



# Gold Industry In-Situ Valuation Report

---

October 2022

Mineral Valuation Group (Pty) Ltd

[gold@minvalgroup.com](mailto:gold@minvalgroup.com)

[www.minvalgroup.com](http://www.minvalgroup.com)

## Overview

Understanding the value of an asset is a fundamental requirement in the decision-making process for professionals in any industry. This is true for a variety of purposes from approving capital allocation to a project, negotiating the sale or purchase of an asset, or assessing the risk of impairment for audit purposes.

The simplest way to understand the value of an asset is to compare it to a similar asset with a known value. This is referred to as the Market Comparative Valuation Approach or the Market Approach. Millions of residential properties are valued this way every day. This is also the way that the second-hand car market operates, and the way that many other assets change hands.

In the context of the minerals industry, this methodology is greatly restricted by the lack of access to the relevant mineral asset data that enables the approach. Due to the relatively low volume of transactions, the complexities involved with considering the confidence levels of in-situ Mineral Resources, and the comparability of assets, additional analysis of the data is required to yield meaningful results.

The Gold Industry In-Situ Resource Valuation Report was designed to address this problem for the gold industry and includes the following mineral asset data:

- Analysis of nearly 400 gold mineral assets (the Global Database) owned by publicly traded companies. The analysis is presented as dollar per ounce (USD/oz) value distribution curves for the Inferred, Indicated and Measured resource categories.
- Analysis of 56 publicly traded companies that own or operate gold assets. The analysis includes a comparison of the USD/oz in-situ value of each company's mineral assets to the Global Database.
- Analysis of the Global Database based on the Development Stage of the mineral assets.
- Analysis of the Global Database based on the location of the mineral assets. The regions reviewed are North America, South America, Africa, Australia, and Rest of World.
- Analysis of 39 transactions (Total Transactions Database) in which gold mineral assets were bought or sold. Each transaction is analysed separately and benchmarked against the Total Transaction database.

## Table of Contents

|                                             |    |
|---------------------------------------------|----|
| Overview .....                              | 2  |
| Table of Contents .....                     | 3  |
| Introduction .....                          | 9  |
| Fundamental Premise .....                   | 10 |
| Mineral Resource Confidence .....           | 10 |
| Development Stage .....                     | 13 |
| Jurisdiction .....                          | 14 |
| Valuation Methodologies .....               | 14 |
| Limitations of the Cost Approach .....      | 15 |
| Limitations on the Cash Flow Approach ..... | 15 |
| Limitations of the Market Approach .....    | 17 |
| The MVG Market Comparative Dataset .....    | 18 |
| Data Gathering .....                        | 18 |
| Data from Publicly Listed Companies .....   | 19 |
| Transaction Data .....                      | 20 |
| Quality Assurance and Quality Control ..... | 21 |
| Data Processing .....                       | 21 |
| The Global Dataset and Subsets .....        | 22 |
| Global Dataset .....                        | 24 |
| Development Stage: Production .....         | 25 |
| Development Stage: Pre-Production .....     | 26 |
| Development Stage: Greenfields .....        | 27 |

|                                                        |    |
|--------------------------------------------------------|----|
| Region: Africa.....                                    | 28 |
| Region: South America .....                            | 29 |
| Region: North America.....                             | 30 |
| Region: Australia.....                                 | 31 |
| Region: Rest of World .....                            | 32 |
| Transactions.....                                      | 33 |
| Using the Datasets.....                                | 34 |
| Analysis using the MVG Market Comparative Dataset..... | 34 |
| Company Analysis.....                                  | 36 |
| African Rainbow Minerals .....                         | 38 |
| Agnico-Eagle Mines Limited .....                       | 40 |
| Alamos Gold.....                                       | 42 |
| Americas Gold and Silver .....                         | 44 |
| AngloGold Ashanti.....                                 | 46 |
| Argonaut Gold .....                                    | 48 |
| Avino Silver & Gold Mines Ltd .....                    | 50 |
| B2Gold Corp.....                                       | 52 |
| Barrick Gold Corporation .....                         | 54 |
| Buenaventura Mining Company.....                       | 56 |
| Centerra Gold.....                                     | 58 |
| Coeur Mining.....                                      | 60 |
| DRDGold.....                                           | 62 |
| Dundee Precious Metals .....                           | 64 |
| Eldorado Gold Corp.....                                | 66 |

|                                      |     |
|--------------------------------------|-----|
| Endeavour Mining .....               | 68  |
| Equinox Gold.....                    | 70  |
| Evolution Mining .....               | 72  |
| First Quantum Minerals Ltd .....     | 74  |
| Great Panther Mining Limited .....   | 76  |
| Harmony Gold Limited.....            | 78  |
| Hecla Mining Company .....           | 80  |
| Hycroft Mining .....                 | 82  |
| i-80 Gold Corp.....                  | 84  |
| IAMGold Corporation.....             | 86  |
| Kinross Gold Corp. ....              | 88  |
| Lundin Gold.....                     | 90  |
| Lundin Mining Corporation.....       | 92  |
| Marathon Gold.....                   | 94  |
| MMG .....                            | 96  |
| New Gold Inc.....                    | 98  |
| Newcrest Mining Limited .....        | 100 |
| Newmont Corporation.....             | 102 |
| Nexa Resources.....                  | 104 |
| Northern Star Resources Limited..... | 106 |
| NovaGold Resources .....             | 108 |
| OceanaGold Corporation.....          | 110 |
| Orla Mining .....                    | 112 |
| OZ Minerals Limited .....            | 114 |

|                                                     |     |
|-----------------------------------------------------|-----|
| Pan African Resources PLC .....                     | 116 |
| Pan American Silver Corporation.....                | 118 |
| Polymetal International PLC .....                   | 120 |
| Regis Resources Limited.....                        | 122 |
| Resolute Mining Limited .....                       | 124 |
| Sandfire Resources .....                            | 126 |
| Seabridge Gold .....                                | 128 |
| Sibanye Stillwater .....                            | 130 |
| SilverCrest Metals .....                            | 132 |
| South32.....                                        | 134 |
| SSR Mining .....                                    | 136 |
| St Barbara Limited.....                             | 138 |
| Teck Resources Limited .....                        | 140 |
| Torex Gold .....                                    | 142 |
| Turquoise Hill Resources Ltd.....                   | 144 |
| Wesdome .....                                       | 146 |
| Western Copper and Gold .....                       | 148 |
| Transaction Analysis .....                          | 150 |
| T001: Orla Mining - Gold Standard Ventures .....    | 151 |
| T002: Zacatecas Silver - Alamos Esperanza .....     | 152 |
| T003: G Mining Ventures - Eldorado Gold .....       | 153 |
| T004: Eldorado Gold - QMX Gold Corporation .....    | 154 |
| T005: Lundin Mining - Josemaria Resources Inc ..... | 155 |
| T006: Avino   Coeur Mining .....                    | 156 |

|                                                         |     |
|---------------------------------------------------------|-----|
| T007: Perseus Mining Limited - Orca Gold Inc .....      | 157 |
| T008: Regis Acquires - Tropicana Gold Project .....     | 158 |
| T009: Argonaut Acquires Alio Gold Inc.....              | 159 |
| T010: Newmont Corporation – Buenaventura.....           | 160 |
| T011: Newmont Corporation – Sumitomo .....              | 161 |
| T012: Gold Line Resources Agnico Eagle .....            | 162 |
| T013: Evolution Mining - Northern Star .....            | 163 |
| T014: Black Cat Syndicate - Northern Star .....         | 164 |
| T015: Kalamazoo Resources Northern Star .....           | 165 |
| T016: Evolution Mining - Battle North Gold .....        | 166 |
| T017: Evolution Mining A - Newmont Gold Corp.....       | 167 |
| T018: Evolution Mining Glencore .....                   | 168 |
| T019: Aeris Resources - Evolution Mining .....          | 169 |
| T020: Navarre Minerals - Evolution Mining .....         | 170 |
| T021: B2Gold Oklo Resources .....                       | 171 |
| T022: Calibre Mining Corp - B2Gold .....                | 172 |
| T023: West African Resources - B2Gold .....             | 173 |
| T024: Endeavour Mining – Semafo.....                    | 174 |
| T025: Endeavour - Teranga Gold .....                    | 175 |
| T026: Newcrest - Pretium Resources .....                | 176 |
| T027: Indotan Halmahera Bangkit - Newcrest Mining ..... | 177 |
| T028: Kinross - Royal Gold and Contango Ore.....        | 178 |
| T030: Asante Gold - Kinross Gold Corp.....              | 179 |
| T031: Highland Gold - Kinross Gold Corp.....            | 180 |

|                                                     |     |
|-----------------------------------------------------|-----|
| T032: Allied Gold - IAMGOLD and Anglogold .....     | 181 |
| T034: IAMGOLD – TomaGold .....                      | 182 |
| T035: Calibre Mining IAMGOLD .....                  | 183 |
| T036: Polymetal International – Rosgeology.....     | 184 |
| T037: Dundee Precious Metals - INV Metals .....     | 185 |
| T038: Equinox Gold Premier Gold Mines .....         | 186 |
| T039: Bear Creek Mining - Equinox Gold .....        | 187 |
| T040: Equinox Gold - Orion Mine Finance Group ..... | 188 |
| Signature Page .....                                | 190 |
| Appendix 1: Global Dataset.....                     | 191 |
| Appendix 2: Value Distribution Graphs.....          | 198 |
| Appendix 3: Transaction Dataset .....               | 201 |
| Appendix 4: Company Omissions .....                 | 203 |

## Introduction

This Gold Industry In-Situ Valuation Report is designed to assist any person that needs to evaluate the in-situ value of gold assets. This report can be used to benchmark asset valuations, inform value expectations, identify over- or under-valued gold mining stocks, assess past or proposed transactions, or estimate impairment risk.

This report will add value to professionals in the gold industry, including Investment Advisory Services, Corporate Finance, Transaction Advisory Services and Audit Services. From the information provided, the value of any gold mineral asset can be quickly and accurately determined based on the estimated in-situ gold Mineral Resources.

