Notes Exposure Draft

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NOTES FOR REVIEWER

This document is a draft document and subject to further revision post closure of the comment period, and after analysis of feedback of areas which may require further development.

JORC recognises the opportunity to generate and release additional specialised guidance around various applications of the Code to exploration process, commodity types and technical studies.

This type of guidance may be best presented as an online library.

JORC welcomes suggestions on topic areas that would benefit from this approach.

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SECTION 1 - INTRODUCTION

The purpose of these Guidance notes is to assist practitioners and companies to understand the reporting requirements of the JORC Code 2024 (the Code) and to promote good practice reporting.

Guidance is intended to provide assistance and guidance to readers for interpreting the application of the Definitions and Clauses in the Code and should be considered persuasive when interpreting the Code.

The JORC Code is a Code for Public Reporting, not a Code that regulates the manner in which a Competent Person estimates Mineral Resources or Ore Reserves. The term 'JORC compliant' therefore refers to the manner of reporting not to the estimates. Use of the words 'JORC compliant' to describe resources or reserves estimates is potentially misleading. The words 'JORC compliant' should be interpreted to mean: 'Reported in accordance with the JORC Code and estimated (or based on Documentation prepared) by a Competent Person as defined by the JORC Code', and should only be used to describe reports not estimates.

Reference in the Code to 'Documentation' is to internal company documents prepared as a basis for, or to support, a Public Report, see Clause 2.5.

While every effort has been made within the Code and Guidelines (including Table 1) to cover most situations likely to be encountered in a Public Report, there may be occasions when doubt exists as to the appropriate form of disclosure. On such occasions, users of the Code and those compiling reports to comply with the Code should be guided by its intent, which is to provide a minimum standard for Public Reporting, and to ensure that such reporting contains all information that investors and their professional advisers would reasonably require, and reasonably expect to find in the report, for the purpose of making a reasoned and balanced judgement regarding the Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves being reported.

Citations in other Codes

The JORC Code is cited by the 'The Australasian Code for the Public Reporting of Technical Assessments and Valuations of Mineral Assets' (the 'VALMIN Code') as the applicable standard for the Public Reporting of Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves. References to 'technical and economic studies' and 'feasibility studies' in the JORC Code are not intended as references to Technical Assessments or Valuations as defined in the VALMIN Code.

Refer to VALMIN Code <https://www.valmin.org/>

The Code has been adopted by and included in the listing rules of the Australian Securities Exchange (ASX), other Australian stock and securities exchanges, NZX (New Zealand's Exchange) and PNGX (Papua New Guinea's national stock exchange) (collectively securities exchanges). Under these listing rules, a Public Report must be prepared in accordance with the Code when it includes a statement on Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves.

ASX Listing Rules Chapter 5: <https://www.asx.com.au/documents/rules/Chapter05.pdf>

NZX Listing rules: <https://www.nzx.com/regulation/nzx-rules-guidance/nzx-listing-rules>

PNGX Listing rules: <https://www.pngx.com.pg/listing/listing-rules/>

SECTION 2 – PUBLIC REPORTING OBLIGATIONS

What is a Public Report?

The JORC Code defines a Public Report as a report prepared for the purpose of informing investors or potential investors and their professional advisers on Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves, or the outcomes of Technical Studies. Public Reports include, but are not limited to, annual and quarterly company reports, media releases, information memoranda, technical papers, website postings, and public presentations (refer to Clause 2.18). The intent of a Public Report is to inform investors with the information presented clearly, concisely and accurately.

The Code also applies to other publicly released company information for *any* purpose which may reference Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves, in the form of postings on company websites and presentation material used in briefings for stakeholders, stockbrokers and investment analysts (refer to Clause 2.20). This includes social media posts by the company and its officers.

The Code also applies to the following reports if they have been prepared for the purposes described in Clause 2.20 including but not limited to: environmental statements, information memoranda, expert reports, and technical papers referring to Exploration Targets, Exploration Results, Mineral Resources or Ore Reserves.

What is the Basis for a Public Report?

Public Reports dealing with exploration and mining must be based on Documentation prepared by a Competent Person. Competent Person Documentation or 'Documentation' refers to internal company documents prepared as a basis for, or to support, a Public Report. (Refer to Clause 2.5)

Who is Responsible for Public Reporting?

The Company's Board of Directors are responsible for Public Reports (refer to Clause 3.12).

The Company must ensure that such Public Reports are based on Documentation prepared by a Competent Person, reflect the findings of the Competent Person, and have the prior written consent from the Competent Persons and Specialists as to the form and context their findings on which the Public Report is based are reflected in the Public Report.

In producing a Public Report, Company's should follow the generalised workflow depicted:



Figure 1: Company Workflow to Release a Public Report

Any Public Report should be specifically reviewed by the Competent Person prior to release to ensure that the form and context in which the Competent Person(s) and Specialist(s) findings presented have not been materially modified during editing and formatting and remain validly presented under the JORC Code.

Any previously issued Exploration Targets, Exploration Results, Mineral Resources or Ore Reserve must be reviewed by the Company to ensure they remain valid in the light of any more recently acquired data.

Clause 3.21 outlines the Company requirements to re-issue information in alignment to the Code. This includes confirmation that the form and context of the original Public Report has not been materially modified.

To assist Competent Person(s), Specialist(s) and companies to comply with these requirements a Competent Person(s) and Specialist(s) Consent Form has been devised that incorporates the requirements of the Code. Consent Forms are provided in Appendices 3 of the Code.

The completion of a consent form is required prior to the release of the Public Report as evidence that the required consent has been obtained.

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

Public Reporting Disclosure Requirements

Public reporting is required in the following scenarios:

- Initial declaration
- Material change
- Annual Review

Public Reporting Category	Initial Declaration	Material Change	Annual Review
Exploration Target	Required	Required	-
Exploration Results	Required	-	-
Mineral Resources	Required	Required	Required
Ore Reserves	Required	Required	Required

Table 1: Public Reporting Disclosure Requirements

What is an Initial Declaration?

An initial declaration is the first Public Report containing Exploration Results, or estimating Exploration Targets, Mineral Resources or Ore Reserves.

What is a Material Change?

A material change could be a new estimate, revising the estimated tonnage or grade, confidence, or in the classification of the Mineral Resources or Ore Reserves. This could also include reviews of Modifying Factors impacting Ore Reserves and Life of Mine Plans.

Whether there has been a material change in relation to a 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.

What is an Annual Review?

An Annual Review is a comprehensive review of a Company's declared Mineral Resources and Ore Reserves estimates, to identify any changes related to those estimates during the previous 12 months and an assessment on whether those changes have a material effect on the declared Mineral Resources and Ore Reserves (Clause 2.35).

The Company is responsible for meeting this requirement.

If the Company is satisfied that no material changes have occurred, then the Company can publicly report that this is the case and must release the relevant JORC Compliance Statement confirming this, which includes the requirement for a named Competent Person to approve the annual statement as a whole.

In the situation where a major review of studies is partly completed which may result in a material change, it is appropriate for the Company to indicate in its Annual Review that this activity is

underway and provide an estimate of when the updated Mineral Resources or Ore Reserves will be released.

It is strongly recommended however, that a Competent Person review the Mineral Resources and Ore Reserves estimates including their critical assumptions and confirm whether or not there have been material changes.

All relevant activities and information in relation to the Mineral Resources and Ore Reserves, should be considered, including but not limited to:

- Exploration activities (direct and indirect geoscientific data collected)
- Variations to interpretation of the mineralisation
- Permitting status (including grant or partial relinquishment of tenure)
- Stakeholder engagement activities
- Variations of any economic or technical assumptions

If there have been material changes that affect the Mineral Resources or Ore Reserves, a Competent Person must review and assess against the previously reported Mineral Resources or Ore Reserves estimate and provide Documentation to explain and reconcile any change to a previously declared estimate. The Company can use this Documentation as a basis for publicly reporting the outcome of its Annual Review.

Where a Competent Person conducts the Annual Review, they may be the same Competent Person who was responsible for the previously declared Mineral Resources or Ore Reserves estimate or may be a different Competent Person. The reviewing Competent Person must accept responsibility for the Annual Review and the Public Report must include the relevant Compliance Statement.

What should a Public Report Include?

Specific requirements of disclosure criteria apply to each of Public Reporting Categories for a material project:

Public Reporting Category	Initial Declarations	Material Change	Annual Review	
			Material Change	No material change
Exploration Target	Technical Summary Exploration Target, Table 1, Compliance Statement.	New data requires full compliance as per Initial Declarations	Not Applicable	Not Applicable
Exploration Results	Technical Summary Exploration Results, Drillhole data table, Table 1, Compliance Statement.	Each update requires new: Technical Summary, Drillhole data table, Table 1, Compliance Statement	Not Applicable	Not Applicable
Mineral Resources	Technical Summary Mineral Resources, Table 1, Compliance Statement.	Technical Summary Mineral Resources, Reconciliation, Table 1, Compliance Statement.	Technical Summary Mineral Resources, Reconciliation, Table 1, Compliance Statement.	Compliance Statement
Ore Reserves	Technical Summary Ore Reserves, Table 1, Compliance Statement.	Technical Summary Ore Reserves, Reconciliation, Table 1, Compliance Statement.	Technical Summary Ore Reserves, Reconciliation, Table 1, Compliance Statement.	Compliance Statement

Table 2 Public Report Inclusions

What is a Technical Summary?

A Technical Summary Exploration Target, Exploration Results, Mineral Resource or Ore Reserve must be prepared by a Competent Person. It should summarise and adequately reflect the content of the Competent Persons Documentation and contain a discussion of all relevant sections of Table 1 reporting and assessment criteria. This is a requirement of the JORC Code (see Clauses 6.8, 7.6, 8.28, and 9.28) and meets the requirements of the ASX listing rules (5.8.1 and 5.9.1).

The Technical Summary should be adequately supported by legible text, figures, tables, sections, and maps to demonstrate Competence by conveying material information in a transparent manner.

Figures of any type should contain appropriate explanatory information in the form of titles and/or captions, legends, coordinates, and scale bars.

What is Table 1?

Table 1 is a high-level checklist of reporting and assessment criteria to be used as a reference by those preparing Competent Persons Documentation on Exploration Targets, Exploration Results, Mineral Resources and Ore Reserves, to ensure they have addressed all the necessary aspects and can provide justification of assumptions used.

The JORC Code includes a requirement to publicly report against Table 1 on an *'if not, why not'* basis for initial declarations and when a material change in the declaration has occurred for material mining projects.

Table 1 contains 10 sections with listed criteria that must be reported against:

- Section 1: Project Outline
- Section 2: Geological Setting, Deposit, Mineralisation
- Section 3: Exploration and Drilling, Sampling Techniques and Data
- Section 4: Geological Modelling, Interpretation and Estimation
- Section 5: Modifying Factors
- Section 6: Classification and Reporting
- Section 7: Audits and Reviews
- Section 8: Other Relevant information
- Section 9: Risks (Opportunities and Threats)
- Section 10: Competent Person

The JORC Code (2024) contains Table 1 formatting by project progression, split into 3 sub- tables, allowing for more refined prompts around both geological and modifying factor knowledge elements as the project progresses from exploration phase, through Mineral Resources reporting and finally to Ore Reserves.

The subdivision of Table 1 in this form recognises the evolving nature of available information as the project progress, and their studies mature.

