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Canadian Institute of Mining, Metallurgy and Petroleum
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CIM Leading Practice Guidelines for Diamond Exploration, Resources and Reserves, Specific to Primary Diamond Deposits

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1. Introduction

The Leading Practice Guidelines for documenting Diamond Exploration Results, Resources and Reserves, specific to Primary Diamond Deposits (Diamond Guidelines) supersede and replace in one document, the Guidelines for the Reporting of Diamond Exploration Results (2003) and the CIM Best Practice Guidelines for the Estimation of Mineral Resources and Mineral Reserves for Rock Hosted Diamonds (2008).

These diamond guidelines are not prescriptive and do not provide detailed and exhaustive instructions for the preparation of Mineral Resource and/or Mineral Reserve (MRMR) estimates. Not all aspects of the Mineral Resource or Mineral Reserve estimation process are discussed. The CIM Mineral Exploration Best Practice Guidelines (2018), the CIM Estimation of Mineral Resources & Mineral Reserves Best Practice Guidelines (2019) and the CIM Definition Standards for Mineral Resources & Mineral Reserves (2014), are still valid and apply.

In 2022, the Canadian Institute of Mining, Metallurgy and Petroleum (CIM) established a Diamond Peer Group (the Peer Group) to review and update the existing Exploration and MRMR diamond guidelines (dated 2003 and 2008 respectively). The intent of this review was to improve the robustness and accountability of the evaluation process for primary diamond deposits. Also, given the importance of diamond pricing in MRMR estimation, there was a desire to improve the transparency of and basis for the diamond price estimation process. In constructing these new guidelines, the Peer Group considered changes that have occurred in the diamond industry in Canada and other regions since 2003.

In updating these guidelines, the Peer Group acknowledges the use of language from other CIM Codes (Ref. 5 and 6), the CIM Definitions Standards (2014), the South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves (SAMREC) Diamond Guidelines 2019 and the Australian Joint Ore Reserves Committee (JORC) Codes (2012 & 2025). It is important to note that disclosure and public reporting are not addressed in these Diamond Guidelines. Determination of what information is required to be disclosed in order to meet securities law requirements are set out in applicable Canadian securities regulations, including National Instrument 43-101 Standards of Disclosure for Mineral Projects.

Diamonds are produced commercially from primary and secondary diamond deposits. “Primary diamond deposits" as discussed in these guidelines refer to the diamond-bearing rocks kimberlite and olivine lamproite. They can include sedimentary units created during emplacement. Secondary diamond deposits consist mainly of alluvial and marine deposits. Secondary diamond deposits can include consolidated sediments.

The term “diamonds” as used in these guidelines refers to natural diamonds; “diamonds” and “stones” are interchangeable, and the term “primary diamond deposit" is shortened to deposit.

Diamonds differ from other minerals. Firstly, they occur as discrete particles in concentrations as low as parts per billion. Secondly, the release of diamonds from the kimberlite or lamproite rock is a function of the excavation and rock treatment processes. Thirdly, the price per carat of diamonds varies from deposit to deposit and with stone size and stone quality within a given phase of a deposit. These aspects must be considered when sampling and estimating the diamond resource and establishing the diamond reserve of a deposit.

Diamonds from the major producing mines are typically valued for export and/or preparation for sale ten times per year or on a less frequent time frame that varies by producer. The sales, tenders or auctions are dominated by a small number of organizations. In contrast, the products from metallic mineral mines are generally quite liquid in terms of number of potential buyers and metal prices and price structures are published daily. Diamond valuation is more akin to industrial minerals valuation in that the recovery process can affect the price. The impact of new supply on market prices must be assessed, and product quality and consistency of presentation of parcels must be acceptable to potential buyers.

A further contrast with base and precious metal evaluation is that the high values of diamond–bearing rocks often mean selective mining within a domain is not carried out and country-rock dilution may be tolerated in order to maximize ore extraction. Some of the distinctive aspects of diamonds are summarized below:

Table 1: Distinctive Aspects of Diamonds

Element	Definition	Comment, Options
Mineral Type	Diamonds.	Diamonds require recognition as discrete particles.
Mineral Source	Commercial diamonds are derived from primary (e.g., kimberlite, olivine lamproite, or ultramafic) and secondary (e.g., alluvial, fluvial or eluvial or marine) sources.	Primary and secondary sources are evaluated differently due to genetic differences.
Mineral Properties	Diamond size and quality distributions (size versus shape, clarity and colour).	These variables are linked to deposit rock types and petrogenesis; unique distributions within the host material are typical.
Mineral Abundance	Carats or stones per dry metric tonne (cpt or spt) or per dry 100 metric tonnes (cpht or spht).	The selection of estimating either carats or stones per unit is the result of statistical evaluation.
Grade Sampling	Samples used to estimate grade model; frequently termed 'bulk-sampling for grade' by drilling, trenching and underground methods.	Determining optimal sample size and spacing requires assumptions of diamond abundance, geostatistics and deposit geology.
Price Sampling	Diamond parcels containing several thousand carats are recommended to estimate the Run-of-Mine (ROM) diamond price in $US per carat. Methods such as drilling, trenching and underground ‘bulk-sampling for price’ are used for this purpose. ROM refers to a price that includes all the sizes, shapes, clarities and colours of diamonds expected to be present in the resource.	If the size frequency or size quality distributions are incomplete, truncated or un-smooth (for example in the coarser size classes), it is possible to model these distributions. See Section 6.3. The uncertainty (risk) associated with truncated and/or modelled distributions should be quantified.
QA/QC	Methodology to produce integrity and quality of results (e.g., employing blanks, duplicates, density beads, marking of stones).	Procedures exist for QA/QC diamond sampling; often QA/QC is very specific to the selected sampling system.
Sample Security	Gains or losses of natural or synthetic stones.	Product concentration, value and large samples require higher security measures relative to other commodities.
Sampling Method	A system that collects the sampled rock (e.g., outcrop, mining exposure, core, chips, cuttings, muck, loose or blasted	Methods require careful standardization to control the bottom aperture size cut-off and to quantify

	material).	diamond damage/breakage.
Sample Treatment	Technology used to liberate and recover stones from host material (e.g., dense media separation, X-Ray Luminescence, X-Ray Transmission, grease tables, hand or mechanical sorting or other methodologies or technologies accepted by the industry.	Methods require careful standardization to control the bottom aperture size cut-off and to quantify diamond damage/breakage.
Mineral Damage	Natural and induced stone damage including breakage. Damage refers to chipping or cracks within stones. Breakage refers to fracturing stones into smaller pieces.	Natural stone damage is inherent to most diamond populations; damage induced by sampling method and/or treatment requires careful evaluation.

2. The Target Audience – Diamond Practitioners

The target audience for these updated guidelines are individuals involved in the exploration for and evaluation of primary diamond source rocks (collectively referred to here as Diamond Practitioners). Examples would be: Resource Geologists, Geoscientists, Engineers and Diamond Valuators.

Diamond Practitioners should be familiar with:

- Kimberlite or olivine lamproite petrology, terminology and diamond indicator mineralogy.
- Equipment and techniques used in diamond exploration, sampling and deposit delineation.
- Diamond recovery processing and appropriate adjustments to diamond size distributions for standardizing recovery performance and lower cut-off size effects.
- General methods for quality assurance (QA) and quality control (QC) of sampling programs as well as those specifically applicable to diamonds such as the use of density tracers, laser marked stones and coloured synthetic stones.
- Methods for estimating the grades of kimberlites and olivine lamproites and the analytical techniques required for reconciling mini-bulk sampling with bulk sampling.
- Diamond sorting, valuation and the methods for estimating diamond prices.

A Diamond Practitioner is accountable for gathering technical information that includes elements of the diamond price, an essential component of project or mine cashflows and the estimation of Diamond Resources and Diamond Reserves.

It is recognized that diamond valuation is a specialized skill set outside of the expertise of most mineral resource or mineral reserve modellers. The Diamond Valuator provides the raw diamond price for a parcel of diamonds expressed as US$ per carat resulting from the parcel value / the parcel weight. The Diamond Valuator should provide the modeller with a signed valuation report to support the raw diamond price. The raw parcel price can be transformed into a modelled ROM diamond price (see Section 6.3). In such a situation, the valuator and the modeller are experts and must take *accountability* for the raw and modelled diamond prices respectively.

The lead Diamond Practitioner accepts *responsibility* for the valuation and modelling processes by using reasonable measures to confirm the information provided by the valuator and the modeller. It is recommended that the lead Diamond Practitioner conducts a review of and due diligence on these processes. This review will assist the lead Diamond Practitioner to identify and discuss any material risks arising from the valuation and modelling and make recommendations regarding the robustness of the modelled diamond price in the same manner as a lead Diamond Practitioner would verify the geological model, drilling density or grade estimation.

The lead Diamond Practitioner is able to consider factors such as geological complexity and the spatial representivity of the sampling and is, therefore, *accountable* for how the modelled diamond price(s) is used to define the Diamond Resource and Diamond Reserve estimates, where applicable.

The reader is referred to Section 6.1 for more detail on third parties that can provide diamond valuation services.

3. Definitions and Units

Diamond weights: All diamond weights should be stated in carats. A carat is one fifth of a gram.