The report covers the following topics:

- **Fundamental Premise:** The report commences with a discussion on the fundamentals that drive the value of a mining or exploration company.
- **Valuation Methodologies:** The valuation methodologies are detailed as prescribed by global regulatory codes. This sections also highlights the limitations of these methodologies and provides context on how the datasets provided in this report can overcome the current limitations faced when using the Market Approach for the valuation of mineral assets.
- **The MVG Market Comparative Database:** This section walks through the process of data gathering, Quality Assurance and Quality Control, data processing as well as the validation of the processed results. It also summarises the Global Dataset, a comprehensive dataset compiled by Mineral Valuation Group, containing almost 400 assets held by 56 companies. The data is provided in the form of in-situ United States Dollar per Ounce (USD/oz) distribution curves for each Mineral Resource category. Mineral assets are further grouped by their development stage and jurisdiction to simplify identification of the appropriate value ranges for a mineral asset. The distribution curves for these regions are related to the Global Database to provide a regional and global perspective.
- **Using the Datasets:** Simple examples of the applications of the datasets are discussed.
- **Company Analysis:** This section provides key insights into the gold assets each of the 56 companies in this report. This includes what percentage of their in-situ Mineral Resources are gold resources, the proportion of each Mineral Resource category, their development stages, their share price over the last 6 months, as well as graphical illustrations of the company assets on the USD/oz in-situ value distribution curves compared to the Global Dataset.
- **Transaction Analysis:** This section highlights key details for each of the 39 transactions included in the Transaction Database. Each transaction is also compared to the Total Transaction database for perspective, and the Total Transaction Database is in turn compared to the MVG Global Database to ensure the reader can tie all the needed information together to make the most informed decision possible.

- The **Appendices** to this document provide the tables and graphs from the database. Appendix 1 is a table of the Global Dataset, including each project's attributable Mineral Resources and in-situ resource value ranges. Appendix 2 shows the Value Distribution Graphs for the Global Dataset. Appendix 3 is a summary table of the Transaction Dataset.

## Fundamental Premise

The fundamental premise of this report is that the value of a company involved in the exploration, development or extraction of material of economic interest in or on the earth's crust should be driven by the in-situ Mineral Resources. All other plant, equipment, infrastructure and intellectual property associated with the company or project exists purely to increase the probability of profitably extracting the estimated Mineral Resources. Therefore, companies or projects that have a higher probability of successfully extracting the Mineral Resources profitably will have a higher in-situ resource value per unit of mineralization.

The following contributing factors play a primary role in the probability of profitably extracting the Mineral Resources:

- Mineral Resource Confidence,
- Development Stage,
- Jurisdiction.

The impact of these factors on the probability and consequently, the impact on asset value, are outlined in the sections below.

### Mineral Resource Confidence

The probability to profitably extract a Mineral Resource depends on the Mineral Resource confidence of the project. The Committee for Mineral Reserves International Reporting Standards (CRIRSCO) define Mineral Resources as a concentration or occurrence of material of economic interest in or on the Earth's crust in such form, grade/quality and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade/quality, continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling.

Mineral Resources are classified into Measured, Indicated and Inferred Mineral Resources, based on the geological confidence in the locality, quantity, grade/quality, continuity, and other geological characteristics of the orebody:

- A **Measured Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape, and physical characteristics are estimated with confidence sufficient to allow the application of Modifying Factors to support detailed mine planning and final evaluation of the economic viability of the deposit. Geological evidence should be sufficient to *confirm* geological and grade/ quality continuity between points of observation.
- An **Indicated Mineral Resource** is that part of a Mineral Resource for which quantity, grade or quality, densities, shape and physical characteristics are estimated with sufficient confidence to allow the application of Modifying Factors in sufficient detail to support mine planning and evaluation of the economic viability of the deposit. Geological evidence should be sufficient to *assume* geological and grade/ quality continuity between points of observation.
- An **Inferred Mineral Resource** is that part of a Mineral Resource for which quantity and grade/ quality are estimated on the basis of limited geological evidence and sampling. Geological evidence is sufficient to *imply* but not verify geological and grade/ quality continuity.

Measured and Indicated Mineral Resources can be converted into Mineral Reserves. A Mineral Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted and is defined by studies at Pre-Feasibility or Feasibility level as appropriate that include application of Modifying Factors. Mineral Reserves are classified into Proved and Probable Mineral Reserves based on Modifying Factors including mining, processing, metallurgical, infrastructure, economic, marketing, legal, environmental, social, and governmental factors. Figure 1 demonstrates the relationship between the Mineral Resources categories and their relationship to the Mineral Reserve categories.

When considering the probability to profitably extract Mineral Resources; Measured Mineral Resources have the highest probability, while Inferred Mineral Resources have the lowest probability. Consequently, the resource value per unit of mineralization will be higher for Measured than Indicated, which will be higher than Inferred Resources, all else equal.

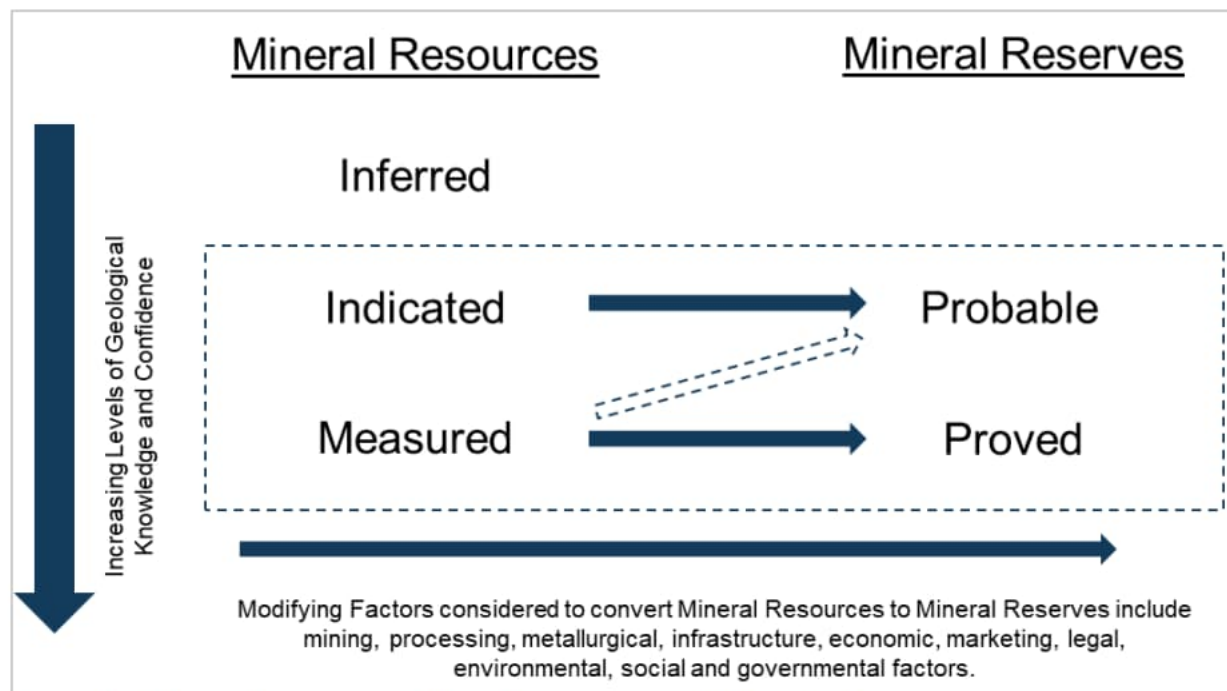


Figure 1: Relationship between Mineral Resource and Mineral Reserve categories

## Development Stage

The probability to profitably extract a Mineral Resource depends on the development stage of the project. The development stages of a project progress through the project life cycle from Opportunity Identification, through Early Exploration and Advanced Exploration into Project Development, Production and finally to Closure. Figure 2 is a graphical illustration of the development stages of mineral projects and the related Mineral Resource categories, the anticipated technical reports, and the appropriate valuation approaches.