The intent of this design is that exploration phase reporting uses the Table 1 Exploration, Mineral Resource reporting uses the Table 1 Mineral Resources, and Ore Reserves reporting uses the Table 1 Ore Reserves. Common elements and prompts are in all Tables. Specific stagewise elements are only in their specific table. If more than one progression stage is being reported at the same time, more than one section may be required.

In this way, the degree of discussion on Modifying Factor elements increases through Mineral Resources to Ore Reserves, in reflection of the underlying progression of the Technical Studies.

The criteria in Table 1 can be reported against in either table or document format as an attachment to the Public Report, but must address all criteria, on an *'if not, why not'* basis. *'If not, why not'* means that each item listed in the relevant section of Table 1 must be discussed or the Competent Person must explain why it has been omitted.

This approach ensures that it is clear to the reader of the Public Report to what degree items have been considered or whether they have yet to be addressed or resolved.

The following templates are provided to assist the Competent Person in meeting the disclosure and public reporting requirements:

- Competent Person Documentation Checklist
- Table 1 for Exploration (Targets and Results)
- Table 1 for Mineral Resources
- Table 1 for Ore Reserves

Table 1 – Which version?

Only the appropriate section of the Table 1 matched to the project development stage being reported is required to be filled in on an *'if not, why not'* basis.

For example, for Exploration reporting of results and/or targets, the Exploration level criteria have been calibrated to match the likely data maturity. In cases where more advanced and material data may exist, it should be reported additional to the minimum criteria, using the appropriate guidance from the next level as a guide.

For a first report Mineral Resource, and subsequent Mineral Resource reporting, the expanded Mineral Resources criteria should be applied.

For first report Ore Reserves, and subsequent Mineral Resource reporting, the expanded Ore Reserves criteria should be used.

The overarching guidance is to match the type of data being reported to the disclosure criteria type. In this way, new Exploration data being reported, even in a brownfields environment on a site with advanced Mineral Resources or Ore Reserves, should use the Exploration stage Table 1 for reporting.

In cases where multiple Competent Persons or Specialists are contributing, the Table 1 should reflect all contributions in a single Table 1, and align to the Technical Summary disclosure and compliance statement(s) in the Public Report.

Reporting in Other Jurisdictions

It is recognised that companies can be required to issue reports into more than one regulatory jurisdiction, with compliance standards that may differ from this Code.

It is recommended that such reports include a statement alerting the reader to this situation. Where members of The AusIMM and the AIG are required to report in other jurisdictions, they are obliged to comply with the requirements of those jurisdictions including the reporting code in use.

This however cannot extend to the issue of a report purported to comply with JORC Code (2024) that does not meet all elements of the Code.

Do Public Reporting Requirements Apply to Unlisted Entities?

If an unlisted Company states, or states or infers that is reporting in accordance with the JORC Code or states or infers that an estimate is in accordance with JORC, then *all* requirements of the JORC Code apply.

For example, if an initial Mineral Resource is estimated, both the Technical Summary and the relevant Table 1 sections must be generated and be prominent in the Competent Persons Documentation.

Should the unlisted entity engage in public reporting through a website or is considering an IPO that lists Mineral Resources or Ore Reserves claimed to have been generated according to the JORC Code, then the Technical Summary, Table 1 and Competent persons compliance statement should be provided in support of this information, in order to comply with the Code.

What Requirements Apply to Non-Public Reporting?

It is recognised that situations may arise where documentation prepared by a Competent Person for internal company or similar non-public purposes does not comply with the JORC Code. In such situations, it is recommended that this documentation includes 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 JORC Code requires Public Reports to fairly reflect Exploration Targets, Exploration Results, Mineral Resource and/or Ore Reserve estimates, and supporting Documentation, prepared by a Competent Person.

I have noticed an error in a Public Report, what should I do?

If an error is noticed, the person should contact the issuing Company of the Public Report and advise of the error. It is then the responsibility of the issuing company to address.

I want to make a complaint, who do I contact?

Complaints with respect to the professional work of a Competent Person may be lodged through a complaints form on the JORC website from which the complaint will be forwarded to the appropriate Professional Organisation for assessment. Each Professional Organisation will evaluate a complaint with respect to their disciplinary and ethical procedures following due process. Complaints can also be directly lodged to a Professional Organisation of the Competent Person.

Complaints with the respect to Company Reporting obligations should be made directly to the company involved and if material, directly to the relevant listing exchange for the entity.

SECTION 3 - COMPETENCE AND RESPONSIBILITY

What Defines Experience that is Relevant?

The key qualifier in the definition of a Competent Person (as provided in Clause 3.1) is the word 'relevant'. Determination of what constitutes relevant experience can be a difficult area and common sense has to be exercised.

The key word 'relevant' also means that it is not always necessary for a person to have five years' experience in each and every type of deposit to act as a Competent Person if that person has experience relevant to other similar and relevant deposit types.

In addition to experience in the style of mineralisation, a 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 materially important.

The same approach applies with respect to mining method for Ore Reserves— similar experience and experience relevant to the mining method is the reference point rather than identical method experience in all cases.

The JORC Code (2024) has introduced the requirement for a public Curriculum Vitae (CV) of Record to be uploaded to the JORC website outlining the areas of practice for all persons acting as a Competent Person. This will be required ahead of acting as the Competent Person for a Public Report.

The CV of Record will allow experienced Competent Persons to outline their range of skills and experience and is not intended to confine individuals experience into narrow categories. It will however require a high-level disclosure of the areas of practice undertaken, supported by an outline of the supporting experience.

The JORC website (will also) includes an induction process required to be completed before acting under the Code for the first time. This will be a one-time process only.

Should a Competent Person gain new areas of competency, provision (will) exists for their CV of record to be updated accordingly. The CV of Record is a public document and will be available for any party to review.

A CV of Record is required to act as a Competent Person for any reporting under the JORC Code (2024), including any non-market statutory reporting, any JORC Code (2024) reporting to international exchanges and any reporting by non-listed entities. This is a requirement of the Competent Person to their professional body (AusIMM, the AIG, or their RPO).

Acting as a Competent Person

As a general guide, a person being called upon to act as Competent Person should be clearly satisfied in their own mind that they could face their peers and demonstrate Competence in the commodity, type of deposit and situation under consideration. To provide clarity on the areas of Competence declared, they will need to generate and post online a CV of record that supports their areas of practice and supporting experience. If doubt exists on the applicability of their experience, the person should either seek opinions from appropriately experienced peers or should decline to act as a Competent Person.

Alternatively, if a Competent Person is not confident that their relevant experience and Competence extends to all aspects of the Public Report, the Competent Person should seek to engage a peer Competent Person who does have relevant experience in those 'gap' aspects of the Public Report.

Example 1

To qualify as a Competent Person in the estimation of Ore 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.

Example 2

When 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.

Banded-iron formation (BIF) hosted gold mineralisation is notoriously prone to a high nugget effect and potentially extreme gold grade variance affecting confidence in grade continuity and interpolation distances. In instances where the geostatistical behaviour of the deposit in question is outside the experience of the practitioner then they cannot act as a Competent Person in this circumstance. The Competent Person in this instance should seek advice from a peer Competent Person with sufficient relevant experience in BIF-hosted gold mineralization.

Example 3

A person with (say) 20 years' 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 Competent Person. Relevant experience in the other deposit types could count towards the required experience in relation to porphyry copper deposits.

Multiple Competent Persons, including use of Specialists

Estimation of Exploration Targets, Mineral Resources and Ore Reserves, can often be a team effort and involve one or more Competent Person, and may be supported by subject matter Specialists. The number and structure of Competent Person(s) hierarchy involved in preparing Documentation can vary, but the principles of Competence and Transparency are the key guiding factors, to ensure that there is clear responsibility of contributions.

Competent Persons must take care not to take responsibility for aspects of Public Reports that are outside their area(s) of Competence. While it may be rare for multiple Competent Persons to take responsibility for a Public Report detailing Exploration Results, Public Reports detailing Mineral Resource and Ore Reserve Estimates will respectively require increasing involvement of peer Competent Persons and Specialists for aspects of the Public Reports that are outside the Competence of the lead Competent Person.

Example 4

Competent Person 1

If only one Competent Person signs the Mineral Resource or Ore 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 Competent Person accepting overall responsibility for a Mineral Resource or Ore Reserve estimate and supporting Documentation prepared in whole or in part by others, is satisfied that the work of the other contributors is acceptable.

Example 5

Competent Person 1

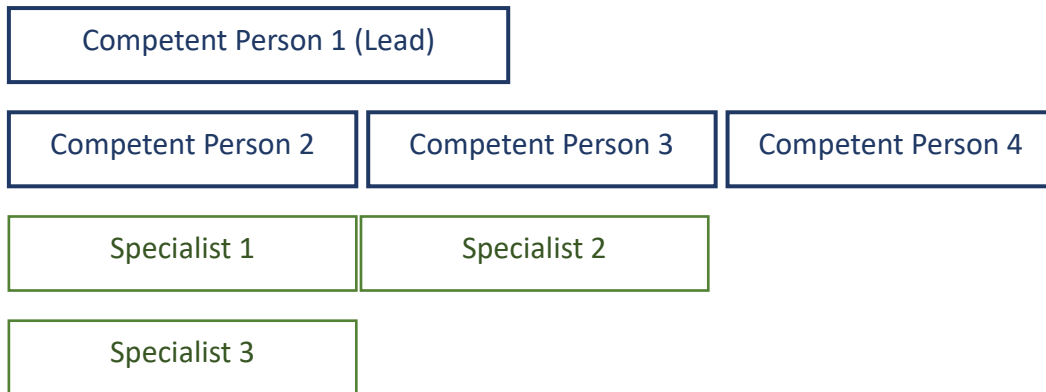
Competent Person 2

Estimation of Mineral Resources may be a team effort (for example, involving one person or team collecting the data, interpreting the geology, structure and controls on mineralisation and another person or team preparing the estimate).

In this instance, it is a requirement to identify both Competent Person(s) and the respective aspects of the Documentation to which they have contributed and accept accountability for.

The Competent Person taking accountability for overall reporting must be identified.

Example 6



Estimation of Ore Reserves is very commonly a team effort involving several technical disciplines.

For Ore Reserves there must be one lead Competent Person and that person must be experienced in Ore Reserves estimation.

If only the lead Competent Person signs the Mineral Resource or Ore 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 Competent Person accepting overall responsibility for a Mineral Resource or Ore Reserve estimate and supporting Documentation prepared in whole or in part by others, is satisfied that the work of the other contributors is acceptable.

Alternatively, if there is clear division of responsibility within a team, all Competent Person(s) and Specialist(s) must sign the Documentation, with each contribution identified, and responsibility accepted for that particular contribution.

SECTION 4 - REPORTING TERMINOLOGY

The generalised workflow of estimation and classification is based on collection and interpretation of geological data to produce a geological model with the levels of geological continuity and confidence assessed. Consideration and application of relevant Modifying Factors to applicable level of evaluation and is then applied to classification and subsequent reporting.



Relationship between Public Reporting Categories

“Figure 1” in the JORC Code (2024), and reproduced here as Figure 2, sets out the framework for classifying tonnage and grade estimates to reflect different levels of geological knowledge and confidence, different levels of Modifying Factor knowledge and confidence, and different degrees of technical and economic evaluation (as provided in Clause 5.8).

