

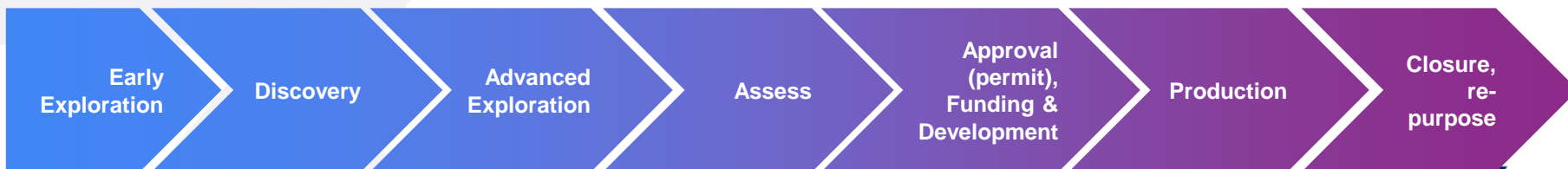


# The assurance around reporting and progressing from exploration to development of projects

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# Overview

- Mineral Resources and Mineral Reserves are key assets for a resource sector company
- Assurance is needed over the processes that are applied in their estimation and reporting (forecasts) across the mine value chain to:
  - Assess and manage the risk that the Mineral Resources and Mineral Reserves are incorrectly defined and/or reported
  - Avoid incorrect information impacting business decision making, reporting, reputation and investor confidence



# What is being covered

- Firstly:
  - What we mean by Resource and Reserve governance and assurance
  - Why we need robust Resource and Reserve governance processes
  - What needs to be in place to provide this assurance and support the governance
  - What we mean by technical peer reviews and audits
- Case studies: What industry is doing
- Conclusion

What do we mean by Resource and Reserve  
(R&R) governance and assurance?

# Corporate Governance

“**Corporate governance** is the system of rules, practices and processes by which a company is directed and controlled.

Corporate governance essentially involves balancing the interests of a company's many stakeholders, such as shareholders, management, customers, suppliers, financiers, government and the community.

Since corporate governance also provides the framework for attaining a company's objectives, it encompasses practically every sphere of management, from action plans and internal controls to performance measurement and corporate disclosure.”

Read more: <http://www.investopedia.com/terms/c/corporategovernance.asp#ixzz4O8rtd9GJ>

# Corporate Governance

## **Governance in Mineral Resource and Ore/Mineral Reserve Reporting:**

Resource and Reserve reporting Governance is the way the reporting guidelines, procedures and methodologies are structured, sustained, regulated and held accountable within the organisation/ company.

# Technical assurance - risk mitigation

- Exploration Results, Resources and Reserves
  - Are key assets for resource sector focused companies
- Assurance
  - Is needed over the quality of the processes applied in the data collection, estimation and reporting of Exploration Results, Resources and Reserves
- The assurance process
  - Must assess and manage the risk that the Exploration Results, Resources and Reserves and Project Forecasts are incorrectly defined and/or reported

# The Foundation of R&R: International Reporting Codes

*Public Reports and Reports for investors/stakeholders rely on Materiality, Transparency, Competence, Independence and Standardised Nomenclature, following Governing Principles for International Reporting Codes of solid minerals*