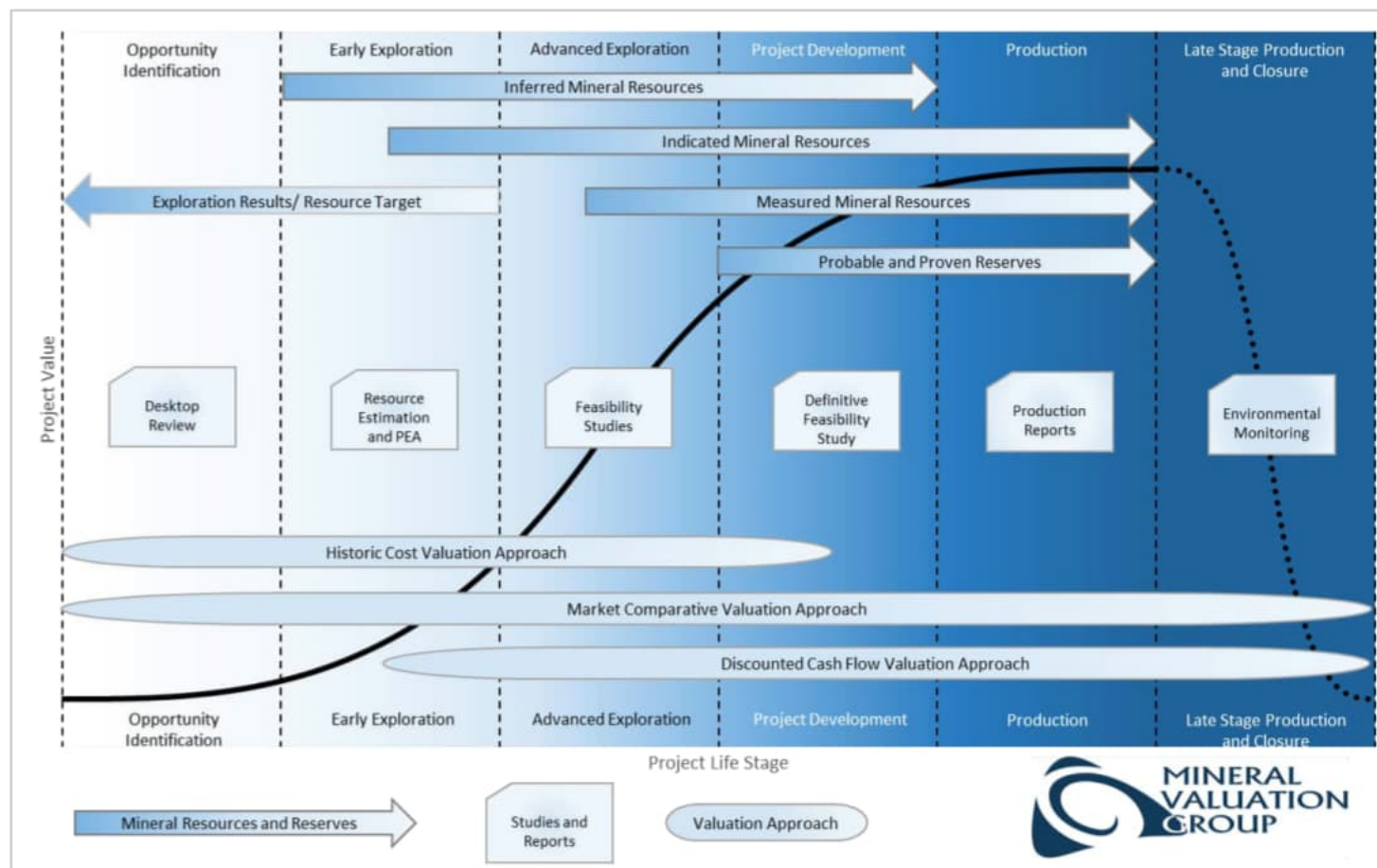


Figure 2: Development Stages of Mineral Assets

This report considers projects in the Opportunity Identification and Early Exploration phase as Greenfields Projects. The minimum criterion for this classification is that an Inferred Mineral Resource be declared for the project. Projects in Advanced Exploration and Project Development are considered Pre-Production Projects. The minimum criterion for this classification is evidence of an economic study, trial mining, or active development of mining infrastructure. Projects in care-and-maintenance are also classified as Pre-Production. Projects that are actively extracting Mineral Resources are considered Production Projects.

When considering the probability to profitably extract Mineral Resources, Production projects have the highest probability, and Greenfields projects the lowest. Consequently, the resource value per unit of mineralization will be higher for Production Projects than Pre-Production, which will be higher than Greenfields Projects, all else equal.

## Jurisdiction

The probability to profitably extract a Mineral Resource depends on the jurisdiction of the project. The life cycle of a mining project is long, requiring investment for extended periods of time. The jurisdiction of the project is related to the country that a project is located in and considers whether each country has or is perceived to have risk relating to security issues, legislative issues, political instability, corruption or other related risks.

Each country is rated individually based on the actual and perceived risks impacting the projects in that country. When considering the probability to profitably extract Mineral Resources, the resource value per unit of mineralization will be higher for low-risk jurisdictions than high-risk jurisdictions, all else equal.

## Valuation Methodologies

When conducting a valuation of a mineral asset, best practice suggests the use of preferably two of the following three valuation methodologies, as required by the leading compliance codes (CIMVAL, VALMIN and SAMVAL):

- **Cost Approach** – The Cost Approach relies on historical and/or future amounts spent on the mineral asset.
- **Cash Flow Approach** – The Cash Flow Approach relies on the ‘value-in-use’ principle and requires determination of the net present value (NPV) of future cash flows over the useful life of the Mineral Asset.
- **Market Approach** - The Market Approach relies on the principle of ‘willing buyer, willing seller’ and the value of the mineral asset is determined as if in an arm’s-length transaction.

Of these suggested valuation methodologies, valuers overwhelmingly rely on the Cash Flow Approach. However, this approach is often misused, resulting in misleading mineral asset valuations. The Market Approach is the second most popular valuation methodology and is applicable to any mineral asset. The Cost Approach is typically only used when there is no other methodology that can be appropriately applied. The limitations of each approach are briefly discussed below as it provides key insight into the reason for the current popularity of the various valuation methodologies.

### **Limitations of the Cost Approach**

The Cost Approach is based on the logic that expenditure relating to the improving the confidence in the mineral asset will increase its value. Using this approach, the valuator multiplies all the relevant expenditure with a multiplier, typically termed the Prospectivity Enhancement Multiplier (PEM) and the result is the 'value' of the asset.

Deciding on an appropriate multiplier is a subjective exercise and selected multipliers rely on the valuator's intuition. This methodology is crude and typically results in large value ranges, which do not offer a great deal of assistance in determining a "fair" value for the mineral asset. Not surprisingly, this method is rarely utilised and only if it is not possible to use one of the other prescribed methodologies.

### **Limitations on the Cash Flow Approach**

The Cash Flow Approach, also known as the Income Approach, relies on the 'value-in-use' principle and requires determination of the present value of future cash flows over the useful life of the Mineral Asset. This approach is usually applied through the development of a Discounted Cash Flow (DCF) model that calculates the Net Present Values (NPV) and Internal Rate of Return (IRR) metrics. Even though the Cash Flow Approach is a very effective valuation methodology, and is the most popular methodology used by valuers, it is often misused, resulting in misleading mineral asset valuations.

When considering Greenfields Projects, valuers sometimes construct "conceptual" cashflow models as they feel that even though the input assumptions are speculative, this conceptual cashflow model is still more accurate than using the Market Comparative or Cost Approach. This sentiment is flawed.

The shortcomings of this cash flow approach that are most often overlooked, include the following:

### **Geological Uncertainty**

- For Inferred Mineral Resources, geological evidence is sufficient to imply but not verify geological and grade/quality continuity. Therefore, a great deal of uncertainty remains regarding the estimated tonnages as well as the grade for the orebody, ultimately impacting the available in-situ ounces. As the competent person increases their confidence in the orebody through further exploration, the in-situ Mineral Resources estimated can change significantly. It is not uncommon to see a 50% variance in the assumed in-situ ounces as the resource category changes from Inferred to Indicated to Measured Mineral Resources. In addition, it is critical to remember that Mineral Resources related only to geological confidence. Mineral Resources do not consider any factors relating to the mining and processing of the orebody and typically overestimate the extractable ounces.
- By using Inferred Resources in a cash flow model, most valuers completely disregard this uncertainty, effectively treating these low confidence Mineral Resources the same as one would Mineral Reserves. However, when considering Mineral Reserves, economic viability has been shown through the completion of at least a Pre-Feasibility Study through detailed evaluation of various processing and mining options that are weighed up to determine the most prospective “Business Case”. This is a considerable amount of work, which often shows that a mineral asset is not economically viable.
- Some valuers add sensitivity analyses to the DCF models to account for this. Although this is a useful exercise, it rarely accounts for the large underlying uncertainties around various input assumptions, particularly geological uncertainty. Often the sensitivity analysis creates an overconfidence in the accuracy of the modelled results, without truly reflecting the inherent risks.

### **Small biases cumulating in big value differences**

- When valuing a mineral asset using the Cash Flow Approach, many input assumptions used to construct the DCF model are estimates presented as ranges. If the valuator wants to lower the NPV, the higher end of cost assumptions can be used, thus increasing the assumed costs. In addition, the lower end of revenue related assumptions (e.g. recoveries achieved, gold price assumed, etc) can be used, thus reducing the assumed revenue. The combination of assuming higher costs and lower revenues can have a significant impact on the resulting NPV.
- Conversely, assuming lower costs and higher revenues will increase the NPV. Large variations in NPV can thus be hidden in a series of subtle changes in the input assumptions.

### **Not accounting for relationships between input assumptions**

- In the valuation of mineral assets, it is important to note that many of the input assumptions depend upon one other. For instance, if the grade of Run of Mine (RoM) material is lower than expected, this may result in recoveries also being lower than expected. If recoveries are lower than expected, it is not uncommon for the corresponding processing costs to be higher than expected (using of more reagents, additional crushing/milling, longer leach times, etc). In other words, a 10% reduction in grade will result in less ounces being mined than estimated, and the smaller number of ounces are recovered at a higher than estimated cost per ounce. This type of relationship is often overlooked by valuers when conducting sensitivity analyses. In other words, when a value range for a mineral asset is determined by varying the input assumptions, they are all independently varied. These under-reports the true impact of the variation in key parameters.

### **Subjective view on key input assumptions**

- In the valuation of mineral assets, particularly gold assets, the value of the asset is highly sensitive to the commodity price. The view that the valuator takes on the future gold price significantly impacts the valuation result. Similarly, the NPV can be very sensitive to the discount rate used. Using a low discount rate where it is not appropriate will overstate the project value, and vice versa.

In essence, using a DCF model to value a mineral asset can be a very useful and accurate methodology to use. However, in certain instances, particularly where there is a very low confidence in the input assumptions, this methodology can be problematic and can result in overstated confidence in the valuation results. For early-stage projects, a DCF model is nothing more than a guess that appears to have been prudently calculated.

### **Limitations of the Market Approach.**

The Market Approach is based on the logic that a similar asset, which has recently been sold in an “arms-length” transaction, is a good indication of value for the mineral asset under consideration. The key limitation to this valuation methodology is the availability of comparable data.

The most common ways in which valuers try to address this limitation are:

#### **Increasing the size of comparable dataset by adding old data**

- Typically, old transactions are escalated using inflation indexes or factorisation based on commodity prices. However, this does not account for the market conditions under which the transaction took place.

### **Subjectively adjusting a small dataset to be more comparable**

- Due to the wide variety of factors that determine whether two mineral assets are similar (geological setting, Mineral Resource categories, project/company size, jurisdiction, mining method, development stage, etc.), finding transactions for similar assets can be difficult. To address this, valuers will apply discounts or premiums to the transactions that are available in order to make them as comparable as possible. This is a subjective exercise and is typically based on valuers intuition rather than supporting information.

### **Goal seeking**

- Often, valuers will use a DCF model to determine the value of a mineral asset, and then when conducting a valuation using the Market Approach, be strongly guided by the results of the DCF model. Subjective adjustments are then made to ensure that the valuation result from the Market Approach aligns with the DCF valuation results.

Most of the limitations around the Market Approach are addressed by having a sufficiently large dataset of comparable mineral assets. This will allow a valuator to rely on the results of the Market Approach and use it to verify that the other selected valuation methodology has been correctly applied. It also reduces the need for subjective adjustments to the comparable dataset.

## **The MVG Market Comparative Dataset**

The MVG Market Comparative Dataset sets out to address the limitations of the Market Approach as set out above. The MVG Market Comparative Dataset is a database containing information on mineral assets. This information includes asset location, geological setting and mineralisation, mining method, development stage, the Mineral Resources and categories, and the in-situ resource values. The in-situ resource values are derived from processing the mineral asset data from companies and transactions. The procedures used to gather, validate, and process the data presented in the MVG Market Comparative Dataset are outlined in the sections below.