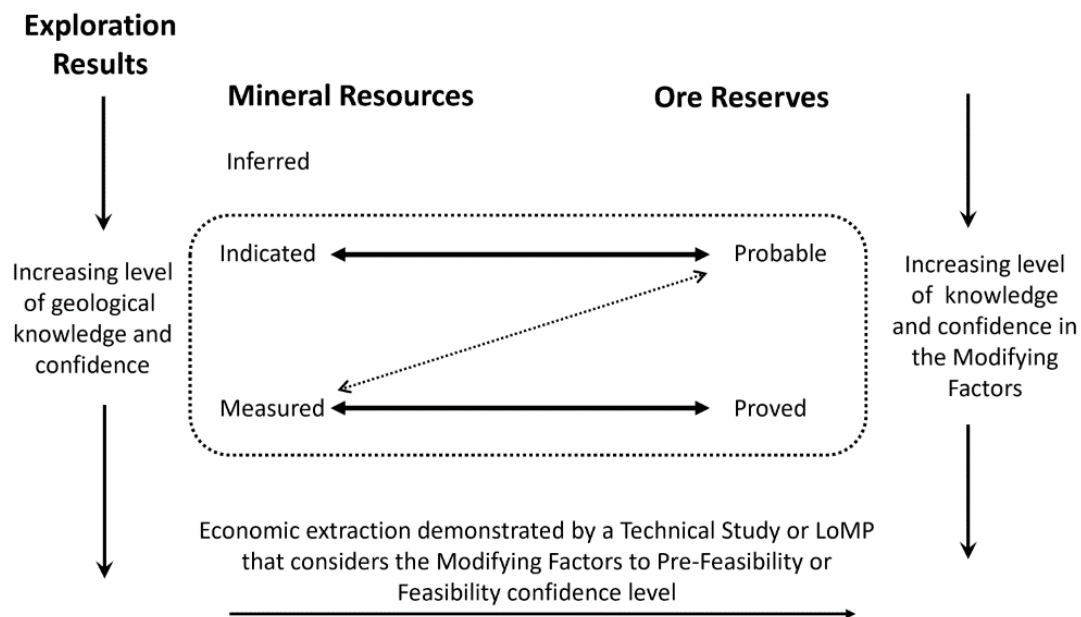


Figure 2: “Figure 1” (as included in JORC Code (2024) – the general relationship between Exploration Results, Mineral Resources and Ore Reserves

A deposit can be assessed and classified as a Mineral Resource, only if there is sufficient geological information, sufficient knowledge and confidence in the deposit’s geological factors, and the deposit has been assessed to have reasonable prospects for economic extraction through the initial evaluation of the Modifying factors.

Mineral Resources have three levels of classification; Inferred, Indicated and Measured.

Ore Reserves are a modified sub-set of the Indicated and Measured Mineral Resources (shown within the dashed outline in Figure 1).

To be classified as an Ore Reserve a Pre-Feasibility or Feasibility level Technical Study must have been completed, providing the required minimum level of knowledge and confidence in contributing Modifying Factors, and the technical and economic viability of the project.

The Code provides for a direct two-way relationship between Indicated Mineral Resources and Probable Ore Reserves and between Measured Mineral Resources and Proved Ore Reserves. In other words, the level of geological confidence for Probable Ore Reserves is similar to that required for the determination of Indicated Mineral Resources, and the level of geological confidence for Proved Ore Reserves is similar to that required for the determination of Measured Mineral Resources.

The Code also provides for a two-way relationship between Measured Mineral Resources and Probable Ore Reserves. This is to cover a situation where remaining uncertainties (perhaps not reducible) associated with any of the Modifying Factors considered when converting Mineral Resources to Ore Reserves may result in there being a lower degree of confidence in the Ore Reserves than in the corresponding Mineral Resources. Such a conversion would not imply a reduction in the level of geological knowledge or confidence. An example would be lower confidence in the mining schedule and dilution associated with block cave mining methods, even with a Measured Mineral Resource in place.

A Probable Ore Reserve derived from a Measured Mineral Resource may be converted to a Proved Ore Reserve if the uncertainties in the Modifying Factors are subsequently reduced.

No amount of confidence in the Modifying Factors for conversion of a Mineral Resource to an Ore Reserve can override the upper level of confidence that exists in the Mineral Resource. Under no circumstances can an Indicated Mineral Resource be converted directly to a Proved Ore Reserve (see Figure 1 in the Code).

Estimation and Classification

Estimation of Mineral Resources and Ore Reserves is inherently subject to some level of uncertainty. 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 Resource and Ore Reserve categories.

Modifying Factors Consideration and Disclosure

As noted in Clause 4.7, 'Modifying Factors' are considerations used to assess and estimate Exploration Targets, Mineral Resources and/or Ore Reserves. They may be incomplete or rudimentary only at earlier exploration stages, and will subsequently mature through formal studies through Mineral Resources and on to Ore Reserves.

They include, but are not restricted to mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social and governance (ESG) and regulatory factors. There is a

strong relationship between Modifying Factors and reasonable prospects for economic extraction that the Competent Person always must consider, based on the information at hand.

As the JORC Code (2024) is applied to all commodities, all mining styles and across many social and environmental footprints, the minimum requirements vary widely from situation to situation and will require careful consideration from the Competent Person.

There is not an expectation of Modifying Factor knowledge maturity ahead of completed studies, though in many cases baseline data may be available, or early detection of likely constraints may have occurred during the exploration phase.

All Modifying Factors must be treated as potentially equally important to project development. While geological data develops necessarily ahead of many other elements, it is not appropriate to leave out from consideration emerging material data across the Modifying Factors within the Public Report.

Environmental, social and governance (ESG) factors must be given equal prominence with respect to the application of the other Modifying Factors. This consideration is neither ahead of or behind other elements, and this prompt is intended to ensure there is not a disconnect between the technical geological, mining and processing factors, and the available environmental, social and governance data. This requirement does not presume mature knowledge for early-stage projects, and only requires available and material data to be considered, as it is for all other Modifying Factors.

While the yet unknown cannot be considered, the material known must always be assessed and included in Public Reports for Exploration Targets, Mineral Resources and Ore Reserves.

The Table 1 prompts for Modifying Factors (section 5) to reflect this growing data maturity by tailoring criteria specifically to the activity and study level (growing detail from exploration, to Mineral Resources and then Ore Reserves) and are tailored to the activity and study stage. As with all Table 1 criteria, these are considered minimum prompts requiring comment on an *'if not, why not'* basis.

If material data is available beyond the minimum criteria, the Competent Person should provide a more comprehensive response to meet the key requirements of Materiality and Transparency.

The JORC Code does not endorse or specify a particular framework or standard in relation to ESG reporting. Given the emerging importance of ESG elements to project progression in many jurisdictions, an ESG Guidance matrix has been developed (as Appendix 1 to this guidance note) to provide guidance for Companies, Competent Persons and Specialists related to themes and impacts that may require consideration as a project progresses through the study stages.

As noted above, given the JORC Code is applied across all commodities and development environments, some of the matrix elements may not be applicable to the reporting circumstance in all cases. They should however be considered useful prompts for framing ESG elements of studies.

Reasonable Prospects Assessment

In evaluating the 'reasonable prospects for economic extraction', the Code requires a Reasonable Prospects Assessment to be completed by the Competent Person (refer to Clause 8.6 – 8.11) of the Modifying Factors (refer Table 1 Section 5). The assessment must evaluate all matters likely to influence the prospect of economic extraction including the currently available Modifying Factor data that may constrain the potential progression to economic development.

In other words, a Mineral Resource is not an inventory of all mineralisation drilled or sampled, regardless of cut-off grade, likely mining dimensions, location or continuity. It is a realistic inventory of mineralisation which, under assumed and justifiable technical, economic and project development conditions, might, in whole or in part, become economically extractable.

With respect to ESG elements, while this requirement does not assume all elements have been studied to advanced levels, it does require *available* and material knowledge is assessed within the Reasonable Prospects Assessment.

As an example, known environmental or social constraints should be taken into account in the same way early metallurgical knowledge, or emerging mineability data is applied to the assessment.

It is not appropriate to exclude available and material knowledge on the basis of the project still being at resource stage.

Unlike the more formal Scoping Study to follow, the Reasonable Prospects Assessment is based on the currently available data, rather than necessarily on commissioned studies across the various Modifying Factors.

Some Modifying Factor elements may still be relatively immature at initial Resource declaration. What is important however, is that the Competent Person considers the range of available data and addresses the impact of the known elements in their assessment and estimation.

Interpretation of the time frame in which there are reasonable prospects for economic extraction must be clearly disclosed and justified.

Example 7

For some coal, iron ore, bauxite and other bulk minerals or commodities, it may be reasonable to envisage 'economic extraction' as covering time periods in excess of 50 years. If long periods of time are considered the Competent Person should take into account current tenure and retention processes and constraints, as proposing a resource beyond reasonable tenure periods may be difficult to justify. It is not intended however that these longer time frames should be adopted as the starting time for the 'economic extraction' to commence.

For the majority of smaller 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 by the Competent Person.

The Competent Person should be satisfied that a Mineral Resource, with a set of realistic economic assumptions and considering all relevant Modifying Factors, has reasonable prospects for economic extraction, with all key assumptions disclosed in the Public Report.

Certain reports (e.g., inventory coal 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 economic extraction. Such estimates of mineralisation would not qualify as Mineral Resources or Ore Reserves in terms of the JORC Code.

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SECTION 5 - RISK: OPPORTUNITIES AND THREATS

The risk profile of a project is likely to change with an increasing level of geological knowledge and confidence, and more detailed consideration of the Modifying Factors.

There should be balanced reporting and discussion by the Competent Person.

Element guidance and diagram below.