## **Transparency:**

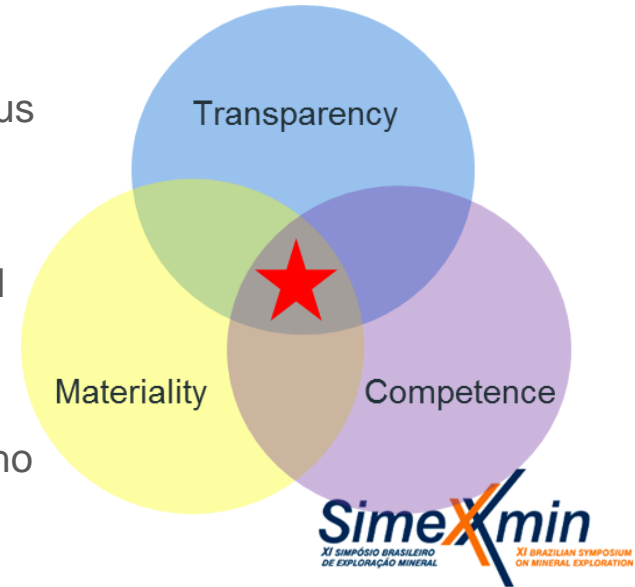
Reader of the public Report has sufficient, clear and unambiguous information reported

## **Materiality:**

Relevant information required to make a reasoned and balanced judgement upon is reported

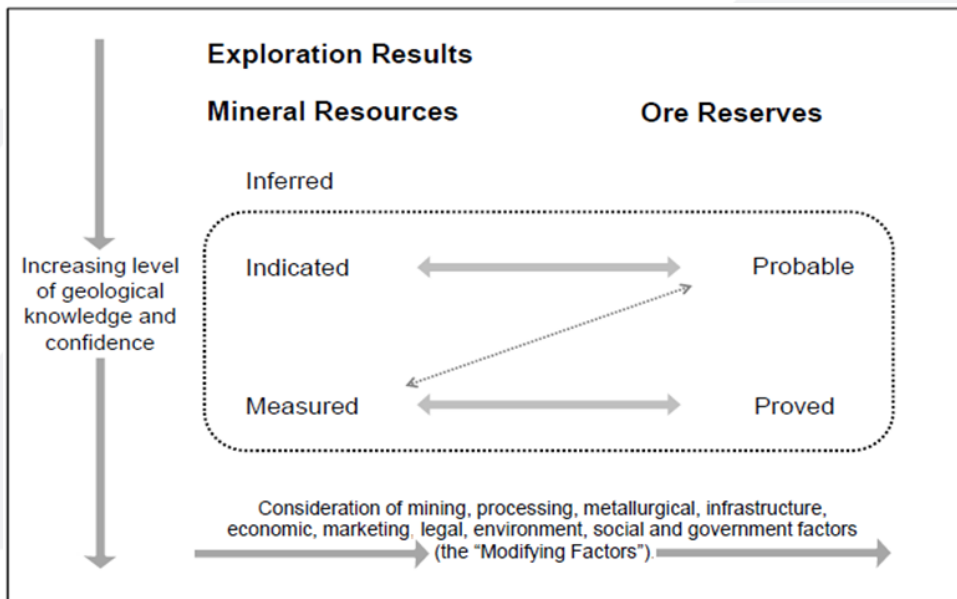
## **Competence:**

Responsibility of a suitable qualified and experienced person, who are subject to an enforceable professional codes and rules