### **Data Gathering**

There are two main sources of data used for the compilation of the MVG Gold Market Comparative Dataset:

- Data from publicly listed companies that own gold assets, and
- Transaction data publicly available on the acquisition/disposal of gold assets.

## Data from Publicly Listed Companies

Mineral Valuation Group identified 93 publicly traded companies that focus on gold assets. These companies primarily trade on the New York Stock Exchange (NYSE), the Toronto Stock Exchange (TSX), the London Stock Exchange (LSE), the Australian Securities Exchange (ASX) and the Johannesburg Stock Exchange (JSE). These companies vary from the largest gold mining companies globally, operating large production assets, to junior companies that focus on the development of greenfield gold assets.

Mineral Valuation Group reviewed these 93 companies to assess whether sufficient data is available on their assets for a thorough analysis. Of these 93 companies, 36 were omitted from the database. The companies omitted as well as the reason for omission are summarised in Appendix 5. The primary reasons for omission are as follows:

- The company is in the process of a merger/transaction that is not yet complete,
- The company focusses on early-stage gold projects where no Mineral Resources have been declared,
- Trading of the company's shares have been suspended,
- The company is a "Royalty and Streaming" company, which means they "lend" money to gold projects in exchange for a royalty payment. However, they do not hold or manage gold assets,
- Large, well-diversified companies that have gold resources in their Mineral Resource Statement, however the in-situ gold resources are "insignificant" to the company.

For each of the companies added to the database, all the relevant technical as well as financial data is captured. For each mineral asset held by the company, the project location, geological setting and mineralisation type, mining method, development stage, as well as the Mineral Resources categories are captured. This information is typically obtained from the company's Annual Report/ Annual Information Form and their Mineral Resource and Ore Reserve Statement.

The financial data is sourced from the latest published financial statements, typically published quarterly, for each company in the database. In addition, the share price for each company is obtained for the previous six months. Using the share price data, the Market Cap value is calculated (share price x shares outstanding).

The Enterprise Value is then calculated by adding Total Debt and subtracting Cash and Cash Equivalents from the Market Cap value.

## Transaction Data

Mineral Valuation Group only considered transactions finalised in the past three years (2020 onwards). The key reasons for not adding transactions older than three years to the database are:

### Transactions need to reflect the current market sentiment to be useful

- Gold companies, like all other companies, are part of an economic cycle. Typically, when the gold price is high or upward trending, demand for shares in gold companies is also high. This leads to additional funds being made available for exploration, extension of gold assets and increased production. Gold producers/investors are often willing to pay a premium for gold projects in these market conditions as production of gold at higher prices will be more profitable.
- Similarly, when the gold price is low or downward trending, companies try to decrease the cost of production. Typically, exploration activities are reduced or halted completely until prices recover sufficiently. In these market conditions, companies may sell off non-core gold assets at a discount to generate cash for their flagship projects.
- It is important to ensure that the transactions are as recent as possible when used as a proxy of value for other gold assets. Transactions taking place in a bull market are not good proxies of the asset value in a bear market and vice versa.
- ***We strongly discourage the practice of using an inflation factor to make “old” transactions recent, in order to use them to value mineral assets.*** This practice is unfortunately quite common due to outdated or small databases resulting in insufficient data that can be used to make an informed decision.

### Recent transactions accurately reflect the investment environment

- The investment environment changes continuously, and these changes greatly influence the price investors are willing to pay for gold assets. For instance, as countries become more aware of the environmental costs of mining, they increase their focus on environmental regulations and the future of mineral assets in these countries becomes more uncertain. This will lead to companies selling assets in these countries at a great discount to recover whatever funds they can.
- Another example is that many developing countries are increasing their focus on local ownership of mining projects. In other words, they require a certain portion of mining projects to be locally owned. These transactions are often completed at deeply discounted rates for the local shareholders as it is a legal requirement to have them on board.
- Old transactions may very well not reflect these concerns, which greatly reduces their use as a proxy of value.

Mineral Valuation Group identified 44 transactions that occurred during the past three years, 39 of which were added to the database as outlined Appendix 4. Transactions were omitted from the database due to:

- Early-stage gold projects where no Mineral Resources have been declared,
- Insufficient data on the transaction is available for analysis,
- Multi commodity transaction where gold makes up an insignificant proportion of the in-situ resource value,
- The transaction has not yet been completed.

The transaction value as well the relevant technical data on the mineral assets under consideration are captured. This includes the project jurisdiction, geological setting and mineralisation, mining method, development stage, and Mineral Resources.

### **Quality Assurance and Quality Control**

Mineral Valuation Group manually captures all data and does not use data scraping technologies. This is because of the large variance in the way that companies report their technical data. For instance, some companies report only their attributable percentage in the Mineral Resources, while other companies report 100% of Mineral Resources declared for each asset regardless of their shareholding. Similarly, some companies report Mineral Resources inclusive of Mineral Reserves, whilst other companies report Mineral Resources exclusive of (in addition to) Mineral Reserves.

Captured data is periodically verified through a process of randomly selecting approximately 10% of mineral assets in the database for a detailed review. This is to ensure that data capturing was accurately done. If more than 5% of the selected assets contain errors, the companies that hold these assets are identified and all their assets are reviewed for errors. Once this is completed, we repeat the process until the criteria of less than 5% errors are met.

### **Data Processing**

After the data has been checked for errors, the Mineral Valuation Group proprietary algorithm attributes the enterprise value or transaction amount to the in-situ gold Mineral Resources. This is completed as follows:

## **Data Standardisation**

As many companies mine other commodities/metals in addition to gold, it is important to standardise the data. Using the relevant commodity price as a weighting, the contained in-situ Mineral Resources are standardised for all the projects contained in the database. This is completed not only for the gold assets held by each company, but for any other assets they report in their Mineral Resource Statement. The reporting unit is also standardised, essentially creating “unitless resources”.

## **Enterprise Value calculation**

Using the 6-month average share price of the company, the Market Cap for each of the companies in the database is calculated. The Enterprise Value for each company is calculated by adding debt and subtracting cash and cash equivalents.

## **Core assumptions of the Data Processing Algorithm**

To attribute the company’s enterprise value to its in-situ Mineral Resources, the following key assumptions are made on in-situ values:

- Value of Measured Resources => Indicated Resources => Inferred Resources,
- Value of Production Assets => Pre-Production Assets => Greenfields Assets.

Additionally, a risk adjustment is made for the country in which the asset is located. This is to account for jurisdiction related risk i.e., an asset located in Canada should be worth more than an asset located in Zimbabwe, all else equal.

## **Value Attribution**

The algorithm maps out every possible distribution of the Enterprise Value to the in-situ Mineral Resources for which the two core assumptions hold. For each asset, a low value, mid value, and high value is calculated. Each asset then has a simple triangular distribution fitted to these values. Combining the Distribution Curves of each asset, the Distribution Curve for each Resource category is generated for the Global Dataset.

## **The Global Dataset and Subsets**

This section summarises the Global Dataset and the various subsets.

The Global Dataset comprises 396 projects in all development stages and regions.

The following information is presented for each subset in the summary sections.

- A brief description of the subset,

- A table with key percentile values for the Measured, Indicated and Inferred in-situ resource values.
- A comparison graph of the Interquartile Range (25<sup>th</sup> percentile to 75<sup>th</sup> percentile) for the Subset compared to the Global Dataset. This can be used to assess the relative premium or discount of the Subset to the Global Dataset.
- The value distribution Graphs illustrating the shape of the distribution graph and the cumulative frequency.

The Global Dataset and subsets are each illustrated below.

# Global Dataset

The Global Dataset consists of 396 projects at all stages of development in all regions. The Dataset is generated from processing technical and financial data of the gold projects owned by 56 listed companies.

## Percentile Values

The percentile value indicates the percentage of values in the subset that fall below a specific in-situ value.

| Percentile | Measured<br>(USD/oz) | Indicated<br>(USD/oz) | Inferred<br>(USD/oz) |
|------------|----------------------|-----------------------|----------------------|
| 1%         | 14.27                | 14.27                 | 14.27                |
| 5%         | 14.27                | 14.27                 | 14.27                |
| 10%        | 14.27                | 14.27                 | 14.27                |
| 25%        | 14.27                | 14.27                 | 14.27                |
| 33%        | 14.27                | 14.27                 | 14.27                |
| 50%        | 14.27                | 14.27                 | 14.27                |
| 66%        | 14.27                | 14.27                 | 14.27                |
| 75%        | 14.27                | 14.27                 | 14.27                |
| 90%        | 14.27                | 14.27                 | 14.27                |
| 95%        | 14.27                | 14.27                 | 14.27                |
| 99%        | 14.27                | 14.27                 | 14.27                |



©Mineral Valuation Group (Pty) Ltd

The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

## Value Distribution Graphs

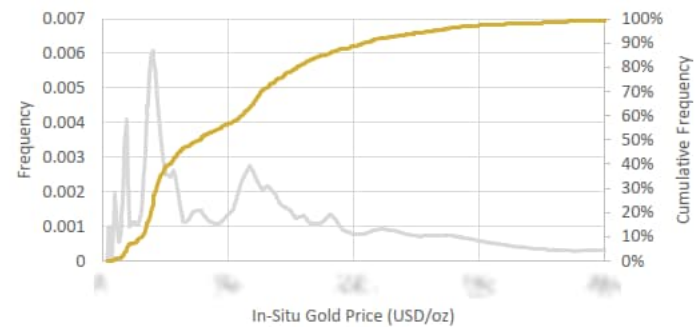
Comparison of the distribution of values of the subset and the Global Database.



### Measured Mineral Resources



### Indicated Mineral Resources



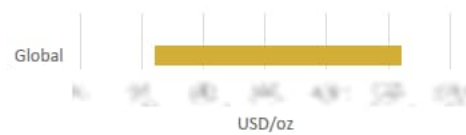
### Inferred Mineral Resources



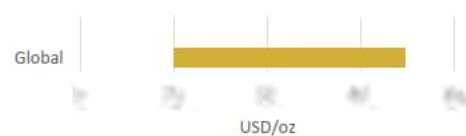
## Interquartile Range

The interquartile range (25<sup>th</sup> to 75<sup>th</sup> percentile) of the Global Dataset.