Risk and Opportunity Guidance Matrix

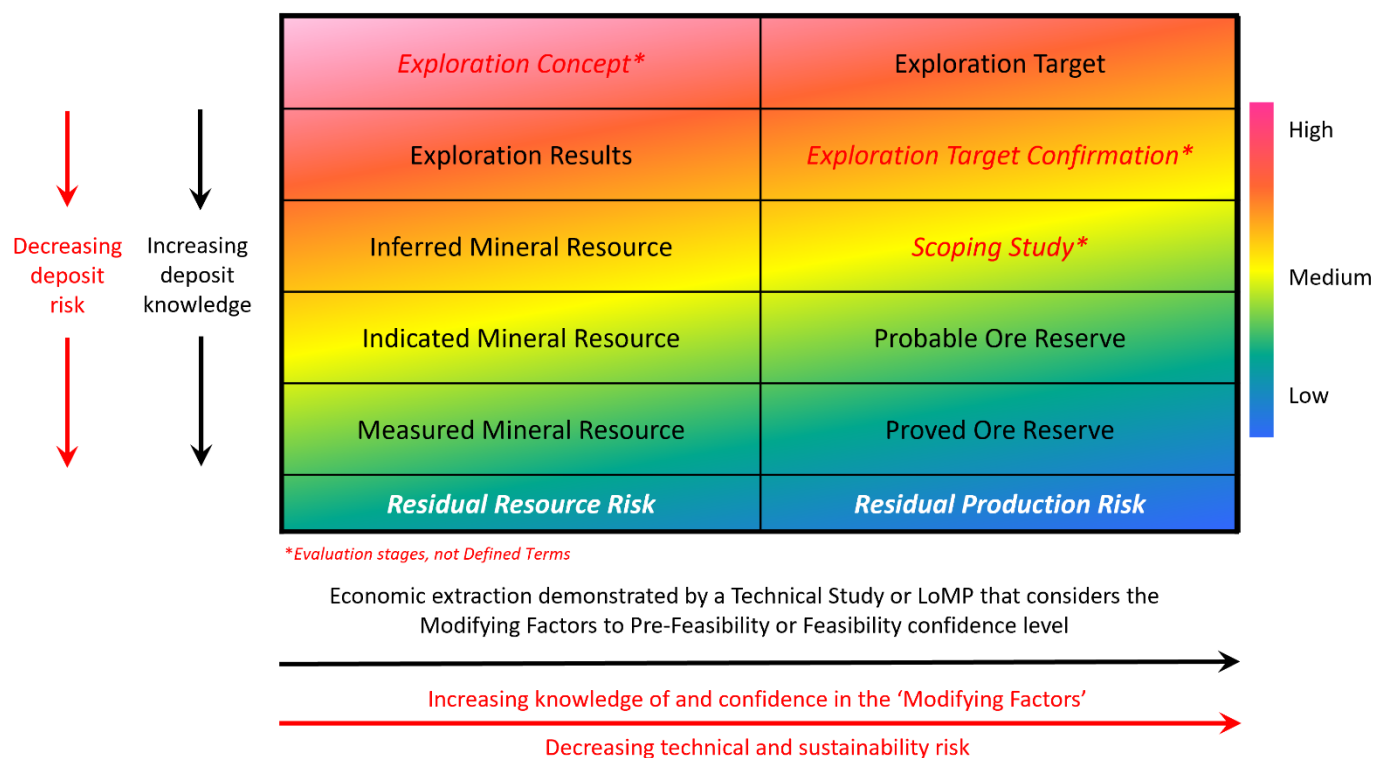


Figure 3 Risk and Opportunity Guidance Matrix

Risks may arise with respect to the availability, uncertainty, and quality of data and/or other non-technical information, including, but not limited to:

- geological prospectivity and the possibility that further exploration may fail to demonstrate economic mineralisation (in the case of projects without defined Ore Reserves);
- geology of the mineral deposits;
- estimation of Mineral Resources or Ore Reserves;
- operational aspects including the mining/extraction method, dilution and mining losses, equipment sizing and efficiencies, use of selective mining assumptions, and waste management;
- mineral processing and the variability of metallurgical parameters such as recovery, comminution, and process plant availability;
- ability of new processes, technologies, to be financed and perform as predicted;
- construction, including unforeseen physical conditions or weather or industrial disputes, which may affect both capital costs and completion date;

- meeting regulatory requirements and mine closure;
- provision and adequacy of existing or proposed infrastructure;
- commodity prices, inflation, and exchange rate forecast;
- production of marketable commodities in terms of quality, price, and cost of production;
- social licence considerations involving social, political, environmental, cultural and security issues that may not be able to be controlled by the project operators; and
- project funding.

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SECTION 6 - EXPLORATION TARGETS

It is recognised that it is common practice for a company to comment on and discuss its exploration program and strategy in terms of target size and type. However, any such comment in a Public Report must comply with the requirement in Section 6 of the JORC Code.

Public Reporting of Exploration Targets

Technical Summary

With reference to Section 6.8 of the Code, for an Exploration Target based on Exploration Results, a Technical Summary of the relevant exploration data available (including geophysical data) 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.

The Competent Person should also include a detailed description of the method used to estimate the range of the exploration target tonnage, grade or quality and extent.

In any subsequent upgraded or modified statements on the Exploration Target, the Competent Person should discuss any material changes to potential target tonnage, grade or quality and extent arising from the additional completed exploration activities.

When including an Exploration Target in a Public Report, there must be accompanying discussion by the Competent Person of the specific work programme(s) designed to test the Exploration Target and the timeframe within which the programme(s) will be executed.

As in all reporting, the Competent Person must ensure that any material matter, including available data on Modifying Factors has been taken into account and disclosed in the generation of the Exploration Target. This is also the case for known environmental or social overlays that would preclude further exploration and/ or development.

Table 1

Criteria in Table 1, Exploration must be addressed in the release on an *'if not, why not'* basis.

Compliance Statement

A compliance statement (Appendix 4 in the Code) and Competent Person Consent Form (Appendix 3 in the Code) is required for the Exploration Target Public Report.

SECTION 7 - EXPLORATION RESULTS

Exploration Results refers to direct and indirect measurement and collection of data for the purpose of increasing knowledge related to the geological setting, mineralisation and deposit.

Table 1 Section 3 requires that data acquisition or exploration techniques should be described including 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.).

With regard to indirect methods of measurement (e.g., remote sensing, geophysical methods), a description of the 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.

Clause 7.13 specifically includes reporting of visual estimates and further information on reporting visual estimates is included in the AIG's The Ethics Column: Reporting Sulphide Mineral Observations In Drilling Intersections, 29 October 2015 (<https://www.aig.org.au/the-ethics-column-reporting-sulphide-mineral-observations-in-drilling-intersections/>) or any updates of this column.

Public Reporting of Exploration Results

Technical Summary

With reference to Section 7 of the Code, 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 or quality (because if there were sufficient information to do so, the resulting estimates would have been quoted).

It is recommended that such reports carry a cautionary statement along the following lines:

"The information provided in this report/statement/release constitutes Exploration Results. It is inappropriate for the reader to use the information presented for deriving estimates of tonnage and grade or quality".

As required under Clauses 3.18 and 4.9, the Competent Person must not remain silent on any issue for which the presence or absence of comment could impact the public perception or value of the mineral occurrence, that is, the concept of "misleading by omission". Balanced reporting requires timely disclosure of both successful and unsuccessful exploration results if they are material to the perception of value of the mineral occurrence. An example would be timely reporting of follow-up analysis of pXRF data by laboratory assay results reported with equal prominence to the initial report.

Known material information of Modifying Factors must also be presented in a balanced manner even in exploration phase reporting. This could be as much refractory metallurgy as environmental preservation overlays. If the knowledge element is likely to impact project progression, is material and is at hand, it cannot be withheld from disclosure.

Drillhole Table

While it is not necessary to report all assays or drill holes, it is a requirement that sufficient information about the omitted data is provided so that a considered and balanced judgement can be made by the reader of the report.

Where reports of Exploration Results do not include all drill holes, or all intersections of drill holes the Competent Person must provide an explanation of why this information is not considered relevant or why it has not been provided.

Table 1

For material exploration projects, the reporting of all criteria in Table 1, Exploration on an '*if not, why not*' basis is required, as an appendix to the Public Report. Additional disclosure is particularly important where inadequate or uncertain data affect the reliability of, or confidence in, a statement of Exploration Results, for example, poor sample recovery, poor repeatability of assay or laboratory results, etc.

Compliance Statement

A compliance statement (Appendix 4 in the Code) and Competent Person Consent Form (Appendix 3 in the Code) is required for the Exploration Results Public Report.

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SECTION 8 - MINERAL RESOURCES

The term 'Mineral Resource' (Clause 8.1) defines an occurrence of material of economic interest in or on the Earth's crust in such form, grade or quality, and quantity that there are reasonable prospects for economic extraction. The definition requires exploration and sampling to have been carried out prior to interpretation and estimation of the Mineral Resource.

Mineral Resource classification is a matter for skilled judgement and a Competent Person should take into account those items in Table 1 that relate to confidence in Mineral Resource estimation.

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. This should also include consideration for material ESG-related matters impacting reasonable prospects for economic extraction of the Mineral Resource including permitting, processing, product supply to customers and ultimate responsible closure of the mineral asset which can impact the investor's decision making.

Where considered appropriate by the Competent Person, Mineral Resource estimates may include material below the selected cut-off grade (i.e., internal dilution) to ensure that the Mineral Resources comprise bodies of mineralisation of adequate size and continuity to properly consider the most appropriate approach to mining.

The Competent Person should disclose and discuss whether practical mineable shapes have been applied or if economic constraints have been applied.

Documentation of Mineral Resource estimates should clearly identify whether any diluting material has been included and Public Reports should include commentary on the matter if considered material, especially in mineralisation that may demonstrate a lack of continuity.

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.

Selection of Mineral Resource Reporting Category

In deciding between Indicated Mineral Resources and Inferred Mineral Resources, Competent Persons may wish to take into account, in addition to the phrases in the two definitions in Clauses 8.12 and 8.16 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 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 in Pre-Feasibility (Clause 11.4) or Feasibility (Clause 11.5) 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 11.2)'.

In deciding between Measured Mineral Resources and Indicated Mineral Resources, Competent Persons may find it useful to consider, in addition to the phrases in the two definitions relating to geological and grade continuity in Clauses 8.16 and 8.18, the phrase in the guideline to the definition for Measured Mineral Resources: 'any variation from the estimate would be unlikely to significantly affect potential economic viability'.

The Competent Person should take into consideration issues of the style of mineralisation and cut-off grade when assessing geological and grade continuity for the purposes of classifying the resource.

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.

Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Mineral Resources (for example, poor sample recovery, poor repeatability of assay or laboratory results, limited information on bulk densities, etc) those unresolved issues should also be reported.

Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over-statement of Mineral Resources should be disclosed.

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.

It is not intended that re-classification from Ore Reserves to Mineral Resources or vice versa should be applied as a result of changes expected to be of a short term or temporary nature, or where company management has made a deliberate decision to operate on a non-economic basis. Examples of such situations might be commodity price fluctuations expected to be of short duration, mine emergency of a non-permanent nature, transport strike, etc.

If, in a production environment, Ore Reserves are likely to be un-economic for the longer term though remain technically viable, the Ore Reserves must be reclassified as Mineral Resources. This does not preclude return to Ore Reserves at a future date with a turnaround in economics, adoption of more efficient technologies or completion of updated studies.

If however, the likelihood of economic or technical extraction is unlikely to recover within the operating life of the asset or the foreseeable reasonable future, (i.e. the reasonable prospects have been extinguished) that material must be removed from both Mineral Resource and Ore Reserve estimates.

Inferred Mineral Resources

The Inferred Resource is defined in clause 8.12. This 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 grade continuity to be confidently interpreted.

While it would be reasonable to expect that the majority of Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur.

Inferred Mineral Resource classification can be used both additional to and even adjoining higher confidence Indicated Resources, or not uncommonly as the first release of Mineral Resources in the case of a new discovery. When Inferred Resources are the only category being reported, it is likely that the maturity of the Modifying Factor data is also at early stages across many elements.

Given both the low geological confidence in the estimate of Inferred Mineral Resources, and the low likelihood of Modifying Factor maturity across all elements, Inferred Resources knowledge is not

sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning in Pre-Feasibility (Clause 11.4) or Feasibility (Clause 11.5) Studies. For this reason, there is no direct link from an Inferred Mineral Resource to any category of Ore Reserves (see Figure 1).

Caution should be exercised if Inferred Mineral Resources are used to support technical and economic studies such as Scoping Studies (refer to Clause 11.2).

Indicated Mineral Resources

An 'Indicated Mineral Resource' is defined in Clause 8.16 and is the minimum level required for consideration of Mineral Resources to be included in Ore Reserve estimates.

Mineralisation may be classified as an Indicated Mineral Resource when the nature, quality, amount, and distribution of data are such as to allow confident interpretation of the geological framework and to assume continuity of mineralisation.

Confidence in the estimate is sufficient to allow application of Modifying Factors within a Technical Study as defined in Section 11.

Measured Mineral Resources

A 'Measured Mineral Resource' is defined in Clause 8.18 and can be applied where reliable geological and grade continuity has been confirmed through detailed exploration sampling and testing.