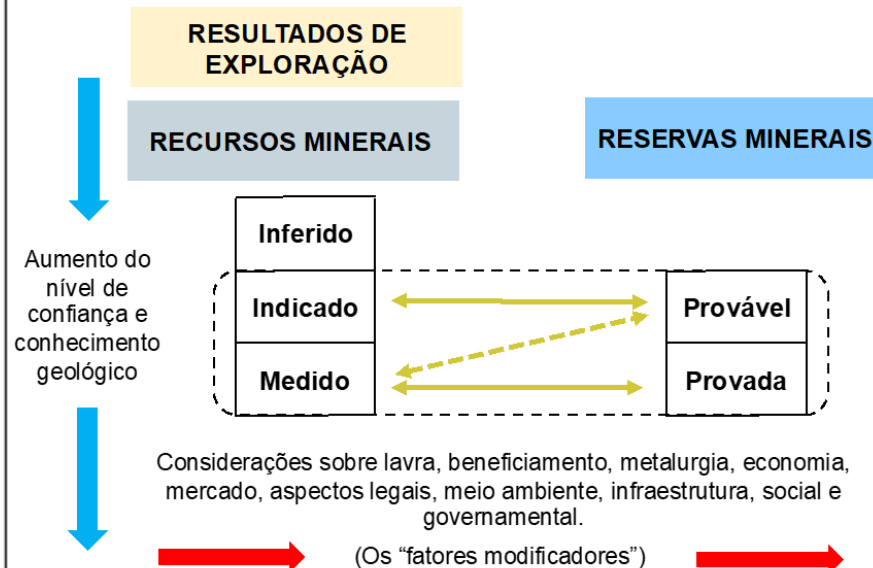




# Reporting standards for disclosure

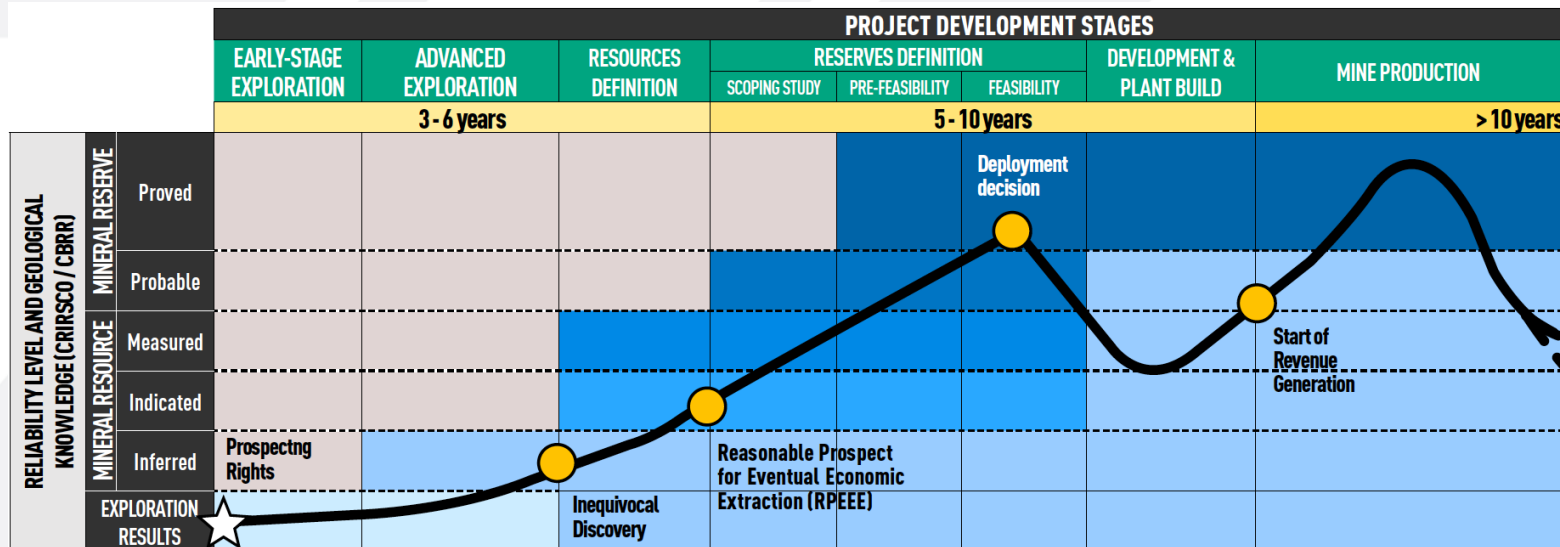


JORC Code 2012, Figure 1



CBRR 2016

# Assurance across the mine value chain



Methodology for monitoring how information is reported and confidence in forecasts:

- project development level
- interrelationship of increased level of confidence in technical and economic studies
- adding value

Allows:

- Identification of the veracity of statements
- Benchmarking between similar projects.