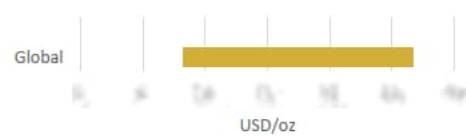
### Measured Mineral Resources



### Indicated Mineral Resources



### Inferred Mineral Resources



Production Projects

The Production Projects are a subset of the Global Dataset. This subset includes projects in the Production development stage in all Jurisdictions. The subset consists of 231 Projects.

The Value Distribution Graphs highlights that the Production Projects subset leads the Global Dataset and populates the higher end of the value ranges. This is also illustrated by the Interquartile Range comparison, which shows higher value ranges per resource category.

Percentile Values

The percentile value indicates the percentage of values in the subset that fall below a specific in-situ value.

| Percentile | Measured<br>(USD/oz) | Indicated<br>(USD/oz) | Inferred<br>(USD/oz) |
|------------|----------------------|-----------------------|----------------------|
| 1%         | 45.25                | 45.00                 | 7.48                 |
| 5%         | 45.27                | 45.24                 | 42.52                |
| 10%        | 45.30                | 45.49                 | 46.28                |
| 25%        | 45.38                | 45.88                 | 52.87                |
| 33%        | 45.52                | 46.25                 | 55.75                |
| 50%        | 45.88                | 46.75                 | 58.20                |
| 66%        | 55.45                | 55.25                 | 60.58                |
| 75%        | 70.23                | 65.45                 | 65.29                |
| 90%        | 140.36               | 125.85                | 80.75                |
| 95%        | 254.74               | 202.46                | 104.96               |
| 99%        | 520.40               | 455.74                | 171.49               |

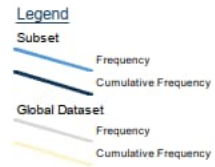


©Mineral Valuation Group (Pty) Ltd

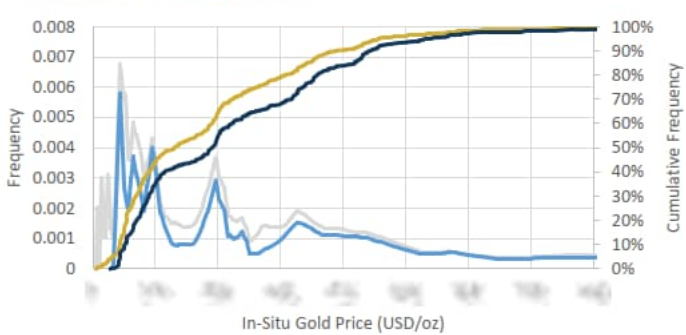
The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

Value Distribution Graphs

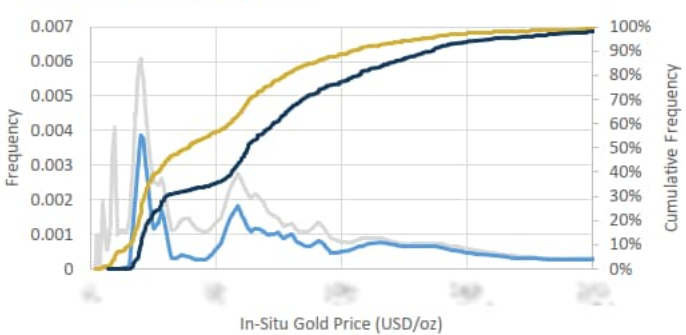
Comparison of the distribution of values of the subset and the Global Database.



Measured Mineral Resources



Indicated Mineral Resources



Inferred Mineral Resources



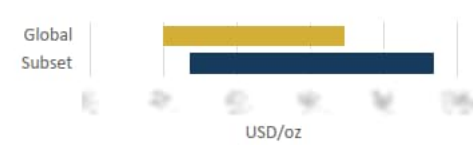
Interquartile Range

Comparison of the interquartile range (25<sup>th</sup> to 75<sup>th</sup> percentile) between the Global Dataset and the Subset. This can be used to assess the relative premium or discount of the subset to the Global Dataset.

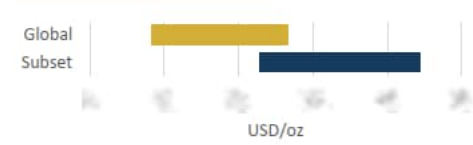
Measured Mineral Resources



Indicated Mineral Resources



Inferred Mineral Resources



## North American Projects

The North American Projects are a subset of the Global Dataset. This subset includes projects of all development stages across North America. The subset consists of 136 Projects in 3 countries.

The Value Distribution Graphs highlights that the North American Projects subset tracks the Global Dataset. This is also illustrated by the Interquartile Range comparison, which shows similar value ranges per resource category.

### Percentile Values

The percentile value indicates the percentage of values in the subset that fall below a specific in-situ value.

| Percentile | Measured<br>(USD/oz) | Indicated<br>(USD/oz) | Inferred<br>(USD/oz) |
|------------|----------------------|-----------------------|----------------------|
| 1%         | 1.25                 | 2.24                  | 1.34                 |
| 5%         | 14.86                | 2.89                  | 1.52                 |
| 10%        | 14.52                | 3.38                  | 1.51                 |
| 25%        | 18.29                | 10.24                 | 1.58                 |
| 33%        | 19.15                | 12.18                 | 1.59                 |
| 50%        | 18.79                | 16.70                 | 1.65                 |
| 66%        | 24.83                | 18.75                 | 1.70                 |
| 75%        | 24.34                | 18.21                 | 1.78                 |
| 90%        | 49.25                | 18.52                 | 1.51                 |
| 95%        | 52.42                | 18.24                 | 1.52                 |
| 99%        | 49.72                | 22.26                 | 1.53                 |



©Mineral Valuation Group (Pty) Ltd

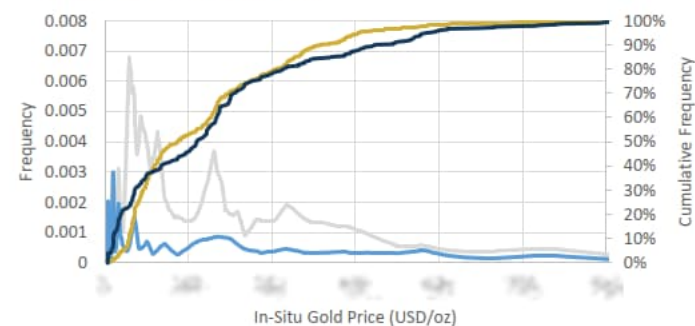
The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

## Value Distribution Graphs

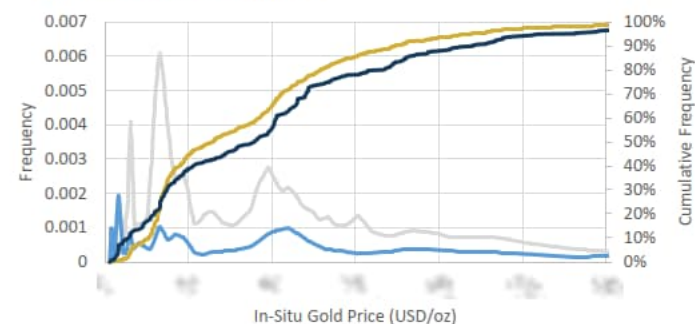
Comparison of the distribution of values of the subset and the Global Database.



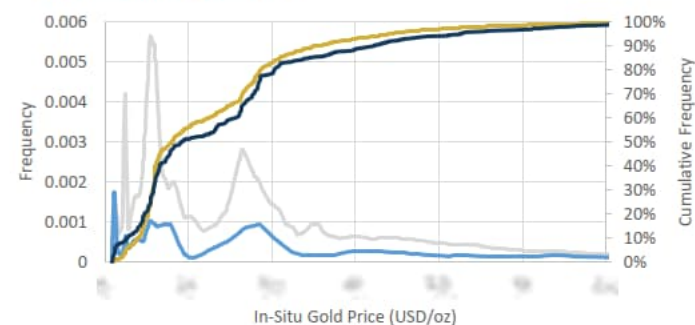
### Measured Mineral Resources



### Indicated Mineral Resources



### Inferred Mineral Resources



## Interquartile Range

Comparison of the interquartile range (25<sup>th</sup> to 75<sup>th</sup> percentile) between the Global Dataset and the Subset. This can be used to assess the relative premium or discount of the subset to the Global Dataset.

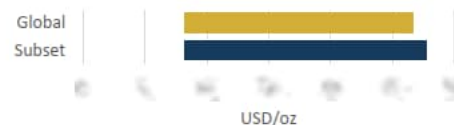
### Measured Mineral Resources



### Indicated Mineral Resources



### Inferred Mineral Resources



## Transaction Database

The Transaction Database comprises 59 Projects from 39 Transactions over the 2020 to 2022 period. The Transaction Database covers all regions and development stages.

The Value Distribution Graphs highlights that the Transaction Database tracks the Global Database In-Situ values for Indicated and Inferred Mineral Resources. For Measured Mineral Resources, the In-Situ Values for the Transaction Database is higher as can be seen from the Cumulative Frequency Graph. This is also illustrated by the Interquartile Range comparison.

### Percentile Values

The percentile value indicates the percentage of values in the Transaction Database that fall below a specific in-situ value.

| Percentile | Measured<br>(USD/oz) | Indicated<br>(USD/oz) | Inferred<br>(USD/oz) |
|------------|----------------------|-----------------------|----------------------|
| 1%         | 14.25                | 2.31                  | 2.95                 |
| 5%         | 15.20                | 2.47                  | 3.09                 |
| 10%        | 17.48                | 2.62                  | 3.24                 |
| 25%        | 27.59                | 3.45                  | 4.16                 |
| 33%        | 32.32                | 3.56                  | 4.29                 |
| 50%        | 59.22                | 4.37                  | 5.28                 |
| 66%        | 65.23                | 4.52                  | 5.41                 |
| 75%        | 66.25                | 4.62                  | 5.46                 |
| 90%        | 75.12                | 4.82                  | 5.62                 |
| 95%        | 76.22                | 4.92                  | 5.67                 |
| 99%        | 77.31                | 5.02                  | 5.72                 |



©Mineral Valuation Group (Pty) Ltd

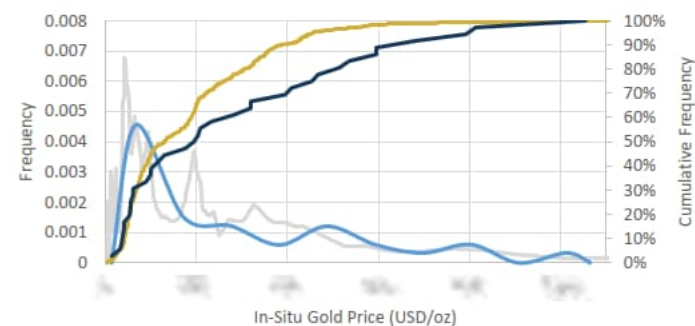
The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

## Value Distribution Graphs

Comparison of the distribution of values of the Transaction Database and the Global Database.