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 Competent Person determining the Mineral Resource, that the tonnage and grade of the mineralisation can be estimated to within close limits, and that any variation from the estimate would be unlikely to significantly affect potential economic viability.

This category requires a high level of confidence in, and understanding of, the geological properties and controls of the mineral deposit.

Confidence in the estimate is sufficient to allow application of Modifying Factors within a technical and economic study as defined in Section 12.

Depending upon the level of confidence in the various Modifying Factors it may be converted to a Proved Ore Reserve (high confidence in Modifying Factors), Probable Ore Reserve (some uncertainty in Modifying Factors) or may not be converted at all (low or no confidence in some of the Modifying Factors; or no plan to mine, e.g. pillars in an underground mine or outside economic pit limits).

Accuracy of Estimates

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.

Competent Persons are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Mineral Resource estimates with consideration of at least sampling,

analytical and estimation errors. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).

Public Reporting of Mineral Resources

Technical Summary

With reference to Clause 8.28 of the Code, a Public Report of a Mineral Resource for a material mining project, when reporting for the first time, or when those estimates have materially changed from when they were last reported, a Mineral Resource Technical Summary must be provided in text form in the body of the Public Report and is *additional to* the Table 1 appendix (based on Mineral Resources Table 1) of the Public Report.

This is a requirement of both the JORC Code (2024) and the ASX listing rules.

For a material mining project, when Mineral Resource estimates have their initial declaration (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 Resource estimate in order that investors are appropriately informed of the basis for the changes.

As noted in Clauses 2.14 and 2.17 the benchmark of Materiality is that which an investor or their advisers would reasonably expect to see explicit comment on from the Competent Person, thus the reporting of all relevant criteria in Table 1 Mineral Resources Table 1) on an '*if not, why not*' basis is required.

It also requires that the Competent Person discuss and justify the reasonable prospects for economic extraction requisite when reporting a Mineral Resource estimate. The level of work undertaken should demonstrate a reasonable basis for the conclusions reached.

When revised Ore Reserve and Mineral Resource statements are publicly reported, the Competent Person must discuss any material changes from the previous estimate and supply sufficient comment to enable the basis for material changes to be understood by the reader.

Reconciliation

Depletion of any in-pit Mineral Resources by mine production (particularly when Mineral Resources are reported inclusive of Ore Reserve and at a lower cut-off) may lead to a material change in areas where mining has depleted the reported Mineral Resource.

Mineral Resource estimates should therefore be reported after depletion and reconciliation with production data, in line with Section 11 of the Code. Such adjustments for depletion, and the reconciliation methods used should be clearly described in a Public Report of Mineral Resources in this case.

This will not apply when Mineral Resources are reported additional to Ore Reserves.

Table 1

The Code specifies reporting against relevant sections of Table 1 in this Clause. This may be satisfied by reporting against Mineral Resources Table 1.

Compliance Statement

A compliance statement (Appendix 4 in the Code) and Competent Person Consent Form (Appendix 3 in the Code) is required for the Mineral Resources Public Report.

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SECTION 9 - ORE RESERVES

The Ore Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource which after taking into account Modifying Factors assumptions to at least Pre-Feasibility level, demonstrate that at the time of reporting extraction could be reasonably justified. (Refer to Clause 9.1 for full definition).

The Competent Person making the estimates, must provide assurance that a technically achievable and economically viable project has been established. Deriving an Ore Reserve without a mine design or mine schedule through a process of factoring of the Mineral Resource is unacceptable.

Ore Reserves are reported as inclusive of marginally economic material and diluting material delivered for treatment or dispatched from the mine without treatment.

The term 'economically mineable' implies that extraction of the Ore Reserves has been demonstrated to be viable under reasonable economic assumptions. This will vary with the type of deposit, the level of study that has been carried out and the financial criteria of the individual company. For this reason, there can be no fixed definition for the term 'economically mineable'.

In order to achieve the required level of confidence in the Modifying Factors, appropriate Feasibility or Pre-Feasibility level studies will have been carried out prior to determination of the Ore Reserves. The studies will have determined a mine plan and production schedule that is technically achievable and economically viable and from which the Ore Reserves can be derived.

The term 'Ore Reserves' need not necessarily signify that extraction facilities are in place or operative, or that all necessary approvals or sales contracts have been received. In such cases, in which permitting and approvals are as yet not obtained, discussion must disclose the risks, work plan and timeline required to achieve approval. There must be reasonable grounds to expect that all necessary Government approvals will be received. The Competent Person shall highlight and discuss any material unresolved matter that is dependent on a third party on which extraction is contingent.

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 on an '*if not, why not*' basis.

Any adjustment made to the data for the purpose of making the Ore Reserve estimate, for example by cutting or factoring grades, should be clearly stated and described in the Public Report.

Where companies prefer to use the term 'Mineral Reserves' in their Public Reports, e.g., for reporting industrial minerals or for reporting outside Australasia, they should state clearly that this is being used with the same meaning as 'Ore Reserves', defined in this Code. If preferred by the reporting company, 'Ore Reserve' and 'Mineral Resource' estimates for coal may be reported as 'Coal Reserve' and 'Coal Resource' estimates.

JORC prefers the term 'Ore Reserve' because it assists in maintaining a clear distinction between a 'Mineral Resource' and an 'Ore Reserve', whereas other codes feel it is better to reference Mineral Exploration Results, Mineral Resources and Mineral Reserves.

Selection of Ore Reserves Reporting Category

Application of the category of Proved Ore Reserve implies the highest degree of geological, technical, and economic confidence in the estimate at the level of production increments used to support mine planning and production scheduling, with consequent expectations in the minds of the readers of the report.

The Competent Person(s) and Specialist(s) are encouraged, where appropriate, to discuss the relative accuracy and confidence level of the Ore Reserve estimates with consideration of both underlying estimation and Modifying Factor uncertainties. The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnage. Where a statement of the relative accuracy and confidence level is not possible, a qualitative discussion of the uncertainties should be provided in its place (refer to Table 1).

The style of mineralisation or other factors could mean that Proved Ore Reserves are not achievable in some deposits.

Ore Reserves may incorporate material (dilution) that is not part of the original Mineral Resource. In such cases a clear description of the basis and process for inclusion of diluting materials in the Ore Reserves should be included under section 5.2 of Table 1. It is essential that this fundamental difference between Mineral Resources and Ore Reserves is considered, and caution exercised if attempting to draw conclusions from a comparison of the two.

Accuracy of Estimates

To emphasise the imprecise nature of an Ore Reserve, the result should always be referred to as an estimate and not as a calculation.

Competent Persons should, where appropriate, discuss the relative accuracy and/or confidence of the Ore 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.

Permitting and Approvals

With reference to Clause 9.9 it is recognised that some permits cannot be obtained until after an Ore Reserve has been declared. There might be sound business reasons why obtaining some permits should be postponed.

It is also recognised that waiting for all permits to be on hand could result in critical information not being released to the investors in a timely fashion, and therefore it is recommended that disclosure of material information occur prior to obtaining permits as appropriate.

Documentation should include a brief description of the title, claim, lease, or option under which the company has the right to hold or operate the property, indicating any conditions that the company must meet to obtain or retain the property.

If held by leases or options, the expiry dates of such leases or options should be stated. If extension of leases or options will be needed to mine the Ore Reserves, there should be reasonable expectation and explanation provided that such extension will be granted.

Public Reporting Ore Reserves

Technical Report

When revised Ore Reserve and Mineral Resource statements are publicly reported, the Competent Person must discuss any material changes from the previous estimate and supply sufficient comment to enable the basis for significant changes to be understood by the reader.

Ore Reserves Basis for Existing Operations

For existing mining operations Ore Reserves may be supported by a Life of Mine plan (LoMP) providing all elements are at least at Pre-Feasibility Level (Clause 11.4). This clause acknowledges that for existing mining operations the assumptions base for many of the Modifying Factors may be already established (for example, infrastructure facilities, mining equipment, permits, workforce etc). In industry practice, updated Ore Reserves are typically supported by LoMP studies in which the Modifying Factor assumptions are a combination of the existing elements and new evaluations. Provided the inputs are of at least Pre-Feasibility level this is considered sufficient to support an updated Ore Reserves Statement.

If however, the updated study includes significant capital investment or fundamental change to the mining or processing approaches, a new Pre-Feasibility study would be required. Examples of this would be transition from open pit to underground mining, or transition to substantially changed processing plant technology and capital investment.

Reconciliation

Where material changes in Mineral Resources and Ore Reserves are the result of depletion by mine production, the Competent Person must conduct and report a reconciliation that compares both Mineral Resource and Ore Reserve estimates to achieved production results according to the criteria as set out in Section 10.

Ore Reserve estimates should be reported after depletion and reconciliation with production data in line with Section 11 of the Code. Such adjustments for depletion, and the reconciliation methods used should be clearly described in a Public Report of Ore Reserves.

Ore Reserve estimates are sometimes reported after adjustment from reconciliation with production data. Such adjustments should be clearly stated in a Public Report of Ore Reserves and the nature of the adjustment or modification described.

Table 1

The Code specifies reporting against relevant sections of Table 1 on an '*if not, why not*' basis. The reporting criteria for Ore Reserves (Ore Reserves Table 1) must be disclosed and discussed. This should be included as an appendix to the Public Report.

The Technical Summary based against Ore Reserves Table 1 criteria must be included in the body of the Public Report.

Where there are as yet unresolved issues potentially impacting the reliability of, or confidence in, a statement of Ore Reserves (for example, limited geotechnical information, complex orebody metallurgy, uncertainty in the permitting process, etc) those unresolved issues shall also be reported.

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 on an *'if not, why not'* basis.

Uncertainties in any of the criteria listed in Table 1 that could lead to under- or over- statement of Ore Reserves should be disclosed.

In some situations there are reasons for reporting Mineral Resources inclusive of Ore Reserves and in other situations for reporting Mineral Resources additional to Ore Reserves. It must be made clear which form of reporting has been adopted.

Appropriate forms of clarifying statements may be:

'The Measured and Indicated Mineral Resources are inclusive of those Mineral Resources modified to produce the Ore Reserves.' or

'The Measured and Indicated Mineral Resources are additional to the Ore Reserves.'

In the former case, if any Measured and Indicated Mineral Resources have not been modified to produce Ore 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 being converted to Ore Reserves.

Inferred Mineral Resources are by definition generally additional to Ore Reserves except where included as dilution in the Ore Reserves.

With reference to Clauses 9.31 and 9.32 reported Ore Reserve estimates must not be aggregated with the reported Mineral Resource estimates (e.g., in graphs, figures or tables). 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.

Compliance Statement

A compliance statement (Appendix 4 in the Code) and Competent Person Consent Form (Appendix 3 in the Code) is required for the Ore Reserves Public Report.

SECTION 10 - RECONCILIATION

What is Reconciliation?

As defined in Clause 10.1 Reconciliation refers to the comparison of an estimate to a prior estimate, such as a Mineral Resource and/or an Ore Reserve, or the comparison of the mined part of an estimate to the mine production results.

Both prior estimate and production reconciliations should be documented by the Competent Person in Table 1 and elsewhere in the report as deemed appropriate by the Competent Person. For any prior estimate comparison, the Competent Person should comment on and quantify any material differences due to changes, for example; mining depletion, resource model updates, product pricing, metallurgical factors, costs, etc.