Resource Project Framework de Noppé (2016)  
 CUCHIERATO, PISANI, PENHA, ROBINE, PENNA, PEREIRA (2022)

# R&R assurance

Incorrect **data collection**, **interpretation**, **estimation** and **reporting** can impact on business decision making, reporting, and corporate reputation

*“The level of risk is determined by the quality of controls”*  
(Jim Joy, University of Queensland)

*The industry needs to take these steps [peer review and audits] to heart and continually improve the quality of estimates.*

*Public confidence is critical to our industry's success.*  
(Craig Waldie, Ontario Securities Commission)

# R&R quality

Provide assurance over the accuracy of the generation and reporting of Exploration Results, Resources, Reserves and Mine Reconciliation

- For the Board, senior management, technical management, the practitioners
- For other stakeholders: public, investors, etc.

Provide assurance that the R&R generation and reporting

- Has been accurate and reliable
- Is currently accurate and reliable
- Will continue to be accurate and reliable in the future

## R&R quality (cont.)

Put simply: we need to answer the questions on “accuracy” by completing reviews and audits over

- Already completed estimates and reporting
- Currently being completed estimates and reporting (i.e. concurrently)

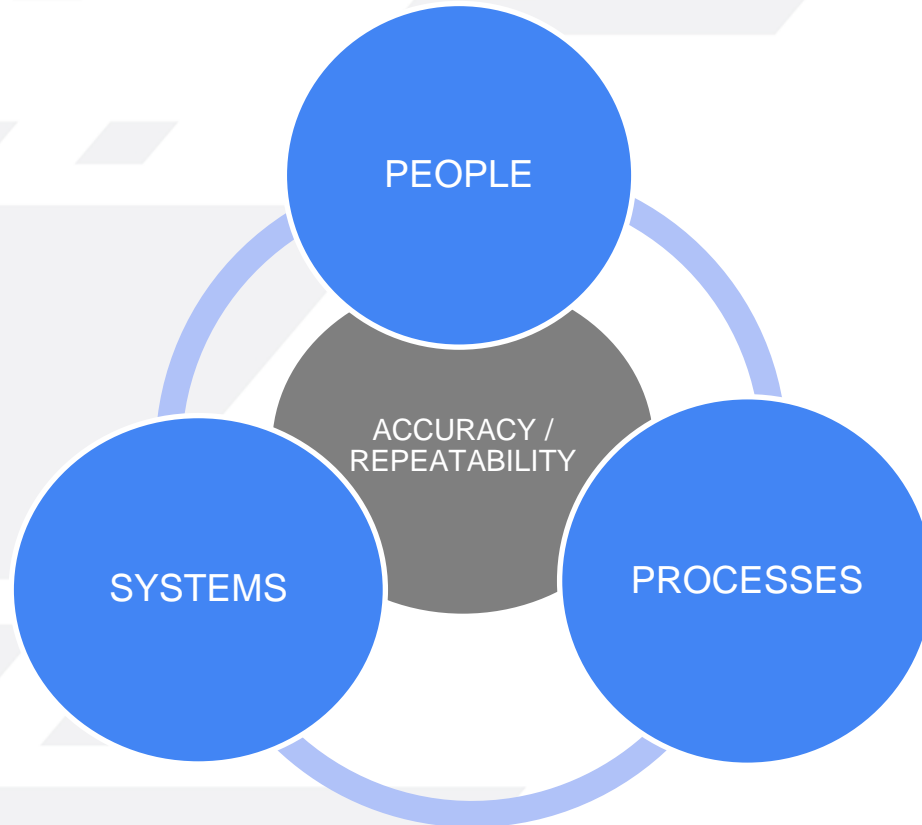
Reviews, audits, checklists and compliant reporting (e.g., CIM/ NI 43-101, JORC Code, SK-1300, CBRR, etc.) are part of the assurance process, and not the process itself

# R&R assurance

Any process for R&R assurance should:

1. Support corporate governance (Board assurance)
2. Ensure the accuracy of generated and reported and forecast results
3. Provide knowledge sharing, capacity building and improvement opportunities

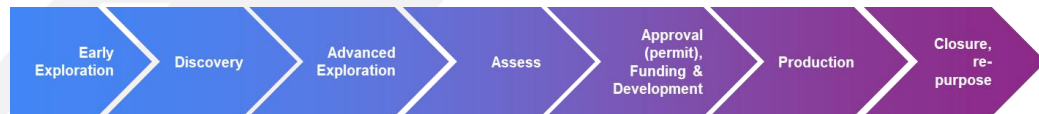
# R&R assurance: people-process-systems



Why improve R&R assurance?



# Introduction



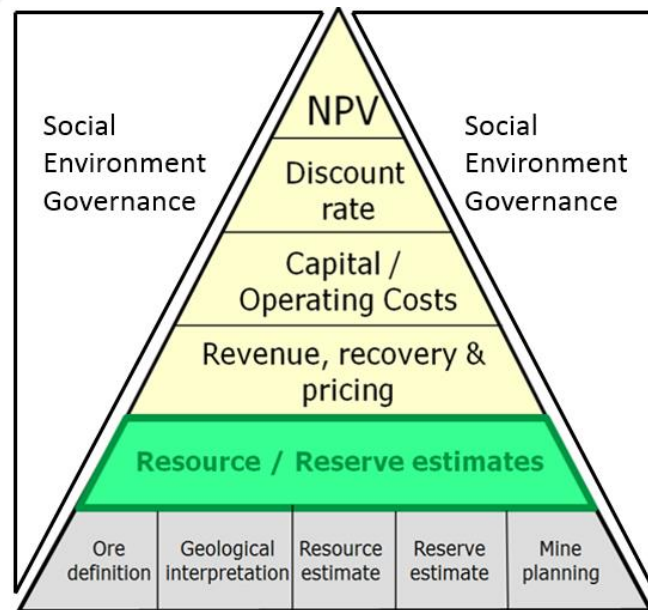
## Mining is an inherently risky business

The company and the market need **transparent, consistent** and **balanced** reporting of a project/operation's technical data, confidence and development status

Risks and opportunities exist when:

- advancing an exploration prospect to a viable project, and
- operating a mine

Incorrect **data collection, interpretation, estimation (forecasting)** and **reporting** can impact on value, business decision making, reporting and corporate reputation



# Some benefits of an R&R assurance process

## Strong, demonstrable governance

- Provides assurance and improve confidence (for investors, governments, partners, securities exchanges, governance bodies)

## Provides improved

- Data collection, estimation and reporting quality
- Internal information/ knowledge sharing
- Understanding (through development of people)
- Responsibility and accountability
- Connection with business planning and strategies
- Repeatability
- Auditability

# Issues that should not occur

## Age old matters continue to be an issue

- Different types and quality of sample data
  - More data  $\neq$  better data
- Geological controls not recognised / applied
- Inappropriate estimation (methods / application)
- Lack of Reconciliation of Resources and Reserves with production (planned v actuals)
- Lack of support to modifying factors applied to convert resources to reserves
- Out of date life-of-mine plans

# Some more common issues

- Resource and Reserve estimates not being updated at all
- Different operations using completely different approaches based on very different opinions, no consistency
- No company level technical or economic guidelines
- Different economic and corporate assumptions applied at different operations
- Very different skill and experience levels at different projects / operations, with lack of training in key areas

# How to improve R&R assurance

# How do we improve R&R assurance?

- **Assurance for the Board, Management & External Stakeholders**
  - Is needed over the processes applied in the **data collection, estimation and reporting** of Exploration Results, Resources, Reserves and mine reconciliation
  - Put the correct systems and structures in place and promote/adopt
  - Including all key inputs (Modifying Factors)
- **The assurance process**
  - Must assess and manage the risk that the results are incorrectly defined and/ or reported

# Where can R&R assurance be improved?

CORPORATE  
External reporting

SUPERVISER  
Internal reporting

PRACTITIONER  
Estimate / Report generating

# How do we improve R&R assurance?

- Companies already have assurance and governance systems for legal, financial, etc. matters
- So what about Exploration Results, Resources, Reserves (and mine reconciliation) reporting?