Diamond sizes: Diamonds are sized using sieves or by individual stone weights. Sieve aperture sizes should be stated as mesh openings in millimeters and should specify whether the mesh is square or oblong and, in the case of punched metal plates, whether the holes are circular. Expressing carats retained on a particular sieve brand or by sieve name can help to eliminate any ambiguity as to the sieve aperture sizes.

The smallest diamonds with commercial value are > #1 Diamond Trading Company (DTC) sieve size (equivalent to >0.85 mm square mesh). Diamonds larger than 0.66 carats are allocated into size (weight) classes based on their individual weights – see Appendix 1, Tables 1 and 2 for size class boundary weights.

Diamond grades: Macro-diamond grades (i.e., commercial grades > 0.85mm) should be stated in carats per dry tonne. Since these guidelines were first issued in 2003, the industry has settled on 0.85 mm square mesh as the lower cut-off size for macro-diamonds. Grade estimates based on micro-diamonds (-0.850+0.075 mm) recovered from smaller samples (kilograms or tonnes), supported by macro-diamonds recovered from larger samples (tonnes), are possible also.

When expressing the grade of exploration samples, Diamond Resources and Diamond Reserves, the lower cut-off size for the recovery plant and the shape and size of the screen aperture must be given (e.g., square, round or slotted; nominal 1.00 mm, 1 DTC sieve, or 0.85 x 14 mm respectively). Refer to Appendix 1, Tables 1 and 2 for standard industry practice as it relates to diamond size classes and lower cut-off sizes.

Sampling results can be expressed as stones per dry tonne (and converted into carats per tonne using appropriate mean stone sizes per size class), or on a volumetric basis as carats per cubic metre.

Diamond pricebook: Sorting, presentation and valuations are carried out to a pre-defined assortment. Each item in the assortment has a price and this price is recorded in a pricebook. Large (detailed) pricebooks may have as many as 12,000 pricebook items.

Diamond prices: Diamond prices are established in US$ per carat with a date for the associated rough diamond valuation exercise and a pricebook for a defined period (e.g., month and year). Diamond prices should be expressed in US$ per carat, i.e., never in local currencies. Diamond prices should be aligned with the diamond grades (i.e., both figures must be underpinned by the same diamond size weight distribution and lower cut-off size).

Diamond parcels: Diamond parcels from sampling programs can range from a few tens of carats to thousands of carats. The prices for such parcels are defined as "parcel prices". Tracking of parcels is a key consideration, the Diamond Practitioner should be able to track any rolling (combining) of small parcels and ensure the raw data for small samples are captured and retained. Typically, parcels comprising thousands of carats are recommended to estimate the run-of-mine (ROM) diamond price (see Section 5).

Documenting diamond prices: The Diamond Practitioner should confirm that the valued diamond parcel has been cleaned, the nature of the cleaning (acid, deep boil, caustic) and that the stated size weight distribution is for the cleaned diamonds. See Appendix 3.

The diamond price should be stated as either an observed or a modelled price. If the price is based on a modelled size frequency distribution (SFD) and/or size quality distribution (SQD), the modeler should describe the nature of the modelling. See Section 6.3.

The modeler should address the effect of single, high value stones on the stated diamond price, quantify the uncertainty (risk) associated with using a truncated distribution or a modelled distribution and document these effects.

Resource and Reserve estimates have to be underpinned by prices for run-of-mine diamonds. ROM diamonds encompass all the sizes, shapes, qualities and colours that are expected during production. Such prices are defined as the "diamond price" or the "ROM diamond price". In these circumstances, "diamond" refers to a "parcel of diamonds" (as opposed to a single stone).

4. Diamond Exploration

Exploration results include data and information generated by exploration programs typically do not form part of a declaration of Mineral Resources or Mineral Reserves. However, diamond results from early exploration samples are often part of the diamond database used to inform these declarations.

Documentation on diamond exploration sampling programs should describe the nature of the sample, how the sample was taken, and the method used to recover diamonds from the sample. The mass of diamonds recovered may be omitted from the document only when the diamonds are considered to be too small to be of commercial significance. For specific guidance on documenting exploration results generated by:

- Total diamond liberation laboratory techniques, and
- Sample processing methods simulating commercial treatment plants,

the Diamond Practitioner is referred to Tables 1.1 and 1.2, respectively, in Appendix 1.

The small diamond parcels obtained in discovery and early-stage exploration are important. They can be valued and used to generate parcel prices or modelled prices that assist in prioritizing exploration focus or designing the next phase of evaluation.

Applying sound and consistent sampling protocols (as outlined in these guidelines) will enable the data collected to be used in Diamond Resource and Diamond Reserve estimation.

Earlier stage reporting of geophysical, geochemical or kimberlite and lamproite indicator mineral results were not discussed in previous guidelines. Such methods can be confidential, or proprietary and offer competitive advantage and have not been addressed in this update.

5. Diamond Deposit Evaluation

5.1. Resource Database

Databases typically contain data from exploration programs, delineation drilling, large diameter drilling and surface and underground sampling. Relatively large drill hole diameters or long sample intervals are needed to capture a statistically adequate number of stones. Fewer drill holes may be drilled, and fewer samples collected as a result of the expense of drilling and processing of large samples. The design of the sampling program and the amount of sampling should be appropriate to the scale and geological complexity of the deposit, the irregularity of lithological and structural contacts and the degree of country rock inclusion.

A typical database therefore has relatively few samples from which to estimate grade. Delineation drill holes may or may not be sampled for diamonds and may be in sufficient number only to provide a reasonable outline of host body contacts. Grade sampling results may be available only from portions of the deposit but should be as representative as possible of the identified diamond-bearing phases.

In complex deposits, it may be very difficult to ensure that the grade and price samples taken are truly representative of the whole deposit. The representivity of the grade and price sampling should be discussed.

Larger price samples from surface pits or underground workings should be collected to support the results from smaller drill samples (e.g., cores or chips) and to provide sufficient stones for valuation to facilitate modelling and ROM price estimation. Further guidance on the parcel sizes required to underpin robust estimates of diamond price is provided in Section 6.

Extensive drilling or grade sampling will be required to evaluate kimberlite or lamproite sills or dykes since narrow widths restrict the amount of material extracted per sample interval. However, the fundamental requirement of the evaluation program is to obtain a preliminary diamond parcel of at least 1,000 carats, followed by further price sampling, as determined by the character of the diamond parcel from the initial sampling.

5.2. Testing and Analysis

Independent diamond recovery facilities should be named, and any accreditation given. Depending on the sample size, sampling for diamonds may include an in-house pilot plant and diamond recovery facility. In-house facilities should be noted where used and should conform to CIM Best Practice Guidelines for Mineral Exploration, QA and QC, November 2018.

The Diamond Practitioner should account for the relationship that exists between sample collection method (drilling, trenching, drifting etc.) and the selected method(s) of sample treatment (e.g., dense media separation, x-ray, grease, magnetic, hand-sorting) with respect to diamond recoveries, damage and losses. A discussion of the suitability of the chosen treatment facility as it pertains to a commercial (production) scale ore processing plant and flowsheet should be provided in the documentation supporting use of the data.

Results of total dissolution methods should not be used for MRMR estimation unless they are supported by grade and price sampling and/or mining that demonstrate the occurrence of commercial-sized diamonds and a size distribution relationship congruent with the dissolution-recovered diamonds.

5.3. Geological Interpretation and Modelling

A 3D geology model that represents the distribution of all volumetrically significant phases of kimberlite and/or olivine lamproite present, and the related diamond grade (cpt), diamond size frequency and size quality distributions within a particular deposit should be developed. The 3D model should consist of two components: the external morphology of the body (pipe, sheet or sheet-blow complex) and the internal geology, representing the distribution of the various phases within the deposit. The amount of drilling and sampling undertaken to develop a robust geological model will depend on the size and complexity of the deposit being evaluated. The Diamond Practitioner should consider whether the drilling and sampling density on a particular body supports the extrapolation of geology between drillholes and sampling locations.

The geology of a deposit can be highly variable and influenced by the country rock setting, the volume and composition of the kimberlite/lamproite melt, the variable emplacement processes, re-sedimentation processes, and the extent of erosion. The duration and type of explosive fragmentation processes that occur during emplacement may result in a spectrum of pipe shapes and internal dilution as well as differences in the internal geometry and distribution of phases of kimberlite and/or lamproite present. Such systems can evolve over time and may involve multiple emplacement events with different phases of rock carrying different diamond packages (populations) from the mantle. The main volumetrically significant phases of kimberlite present within a deposit, and the relationship between them, should be well understood and the basis for any interpretations and assumptions documented.

Within the crater and diatreme zones, mixing of various phases may occur (pre and post-lithification) and the geological domaining or grouping of multiple rock types or phases may be undertaken. The proportion and distribution of each phase within all geological domains that have multiple rock types or phases modelled within them should be documented. As a result of emplacement and re-sedimentation processes, there is typically a redistribution of mantle-derived components and country rock xenocrysts/xenoliths that results in the modification of the original diamond parcel within a particular phase. Geological sampling should be reviewed to ensure that it is representative.

