



EXPLORATIONS UNLIMITED

Valuation of Alluvial Diamond Deposits

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Valuation



▶ Listed Environment

- SAMVAL-compliant documents required by JSE for Mineral Asset Valuation

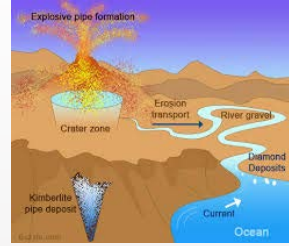
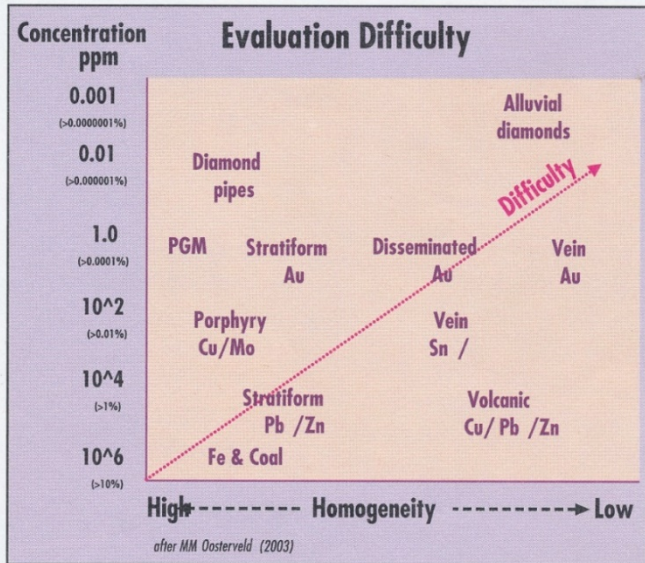
▶ Unlisted Environment

- Private deals to determine equity for BEE partnerships
- Private companies and small-medium scale alluvial diamond operators looking for finance
 - IDC, banks, mining funds
 - High-wealth individuals
 - Diamantaires
- More and more private entities requiring CPR and valuation reports
- Deserve/demand the same standards of professionalism as JSE



Valuation

Diamonds are different



- The widely differing nature of diamondiferous deposits and their associated forms of mineralisation and the estimation relevant to these. Diamond deposits can be subdivided into:
 - Igneous-hosted (primary) deposits
 - Marine and alluvial placers
 - Tailings deposits
- The low diamond content of primary and placer diamond deposits and their variability
- 'Quality' cannot be used as a substitute for 'grade'.
- The 'nugget effect' on diamond grade
- The relationship between average diamond value and the underlying diamond size distribution
- The specialised field of diamond valuation.
 - The individual physical characteristics, which have a significant impact on diamond value. These characteristics are size and assortment, the latter being comprised of model (shape or morphology), quality and colour.





► Valuation Report

- In terms of the SAMVAL Code
- Based on a CRIRSCO Resource/Reserve estimation code (SAMREC)
- Valuation is date specific
- Must be completed by registered Competent Valuator
- Three generally accepted approaches
 - CV must apply at least two approaches and explain differences in results, where applicable
 - Different approaches may be more applicable at different stages of exploration/mining programme
- Important to state the basis of valuation
 - Intrinsic value, fair value, market value, etc.
- Important to state the reason for valuation
 - Buying, selling, merger, financing, legal dispute, etc.



Valuation



- ▶ Not different from other commodities
 - Same driving principles
 - Same basic approaches – cost, market, income
 - Not different in standard
- ▶ *So why so many problems with valuation reports done on alluvial diamond deposits?*
 - Typically done on early stages of the operation, before Diamond Reserves have been identified
 - Does not mean that they can't be valued properly
 - Does mean that there are some peculiarities involved in their valuation



Valuation



Valuation Approach	Exploration Properties	Development Properties	Production Properties		Dormant Properties	Defunct Properties
					<i>Economically Viable</i>	<i>Not Viable</i>
Cash Flow	Not generally used	Widely used	Widely used	Widely used	Not generally used	Not generally used
Market	Widely used	Less widely used	Quite widely used	Quite widely used	Widely used	Widely used
Cost	Quite widely used	Not generally used	Not generally used	Not generally used	Less widely used	Quite widely used