PUT A R&R CORPORATE GOVERNANCE SYSTEM IN PLACE

Companies should **disclose** to their stakeholders how **adequate assurance** on the effectiveness of the company's Resource and Reserve governance, risk management and control structure **is provided**.

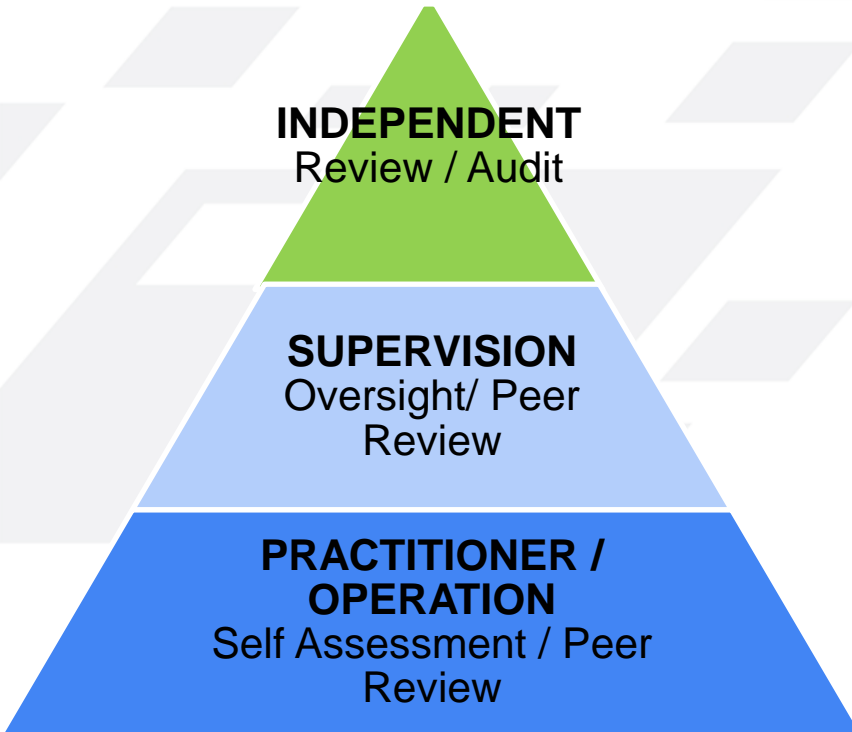


# Example of a risk management framework

The Institute of Internal Auditors (IIA) provides an outline of an effective risk management and control process known as “*The Three Lines of Defense*” model (IIA, 2013):

1. **Management control** is the first line of defense
2. **Oversight functions** through the various risk controls and compliance established by management are the second line of defense
3. **Independent assurance** is the third line of defense

# Where can R&R assurance be improved?



3<sup>rd</sup>  
Line

Independent reviews and/or audits managed by and reported through the company's internal audit group rather than through the technical group whose work is the subject of the review or audit

2<sup>nd</sup>  
Line

Oversight and selectively applied peer reviews of the technical processes and compliance to procedures, standards and operation of controls in place at key stages of the estimate generation and reporting

1<sup>st</sup>  
Line

Peer review of technical work at specific stages of the various estimate generation and reporting stages by suitable qualified / experienced peers

# Technical peer reviews and audits

# Why have a peer review and audit process?

*The overall objective of Peer Review and Audit is to provide effective risk management and control to provide the Board and Senior Management with a level of **assurance** that the reported Exploration Results, Resources and Reserves are accurate and reliable*