Where an Ore Reserve has been publicly reported for an operating mine, the results of both production reconciliation and any prior estimate reconciliation must also be included in the Public Report. The relationships and variables being reconciled must be described in plain language or depicted graphically, and must include reconciliations of Mineral Resource and Ore Reserve.

With reference to reporting criteria in Table 1 Section 6 (6.2.6 and 6.2.11)

- The measures that must be included in reporting each reconciliation are those that are material to the understanding of the estimates compared to production actuals (noting that production includes saleable product quantities) because they directly affect the value of the mine's production. Reconciliation between material Modifying Factors and actual mine production and mineral processing outcomes must be included in the Public Report.
- Production Reconciliation results should be presented in a simple format that also shows what the Competent Person deems to be acceptable tolerance limits of variation. The basis for setting tolerance limits must be clearly stated. Where production Reconciliation results are outside the tolerance limits deemed acceptable by the Competent Person a narrative must be provided that explains the effect on the operation's production and any subsequent mitigating actions being implemented. More detailed reconciliations can be reported if these clarify understanding the narrative.

The degree of confidence in the Reconciliations should be discussed so that the quality of the inputs and results are clearly explained.

SECTION 11 - TECHNICAL STUDIES

Scoping Study

In discussing 'reasonable prospects for economic extraction' in Clause 9.6 and 9.7, the Code requires a Reasonable Prospects Assessment of the Modifying Factors (refer Table 1 Section 5) in respect of all matters likely to influence the prospect of economic extraction including the approximate mining parameters by the Competent Person. While a Scoping Study may provide the basis for that assessment, the Code does not require a Scoping Study to have been completed to report a Mineral Resource.

Scoping Studies are commonly the first formal economic evaluation of a project undertaken and may be based on a combination of directly gathered project data together with assumptions borrowed from analogous deposits or operations to the case envisaged. They are also commonly used internally by companies for comparative and planning purposes.

Reporting the general results of a Scoping Study needs to be undertaken with care to ensure there is no implication that Ore 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, but it is not appropriate to report the diluted tonnes and grade as if they were Ore Reserves.

The required 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 Ore 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.'

While initial mining and processing cases may have been developed during a Scoping Study, there is too much uncertainty in the application of the Modifying Factors to allow an Ore Reserve to be estimated.

Pre-Feasibility Study

As noted in Clause 11.4, formal assessment of all Modifying Factors is required in order to determine how much available Measured and Indicated Mineral Resources can be converted to Ore Reserves.

A Pre-Feasibility Study will consider the application and description of all Modifying factors (as outlined in Table 1, section 5) to demonstrate economic viability and to support an Ore Reserve Public Report. The Pre-Feasibility Study will identify the preferred mining, processing, and infrastructure requirements and capacities, but will not yet have finalised these matters. Detailed assessments of environmental and socio-economic impacts and requirements will also be well advanced. The Pre-Feasibility Study will highlight areas that require further refinement within the final study stage.

Feasibility Study

Public Reports must only use the term Feasibility Study as defined in the JORC Code.

Terms such as “Bankable Feasibility Study” and “Definitive Feasibility Study” are not acceptable. Use of these terms does not imply greater confidence than that of a Feasibility Study and may be misconstrued.

A Feasibility Study is of a higher level of confidence than a Pre-Feasibility Study. The Feasibility Study demonstrates the work completed which has led to an increase in confidence in the applied Modifying Factors.

It 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 5) 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.

Appendix 2 of this Guidance contains Technical Study guidance by study stage which provides useful prompts.

DRAFT

SECTION 12 REPORTING OF METAL EQUIVALENTS

With reference to Section 12 of the Code, the Competent Person shall transparently disclose and discuss all references to metal equivalents, including where a metal equivalent cut-off is applied.

It is a requirement that the metal equivalent basis and all input assumptions are clearly explained so the readers can understand the manner in which the “equivalence” has been generated.

It follows that the more metals included in the calculation, the more complex this disclosure can become.

An area of concern is the level of metallurgical recovery and payability assumed for the metals package. For early-stage exploration reporting, there may not be sufficient data to validly claim equivalence, and individual metals should be reported.

For metallurgically complex mineralisation types, special attention must be given by the Competent Person to what elements may be recoverable (or not) through an available and viable processing pathway.

As always, value contribution relies on reasonable recovery assumptions for each metal aligned with reasonable price assumptions. In some cases, equivalence may only be able to be calculated on the metals for which recovery can be more reasonably assumed. An example could be reporting Copper Equivalents for copper and gold in concentrate, forgoing assumed recovery of non-payable metals in the assumed smelter payments. (i.e., forgoing value from minor metals not paid for in concentrate sales).

SECTION 13 REPORTING OF IN SITU OR IN GROUND VALUATIONS

Clause 13.1 states that in situ or in ground financial valuations must not be reported by companies in relation to Exploration Results, Exploration Targets, Mineral Resources, Ore Reserves, or deposit size.

The use of such financial valuations (usually quoted in dollars) has little or no relationship to economic viability, value, or potential returns to investors.

These financial valuations can imply economic viability without the apparent consideration of the application of the Modifying Factors, in particular, mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social, and governance (ESG) and regulatory factors.

In determining project viability it is necessary to include all reasonable Modifying Factors to determine the economic value that can be extracted from the mineralisation.

Many deposits with purported large in ground values are never developed because they have a negative Net Present Value when all reasonable Modifying Factors are considered.

By reporting such financial valuations as a component of Exploration Results or when evaluating deposits that commonly include large portions of Inferred Mineral Resources, companies are not necessarily representing the economic viability of the project, or the net economic value that can be extracted from the mineralisation, and such reports are misleading.

SECTION 14 REPORTING OF MINERALISED FILL, REMNANTS, PILLARS, LOW GRADE MINERALISATION, STOCKPILES, DUMPS AND TAILINGS

Any mineralised material as described in Clause (14.1) can be considered to be similar to in situ mineralisation for the purposes of reporting Mineral Resources and Ore Reserves. Judgements about the mineability of such mineralised material should be made by professionals with relevant experience.

If there are no reasonable prospects for the economic extraction of all or part of the mineralised material, then this material cannot be classified as either Mineral Resources or Ore 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 an Ore Reserve.

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 be aggregated with total Mineral Resource and Ore Reserve figures.

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.

SECTION 15 COMMODITY PRICING AND ECONOMIC ASSUMPTIONS

The basis for the selected prices and sales volumes should be supported by appropriately sourced marketing analysis and documentation.

The Competent Person should ascertain that these prices and volumes are consistent with sales agreements and marketing determinations or forecasts.

Under certain circumstances, it may be appropriate to use slightly different prices for estimating Mineral Resources and Ore Reserves.

For current mining operations, the price and volume profile used for Mineral Resources and Ore Reserves estimation may reflect current market conditions for short-term forecasts, while trending with time upward or downward toward the long-term price and volume estimates based on the company's expectations, forward contracts and public consensus price forecasts.

For Ore Reserves that are expected to be produced beyond the validity of short-term forecasts, the company should use long-term price and volume expectations.

For commodities sold under existing contracts, Ore Reserves should be determined based on contract terms.

For Ore Reserves for which production would extend beyond the quantities specified in existing contracts, reasonable and supportable assumptions should be made to determine the likelihood of contract renewal and prices applicable for the estimation and reporting of these Mineral Resources and Ore Reserves.

Ore Reserves are the economically mineable part of a Measured or Indicated Mineral Resource; hence, appropriate assessments should demonstrate at the time of reporting that extraction is reasonably justified. This requires that assumptions are made concerning the price of the commodity or product that will be sold when the mine is in production and assumptions regarding successful permitting renewals.

Ore Reserves are estimated and published to supply information concerning the value of the deposit and the risk which may be associated with its development.

Ore Reserves are used by a company, in conjunction with Mineral Resources, for short-term, long-term, and strategic planning. They play a critical role in accounting, including impairment testing, fair value accounting, calculation of depreciation, amortisation, depletion, closure provisioning and accumulated retirement obligation provision rates.

To supply information consistent with the company's plans and financial reporting, commodity prices used for the determination of Ore Reserves should be based on forward-looking estimates reflecting the company's reasonable expectations as supported by all available evidence including public data (e.g., World Bank).

Most commodities, whether sold using publicly quoted prices (e.g., base metals and precious metals) or under long term contract (e.g., coal and iron ore), experience long-term price cycles. Price expectations should reflect current prices as well as long-term trends. Overly optimistic or pessimistic price and volumes expectations could result in significant over or underestimation of Ore Reserves. It is the responsibility of the company and the Competent Person to determine whether the prices used for Ore Reserve estimation are reasonable and supportable, given all available

information. Significant deviation from consensus commodity price assumptions is always material and would require additional disclosure and discussion.

During periods of low prices, a mining company may choose to temporarily curtail operations and conserve the mineral asset until prices recover. When such actions are taken, Public Reports should be updated to reflect the new information. In such circumstances, previously published Ore Reserves may not have to be reclassified, provided that, in the opinion of company and the Competent Person, higher future prices can be reasonably and supportably assumed, and it can reasonably be expected that operations will resume.

The documentation supporting the company's expectations should include a comparison of historical prices and costs with current prices and costs, forward curves, contracts and market considerations, currency exchange rates where applicable, third-party sources, and supplemental information.

Whenever prices and/or costs are not disclosed, the reasons should be documented, and the commodity price and/or cost information should nevertheless be available for review by auditors or regulators if required.

Even when commodity prices and/or costs are excluded from a Public Report, a description of the methodology used to determine the prices and/or costs should be disclosed. Such disclosure should be in a form which helps the audience of the Public Report to form an opinion that prices and/or costs used represent reasonable views of future prices and/or costs.

The exceptions to disclosure of commodity prices and/or costs are subject to, and overruled by, any obligations imposed by applicable securities or other laws.

SECTION 16 COMMODITY SPECIFIC CONSIDERATIONS

Diamonds

For the purposes of Public Reporting, the requirements for diamonds and other gemstones are generally similar to those for other commodities with the replacement of terms such as 'mineral' by 'diamond' and 'grade' by 'grade and average diamond value'. The term 'quality' should not be substituted for 'grade,' since in diamond deposits these have distinctly separate meanings. Other industry guidelines on the estimation and reporting of diamond resources and reserves may be useful but will not under any circumstances override the provisions and intentions of the JORC Code.

A number of characteristics of diamond deposits are different from those of, for example, typical metalliferous and coal deposits and therefore require special consideration. These include the generally low mineral content and variability of primary and placer deposits, the particulate nature of diamonds, the specialised requirement for diamond valuation and the inherent difficulties and uncertainties in the estimation of diamond resources and reserves.

The stone size distribution and price of diamonds and other gemstones are critical components of the resource and reserve estimates. At an early exploration stage, sampling and delineation drilling will not usually provide this information, which relies on large diameter drilling and, in particular, bulk sampling.

In order to demonstrate that a resource has reasonable prospects for economic extraction, some description of the likely stone size distribution and price is necessary, however preliminary the analysis of these may be. To determine an Inferred Mineral 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.

In order to progress to an Indicated Mineral Resource, and from there to a Probable Ore 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.

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.

Industrial minerals

When reporting information and estimates for industrial minerals, the key principles and purpose of the JORC Code apply and should be borne in mind. Assays may not always be relevant, and other quality criteria may be more applicable. 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.

The factors underpinning the estimation of Mineral Resources and Ore Reserves for industrial minerals are the same as those for other deposit types covered by the JORC Code. It may be necessary, prior to the reporting of a Mineral Resource or Ore Reserve, to take particular account of

certain key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability.