Valuation Cost Approach

► Variations of:

- Relevant exploration expenditure multiplied by a factor greater or less than 1 that reflects previous positive or negative exploration results.
 - Extremely subjective in what constitutes “relevant” exploration expenditure
 - Extremely subjective in what constitutes positive or negative exploration results

► Artisanal Operations / Professional Diggers

- Little/no information is available to substantiate expenditure
- Prospecting often done “on the cheap” by owners who lack funds
- Cost approaches often significantly undervalue properties



Valuation Market Approach

- ▶ Market based approaches are based on the premise that similar properties should have similar values.
 - Historically, very few public alluvial diamond project transactions outside of the listed environment
 - Listed projects generally significantly larger than average

- ▶ **Comparable Transactions**
 - Geology (bedrock and depositional environments) of projects is unique, varying even between adjacent properties
 - SFD, grades and values dependent on depositional environments
 - Terms generally not only for cash
 - Shares, options, royalties, cutting/polishing agreements
 - Diamond market very fickle.



Valuation Market Approach

➔ Option Agreement (JV) Terms

- Most useful for large exploration concession where there is significant exploration potential, but very little work completed.
- Based on the premise that project exploration and development costs materially escalate with time.
- On alluvial diamond projects, much of total expenditure is in early stages
 - Resource estimation based on on-site bulk-sampling
 - Requires EMV and processing plant
 - PFS/FS based on trial-mining
 - Requires EMV and processing plant
 - After PFS/FS, costs can remain static/decrease
- Tends to overestimate actual project values





Valuation Market Approach

► Net mineral value (or value per unit of mineral)

- All diamonds are not born equal.



► Market capitalisation

- This method has effectively been applied to the valuation of single property asset listed companies.
- Most South African alluvial diamond properties are not owned by listed companies



Valuation Market Approach

Value per unit area

- Size of an alluvial diamond property is not always the most significant variable.
 - A situation could occur where the bedrock influence on one stretch of river could be far more conducive to the formation of trapsites (potentially higher grades and higher diamond values) than on the comparison property.



Valuation Income Approach

➤ Discounted Cash Flow (“DCF”)

- Requires Probable Diamond Reserves
- Most of the Capex is spent prior to, or during, the PFS and only minor sustaining capital is, generally, required throughout the life of the mine. This feature results in difficulty in determining Internal Rates of Return (IRR)
- Although the operation may have multiple years of identified Diamond Resources, the industry standard is to determine only limited amounts of Diamond Reserves ahead of mining. This, typically, results in low NPV and IRR values that might not reflect the true value of the property.