The characteristics of the groundmass mineralogy and mantle-derived components as well as the country rock dilution and any variability of these components within a particular phase of kimberlite or geological domain should be documented. Changes within the mantle constituents or the proportion of country rock xenocrysts/xenoliths present within a phase or geological domain can impact the diamond grade. A recommended guide for terminology definitions, classification approach and mantle-derived and country rock component size classification charts for kimberlite and olivine lamproite systems is Scott Smith et al. (2013) and Scott Smith et al. (2018).

A 3D geology model should be used as a foundation for representative sampling of all variables including the diamond size frequency and size quality distributions for the kimberlite and/or lamproite phases that make material contributions (≥10%) to the resource within the 3D geology model generated.

5.4. Resource Estimation

The CIM's General Guidelines for the Estimation of Mineral Resources and Mineral Reserves (2019) apply equally to diamond deposits. The main components of a Diamond Resource estimate are listed in Appendix 1, Table 3.

In addition, the following guidance applies as a generalized resource estimation methodology for diamond deposits:

- The system for identifying and eliminating gains and losses of diamonds due to the contamination of samples with natural and/or synthetic diamonds, as well as the integrity of collection systems from acquisition, liberation to final recovery should be documented. Any adjustments to the diamond size frequency distribution and sample grades that are necessary to reconcile plant recoveries should be noted.
- Optimum sample size and interpolator, e.g., grade in carats per tonne or stone density in stones per tonne, should be selected and the reasoning for the choice should be documented.
- The diamond price may not be known with accuracy at any given time. At the resource estimation stage at least a preliminary valuation of a spatially representative parcel of diamonds should be completed to support assessments of reasonable prospects of economic extraction. See Section 6 of these Diamond Guidelines for guidance on diamond price estimation.

5.5. Reasonable Prospects for Eventual Economic Extraction (RPEEE)

RPEEE should have a reasonable basis, and include documentation of the assumptions, as applicable to the project and setting, of the geological, engineering (including mining and processing), mining, metallurgical, legal, infrastructural, environmental, marketing, socio-political and economic parameters that, in the opinion of the lead Diamond Practitioner, would be likely to influence the prospect of eventual economic extraction. All issues should be discussed at the level appropriate for the specific investigation.

The assessment shall be based on the principle of reasonableness[1] and shall be justifiable and defendable. The assumptions used to test for RPEEE shall be within known/assumed tolerances or have examples of precedence that should be applied at an appropriate and practicable scale and follow standard industry practice.

To demonstrate that a Diamond Resource has reasonable prospects of economic extraction, an appreciation of the likely size and quality distributions is necessary, however preliminary the estimates of these distributions and the price may be. Further, the spatial distribution of the data, as well as the geological and grade continuity should also be considered.

It is critical that the project's economic risk factors be defined clearly, current, reasonably developed and based on generally accepted industry practice and experience. By way of example, the potential capital cost (CAPEX) may be relevant and should always be shown to be recoverable from project revenue.

[1] A principle of reasonableness here refers to a standard where "*each person owes a duty to behave as a reasonable person would under the same or similar circumstances"*. Citation: "Reasonable person", Wikipedia, Wikimedia Foundation, 20 Sept 2024, https://en.wikipedia.org/wiki/Reasonable_person.
A reasonable person "*is a fictional person with an ordinary degree of reason, prudence, care, foresight, or intelligence whose conduct, conclusion, or expectation in relation to a particular circumstance or fact is used as an objective standard by which to measure or determine something*". Citation: Merriam-Webster.com Legal Dictionary, Merriam-Webster, 20 Sept 2024, https://www.merriam-webster.com/legal/reasonable%20person.

6. Diamond Valuation

6.1. Valuation

Diamond valuation is the process used to assign a US dollar value to a parcel of rough diamonds. This process includes diamond cleaning, sizing, sorting, weighing, and recording information. A current diamond producer, or an accredited Government Diamond Valuator currently providing service to a diamond producing country, or an experienced Diamantaire should be involved in this process. The CIM MRMR Committee acknowledges that exploration companies will not necessarily want to show their diamonds to another producer, since the data are commercially sensitive.

The lead Diamond Practitioner should confirm that the diamond parcel valued is complete and, in all respects, representative of the parcel recovered from sampling, that industry standard QA/QC procedures have been followed and that a valuation report has been prepared and signed by an industry expert.

Caution should be expressed when ROM diamond prices are based on smaller parcels since the medium and large stones that can contribute significantly to the ROM diamond price may not be present in the smaller parcels. As recommended in Appendix 1 (Tables 1.1 and 1.2), the stone counts per size class should be stated.

Further definitions and guidance for price estimation are provided in Appendix 1 (Tables 1.3 and 1.4) and Appendix 3.

6.2. Guidance for Selection of Parcel Sizes for Accurate Price Estimation

The diamond price is of critical importance in demonstrating project value and estimating a Diamond Resource and a Diamond Reserve. The size of the valuation parcel will depend upon the diamond size frequency and size quality distributions that are characteristic of the stones in the deposit.

The planning of parcel size for valuation purposes is therefore an important activity that should attempt to anticipate the character of the diamonds and predict the parcel size ahead of sampling in order that the level of confidence in the price estimate does not fall short of expectations for the stage of project progress.

While the classification of the Mineral Resources into the Measured, Indicated, or Inferred categories allows technical risk in broad terms, leading practice includes identification and ranking of risks associated with each input of the Mineral Resource estimate (Section 6.14 of the CIM Best Practices) to be identified. When considering a primary diamond deposit, the technical risk includes diamond price.

Sampling for price estimation can take place in at least two phases (see Figure 1 below):

- an initial phase producing 1,000 carats, followed by
- a second phase with a parcel size dependent on the results from Phase 1

These guidelines provide advice on the parcel size required to underpin ROM price estimates for use in pre-feasibility or feasibility studies. If the results from the Phase 1 sampling have encouraged the Practitioner to contemplate Phase 2 sampling, the parcel size selection advice contained in these guidelines is leading practice.

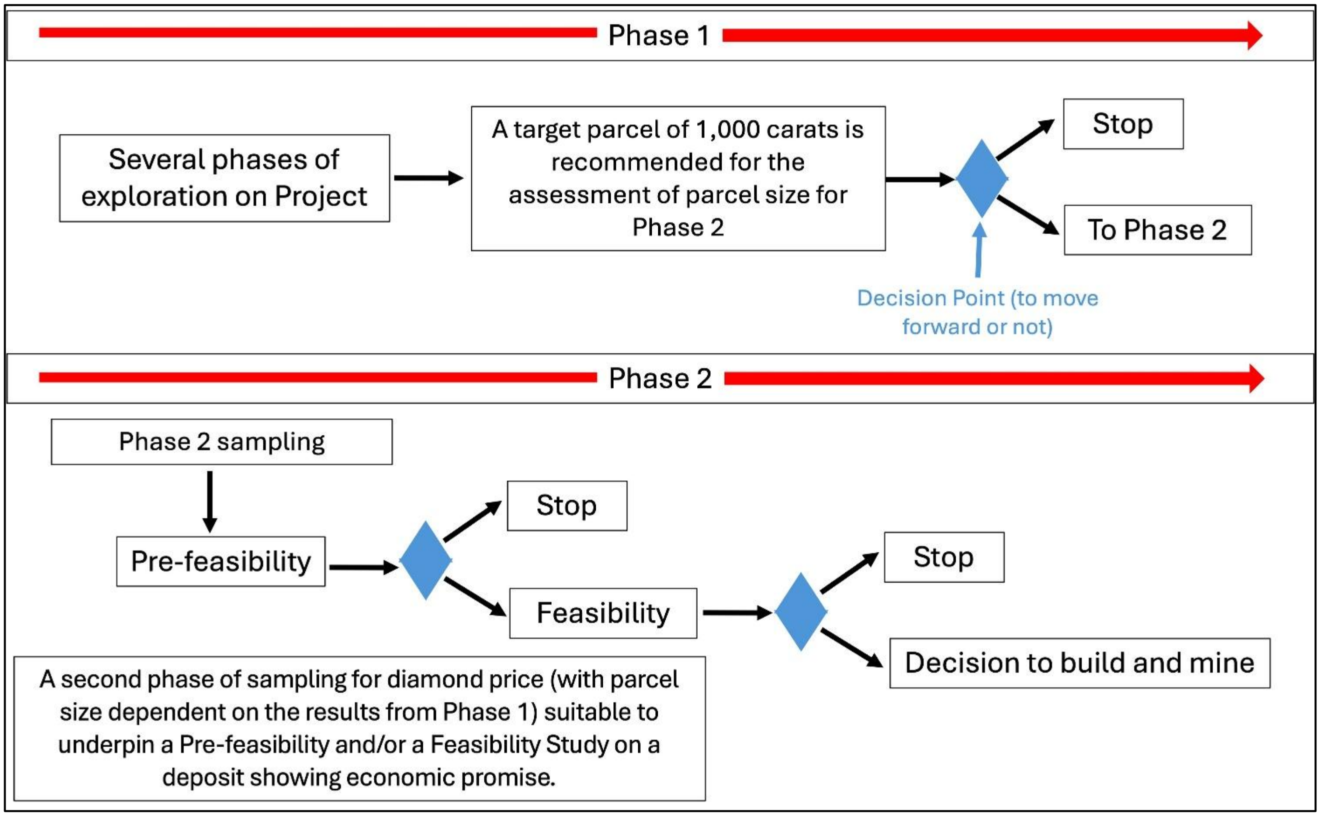

Figure 1: Schematic showing Phase 1 and Phase 2 sampling for price estimation

Ideally, Phase 1 sampling would target a parcel of 1,000 carats for sorting and valuation. Such a parcel would be suitable to underpin an early-stage study on a newly discovered deposit. Phase 2 sampling would target thousands of carats from deposits showing economic promise. The diamonds recovered during both phases of sampling can be combined (physically or digitally) and used to support more advanced studies.