The process:

- **Recognises** the fundamental importance of Resources and Reserves
- **Requires** complete, accurate information to meet internal standards and public disclosure obligations
- **Helps** define competencies, accountabilities and responsibilities

# Technical peer review versus audit

## Peer Review

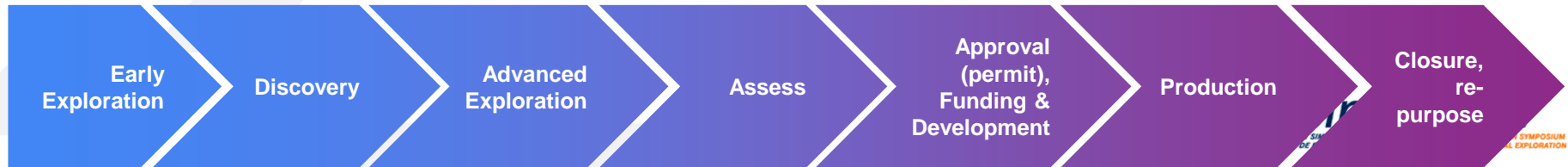
- **Concurrent** with the preparation/ reporting processes
- Allows time for **implementation of improvements** prior to reporting
- May involve a **verification of the numbers and processes**

## Audit

- Generally **retrospective**
- Identifying opportunities for improvement **in the future**
- Focused on **people (competency), processes and systems (adequacy and effectiveness)**
- Does not necessarily verify the reported numbers

# When to have reviews and audits

- Data Quality-QAQC Stage
- Mineral Resource Estimate before hand-over to Mining
- Agreement of Base Mineral Reserve technical and economic assumptions (link to corporate-business strategy/planning), inclusive of impact of reconciliations
- Project development stage gates (Scoping-PreFeasibility-Feasibility, Capital investment, etc)
- Initial High-level, annual Life of mine plan/Ultimate pit limit/MSO
- 5-Year Mine/Business Plan (Quarterly)
- 1-2-Year Mine/Business Plan (Monthly)
- Annual Reporting Cycle



# Case Studies

*Examples of R&R assurance and governance*

# Example – AngloGold Ashanti

## Corporate governance

AngloGold Ashanti has established a Mineral Resource and Ore Reserve Steering Committee (RRSC) that is responsible for setting and overseeing the Mineral Resource and Ore Reserve governance framework and for ensuring that the Company's goals and strategic objectives are met while complying with all relevant regulatory codes. The committee's membership and terms of references are mandated under a policy document signed by the Chief Executive Officer.

Over more than a decade, AngloGold Ashanti has developed and implemented a rigorous system of internal and external reviews aimed at providing assurance in respect of Ore Reserve and Mineral Resource estimates. Due to the travel restrictions around COVID-19, the 2020 internal reviews could not take place on site but were instead conducted as desktop reviews. The same restrictions meant that the external audits could not take place either. Given the scope of work required on site for the external audits, it was not possible to conduct these remotely. To meet the internal policy requirement that all operations be audited on average of once every three years, the number of audits to be conducted in 2021 will be increased.



# Example – Anglo American

The Ore Reserve and Mineral Resource estimates presented in this report were prepared in accordance with the Anglo American Group Ore Reserves and Mineral Resources Reporting Policy. This policy stipulates that the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2012 edition (the JORC Code) be used as a minimum standard.

The Anglo American Group of companies is subject to reviews aimed at providing assurance in respect of Ore Reserve and Mineral Resource estimates. The reviews are conducted by suitably qualified CPs from within the Group or independent consultants. The frequency and depth of review are a function of the perceived risks and/or uncertainties associated with a particular Ore Reserve and Mineral Resource. The overall value of the entity and time that has elapsed since an independent third-party review are also considered. Those operations/ projects subjected to independent third-party reviews during the year are indicated in footnotes to the tables.