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 Ore Reserve. JORC's preference is that, if the saleable product is reported, it should be in conjunction with, not instead of, reporting of the Ore Reserve. However, it is recognised 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.

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 company, such multiple products should be quantified either separately or as a percentage of the bulk deposit.

Coal Resources and Reserves

For guidance on the estimation of Coal Resources and Reserves and on statutory reporting not primarily intended for providing information to the investing public, readers are referred to the 'Australian Guidelines for the estimation and classification of Coal Resources', 2014 Edition, or its successor document as published from time to time by the Coalfields Geology Council of New South Wales and the Queensland Resources Council.

These guidelines do not override the provisions and intentions of the JORC Code for Public Reporting. Competent Persons should as always exercise their judgement in the application of these guidelines to ensure they are appropriate to the circumstances being reported. They may not be appropriate for use in all situations in Australia or overseas.

Because of its impact on planning and land use, governments may require estimates of inventory coal that are not constrained by short- to medium-term economic considerations. The JORC Code does not cover such estimates.

Since investors need to be informed on the products intended to be sold, reporting of Marketable Coal Reserves is required.

Reference to the terms 'coking coal' or 'metallurgical coal', or any reference to coking properties, should not be made until specific coking properties are demonstrated by analytical results for samples from a deposit.

To access the 2014 *Australian Guidelines for the estimation and classification of Coal Resources*, please [click here](#)

Brines

AMEC Brine Guideline

To view the brine guideline please, [click here](#)

APPENDIX 1 ESG GUIDANCE MATRIX

ENVIRONMENTAL				
	Impact Category	Exploration	Mineral Resources	Ore Reserves
Air	Air emissions, including dust quantity and characteristics	<ul style="list-style-type: none"> Potential impacts to people and environment 	<ul style="list-style-type: none"> Potential impacts to people and environment Extreme event management (storm, flood, fire) 	<ul style="list-style-type: none"> Potential impacts to people and environment Extreme event management (storm, flood, fire)
	Noise and visual	<ul style="list-style-type: none"> Potential impacts to people and environment 	<ul style="list-style-type: none"> Potential impacts to people and environment 	<ul style="list-style-type: none"> Potential impacts to people and environment
Water	Availability and competition	<ul style="list-style-type: none"> Availability and quality 	<ul style="list-style-type: none"> Availability and quality Availability and competition 	<ul style="list-style-type: none"> Availability and quality Availability and competition
	Surface flow and quality impacts		<ul style="list-style-type: none"> Hydrological & hydrogeological interpretation 	<ul style="list-style-type: none"> Hydrological & hydrogeological interpretation Dewatering and other discharges
	Aquifer impacts		<ul style="list-style-type: none"> Water and wastewater management 	<ul style="list-style-type: none"> Water and wastewater management Water efficiency, reuse, and recycling
	Storage and discharge		<ul style="list-style-type: none"> Extreme event management (flood/drought) 	<ul style="list-style-type: none"> Extreme event management (flood/drought) Impact on down-gradient users
Land and Biodiversity	Native vegetation impacts	<ul style="list-style-type: none"> Environmental knowledge base status 	<ul style="list-style-type: none"> Environmental knowledge base status 	<ul style="list-style-type: none"> Environmental knowledge base status
	Terrestrial and aquatic species impacts	<ul style="list-style-type: none"> Endangered biodiversity status/potential impact 	<ul style="list-style-type: none"> Endangered biodiversity status/potential impact Impact on ecosystems and/or individual species 	<ul style="list-style-type: none"> Endangered biodiversity status/potential impact Impact on ecosystems and/or individual species
	Agricultural impacts	<ul style="list-style-type: none"> Location of protected or sensitive areas/species 	<ul style="list-style-type: none"> Location of protected or sensitive areas/species Existing land use and competition 	<ul style="list-style-type: none"> Location of protected or sensitive areas/species Existing land use and competition Biodiversity offsets
	Protected areas, habitats, and species		<ul style="list-style-type: none"> Land clearing/biomass impact 	<ul style="list-style-type: none"> Land clearing/biomass impact Groundwater dependent ecosystems Landscape impacts and erosion
Mineral Waste	Soil erosion/ contamination	<ul style="list-style-type: none"> Waste Products 	<ul style="list-style-type: none"> Waste Products 	<ul style="list-style-type: none"> Waste Products
	Mine Domain (TSF, WRD, ROM, pits, heap leach, etc.)	<ul style="list-style-type: none"> Legacy issues Hazardous materials Environmental geochemistry hazards 	<ul style="list-style-type: none"> Legacy issues Hazardous materials Environmental geochemistry hazards Tailings considerations (incl AMD) Waste dump considerations (incl AMD) Environmental geochemistry predictions 	<ul style="list-style-type: none"> Legacy issues Hazardous materials Environmental geochemistry hazards Tailings considerations (incl AMD) Waste dump considerations (incl AMD) Environmental geochemistry predictions TSF capacity & construction material assumptions Closure and Remediation assumptions and costs
Climate	Critical Minerals		<ul style="list-style-type: none"> Identify emissions sources 	<ul style="list-style-type: none"> Identify emissions sources
	GHG emissions - absolute	<ul style="list-style-type: none"> Statement, including access to renewable energy 	<ul style="list-style-type: none"> Statement, including access to renewable energy Qualitative statement about Scope 1, 2, 3 emissions 	<ul style="list-style-type: none"> Statement, including access to renewable energy Qualitative statement about Scope 1, 2, 3 emissions Quantitative Scope 1, 2 and 3 emissions, by source by annum over life of asset
	GHG emissions - intensity	<ul style="list-style-type: none"> Energy sources/profile 	<ul style="list-style-type: none"> Energy sources/profile 	<ul style="list-style-type: none"> Energy sources/profile Quantitative, by annum
	Carbon Neutrality strategy		<ul style="list-style-type: none"> Statement, inclusive of climate change vulnerability considerations 	<ul style="list-style-type: none"> Statement, inclusive of climate change vulnerability considerations Plan for decarbonisation
	Energy consumption profile and management		<ul style="list-style-type: none"> Relative to mining/ processing method, estimative usage, by source, for life of resource Estimated intensity, for life of resource 	<ul style="list-style-type: none"> Relative to mining/ processing method, estimative usage, by source, for life of resource Estimated intensity, for life of resource Quantitative energy usage profile, by source by annum Intensity, by annum

SOCIAL

Impact Category	Exploration	Mineral Resources	Ore Reserves	
Health, Safety and Security	Affected community H&S	<ul style="list-style-type: none"> Workforce considerations 	<ul style="list-style-type: none"> Workforce considerations Employee and contractor health and safety 	<ul style="list-style-type: none"> Workforce considerations Employee and contractor health and safety Emergency Response
	Communicable diseases	<ul style="list-style-type: none"> Community considerations 	<ul style="list-style-type: none"> Community considerations Community health and safety 	<ul style="list-style-type: none"> Community considerations Community health and safety
Workforce and Services	Local employment opportunity	<ul style="list-style-type: none"> Fair labour practices 	<ul style="list-style-type: none"> Fair labour practices Codes of conduct 	<ul style="list-style-type: none"> Fair labour practices Codes of conduct Local and indigenous employment
	Adequate conditions		<ul style="list-style-type: none"> Gender equality 	<ul style="list-style-type: none"> Gender equality Local and indigenous training and employment
	Local enterprise opportunity			<ul style="list-style-type: none"> Local and indigenous service and supply
	Adequate payment			<ul style="list-style-type: none"> Gender equality
People	Resettlement and displacement	<ul style="list-style-type: none"> Socioeconomic knowledge base status 	<ul style="list-style-type: none"> Socioeconomic knowledge base status Land use/access agreements 	<ul style="list-style-type: none"> Socioeconomic knowledge base status Land use/access agreements
	In-migration	<ul style="list-style-type: none"> Stakeholder characterisation/engagement 	<ul style="list-style-type: none"> Stakeholder characterisation/engagement Free, Prior and Informed Consent (FPIC) 	<ul style="list-style-type: none"> Stakeholder characterisation/engagement Free, Prior and Informed Consent (FPIC) Restricted public access
	Indigenous peoples, ethnic minorities	<ul style="list-style-type: none"> Landowner permission and compensation 	<ul style="list-style-type: none"> Landowner permission and compensation Local economy/social contribution opportunities 	<ul style="list-style-type: none"> Landowner permission and compensation Local economy/social contribution opportunities Displacement, economic resettlement, in-migration
	Artisanal and small-scale mining	<ul style="list-style-type: none"> Adjacent property considerations 	<ul style="list-style-type: none"> Adjacent property considerations Impact on community common lands/water use Visual, air/dust, noise, vibration, light impacts 	<ul style="list-style-type: none"> Adjacent property considerations Impact on community common lands/water use Visual, air/dust, noise, vibration, light impacts
	Workforce behaviour	<ul style="list-style-type: none"> Indigenous peoples, ethnic minorities presence Community complaints system/any issues 	<ul style="list-style-type: none"> Indigenous peoples, ethnic minorities presence Community complaints system/any issues Potential lifecycle impacts Artisanal & Small-Scale Mining (ASM) 	<ul style="list-style-type: none"> Indigenous peoples, ethnic minorities presence Community complaints system/any issues Potential lifecycle impacts Artisanal & Small-Scale Mining (ASM)
Heritage	Cultural heritage impacts	<ul style="list-style-type: none"> Cultural heritage surveys/clearance approvals 	<ul style="list-style-type: none"> Cultural heritage surveys/clearance approvals 	<ul style="list-style-type: none"> Cultural heritage surveys/clearance approvals