To improve the guidance provided to Diamond Practitioners for Phase 2 parcel size selection, a statistical study was conducted using data from 37 producing mines to investigate the quantitative confidence that can be attached to run-of-mine price estimates. For example, what parcel size is required to provide a price estimate that is accurate to within ±20%, nine times out of ten?

Descriptions of the study and its results are included in Appendix 2. The outcome from the study was a set of recommended "C90/20" and "C90/10" parcel sizes for Phase 2 sampling (see Table 2 below). Column one of Table 2 lists the incremental US$/Ct values for the size range 0.1 Cts to 0.9 Cts (+5s to 3 Grs inc.) derived from the Phase 1 diamond parcels. Typically, these values lie between US$1/Ct and US$100/Ct. The corresponding parcel sizes for Phase 2 price sampling are listed in columns two and three.

Table 2: Recommended Phase 2 parcel sizes for various incremental US$/Ct values for two confidence intervals at C90 level of confidence.

Incremental 0.1-0.9 Ct (Δ US$/Ct) *	Conf. Limit & Intvl C90, +/-20% (carats)	Conf. Limit & Intvl C90, +/-10% (carats)	Prptn of Mines †
0-10	4,000	12,000	16%
10-30 (i)	5,000	16,000	35%
10-30 (ii)	10,000	32,000	24%
30-60	3,000	10,000	22%
60-100	1,000	5,000	3%

** Column 1 - Incremental US$/Ct values obtained from Phase 1 samples*
10-30 (i): Initial Phase 2 bulk sample (1st 5k Ct)
10-30 (ii): Follow-up Phase 2 bulk sample (i.e., 2nd 5k Ct)
Parcel weights are totals (i.e., one or more parcels)
† Monte Carlo simulations for 37 mines were used to prepare this table

A graphical tool was developed to assist the resource geologist in selecting a parcel size. An explanation of the tool and its application is provided in Appendix 2 (Mine 35 Case Study, Figures 2.2a and 2.2b). This case study shows how the first surface pitting samples were used to characterize the diamonds and to plan the sizes of the additional bulk samples required to estimate the diamond price for a "C90/20" level of confidence. The tool is less discriminatory for incremental US$/Ct values ranging from US$10-30/Ct and it is recommended that the initial Phase 2 bulk sample should be selected to produce a 5,000-carat parcel for deposits with incremental values in this range. Examination of the size versus weight % and value % distributions may indicate that a 5,000-carat parcel is sufficient to achieve a “C90/20” level of accuracy in the price estimate, or that a follow-up (second) Phase 2 parcel of 5,000 carats is also required.

Although the study selected "C90/20" and "C90/10" levels of confidence, every Project is unique and the Diamond Practitioner should decide the target level of confidence for the diamond price considering the nature of the Project (factors such as complexity of execution, profit margin, etc.), and the risk appetite of stakeholder(s). This target level of confidence dictates the amount of sampling required for Phase 2. Irrespective of the Phase 2 parcel size, the level of uncertainty in the parcel price can be calculated. It is important that the uncertainty in the diamond price is assessed and discussed.

The CIM recognizes that there are different approaches to risk analysis, and the reader is referred to Verly et al (2014) for alternatives, however it is recommended, where appropriate and possible, the Diamond Practitioner adopts a quantitative assessment of confidence for diamond price. At the time of writing, the guidance on parcel sizes from CIM, JORC and SAMREC was qualitative and variable (see Table 3). These historical parcel sizes are compared to the current statistical study results using the 50th percentile of ranked parcel sizes for the lower limit and the 75th percentile for the upper limit. The 50th percentile represents the parcel size for which 50% of the parcels lie at or below this size. Similarly, the 75th percentile represents the parcel size for which 75% of the parcels lie at or below this size.

Table 3: Historical guidance on parcel sizes from three diamond codes compared to the results from the CIM Statistical Study

Guidance	Units	CIM (2008)	JORC (2012)	SAMREC (2019)	CIM Stat Study 2024	
Parcel Size	(carats)	Thousands	N/A	Thousands	Thousands	Thousands
Representivity	(spatial)	Per Facies	Per Deposit	Per Deposit	Per Phase	Per Phase
Accuracy	(level & ±%)	Reasonable	Confident	Reasonable	C90/20	C90/10
Confidence	(descriptor)	Qualitative	—	Qualitative	Quantitative	Quantitative
Sampling Programs (parcel sizes):						
Phase 1	(carats)	—	—	500	1,000	1,000
Phase 2 50% (†)	(carats)	3,000	—	2,000	2,000	7,500
Phase 2 75% (†)	(carats)	5,000	—	>5,000	4,500	17,500
† Parcel sizes required for 50% and 75% respectively of the mines in the 2024 study to meet these levels of confidence						

The "C90/20" parcel sizes were not dissimilar to previous "wisdom" on parcel sizes. The "C90/10" parcel sizes were larger.

CIM Best Practice Guidelines for MRMR (see Section 6.14 of the MRMR guidelines) require that a quantitative measure of uncertainty be related to a production volume over a given time period. The estimate of confidence for diamond price is a global estimate for a domain defined, if required, by a basal elevation.

A reasonable confidence interval for diamond price would align with other technical data at the same level of Project progress. For instance, if capital expenditure is estimated with an accuracy of ± 15%, then it is reasonable that diamond price should have a similar or better level of confidence.

6.3. Price Modelling Concepts

During the early stage of project evaluation, a diamond price estimate may be based on smaller sized parcels. These small parcels will not contain sufficient diamonds to represent the full range of sizes and qualities that could be expected in, say, an ore block or a 3D geological domain; parcels of thousands of carats (and in some cases tens of thousands of carats) are needed to fulfill this requirement. In smaller sized parcels the diamond size frequency and size quality distributions are only partly revealed (i.e., in the size classes that contain, say, <100 stones). They are un-smooth in the size classes with fewer stones and truncated in the size classes containing no stones (collectively known as the “sample size effect”). In Section 6.2 of this document, it was recommended that Phase One of an evaluation program should target a parcel size of 1,000 carats to increase the probability of the parcel containing stones in the carater sizes. This parcel should reveal the size frequency and size quality distributions over the size range 0.01 Ct to 1.0 Ct, but these distributions will be uncertain in the grainer and carater sizes.

To overcome these difficulties, the size frequency and size quality distributions can be modelled (or extrapolated) into the size classes that were not represented in the Phase 1 evaluation parcel. Modelling size frequency and size quality distributions requires specialist knowledge. Advice from an expert modeller should be sought in this instance. The expert modeller would create models representing a "best guess" of future production, i.e., encompassing the size range 0.01 Ct to 10.8 Ct, or coarser. The end products of the modelling process would be ROM price estimates underpinned by the actual size frequency and size quality distributions in the smaller sizes and the distributions selected by the modeler in the larger sizes.

A recent review of the size quality distributions for 40 production parcels revealed that these distributions can be flat, rising, falling or undulating (Davy et al, 2024) and that only 16 (40%) of the distributions for the 40 mines observed were constant with increasing diamond size. This observation implies that modelling truncated quality distributions carries more risk than has been perceived previously by the industry. Therefore, the Diamond Practitioner should state clearly the assumptions that were used by the modeler to underpin the modelled price. The Diamond Practitioner should appreciate that a modelled distribution is an "educated best guess" and hence does not eliminate uncertainty in the ROM price estimate from a Phase 1 sampling program; uncertainties should be communicated to key stakeholders in documentation. Monte Carlo simulations can be used to produce quantitative assessments of confidence in the raw parcel price and in the modelled price estimate, but these assessments will be underpinned either by truncated distributions or by the modeler's assumptions (the size and quality models) and if these latter assumptions are incorrect, the confidence levels will be incorrect also.

Usually, Phase 2 evaluation programs will target diamond parcels comprising thousands of carats. Even these larger parcels will have truncated and un-smooth size frequency and size quality distributions, but the forms of the distributions should be revealed into the carat sizes, possibly up to 4 carats. Most likely price modelling will be required at the end of Phase 2 sampling to produce the final ROM price estimates for Diamond Resource and Diamond Reserve statements. However, as mentioned above, even the modelled ROM price estimates will be underpinned by assumptions and if these assumptions are incorrect, non-quantifiable uncertainty will remain in the Phase 2 price estimates.

6.4. Price Modelling Methodology

Methodologies for generating size frequency and size quality distributions over the size range 0.01 Ct to 10.8 Cts will vary. Judgements as to which model or modelling approach best fits the raw data will be subjective. Methods of modelling should be described, and the basis for selection of the model method explained, including any reliance on expert input.

The form (or shape) of the diamond size frequency distribution (i.e., tending coarser, finer or intermediate) can be interpreted from smaller parcels and approximated using second-order polynomial functions.