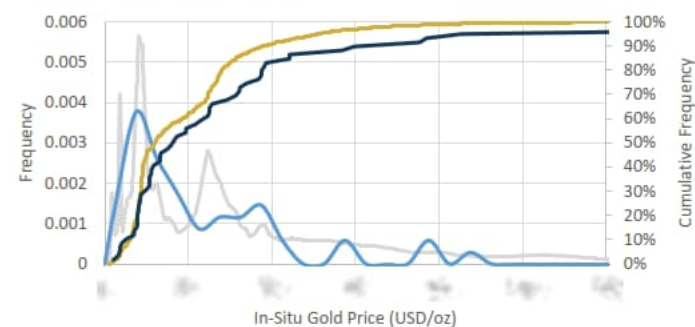
### Measured Mineral Resources



### Indicated Mineral Resources



### Inferred Mineral Resources



### Interquartile Range

Comparison of the interquartile range (25<sup>th</sup> to 75<sup>th</sup> percentile) between the Global Dataset and the Transaction Database.

#### Measured Mineral Resources



#### Indicated Mineral Resources



#### Inferred Mineral Resources



## Using the Datasets

### Analysis using the MVG Market Comparative Dataset

The value of gold mining companies involved in the exploration, development or mining of Mineral Resources is primarily driven by their in-situ Mineral Resources. The type and quality of the mineral assets in their portfolio will impact the company value as these mineral assets are essentially the reason these gold companies exist.

A reader of this report can use the Global Dataset, or a subset in their analysis of a project or company. This report provides estimates of the in-situ values that the market currently ascribes to projects. For projects or companies in the Global Dataset, comparisons can be made to similar projects or companies, and a determination can be made whether the projects are over or under priced. For projects or companies not in the Global Dataset, similar projects can be identified, and used as proxies for the value.

Once the reader has a high-level understanding of the mineral assets owned by a company, he can select a subset of similar assets owned by other companies from the Global Dataset. To do this, the reader will have one of two options:

- **The company under consideration is included in the MVG Database:** If the company under consideration is already part of the database, the analyst can simply see where the assets, or the appropriate subset of assets, plot compared to the Global Database, by reading the relevant section/s of this report. The reader will be able to determine where on the distribution curve for each Mineral Resource category the mineral assets plot (50<sup>th</sup> percentile, 75<sup>th</sup> percentile etc.).
- **The company under consideration is not included in the MVG Database:** If the company is not part of the database, the reader can attribute a value to the mineral assets by making an assumption on where these mineral assets should reasonably plot compared to similar mineral assets (50<sup>th</sup> percentile, 75<sup>th</sup> percentile etc.). The reader can calculate a value range for each mineral asset owned by the company by multiplying the estimated in-situ resource value range by the contained gold ounces. Summing results will provide the analyst with a value indication for the company under consideration. Comparing this company value to the Enterprise Value of the company will give the analyst a clear picture of whether the company shares are under-priced, fairly-priced, or over-priced.

The following two examples illustrate this analysis process.

#### **Example 1: Analysis when a company is included in the dataset**

Company A, which is included in the MVG Database, owns one gold mineral asset, Project X, located in Tanzania. A Pre-Feasibility Study has been completed on the project and the following Mineral Resources have been declared:

- 3 Moz of total contained ounces in the Measured Category,
- 2 Moz of total contained ounces in the Indicated Category,
- 1 Moz of total contained ounces in the Inferred Category.

#### **Solution 1**

- The reader should familiarise themselves with the mineral asset under consideration and determine the jurisdiction, development stage, mining method and the viability of successful development of the asset in general, and take note of associated risks. This can be seen in the project's Pre-Feasibility Study.
- After the reader has familiarized himself with the asset, they should understand whether this is an exceptional asset, an average asset or an asset that will only be profitable in a high gold-price environment. Since Company A is included in the dataset, the analyst will be able to see how Project X relate to other projects in the Global Dataset by referring to the Company Overview section of this report.
- If the asset plots higher or lower than expected, the share price of Company A is very likely over- or under-valued.
- The reader can further intensify his efforts by comparing the value ranges attributable to Project X to specific assets in the database with similar characteristics.

#### **Example 2: Analysis when a company is not included in the dataset**

We consider Company A, the same company as in Example 1, however in this instance, the company is not included in the Database.

#### **Solution 2**

- As in Solution 1, the reader should familiarise themselves with the mineral asset under consideration and determine the jurisdiction, development stage, mining method and the viability of successful development of the asset in general and take note of associated risks as identified in the project's Pre-Feasibility Study. After the reader has familiarized himself with the asset, they should understand whether this is an exceptional asset, an average asset or an asset that will only be profitable in a high gold-price environment. This should give him an idea of where he would expect the asset to plot, compared to similar assets in the Database.

- Once the reader understands where the asset under consideration should plot (50<sup>th</sup> percentile, 75<sup>th</sup> percentile etc.) the reader can read the USD/oz values for the appropriate percentile, or percentile ranges from the MVG Database for similar assets.
- Multiplying these ranges with the contained ounces for each Mineral Resource category, and then summing the values for each of the three resource categories will give an asset value. As this is the only asset owned by Company A, this value can then be compared to the enterprise value of the company to determine whether the enterprise value is under-valued, over-valued or fairly valued.

Similarly, a reader can determine whether a transaction is ideally priced, by determining what value the transaction price places on the underlying mineral assets. This is a very quick and accurate way of understanding whether value expectations, for both the buyer and the seller, are reasonable.

The advantage of using this methodology is that this assessment can be done quickly. This helps to greatly reduce the amount of time and money spent on potential transactions with very low probability of success due to unreasonable value expectations from one of the parties.

## Company Analysis

Mineral Valuation Group identified 93 publicly traded companies that focus on gold assets. These companies primarily trade on the New York Stock Exchange (NYSE), the Toronto Stock Exchange (TSX), the London Stock Exchange (LSE), the Australian Securities Exchange (ASX) and the Johannesburg Stock Exchange (JSE). These companies vary from the largest gold mining companies globally, operating large production assets, to junior companies that focus on the development of greenfield gold assets.

Mineral Valuation Group reviewed these 93 companies to assess whether sufficient data is available on their assets for a thorough analysis. Of these 93 companies, 36 were omitted from the database. The primary reasons for omission are as follows:

- The company is in the process of a merger/transaction that is not yet complete,
- The company focusses on early-stage gold projects where no Mineral Resources have been declared,
- Trading of the company's shares have been suspended,
- The company is a "Royalty and Streaming" company, which means they "lend" money to gold projects in exchange for a royalty payment. However, they do not hold or manage gold assets,
- Large, well-diversified companies that have gold resources in their Mineral Resource Statement, however the in-situ gold resources are "insignificant" to the company.

The remaining 56 companies have a combined Enterprise Value of USD383.7bn, for a combined gold resource base of 2.13bn ounces. The combined value of gold projects is USD221.2bn resulting in an average in-situ resource value of USD103.81.

For each company with assets in the Global Dataset, the following information is presented:

- Description: A short introduction to the company.
- Enterprise Value: A table in USD summarising the lowest, highest and average Enterprise Value of the company for the 6-month period, 1 March 2022 to 31 August 2022. The Enterprise Value is calculated from the market capitalisation adjusted for cash and debt as presented in the latest financial statements as at 31 August 2022.
- Share Price: A graph showing the share price movement in USD for the 6-month period, 01 March 2022 to 31 August 2022.
- Resource Value Contribution: A graph illustrating the in-situ resource value contribution of gold Mineral Resources to other commodities in the company's portfolio. This shows the company's level of exposure to gold.
- Ounce Distribution: The graphs illustrate the distribution of gold ounces between Measured, Indicated and Inferred Mineral Resources, and between Production, Pre-Production and Greenfields projects.
- Company Value Ranges: The company's relative position compared to the Global Dataset is presented on distribution graphs for the in-situ resource values. The average in-situ value for each development stage and resource category is plotted on the cumulative frequency graph to allow comparison between different companies.
- A table of all the assets in the company's portfolio, highlighting their gold Mineral Resources, is presented, with a summary of the attributable contained gold ounces.

Each company's data is outlined below.

## Barrick Gold Corporation

Barrick is a gold and copper producer, operating mines and projects in 18 countries in North and South America, Africa, Papua New Guinea and Saudi Arabia.

Gold contributes 73% of Barrick's in-situ resource value. Barrick has 202.7Moz. Other resources includes copper and silver.

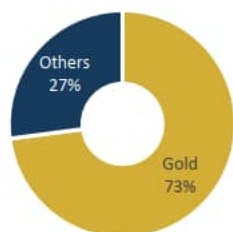
The company's shares trade on the New York Stock Exchange under the symbol GOLD, and on the Toronto Stock Exchange under the symbol ABX.

|                                | (USDm)    |
|--------------------------------|-----------|
| Low                            | 34,581.27 |
| Average                        | 43,705.89 |
| High                           | 52,805.01 |
| *1 March 2022 - 31 August 2022 |           |

### Share Price



### Resource Value Contribution

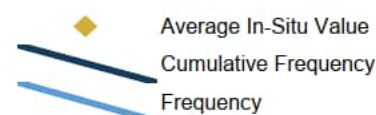


### Ounce Distribution (Moz)



### Company Value Ranges

The graphs highlights the average in-situ value ranges for projects in the company based on development stage and resource confidence



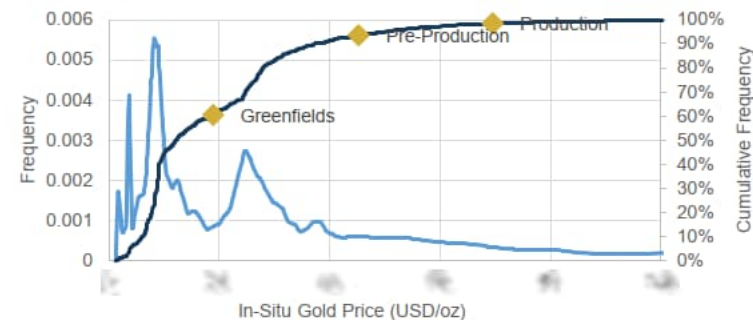
#### Measured Mineral Resources



#### Indicated Mineral Resources



#### Inferred Mineral Resources



©Mineral Valuation Group (Pty) Ltd

The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

# Barrick Gold Corporation

[illegible]

## Transaction Analysis

Mineral Valuation Group identified 44 transactions that occurred during the past three years, 39 of which were added to the database. Transactions are typically omitted from the database because:

- Early-stage gold projects where no Mineral Resources have been declared,
- Insufficient data on the transaction is available for analysis,
- The transaction has not yet been completed.