GOVERNANCE

	Impact Category	Exploration	Mineral Resources	Ore Reserves
Tenure	Permits, Approvals and Licences status	<ul style="list-style-type: none"> Permits, Approvals and Licences status 	<ul style="list-style-type: none"> Permits, Approvals and Licences status 	<ul style="list-style-type: none"> Permits, Approvals and Licences status
	Indigenous Title/Agreements	<ul style="list-style-type: none"> Indigenous Title/Consent Agreements 	<ul style="list-style-type: none"> Indigenous Title/Consent Agreements 	<ul style="list-style-type: none"> Indigenous Title/Consent Agreements
	Other rights holders	<ul style="list-style-type: none"> Other rights holders (e.g. pastoralists) 	<ul style="list-style-type: none"> Other rights holders (e.g. pastoralists) 	<ul style="list-style-type: none"> Other rights holders (e.g. pastoralists)
Management	Record keeping, data quality and security	<ul style="list-style-type: none"> Record keeping, data quality and security 	<ul style="list-style-type: none"> Record keeping, data quality and security Strategy and values 	<ul style="list-style-type: none"> Record keeping, data quality and security Strategy and values Material Stewardship
	Downstream supply chain certification	<ul style="list-style-type: none"> Management systems and records 	<ul style="list-style-type: none"> Management systems and records Policies and procedures 	<ul style="list-style-type: none"> Management systems and records Policies and procedures
	Reporting - transparency and disclosure	<ul style="list-style-type: none"> Reporting transparency 	<ul style="list-style-type: none"> Reporting transparency Internal monitoring and reporting Accountabilities/Responsibilities 	<ul style="list-style-type: none"> Reporting transparency Internal monitoring and reporting Accountabilities/Responsibilities Executive remuneration and ESG KPIs
	Business integrity - corruption, bribery, anti-competitive behaviour	<ul style="list-style-type: none"> Business integrity 	<ul style="list-style-type: none"> Business integrity Attempted bribery and corruption response 	<ul style="list-style-type: none"> Business integrity Attempted bribery and corruption response
	Planning for closure, unanticipated suspension/termination	<ul style="list-style-type: none"> Management systems and records 	<ul style="list-style-type: none"> Management systems and records Extreme event management 	<ul style="list-style-type: none"> Management systems and records Extreme event management
	Sustainability	<ul style="list-style-type: none"> Sustainability ratings 	<ul style="list-style-type: none"> Sustainability ratings 	<ul style="list-style-type: none"> Sustainability ratings
Legal	Land acquisition	<ul style="list-style-type: none"> Land acquisition 	<ul style="list-style-type: none"> Land acquisition 	<ul style="list-style-type: none"> Land acquisition
	Permitting	<ul style="list-style-type: none"> Permitting condition compliance 	<ul style="list-style-type: none"> Permitting condition compliance Compliance assurance/verification 	<ul style="list-style-type: none"> Permitting condition compliance Compliance assurance/verification
	Commercial arrangements	<ul style="list-style-type: none"> Commercial arrangements 	<ul style="list-style-type: none"> Commercial arrangements 	<ul style="list-style-type: none"> Commercial arrangements
	Terms and conditions	<ul style="list-style-type: none"> Existing orders Terms and conditions 	<ul style="list-style-type: none"> Existing orders Terms and conditions 	<ul style="list-style-type: none"> Existing orders Terms and conditions
Human Rights	Refer to UN Charter and Voluntary Principles on Security and Human Rights	<ul style="list-style-type: none"> Due diligence review as appropriate Adherence to Voluntary Principles on Security and Human Rights 	<ul style="list-style-type: none"> Due diligence review as appropriate Adherence to Voluntary Principles on Security and Human Rights 	<ul style="list-style-type: none"> Due diligence review as appropriate Adherence to Voluntary Principles on Security and Human Rights
Ethics	Reputation exposures	<ul style="list-style-type: none"> Commitment to ESG described 	<ul style="list-style-type: none"> Commitment to ESG described Transparency Diversity Whistleblowing procedure 	<ul style="list-style-type: none"> Commitment to ESG described Transparency Diversity Whistleblowing procedure Codes of conduct Supplier privacy Political Influence

APPENDIX 2 TECHNICAL STUDY GUIDELINES

GUIDELINE FOR TECHNICAL STUDIES			
Item	Scoping Study	Pre-Feasibility Study	Feasibility Study
Resource categories (inputs)	<ul style="list-style-type: none"> Any 	<ul style="list-style-type: none"> Measured and Indicated 	<ul style="list-style-type: none"> Measured and Indicated
Reserve categories (outputs)	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Proved and Probable 	<ul style="list-style-type: none"> Proved and Probable
Mining method and geotechnical constraints	<ul style="list-style-type: none"> Conceptual 	<ul style="list-style-type: none"> Preliminary Options 	<ul style="list-style-type: none"> Detailed
Mine design	<ul style="list-style-type: none"> Conceptual 	<ul style="list-style-type: none"> Preliminary mine plan and schedule 	<ul style="list-style-type: none"> Detailed mine plan and schedule
Scheduling	<ul style="list-style-type: none"> Annual approximation 	<ul style="list-style-type: none"> 3-monthly to annual 	<ul style="list-style-type: none"> Monthly for much of payback period
Geometallurgy	<ul style="list-style-type: none"> Limited definition 	<ul style="list-style-type: none"> Preliminary definition to support metallurgical recovery based on representative composites 	<ul style="list-style-type: none"> Representative samples across all domains and variability composites
Mineral Processing	<ul style="list-style-type: none"> Indicative test work Similar deposit benchmark 	<ul style="list-style-type: none"> Flowsheet development Comparative options 	<ul style="list-style-type: none"> Detailed and Optimised Domaining and mineral influence tested
Revenue Basis	<ul style="list-style-type: none"> Industry benchmark (with consideration of development time horizons) 	<ul style="list-style-type: none"> Average product basis (with consideration of development time horizons) 	<ul style="list-style-type: none"> Marketing Study Customer appraisal
Permitting - (land access, water, power, mining, prospecting, enabling infrastructure & environmental)	<ul style="list-style-type: none"> Required permitting and anticipated timelines listed Clarification of permitting process / timelines and identification of required fieldwork 	<ul style="list-style-type: none"> Preliminary applications submitted Authorities, directly affected communities and relevant stakeholders engaged. Relevant fieldwork and studies underway 	<ul style="list-style-type: none"> Major permit applications submitted with anticipated Timelines for approval Authorities, directly affected communities and relevant stakeholders engaged.
Social Performance and Compliance	<ul style="list-style-type: none"> Engagement with directly affected communities 	<ul style="list-style-type: none"> Formal communication structures and engagement channels in place Engagement with directly affected community on major design/location/technology decisions 	<ul style="list-style-type: none"> Contracts/agreements in place with directly affected communities, relevant organisations and governments as required. Estimate prepared from detailed zero- based budget for specific contracts/agreement requirements
Risk tolerance	<ul style="list-style-type: none"> High 	<ul style="list-style-type: none"> Medium 	<ul style="list-style-type: none"> Low
Risk assessment level	<ul style="list-style-type: none"> Identification of material risks 	<ul style="list-style-type: none"> Preliminary risk assessment with qualitative impact assessment and identification of mitigation and realisation approaches 	<ul style="list-style-type: none"> Implementation of detailed risk register and use of Tornado charts or Monte Carlo assessments to represent quantification of impacts for key variables
Percentage of study outcomes applicable to next study phase (this is not an "Engineering Complete" value as this concept is not applicable to sequential mineralisation studies)	<ul style="list-style-type: none"> <5% applicable to PFS Future drilling and associated testing will typically redefine macro project parameters 	<ul style="list-style-type: none"> <40% applicable to FS Future drilling and associated testing may redefine macro project parameters and will redefine many of the remaining design inputs. Major decisions subject to trade-off study before commencing FS. 	<ul style="list-style-type: none"> >80% FS applicable to implementation FS must be definitive such that it allows commencement of detailed design activities
Relative Engineering and Infrastructure (this is not % complete)	<ul style="list-style-type: none"> Proof of Concept 	<ul style="list-style-type: none"> Preliminary Flowsheet designs 	<ul style="list-style-type: none"> Detailed Flowsheet Design (construction engineering design remains to be completed.)
Project Development Plan	<ul style="list-style-type: none"> General estimate of time and cost based on assumptions. Definition of further work required to assess risk 	<ul style="list-style-type: none"> Preliminary 	<ul style="list-style-type: none"> Detailed (to inform the Project Implementation Plan)

Basis of Capital Estimate			
Item	Scoping Study	Prefeasibility Study	Feasibility Study
Civil/structural, architectural, piping/HVAC, electrical, instrumentation, construction labour, construction labour productivity, material volumes/amounts, material/equipment, pricing, infrastructure	<ul style="list-style-type: none"> Order-of-magnitude based on historic data or factoring. 	<ul style="list-style-type: none"> Estimated from benchmark data, historic factors or percentages in combination with vendor budget quotes based on material volumes. 	<ul style="list-style-type: none"> Estimated material take-off quantities, and multiple vendor quotations (*as basis for final engineering drawings and design and updated cost estimate)
Contractors	<ul style="list-style-type: none"> Included in unit cost or as a percentage of total cost 	<ul style="list-style-type: none"> Percentage of direct cost by area for contractors; historic for subcontractors Budget quotes from contractors and suppliers should be included 	<ul style="list-style-type: none"> Written quotes from contractor and subcontractors
Engineering, procurement, and construction management (EPCM)	<ul style="list-style-type: none"> Percentage of estimated construction cost 	<ul style="list-style-type: none"> Key parameters, Percentage of estimated construction cost 	<ul style="list-style-type: none"> Detailed implementation estimate
Owner's costs	<ul style="list-style-type: none"> Factored, benchmark, database or historic estimate 	<ul style="list-style-type: none"> Budgeted quotes on key parameters and estimates from experience, factored from similar project 	<ul style="list-style-type: none"> Detailed estimate
Environmental Performance and Compliance Costs	<ul style="list-style-type: none"> Identification of material environmental matters and compliance requirements. 	<ul style="list-style-type: none"> Identification of material environmental matters and compliance requirements. Estimate from experience, factored from similar project 	<ul style="list-style-type: none"> Identification of material environmental matters and compliance requirements. Estimate prepared from detailed zero- based budget for design engineering and specific permit requirements
Exit/Closure Plan and Cost Estimate	<ul style="list-style-type: none"> Conceptual Exit and/or Closure Plan, with options for discussion. Estimate from experience, factored from similar projects. 	<ul style="list-style-type: none"> Conceptual Exit and/or Closure Plan, with recommended option(s) for internal approval. Cost estimate from experience, factored from similar projects. 	<ul style="list-style-type: none"> Conceptual Closure Plan, with recommended option(s) for approval and discussion with Authorities, affected communities and other external stakeholders. Estimate prepared from detailed zero- based budget for design engineering and specific permit requirements. Target estimate accuracy of $\pm 30 - 50\%$
Escalation	<ul style="list-style-type: none"> Not considered 	<ul style="list-style-type: none"> Based on entity's current budget percentage 	<ul style="list-style-type: none"> Based on cost area with risk
Accuracy Range (Order of magnitude) *percentage reflect the confidence range of the various Modifying Factors and assumptions/inputs to the model.	<ul style="list-style-type: none"> $\pm 25-50\%$ 	<ul style="list-style-type: none"> $\pm 15-25\%$ 	<ul style="list-style-type: none"> $\pm 10-15\%$
Suggested Contingency Range (Allowance for items not specified in scope that will be needed)	<ul style="list-style-type: none"> $\pm 30\%$ 	<ul style="list-style-type: none"> $\pm 15-30\%$ 	<ul style="list-style-type: none"> $\pm 10\% - 15\%$ (actual to be determined based on risk analysis)

Basis of Operating Costs			
Item	Scoping Study	Prefeasibility Study	Feasibility Study
Operating Costs	<ul style="list-style-type: none"> Order-of-magnitude based on benchmark data or historic data or factoring 	<ul style="list-style-type: none"> Estimated from benchmark data, historic data with factoring or percentages related to other estimates such as CAPEX and with consideration of project location. Obtain vendor budget quotes based on material volumes where applicable 	<ul style="list-style-type: none"> Detailed estimate
Operating quantities	<ul style="list-style-type: none"> General 	<ul style="list-style-type: none"> Specific estimates with some factoring High level schedules to be included 	<ul style="list-style-type: none"> Detailed estimates
Unit costs	<ul style="list-style-type: none"> Based on benchmark data or historic data with factoring 	<ul style="list-style-type: none"> Estimates for labour, power, and consumables, some factoring Project location factors estimated 	<ul style="list-style-type: none"> Written quotes from vendors; minimal factoring
Accuracy Range (percentage reflect the confidence range of the various Modifying Factors and assumptions/inputs to the model.)	<ul style="list-style-type: none"> ± 25-50% 	<ul style="list-style-type: none"> ±15% - 25% 	<ul style="list-style-type: none"> ±10% - 15%
Suggested Contingency Range (Allowance for items not specified in scope that will be needed)	<ul style="list-style-type: none"> + 25% 	<ul style="list-style-type: none"> + 15% 	<ul style="list-style-type: none"> + 10% (actual to be determined based on risk analysis)

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