The diamond size quality distribution can change with increasing size and hence larger parcels (containing stones in all sizes up to 10.8 Ct) are required to reveal its true form. If the diamond size frequency distribution is tending coarser, this requirement becomes more important because diamond prices increase exponentially with increasing size and the contribution to rock value (US$ per tonne) from the larger stones can become very significant. For example, at Lucara Diamond's Karowe kimberlite mine, diamonds larger than 10.8 carats contribute 60-70% of the ROM rock value (see Reference 10).

Typically, the full form of the diamond size quality distribution remains uncertain until production-size parcels have been sorted. Methods for predicting the distribution using data from evaluation parcels include "reasonable extrapolations" of the size versus price curves, or extension of the assortments for grainer sizes into the carater sizes, applied against an existing pricebook. These methods require specialist knowledge and the lead Diamond Practitioner should seek expert advice.

Benchmarking the size frequency and size quality distributions with similar data from other kimberlites can be a useful practice.

6.5. Diamond Damage

Natural (pre-existing) diamond breakage is a feature common to primary diamond deposits inherent from the mantle environment and emplacement process. During the characterization of diamond samples for grade and price studies to determine reasonable prospects for economic extraction, the results of any diamond breakage studies should be discussed. Assessing diamond damage requires specialist knowledge and expert input should be sought.

6.6. Other Properties of Diamonds That Affect Prices

The prices of individual stones can be affected negatively and positively by factors such as the chemistry and physical structure of the diamonds. For example, fluorescence (blue or purple caused by the reaction of trace elements such as boron, nitrogen and aluminum to ultraviolet light), type (presence (I) or absence (II) of nitrogen) and tension (stressed stones can change colour or become brittle). Such effects may cause material premiums or discounts. An expert should be consulted when conducting such assessments to provide comment on any potential impact on prices. These features should be documented during the diamond valuation process (see Appendix 3).

7. Diamond Resource Confidence Classification

When estimating a diamond resource, the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines apply.

Mineral Resources are classified into three confidence categories, Measured, Indicated, and Inferred. These terms are defined under the CIM Definition Standards for Mineral Resources and Mineral Reserves 2014 as amended

The appropriate Mineral Resource category should be assigned based upon the quantity, distribution and quality of data available, and the level of confidence attached to the data with reference to Table 2 in Section 6.2.

The method of determining the Mineral Resource category should be documented.

The following points apply:

- Any diamond mineralization that has not demonstrated reasonable prospects for economic extraction cannot be included in a Diamond Resource.
- Since diamond price is a critical consideration in evaluating reasonable prospects for economic extraction, a Diamond Resource cannot be stated without an estimate of the ROM diamond price.
- This price should be based on spatially representative parcel(s) of diamonds that have been recovered from bulk samples of the major kimberlite phases on the project property.
- The representivity of the price parcel(s) used to estimate the run-of-mine diamond price(s) should be discussed.

- An initial indication of volume, density, stone size distribution, grade and ROM diamond price should be obtained for each significant geological domain in an Inferred Diamond Resource.
- In order to progress to an Indicated Diamond Resource (and from there to a Probable Diamond Reserve), it is likely that more extensive, representative price sampling (and/or trial mining) would be needed to determine fully the stone size distribution, stone quality distribution and ROM diamond price. Typically, such diamond parcels would be obtained by large diameter drilling, trench cutting, surface pitting or underground mining designed to obtain sufficient stones to enable an estimate of diamond price with accuracy appropriate to the level of study (see Table 2 in Section 6.2 for examples describing appropriate levels of accuracy).

8. Technical Studies

A mining project typically passes through exploration, resource definition and design phases. Each phase involves escalating levels of investment requiring increasing levels of economic and technical assessment with increasing levels of confidence in the project design, scheduling, costs and understanding of the risks to justify progression of the project to the next investment level. The different phases of study are defined in the CIM Definition Standards (2014). The CIM Definition Standards requires the completion of a Pre-Feasibility Study as the minimum level of study for the conversion of Mineral Resources to Mineral Reserves.

9. Diamond Reserves

When estimating a diamond reserve, the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines apply. The main components of a diamond reserve are listed in Appendix 1, Table 1.5.

Mineral Reserves are classified into two confidence categories, Probable and Proven. These terms are defined under the CIM Definition Standards for Mineral Resources and Mineral Reserves 2014 as amended.

The following points apply:

- Diamond price estimation is a key factor in the Diamond Reserves estimate for a diamond deposit and valuation of a significantly sized and spatially representative parcel of diamonds should be carried out by an experienced valuator (see section 6.1). Grade and price are integral to establishing the mining cut-off grade.
- The relationship (reconciliation) that exists between the resource SFD, SQD and recovery efficiency from a pilot plant or laboratory and the reserve SFD, SQD and recovery efficiency from a production facility should be considered.
- If a Probable Diamond Reserve is estimated, there should be a reasonable degree of confidence in the diamond price estimate. As noted in Section 6.2 of this document, a reasonable confidence interval for diamond price is one that aligns with other technical data at the same level of development of the mineral property.
- Since a Measured Diamond Resource is the basis for a Proved Diamond Reserve and, since this status is seldom achieved, it follows that a Proved Diamond Reserve classification will rarely be attained.

10. Documentation

The documentation provides a summary of important information about the Project.

When documenting any aspect of a mineral property, the CIM Best Practice Guides (references 5 and 6) apply.

In addition to the guidance from these documents, and regarding information relevant to primary diamond deposits, the following elements are key to understanding the robustness and risk of a diamond Project.

The adequacy of the diamond specific sampling procedures; types of equipment employed, recovery plant design, lower (bottom) and upper (top) cut–off screen sizes and crushing characteristics for grade and price samples and any other pertinent characteristics should be clearly elucidated. Aspects such as sample representivity for major geological phases/domains should be discussed in terms of adequacy and risk.

The bottom cut-off used in the Diamond Resource and Diamond Reserve should be stated and how that has been accounted for in the grade, the diamond size distribution and the diamond prices of the Diamond Resource and Diamond Reserve. The bottom cut-off of the Diamond Resource and Diamond Reserve may be different and, if so, this difference should be explained. The variable used for estimating the concentration of diamonds in a kimberlite or olivine lamproite (stones per tonne or carats per tonne) should be provided.

Diamond Resource classification is discussed in Section 7 of these guidelines. While the classification of the Diamond Resources into the Measured, Indicated, or Inferred categories provides an assessment of technical risk in broad terms, leading practice includes identification and ranking of risks associated with each input to the Diamond Resource estimate. A quantitative approach should be adopted for expressing uncertainty in the key variables affecting the Diamond Resource. Details of the methodology applied, the ranking, and the analysis should be provided.

Similarly, the classification of Diamond Reserves into either the Proven or Probable categories provides an assessment of technical risk in broad terms, leading practice includes identification and ranking of risks associated with the application of Modifying Factors. Details of the methodology applied, the ranking, and the analysis should be provided.

The ROM diamond price is a key input for the reasonable prospects of economic extraction test used for the estimation of Diamond Resource, the estimation of a Diamond Reserve and for defining the Project economics. It is recommended that the following key information is provided:

1. Weights and stone counts per size class
2. Prices per size class (US$ per carat), parcel price (US$ per carat) and parcel value (US$)
3. Impact of high value stones (% of parcel value)
4. Weight % and value % per size class
5. Modelled size frequency distribution (weight % per size class)
6. If applicable, modelled prices per size class and a ROM price estimate (US$ per carat)
7. Gem, Near-gem and Boart – weight % per size class
8. Reconciliation of the sampling data to the geological model
9. Confidence intervals (i.e., ±% in price estimate) and selected confidence limit(s) (e.g., 90%, 80%)
10. A flowsheet for the sample treatment plant including top and re-crush crushing sizes.
11. An assessment of any freshly induced damage to the recovered diamonds.

It may be appropriate to include discussions on market supply and/or demand projections or constraints to marketing and the impact of these criteria on the forecast diamond prices.

Grade measurements and declarations in carats per dry tonnes, carats per hundred tonnes or stones per tonne (with appropriate mean stone sizes) or carats/stones per unit volume are recommended for primary deposits.

A valuator conducts diamond valuations, and the lead Diamond Practitioner can rely on an expert valuator to provide raw pricing information. If this pricing information is used to create a modelled diamond price (see

Section 6.3), the lead Diamond Practitioner can rely on an expert price modeler for the modelled diamond price. These diamond valuation and price modelling experts should provide the lead Diamond Practitioner with signed reports on their work.

By considering factors such as geological complexity and the spatial representivity of the sampling, and by using reasonable measures to confirm the information provided by the valuator and the modeler, the lead Diamond Practitioner is able to:

1. Accept *responsibility* for the valuation and modelling processes, and
2. Accept *accountability* for how the modelled diamond price(s) is used in the Resource and Reserve estimates.

Any variances from the key information (points 1-11 above) should be explained in a clear and transparent manner.

11. Reconciliation of Mineral Reserves

For an update on the Mineral Reserves of a producing diamond mine, the CIM's General Guidelines of the Estimation of Mineral Resources and Mineral Reserves would apply. This update should include a reconciliation between the previous Mineral Reserve estimate and mine-mill production. Annual reconciliation for diamonds would encompass the production rate, the blend of ore sources (% of recovered carats drawn from each kimberlite phase/domain), the tonnes extracted and processed, the grade, the diamond size weight distribution and the diamond price. In some cases, production data for several years may be needed for meaningful reconciliation of Diamond Reserves.