The transaction value as well as all the relevant technical data on the mineral assets under consideration are captured. This includes the project location, geology and mineralization, mining method, development stage, and Mineral Resources.

Each transaction is compared to the Transaction Dataset and overlaid on the Global Dataset for information purposes. The following information is presented for each transaction:

- Description: A short description of the transaction,
- Transaction Summary: A table summarising key information about the transaction,
- Resource Value Contribution: A graph illustrating the in-situ resource value contribution of gold Mineral Resources to other commodities in the transacted assets,
- Attributable Gold Resources: A table summarising the transacted assets, with their attributable Mineral Resources and the in-situ resource values,
- Value Distribution Graphs: The transaction's relative position compared to the Transaction Dataset is presented on the distribution graphs for the in-situ resource values. The in-situ value for each project and resource category is plotted on the cumulative frequency graph to allow comparison between different companies.

Each transaction is outlined below.

## T024: Endeavour Mining - Semafo

Endeavour Mining acquired SEMAFO Inc. The consideration was paid with Endeavour ordinary shares. As a result of the arrangement, SEMAFO has become a wholly-owned subsidiary of Endeavour, giving Endeavour its 90% ownership stake in its mineral assets.

### Transaction Summary

|                             |        |           |
|-----------------------------|--------|-----------|
| Transaction Date            |        | 03-Jul-20 |
| Transaction Amount          | (USDm) | 735.00    |
| % Acquired                  | (%)    | 90%       |
| Attributable Gold Resources | (koz)  | 7641      |
| Other Commodities           |        | -         |

### Attributable Gold Resources

| Project         | Dev Stage   | Jurisdiction | Measured<br>(koz) | Indicated<br>(koz) | Inferred<br>(koz) | Measured<br>(USD/oz) | Indicated<br>(USD/oz) | Inferred<br>(USD/oz) |
|-----------------|-------------|--------------|-------------------|--------------------|-------------------|----------------------|-----------------------|----------------------|
| Mana Project    | Production  | Burkina Faso | 1,000             | 2,800              | 2,000             | 280.00               | 192.00                | 93.75                |
| Boungou Mine    | Production  | Burkina Faso | 100               | 1,000              | 100               | 280.00               | 192.00                | 93.75                |
| Nabanga Project | Greenfields | Burkina Faso | 2                 | 5                  | 100               | 280.00               | 192.00                | 93.75                |
| Bantou          | Greenfields | Burkina Faso | 2                 | 2                  | 300               | 280.00               | 192.00                | 93.75                |

### Total

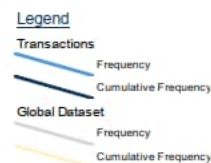


©Mineral Valuation Group (Pty) Ltd

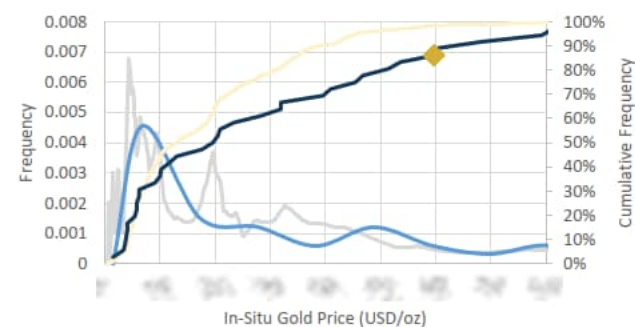
The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

### Value Distribution Graphs

Comparison of the distribution of values of the Transaction Database and the Global Database.



#### Measured Mineral Resources



#### Indicated Mineral Resources



#### Inferred Mineral Resources



## Appendix 1: Global Dataset

| Company                    | Project                            | Ownership | Development Stage | Jurisdiction     | Gold Content (koz) |           |          | Measured in-situ value (USD/oz) |     |     | Indicated in-situ value (USD/oz) |     |     | Inferred in-situ value (USD/oz) |     |     |
|----------------------------|------------------------------------|-----------|-------------------|------------------|--------------------|-----------|----------|---------------------------------|-----|-----|----------------------------------|-----|-----|---------------------------------|-----|-----|
|                            |                                    |           |                   |                  | Measured           | Indicated | Inferred | High                            | Mid | Low | High                             | Mid | Low | High                            | Mid | Low |
| African Rainbow Minerals   | Bambanani Gold Mine                | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Joel Gold Mine                     | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Masimong Gold Mine                 | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Target 1 Gold Mine                 | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Target 3 Gold Mine                 | 12.1%     | Pre-Production    | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Tshepong                           | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Doornkop Gold Mine                 | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Kusasaletu Gold Mine               | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Kalgold Gold Mine                  | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Hidden Valley Mine                 | 12.1%     | Production        | Papua New Guinea |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Golpu Project                      | 6.1%      | Pre-Production    | Papua New Guinea |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Kili Teke                          | 12.1%     | Greenfields       | Papua New Guinea |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Free State Surface Operations      | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Moab Khotsoeng                     | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Mispah Tailings Storage Facilities | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Kopanang Pay Dam                   | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Mponeng                            | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | Vaal River Tailings                | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| African Rainbow Minerals   | West Wits Tailings                 | 12.1%     | Production        | South Africa     |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | LaRonde                            | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Canadian Malartic                  | 50.0%     | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Odyssey                            | 50.0%     | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | East Malartic                      | 50.0%     | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Goldex                             | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Akasaba West                       | 100.0%    | Pre-Production    | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Zulapa                             | 100.0%    | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Meadowbank Complex                 | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Melladine                          | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Hammond Reef                       | 100.0%    | Pre-Production    | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Upper Beaver                       | 100.0%    | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | AK Project                         | 100.0%    | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Anoki-McBean                       | 100.0%    | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Upper Canada                       | 100.0%    | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Kittila                            | 100.0%    | Production        | Finland          |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Kuotko                             | 100.0%    | Greenfields       | Finland          |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Barsale                            | 55.0%     | Greenfields       | Sweden           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Pinos Altos                        | 100.0%    | Production        | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | La India                           | 100.0%    | Production        | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Tarachi                            | 100.0%    | Greenfields       | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | El Barqueño Gold                   | 100.0%    | Greenfields       | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Chipiriona                         | 100.0%    | Greenfields       | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Santa Gertrudis                    | 100.0%    | Greenfields       | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | East Gouldie                       | 50.0%     | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Hope Bay                           | 100.0%    | Pre-Production    | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Detour Lake                        | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Macassa                            | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Fosterville Complex                | 100.0%    | Production        | Australia        |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Northern Territory                 | 100.0%    | Greenfields       | Australia        |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Agnico-Eagle Mines Limited | Timmins East Properties            | 100.0%    | Greenfields       | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Young-Davidson                     | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Island Gold                        | 100.0%    | Production        | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Mulatos                            | 100.0%    | Production        | Mexico           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Lynn Lake                          | 100.0%    | Pre-Production    | Canada           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Kirazli                            | 100.0%    | Pre-Production    | Turkey           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Agı Dagı                           | 100.0%    | Pre-Production    | Turkey           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Alamos Gold                | Camıyurt                           | 100.0%    | Pre-Production    | Turkey           |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |
| Americas Gold and Silver   | Relief Canyon                      | 100.0%    | Production        | United States    |                    |           |          |                                 |     |     |                                  |     |     |                                 |     |     |

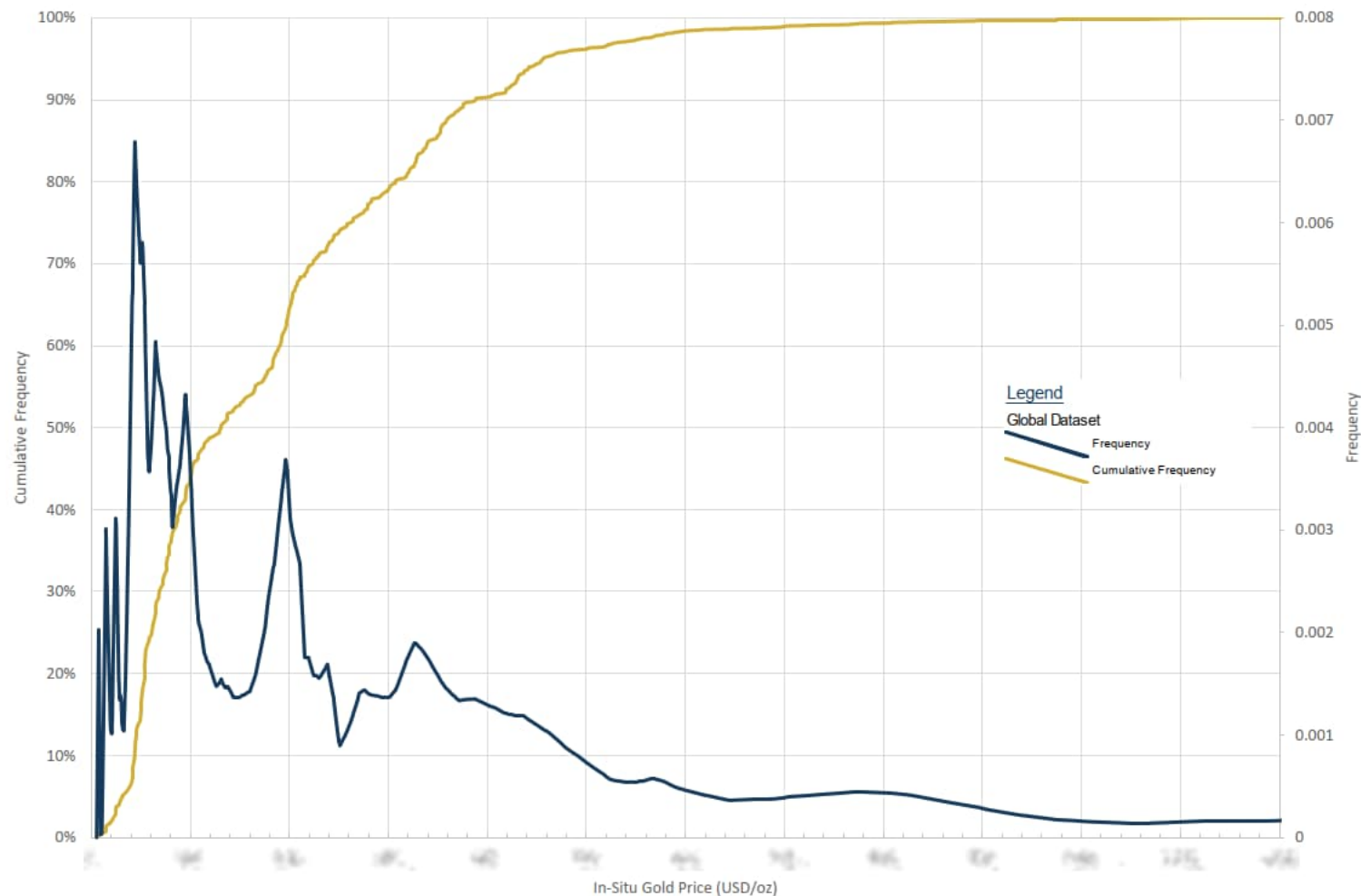
## Appendix 2: In-situ Resource Value Distribution Graph - Measured