The effective management of risk is integral to good management practice. Anglo American is committed to an effective, robust system of risk identification and an appropriate response to such risks, in order to support the achievement of our objectives. Risk registers related to Ore Reserves and Mineral Resources are maintained for each operation, covering key risks pertaining to, but not limited to, technical, environmental, social, health, safety, economic and political aspects. Mitigation measures are identified and actioned to address the material risks at each operation

# Discussion

## A system of peer reviews and audits contribute to:

- Governance (assurance over accuracy)
- Technical improvement opportunities
- Mentoring and professional development guidance to those whose work is being reviewed

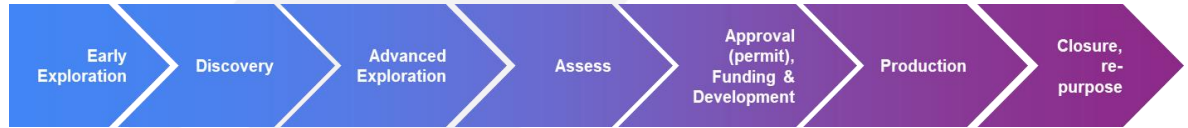
## Technical review / audit is particularly crucial at this time in the industry when:

- Companies are running lean or inexperienced teams, with limited technical or management oversight
- Mining companies are suffering investor “crisis of confidence” in their ability to achieve stated objectives
- Investors are increasingly risk adverse
- Regulators are taking a closer look at industry’s “self regulation” model



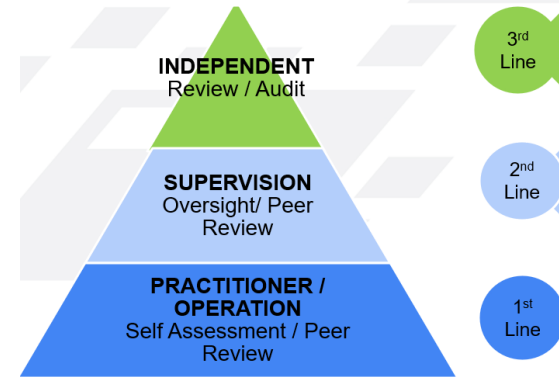
*Companies should **disclose** to their stakeholders how **adequate assurance** on the effectiveness of the company’s Resource and Reserve & Forecasts governance, risk management and control structure **is provided***

# Conclusion



## A R&R assurance system of staged reviews and audits

- Provides increasing levels of independent and objective assurance
- Leads to systematic and disciplined processes of evaluating and improving the effectiveness of the Exploration Results (data), Resource and Reserve and Forecasting risk management and governance processes
- Provides management and the board with assurance that the Exploration Results, Resources and Reserves are accurate and reliable
- Helps to develop your teams skills and the Competent Persons



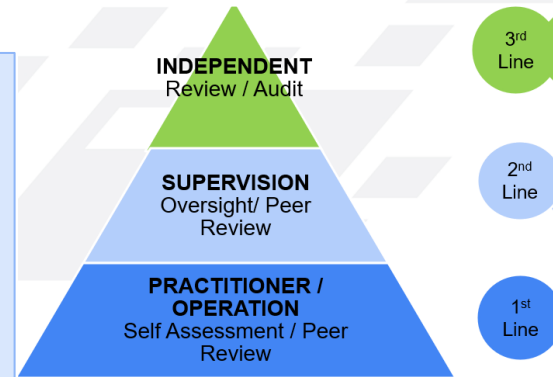
# Conclusion



## A R&R assurance system of staged reviews and audits

- Responsible management of a resource project through its full lifecycle relies on
  - competent and dependable controls and management direction/oversight
  - effectively provided by the senior management and board leadership of the organisation

- R&R assurance supports corporate governance (provides Board assurance)
  - Ensures the accuracy of generated and reported and forecast results
  - Provides knowledge sharing, capacity building and improvement opportunities





# Obrigado!

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