12. Acknowledgements

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13. References

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Appendix 1 – Tables

Table 1.1: Processing of samples using chemical dissolution or total liberation laboratory methods for the recovery of diamonds >0.075 millimetres (micro-diamonds)

Element	Definition	Comment, Special Attention, Options
Sample Description		
Source	Outcrop, mining exposure, float, drill core, RC drill cuttings, gravel, stream sediment, soil.	Depth, any grouping of samples should be documented or commented upon.
Type	Chip, channel, grab, full core, split core, riffled splits of drill cuttings.	Include customary information such as recovery percentages, etc.
Interval	Centimetre, metre, square metre, cubic metre	
Rock Type	Geological/petrological description and classification by a Practitioner.	Reconcile to the geological model.
Sample Weight	Weighed or calculated as dry metric tonnes (t), kilograms (kg) or grams (g).	
Sample Treatment		
Laboratory Name	Names of the processing laboratory and the person responsible for the processing.	Company should be in possession of a written report confirming the results.
ISO Compliance	Document whether the samples have been treated by a laboratory accredited to the ISO/IEC Guide 17025.	
Chain of Custody	Confirm that industry standards have been followed to ensure that the sample's "Chain of Custody" has been maintained.	
Method of Processing	Caustic Soda or Hydrofluoric Acid dissolution, attrition milling etc..	
Lower Cut-Off Size	Millimetre dimensions of the aperture size of the woven wire square mesh sieve (Tyler or Endecott) used as the Lower Cut-Off size for the sample.	
Sample Grade	Sample grades (carats per tonne) can mislead the public and should not be stated for samples processed using these methods for a cutoff size less than 0.85mm.	If a sample grade is reported for diamonds greater than 0.85mm, the Practitioner should comment on why the stated grade is relevant, the representivity of the sample and include appropriate cautionary language highlighting that the stated grade may not reflect future production.
Diamond Sizing	Micro-diamonds are sized on a series of millimetre square mesh sieves.	The sieves are known as a Root 2 series because the mesh apertures increase by a factor of the square root of two (i.e. x 1.414)
Size Class (mm square mesh) <9.50 (list individually) 6.70 to 9.50 4.75 to 6.70	Number of diamonds (stones)	Weight of diamonds (carats)

3.35 to 4.75 2.36 to 3.35 1.70 to 2.36 1.18 to 1.70 0.85 to 1.18 *0.600 to 0.850* *0.425 to 0.600* *0.300 to 0.425* *0.212 to 0.300* *0.150 to 0.212* *0.105 to 0.150* *0.075 to 0.105* *Total > 0.075* mm Total > 0.85 mm		
Diamond Characteristics	Diamonds less than 0.85mm may not reflect the characteristics of commercial sized stones.	At the discretion of a Practitioner it may be appropriate to provide a link to actual diamond photographs that are representative of the population.
Crystal Habit	Octahedral, dodecahedral, cubic, aggregate etc.	Diamond sizes/weights should be annotated on photographic images.
Crystal Colour	White, brown, yellow, etc.	
Crystal Resorption	General comments on the modification of the crystal habits due to resorption.	
Crystal Damage	Clear evidence of fresh diamond damage/breakage (induced by sample collection or processing methods) such as the presence of fragments or shards of whole crystals.	Such evidence implies that the counts of larger stones will be reduced, and the counts of smaller diamonds will be increased, modifying the natural diamond size distribution.
Commercial Size Diamonds	Comments on the commercial characteristics (for example, the proportion of gem, near-gem and boart quality diamonds) should be restricted to diamonds larger than #1 DTC sieve [Diamond Trading Company] (approx. >0.85 mm square mesh) the lower size limit for naturally occurring “commercial” diamonds.	Commercial diamonds are sorted into individual categories with different price-points. The Practitioner should comment on the representivity of diamonds > 0.85 mm in the parcel and their relevance to the characteristics of possible future production diamonds.
Diamond Price	Diamond prices should not be stated for samples processed using these methods. Prices of small parcels can mislead the public.	Valuation of commercial size diamonds is discussed in Table 1.4.
In-Situ Diamond Size Distribution	Total dissolution / liberation methods of sample treatment will deliver the natural, in-situ size distribution of the diamonds in a kimberlite/lamproite.	This size distribution will be incomplete (i.e., truncated) and the form it will take in the commercial sizes is uncertain. At this point in the evaluation process, the micro-diamond size distribution is useful only for ranking the prospectivity of a newly discovered kimberlite.

Table 1.2: Processing of samples using methods simulating commercial ore treatment (bulk sample treatment plants) for the recovery of diamonds >0.85 millimetres (macro-diamonds)

Element	Definition	Comment, Special Attention, Options
Sample Description		
Method of collection	Surface pitting, trenching, drilling, trench cutting, underground bulk sampling.	Depth of collection, nature of rock (weathered, fresh).
Type	Large diameter core, large diameter reverse circulation chips (whole or split, riffled or coned & quartered).	Include customary information such as recovery percentages, etc.
Interval	Metre, square metre, cubic metre	
Rock Type	Geological/petrological description and classification addressing sample homogeneity and the representative nature of the sample by a Practitioner.	Reconcile to geological model.
Sample Weight	Weighed or calculated as dry metric tonnes (t) or kilograms (kg) with defined moisture content.	
Sample Treatment		
Laboratory Name	Names of the processing laboratory and the person responsible for the processing.	Company should be in possession of a written report confirming the results.
ISO Compliance	Document whether the samples have been treated by a laboratory accredited to the ISO/IEC Guide 17025.	
Chain of Custody	Confirm that industry standards have been followed to ensure that the sample's "Chain of Custody" has been maintained.	
Treatment Method	Description of the plant and recovery flowsheets including primary crushing method, top crushing and re-crushing sizes (square mesh equivalent mm) and method, concentration method (dense media separation, high intensity magnetic separation, XRT, XRL, grease, magnetic separation, caustic fusion, tabling, hand-sorting, etc.).	Comment on the compatibility of the sample flowsheet and that of a commercial (production) process plant and flowsheet). Diamond recovery processes: Sorting machine based on x-ray transmission (XRT) Sorting machine based on x-ray luminescence (XRL).
Tailings Audit	The results of tailings auditing and a comment on process recovery efficiency.	Document any diamonds recovered during audit of tailings, reprocessing of tails, or size fractions and how these diamonds were considered during valuation and SFD modelling.
Diamond Recovery Plant Lower Cut-Off size	Dimensions of the aperture in the screen used as the lower cut-off size in the recovery plant.	
Sample Results		
Diamond Count	Total number (stones) of diamonds recovered >0.85 mm square mesh (or >#1 DTC sieve)	Count by size class.
Diamond Weight	Total weight (carats) of diamonds recovered >0.85 mm square mesh (or > #1 DTC sieve)	Weight by size class.
Diamond Sizing	Normal practice would be to size the	These classes are known as "Caraters" and

	diamonds on square mesh sieves, round hole sieves and, for stones >0.660 Ct, allocated into size classes according to their individual weights. Standard representations of these three size classifications are shown below.	"Grainers" where 1 Grain equals 0.25 Ct. By way of example, a 3 Grainer is a diamond that weighs between 0.660 Ct and 0.899 Ct. The average weight of a 3 Grainer is approximately 0.75 Ct. A stone described as a 3-carater will weigh between 2.800 Ct to 3.799 Ct
Size Class (MM square mesh) +9.50 * +6.70 +4.75 +3.35 +2.36 +1.70 +1.18 +0.85 Total >**0.85 mm** **list individual stone weights*	Size Class (DTC sieves) Specials (>10.8 Ct) * +23 +21 +19 +17 +15 +13 +12 +11 +9 +7 +5 +3 +1 **Total >1 DTC** **list individual stone weights*	Size Class (Carats, Grainer & DTC sieves) Specials (>10.8 Ct) * 10 Ct (10.79 to 9.80 Ct) 9 Ct (9.79 to 8.80 Ct) 8 Ct (8.79 to 7.80 Ct) 7 Ct (7.79 to 6.80 Ct) 6 Ct (6.79 to 5.80 Ct) 5 Ct (5.79 to 4.80 Ct) 4 Ct (4.79 to 3.80 Ct) 3 Ct (3.79 to 2.79 Ct) 10 Grs (2.79 to 2.50 Ct) 8 Grs (2.49 to 1.80 Ct) 6 Grs (1.80 to 1.40 Ct) 5 Grs (1.40 to 1.20 Ct) 4 Grs (1.20 to 0.90 Ct) 3 Grs (0.90 to 0.66 Ct) +11sieve +9sieve +7sieve +5sieve +3sieve +1sieve **Total >1 DTC Sieve** **list individual stone weights*
Sample Grade	The Sample Grade for diamonds >0.85 mm (or > #1 DTC sieve) stated as carats per dry metric tonne and/or carats per 100 dry metric tonnes.	
Zone of Influence	To avoid the sample grade being misinterpreted as the grade of the whole deposit, the sample grade should be stated with a zone of influence. For example, it could be representative of a particular kimberlite phase or geological domain.	Important the Practitioner clarifies that the sample grade is a local grade and not the grade of the whole deposit.
Modelling of the diamond size weight distributions.	Commercial grade estimates are often underpinned by modelled diamond size distributions. The accuracies of modelled size distributions become less certain with smaller diamond parcels. The Practitioner should document the modelling methodology and	State, describe and list: - The lower cut-off size for these grade estimates - The method used for modelling the SFD - The qualifications (experience) of the modeller.