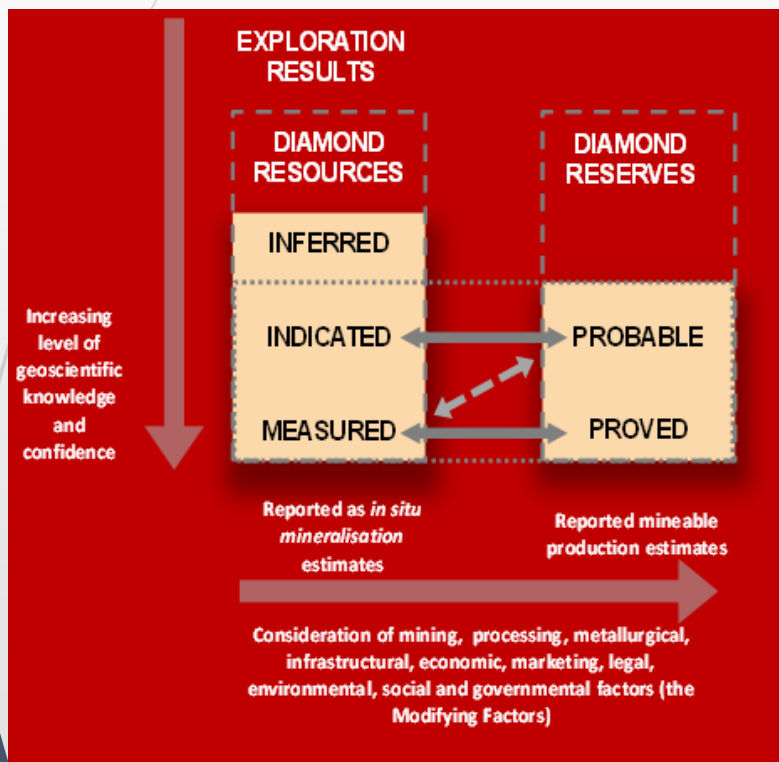
➤ Monte Carlo Analysis

➤ Option Pricing

➤ CPR issues with Diamond Resource estimation



Valuation CPR



- ▶ CV should have more than a passing familiarity with Diamond Resource/Reserve estimation issues peculiar to alluvial diamond projects
- ▶ Figure 3 is specific to diamond deposits
- ▶ Section 11 of Table 1
- ▶ SAMREC Diamonds Guideline document





Valuation Diamond Guidelines

- 1 **INTRODUCTION**
- 2 **DIAMOND EXPLORATION RESULTS**
 - 2.1 DIAMOND EXPLORATION TARGETS
 - 2.1.1 *Kimberlitic Indicator Mineral Chemistry*
 - 2.1.2 *Diamond Mineralisation*
- 3 **DIAMOND RESOURCE ESTIMATION**
 - 3.1 DIAMOND RESOURCE ESTIMATION PRINCIPLES
 - 3.2 REASONABLE PROSPECTS FOR EVENTUAL ECONOMIC EXTRACTION
 - 3.2.1 *Eventual Economic Extraction*
 - 3.3 DIAMOND RESOURCE CLASSIFICATION
 - 3.3.1 *Inferred Diamond Resource*
 - 3.3.2 *Indicated Diamond Resource*
 - 3.3.3 *Measured Diamond Resource*
 - 3.4 DIAMOND VALUE (REVENUE ESTIMATE)
 - 3.4.1 *Parcel Size and Representivity*
 - 3.5 MICRODIAMONDS
- 4 **TECHNICAL STUDIES**
 - 4.1 BULK-SAMPLING VS TRIAL MINING ON ALLUVIAL DIAMOND DEPOSITS
- 5 **DIAMOND RESERVES**
 - 5.1 PROBABLE DIAMOND RESERVE
 - 5.2 PROVED DIAMOND RESERVE
- 6 **MISCELLANEOUS**



Case Study Midamines Project

➤ Located on Kwanza River

- Along border between Angola and DRC
- Concession 200km²
- 55km of stream length
- Only artisanal activity

➤ Project in early-stage exploration

- Desktop Study
- Limited initial exploration to identify Exploration Targets
- No RPEEE demonstrated
- No Diamond Resources



Case Study

Midamines Project

► Cost Approach

- Verifiable relevant expenditure of USD925,000
- Subjective premium of 1.2
- Total estimated value of USD1.1M
 - Expected to under-value the project





Case Study

Midamines Project

➤ Market Approach

- *Market Comparable Method*
 - Two existing CPR's and valuations for public companies on alluvial diamond properties within 100km
 - Based on these documents, project estimated at USD100,000
 - Expected to be significantly undervalued
- *JV Terms Method*
 - Cost of exploration was estimated at USD10-12M
 - Cost to bring to full production estimated at USD4M
 - The cost of the exploration programme was significantly higher than the cost of bringing the property into production which belies the whole premise of the JV terms valuation method.
 - Expected to have over-valued the project.



Case Study

Midamines Project

- ▶ At the end of this exercise, the project was left with a range of valuations from USD 0.1-12 Million, both of which were deemed unreliable.
- ▶ Recognising the issues that made these results undependable is fundamental to assisting the CV in
 - applying global valuation principles to deposits with very specific requirements and
 - coming up with results that will be more useful to both listed and private companies.



THANK YOU