The graph illustrates the distribution of possible resource values for the Measured Resource Category.

### Percentile Values

The percentile value indicates the percentage of values that fall below a specific in-situ value.

| Percentile | Measured<br>(USD/oz) |
|------------|----------------------|
| 1%         | 15.50                |
| 5%         | 16.10                |
| 10%        | 16.70                |
| 20%        | 17.30                |
| 30%        | 17.90                |
| 33%        | 18.10                |
| 40%        | 18.30                |
| 50%        | 18.50                |
| 60%        | 18.70                |
| 67%        | 18.90                |
| 70%        | 19.10                |
| 75%        | 19.30                |
| 80%        | 19.50                |
| 90%        | 19.70                |
| 95%        | 19.90                |
| 99%        | 20.10                |



©Mineral Valuation Group (Pty) Ltd

The data presented on this page is protected by Copyright. Mineral Valuation Group takes all available measures to ensure the accuracy of the data presented, however Mineral Valuation Group does not guarantee, nor accept any legal liability whatsoever arising from or connected to, the accuracy, reliability, currency or completeness of any material contained in this document.

### Appendix 3: Transaction List

| Description                                       | Transaction Date | % Acquired | Key Assets Acquired       | Transaction Value in Currency | Transaction Value in USDm | Notes |
|---------------------------------------------------|------------------|------------|---------------------------|-------------------------------|---------------------------|-------|
| T001: Orla Mining - Gold Standard Ventures        | 15-Aug-2012      | 100%       | Gold Standard Ventures    | US\$20.0m                     | 20.0                      |       |
| T002: Zacatecas Silver - Alamos Esperanza         | 15-Aug-2012      | 100%       | Zacatecas Silver          | US\$10.0m                     | 10.0                      |       |
| T003: G Mining Ventures - Eldorado Gold           | 15-Aug-2012      | 100%       | G Mining Ventures         | US\$10.0m                     | 10.0                      |       |
| T004: Eldorado Gold - QMX Gold Corporation        | 15-Aug-2012      | 100%       | Eldorado Gold             | US\$10.0m                     | 10.0                      |       |
| T005: Lundin Mining - Josemaria Resources Inc     | 15-Aug-2012      | 100%       | Lundin Mining             | US\$10.0m                     | 10.0                      |       |
| T006: Avino - Coeur Mining                        | 15-Aug-2012      | 100%       | Avino                     | US\$10.0m                     | 10.0                      |       |
| T007: Perseus Mining Limited - Orca Gold Inc      | 15-Aug-2012      | 100%       | Perseus Mining Limited    | US\$10.0m                     | 10.0                      |       |
| T008: Regis Acquires - Tropicana Gold Project     | 15-Aug-2012      | 100%       | Regis Acquires            | US\$10.0m                     | 10.0                      |       |
| T009: Argonaut Acquires - Aljo Gold Inc           | 15-Aug-2012      | 100%       | Argonaut Acquires         | US\$10.0m                     | 10.0                      |       |
| T010: Newmont Corporation - Buenaventura          | 15-Aug-2012      | 100%       | Newmont Corporation       | US\$10.0m                     | 10.0                      |       |
| T011: Newmont Corporation - Sumitomo              | 15-Aug-2012      | 100%       | Newmont Corporation       | US\$10.0m                     | 10.0                      |       |
| T012: Gold Line Resources - Agnico Eagle          | 15-Aug-2012      | 100%       | Gold Line Resources       | US\$10.0m                     | 10.0                      |       |
| T013: Evolution Mining - Northern Star            | 15-Aug-2012      | 100%       | Evolution Mining          | US\$10.0m                     | 10.0                      |       |
| T014: Black Cat Syndicate - Northern Star         | 15-Aug-2012      | 100%       | Black Cat Syndicate       | US\$10.0m                     | 10.0                      |       |
| T015: Kalamazoo Resources - Northern Star         | 15-Aug-2012      | 100%       | Kalamazoo Resources       | US\$10.0m                     | 10.0                      |       |
| T016: Evolution Mining - Battle North Gold        | 15-Aug-2012      | 100%       | Evolution Mining          | US\$10.0m                     | 10.0                      |       |
| T017: Evolution Mining A - Newmont Gold Corp      | 15-Aug-2012      | 100%       | Evolution Mining A        | US\$10.0m                     | 10.0                      |       |
| T018: Evolution Mining - Glencore                 | 15-Aug-2012      | 100%       | Evolution Mining          | US\$10.0m                     | 10.0                      |       |
| T019: Aeris Resources - Evolution Mining          | 15-Aug-2012      | 100%       | Aeris Resources           | US\$10.0m                     | 10.0                      |       |
| T020: Navarre Minerals - Evolution Mining         | 15-Aug-2012      | 100%       | Navarre Minerals          | US\$10.0m                     | 10.0                      |       |
| T021: B2Gold - Oklo Resources                     | 15-Aug-2012      | 100%       | B2Gold                    | US\$10.0m                     | 10.0                      |       |
| T022: Calibre Mining Corp - B2Gold                | 15-Aug-2012      | 100%       | Calibre Mining Corp       | US\$10.0m                     | 10.0                      |       |
| T023: West African Resources - B2Gold             | 15-Aug-2012      | 100%       | West African Resources    | US\$10.0m                     | 10.0                      |       |
| T024: Endeavour Mining - Semafo                   | 15-Aug-2012      | 100%       | Endeavour Mining          | US\$10.0m                     | 10.0                      |       |
| T025: Endeavour - Teranga Gold                    | 15-Aug-2012      | 100%       | Endeavour                 | US\$10.0m                     | 10.0                      |       |
| T026: Newcrest - Pretium Resources                | 15-Aug-2012      | 100%       | Newcrest                  | US\$10.0m                     | 10.0                      |       |
| T027: Indotan Halmahera Bangkit - Newcrest Mining | 15-Aug-2012      | 100%       | Indotan Halmahera Bangkit | US\$10.0m                     | 10.0                      |       |
| T028: Kinross - Royal Gold and Contango Ore       | 15-Aug-2012      | 100%       | Kinross                   | US\$10.0m                     | 10.0                      |       |
| T029: Kinross Acquires Great Bear Resources Ltd   | 15-Aug-2012      | 100%       | Kinross Acquires          | US\$10.0m                     | 10.0                      |       |
| T030: Asante Gold - Kinross Gold Corp             | 15-Aug-2012      | 100%       | Asante Gold               | US\$10.0m                     | 10.0                      |       |

#### **Appendix 4: Omitted Companies**

| <b>Company Name</b>             | <b>Reason</b>                     |
|---------------------------------|-----------------------------------|
| Aben Resources                  | No Resource Statement             |
| Acacia Mining PLC               | Acquired By Barrick in 2019       |
| African Gold Group Inc          | Changed Name to Toubani Resources |
| Amarillo Gold Corp              | Hochchild to acquire Amarillo     |
| Anglo American                  | Not Gold focused Company          |
| Aris Gold                       | Acquired by GCM                   |
| Austin Gold                     | Royalties and Streams Company     |
| BHP                             | Not Gold focused Company          |
| CuDeco Limited                  | In Business Rescue (Receivership) |
| Detour Gold Corp                | Acquired by Kirkland Lake Gold    |
| Dreadnought Resources Limited   | No Resource Statement             |
| Franco-Nevada                   | Royalties and Streams Company     |
| Glencore                        | Not Gold focused Company          |
| Gold Fields                     | Merger with Yamana Pending        |
| Goldcorp Inc                    | Acquired By Newmont               |
| Golden Star Resources           | Acquired by Chifeng Gold Group    |
| Gran Colombia Gold (GCM Mining) | Transaction Pending               |
| Kirkland Lake Gold              | Acquired by Agnico Eagle          |
| Lonmin PLC                      | Acquired by Sibanye               |
| Maverix Metals                  | Royalties and Streams Company     |
| MOD Resources                   | Acquired by Sandfire              |
| New Found Gold                  | No Resource Statement             |
| Petropavlovsk                   | De listed                         |
| Pretivm Resources               | Newcrest acquired Pretivm         |
| Randgold Resources              | Merged with Barrick               |
| Rio Tinto                       | Not Gold focused Company          |
| Royal Gold                      | Royalties and Streams Company     |
| Sandstorm Gold                  | Royalties and Streams Company     |
| SEMAFO                          | Acquired by Endeavour             |
| Tahoe Resources Inc.            | Acquired by Pan American Silver   |
| Trevali Mining Corporation      | Not Gold focused Company          |
| Trillium Gold Mines             | Royalties and Streams Company     |
| Triple Flag Precious Metals     | Royalties and Streams Company     |
| Wheaton Precious Metals         | Royalties and Streams Company     |
| Yamana Gold Inc.                | Merger with Goldfields pending    |