	state the confidence in the estimate. Ideally this confidence should be expressed as a quantitative measure of uncertainty accompanied by a probabilistic statement of confidence (e.g., ±15% at a 90 percent level of confidence.	
Diamond Characteristics	Unlike many other mineral products, diamond prices are closely related to the individual physical characteristics of each stone.	At the discretion of a Practitioner, it may be appropriate to provide a link to actual diamond photographs that are representative of the population.
Crystal Habit	Octahedral, dodecahedral, cubic, aggregate etc.	Diamond sizes (or weights) should be annotated on photographic images.
Crystal Colour	White, brown, yellow, etc.	
Crystal Resorption	General comments on the modification of the crystal habits due to resorption.	
Crystal Damage/Breakage	Clear evidence of fresh diamond damage (induced by sample processing methods) such as the presence of fragments or shards of whole crystals.	Such evidence implies that the counts of larger stones will be reduced and the counts of smaller diamonds will be increased, modifying the natural diamond size distribution.
Commercial Characteristics	Comments on the commercial characteristics (for example, the proportion of gem, near-gem and boart quality diamonds) should be restricted to diamonds larger than #1 DTC [Diamond Trading Company] sieve (approximately 0.85 mm square mesh) the lower size limit for naturally occurring "commercial" diamonds.	Commercial diamonds are sorted into individual size/shape/clarity/colour categories – commonly referred to as "assortments" – linked to price-points in a pricebook. A pricebook can contain thousands of individual price-points.
Price Estimation	Valuation of commercial size diamonds is discussed in Table 1.4.	

Table 1.3: Documenting Diamond Mineral Resources (Modified after SAMREC*).

Criteria	Explanation
Geology	Demarcated area of potential. Relative priority of target. Petrology and petrography, geochemistry, geochronology and mineralogy. Ore/waste contact model, emplacement model, phase model and waste model. Diamond paragenesis. Regional geology and structure (relates to mineability).
Geotechnical	Geotechnical bore holes with orientation and hydrology. Logging in terms of structure. Weathering test and hydrological parameter model. Selection of core for physical parameter testing. Slope and initial mine design.
Grade estimation	Bulk sampling results, global grade per phase. Spatial structure analysis and grade distribution. Stone size versus weight and number distributions per phase. Sample head feed and tailings particle granulometry. Moisture content. Sample dry bulk density determination. Percent concentrate and undersize per sample. The effect on the grade of changes in the lower cut-off size. Geostatistical techniques applied.
Price estimation	Diamonds parceled per geology unit or per phase of intrusion, both with increasing depth from surface. Valuation per parcel, parcel price and size distribution. Estimation of price with size. Diamond breakage. Average US$/carat price and US$/tonne value with change in bottom cut-off. Diamond valuation to be conducted by an *experienced valuator*. The diamond price estimate should be reconciled with the geological model. Valuation of commercial size diamonds is discussed in Table 1.4.
Resource volume	Geological model by phase, volume and dry bulk density per phase, bench or estimation block. Dilution per phase. Number of lithological intersections for each phase and contact definition.
Metallurgy	Conceptual plant design. Comminution characteristics, per phase or globally. Re-crush, top, middle and bottom cut-off screen sizes. Reference ore dressing studies.
Resource Classification	State classification of resource in view of level of information. Take account of most important characteristics, geological, grade, size distribution, quality distribution, price, sample treatment, spatial sampling density and estimation. Results of spatial simulation, non-conditional or conditional. Magnitude of grade, price and average diamond size differential between phases.

* *South African Code for Reporting of Mineral Resources and Mineral Reserves, 2016 Edition.*

Table 1.4: Assessment of Diamond Price (US$ per carat) and Value (US$ per parcel)

Element	Definition	Comment, Special Attention, Options
Diamond Price Estimate	The diamond price estimate is a key input to the economics of the project. and must be prepared by a diamond valuation expert.	A price estimate is the end product of a sorting and valuation exercise that may include modelling. A recommended checklist for this exercise is included as the last page of Appendix 3.
Diamond Valuation		Diamond valuations from different Diamantaires can differ significantly. Assistance should be sought from either an existing diamond producer or an accredited Government Diamond Valuator currently providing this service for a diamond producing country, or a suitably qualified diamantaire to help manage the valuation process.
Sample Integrity	The Practitioner should confirm that the diamond parcel valued is intact and, in all respects, representative of the bulk sample and that industry standards have been followed to ensure the "Chain of Custody" has been maintained.	The Practitioner needs to describe and document any combination of diamond samples/parcels (physical or digitally) that are used in the ROM price estimate.
Valuation Report	The lead Diamond Practitioner should be in possession of a signed, written report of the valuation exercise from an experienced diamantaire and/or analyst stating: • The valued parcel has been cleaned, the nature of the cleaning (acid, deep boil, caustic) and that the reported size distribution is for the cleaned diamonds. • The average price (US$ per carat) of the parcel • The overall weight (carats) and value (US$) of the parcel • The lower cut-off size of the parcel valued • The number of valuers used to generate the price estimate • The method used to calculate the average price (e.g., rejection of outliers, inclusion of all data) • Which size classes were sorted 100% and which size classes were sub-sampled (i.e., used cutoffs) prior to	Ideally representative cut-offs for sorting and valuation can be taken from size classes containing >200 stones (+1s & +3s) and >400 stones (+5s and larger). Bulk sample parcels are unlikely to contain 400 stones in the size classes 3 Grs and larger. When the stone counts fall below 400 per size class, all the stones in the size class should be valued. Smaller diamond parcels will have more of their overall value concentrated in individual stones and therefore be less representative of the ROM quality distribution compared to a larger parcel. Individual stones constituting more than 5% of the value of the overall parcel should be stated separately in a table showing stone weight, price per carat and value per stone. The impact of market volatility is almost

	sorting • The basis of the price estimation buying price, selling price • The dates on which the price estimates were obtained. • The impact of high value stones • The impact of diamond damage • The possible impact of market volatility.	impossible to quantify and can only be a considered an opinion. Price and market volatility may be addressed in Project Risks.
Statistical Analysis	Variation between individual valuations and the uncertainty envelope of the result at a given level of statistical confidence reflecting the effects of: • parcel size and/or • a truncated or biased diamond size/weight distribution.	The effects of parcel size can be quantified using Monte Carlo simulations – see Appendix 2 (Case Study) for more details on how this methodology can be used.
Price Modelling	Commercial price estimates are often underpinned by modelled diamond size and quality distributions. The accuracies of these modelled distributions become less certain with decreasing parcel size. Only a Modeler or a suitably experienced Diamond Practitioner should produce modelled ROM price estimates. The expert should explain the modelling methodology and state the confidence in the modelled price estimate. Ideally this confidence should be a quantitative measure of uncertainty accompanied by a probabilistic statement of confidence (e.g., ±15% at a 90 percent level of confidence).	The expert's report should state the lower cut-off size for these price estimates and should list the qualifications (experience) of the modeler. The level of confidence in the price estimates is of prime importance in assessing any associated risk. The lead Diamond Practitioner should take care to convey the meanings of the confidence intervals and confidence levels of a price estimate. For example: for a given diamond SFD and SQD, the price of a parcel of 5,000 carats could be US$100/Ct ±15% at the 90% confidence level (i.e., within the range US$85/Ct to US$115/Ct nine times out of ten).

Table 1.5: Documenting Diamond Mineral Reserves (Modified after SAMREC*).

Criteria	Explanation
Geotechnical	The Practitioner should consult with experts in rock mechanics related to appropriate slope angles and trafficability per domain (surface mine) and on mine design and draw control strategy (underground mine).
Mine planning *(see also CIM Standards & Best Practice 2014, 2019)*	Key components of the mine plan: • Business plan strategy • Life of mine plan • Mining methods considered • Mineability of domains • Specific gravity of ore and waste rock types • Capital cost estimates • Working cost estimates • Contractor strategy • Revenue per geology unit with depth below surface and block contributions • Mining efficiency and dilution factors • Pit optimization plan • Underground mine plan • Ore blending, mine stockpile strategy • Environmental constraints • Waste disposal • Machine replacement plan • Closure plan • Risk analysis
Process Engineering	Key process engineering factors: • Plant location and design • Recovery factors per ore domain • Comminution characteristics per domain • Reference ore dressing studies • Plant capital and operating costs • Stockpile/tailings strategy per domain • Current ore treatment flow sheet • Treatment rates per phase/domain • Top, middle, re-crush and bottom cut-off sizes. • Ore blending definitions, all phases/domains • Head feed tonnage • Gangue composition and behaviour • Preliminary mine planning collaboration • Diamond recovery characteristics • Expected concentrate yields.
Cost and revenue	Cost and revenue models per domain.
Market aspects	Economic considerations with respect to diamond sorting, valuation and pricing, market supply/demand projections or constraints to marketing, political concerns

	and permitting may be of special significance for a diamond deposit.
Reserve Classification	• Identify reserve • Identify high and low risk areas • Specify reasons for high/low risk • Identify Probable and Proved diamond reserves • List items needing more information for reclassification from Probable to Proved diamond reserves • List items that could possibly change diamond reserves from Proved to Probable.

** South African Code for Reporting of Mineral Resources and Mineral Reserves, 2016 Edition.*

Please note: *These Diamond Guidelines relate to practice,* ***not disclosure****. Disclosure in the Canadian context is required to follow securities law. These requirements are set out in applicable Canadian securities regulations, including National Instrument 43-101 Standards of Disclosure for Mineral Projects.*

Appendix 2
Parcel Size Selection – Statistical Study
&
Mine 35 Case Study

Parcel Size Selection – Statistical Study

Introduction

To improve the guidance provided to Diamond Practitioners on parcel size selection, a statistical study was conducted to investigate the quantitative confidence that can be attached to Run-of-Mine price estimates. For example, what parcel size is required to provide a price estimate that is accurate to within ±20%, nine times out of ten?

The dataset used in this study encompassed 37 mines (current or past producing mines with ROM prices from US$20-US$1,500/ct) from around the world including Canada, Southern Africa, Russia, Brazil and Australia. The information for each asset consisted of the carat weights and US dollar values for the gem, near-gem and boart diamonds in 19 or more size classes. All the value information was adjusted to the same year (2022). Detailed pricing remained confidential and to preserve anonymity, the name of each mine was replaced with a number.

The initial objective of this study was to find a single value that could be measured on a parcel of 1,000 carats, that characterised the diamonds from each kimberlite, and to determine whether this value bared any relationship to the parcel size required to estimate the ROM diamond price at the 90/10 and 90/20 levels of confidence.

A number of variables were plotted against each other but convincing relationships were not apparent. As more data sets from different kimberlites were assessed, it became clear that:

- The size/weight distribution (SFD) and the prices per size class were important drivers of the ROM price.
- These prices were underpinned by the proportions of gem/near-gem/boart diamonds in each size class (at the higher level) and (at the more detailed level) the shape, clarity and colour of the gem diamonds.
- The proportion of gem quality diamonds (the highest price diamonds) changed with size, and the shape of the % gem versus size profile was flat, rising, falling or undulating.

The implication of this latter observation was that the diamond qualities observed in the smaller sizes (say, <0.9 Cts [3 Grs & smaller]) might not indicate the qualities in the larger sizes (>0.9 Cts [4 Cts & larger]). Therefore, larger rather than smaller parcels of diamonds would be required to generate robust ROM price estimates. Such parcels would need to contain diamonds in the carats sizes. Also, it was clear that 1,000 Ct parcels recovered from Phase 1 sampling were unlikely to contain diamonds >3 Cts.

Another key observation was that, if the diamond SFD was finer, the ROM price was driven by the quality of the smaller stones (say, <4 Grs) but if the SFD was coarser the ROM price was driven by the quality of the larger diamonds (say, >4 Cts). Therefore, a finer SFD would require a smaller valuation parcel but, in order to get stones in the >4 Cts sizes, a coarser SFD would require a larger valuation parcel.

However, this simple guidance may not apply if the diamond quality changes with increasing size. For example, a finer SFD with increasing proportion of gem with increasing size may require a larger parcel, and a coarser SFD with decreasing proportion of gem with increasing size may require a smaller parcel.

Given all these factors, it was realised that the shape of the cumulative price versus size curve captured the character of each diamond parcel (i.e., integrating the weight % per size class and the price per size class). Cumulative price versus size curves were generated for production diamonds from the 37 mines and it became apparent that, although there were similarities between the shapes of these curves, each mine's diamond population was unique, (see Appendix 2, Figure 2.1). At this point, it would have been reasonable to conclude that the only way to establish robust ROM price estimates would be to collect “large” parcels of diamonds.

In fact, this conclusion was not drawn because, in parallel, Monte Carlo simulations were used to sub-sample each production population (weights, prices, stone counts per 20 or 21 size classes, 10,000 times) to determine the parcel size required to give, nine times out of ten, a ROM price estimate ±10% and ±20%. These simulations revealed that one parcel size (e.g., 5,000 carats) was not suitable for all populations.

At this point, the primary objective of the statistical study was revisited, i.e., which diagnostic measure of a 1,000 carat parcel of each diamond population could be used to indicate the size of a valuation parcel required for a desired level of accuracy and statistical confidence in a ROM price estimate?

Given that the cumulative price curves less than the upper critical size for each size class from approx. 1,000 Cts parcels were unique, it was realised that the incremental US$/Ct value between the cumulative prices for the +5s and 3 Grs (0.10 to 0.90 Cts) could be used as a single number (value) to represent the character of the diamonds in each kimberlite.

These values were plotted against the parcel sizes produced by the Monte Carlo simulations for the 37 mines and grouped into boxes representing five parcel sizes (see Appendix 2, Figures 2.2a & 2.2b) for Phase 2 (PFS) sampling at either the tighter 90/10 confidence level or the looser 90/20 confidence level. By way of example, for incremental values in the range US$10-30/Ct, a 90/10 Phase 2 parcel size would be 16,000 Cts but with the possibility of needing 32,000 carats to meet the 90/10 level of confidence.

Statistical Methodology

As mentioned above, Monte Carlo simulations were used to obtain the indicative confidence limits for diamond prices for each mine and for parcels of different size. Two relative errors around the mean were calculated at the central, 90 percent confidence limits. A relative error that lies within ±10% of the actual mean, nine times out of ten, was designated as a "C90/10" level of confidence. A relative error that lies within ±20% of the actual mean, nine times out of ten, was designated as a "C90/20" level of confidence. The ±10% relative error represented a tighter error margin and the ±20% relative error, a looser error margin.

Results

The empirical results of the study (see Appendix 2, Table 2.1) showed that a Phase-2 target parcel of 5,000 carats was sufficient for 76% of the mines considered assuming a "C90/20" level of confidence. This proportion reduced to 35% for a "C90/10" level of confidence. A target parcel of 10,000 carats was sufficient for 100% of the mines assuming a "C90/20" level of confidence. This proportion reduced to 57% for a "C90/10" level of confidence.

A graphical tool was developed for use by resource geologists to help identify the “target” carats required for the Phase 2 bulk sampling to meet a "C90/10" or a "C90/20" level of accuracy (See Appendix 2, Figures 2.2a and 2.2b).

Table 2.1: Parcel Size versus a given incremental US$/Ct values for two confidence intervals at C90 level of confidence.

Incremental 0.1-1.0 Ct (Δ US$/Ct) *	Conf. Limit & Interval C90, +/-20% (carats)	Conf. Limit & Interval C90, +/-10% (carats)	Prptn of Mines †
0-10	4,000	12,000	16%
10-30 (i)	5,000	16,000	35%
10-30 (ii)	10,000	32,000	24%
30-60	3,000	10,000	22%
60-100	1,000	5,000	3%

** Column 1 - Incremental US$/Ct values obtained from Phase 1 samples*
10-30 (i): Initial Phase 2 bulk sample (1st 5k Ct)
10-30 (ii): Follow-up Phase 2 bulk sample (i.e., 2nd 5k Ct)
Parcel weights are totals (i.e., one or more parcels)
† Monte Carlo simulations for 37 mines were used to prepare this table

Practical Guidance

Step 1:

Determine the prices per size class (Carat/Grainer/DTC sizes) at the end of the Phase 1 sampling program by sorting and valuing the Phase 1 diamond parcel.

Step 2:

Calculate the cumulative price less than the upper boundary size of each size class and the incremental US$/Ct value over the size range 0.1 Cts to 0.9 Cts (+5s to 3 Grs inc.). Typically, this value will lie between US$1/Ct and US$100/Ct (see Appendix 2, Figures 2.2a and 2.2b below).

Step 3:

Use the graphical tool (e.g. Figures 2.2a & 2.2b below) or Appendix 2, Table 2.1 above, to identify the parcel sizes required to meet "C90/10" or "C90/20" levels of accuracy for the project at hand.

In the case of Mine 35, for an incremental US$/Ct value of US$45/Ct, the "C90/20" and "C90/10" parcel sizes would be 3,000 carats and 10,000 carats respectively.

Conclusions

1. A Phase 1 parcel size of 1,000 Cts can be used with confidence to underpin the selection of a Phase 2 parcel size.

2. A confidence level of 90/10 would be appropriate for a project with tighter margins, and a confidence level of 90/20 would be acceptable for a project with good margins.

Mine 35 Case Study

Phase 1 Bulk Sampling

Phase 1 bulk sampling comprised two small surface pits (200 tonnes of kimberlite) yielding 215 carats (+3 DTC size class) valued at US$373/Ct. The cumulative prices less than the critical stone size (CSS) per size class were US$30/Ct and US$55/Ct for the <0.1 Ct and <0.9 Ct sizes respectively (Figure 2.1). Therefore, the incremental US$/Ct for the 0.1 to 0.9 Ct size range was US$25/Ct.

The incremental US$/Ct plotted on the x-axis of the "C90/20" Parcel Size chart against the 1,000 to 10,000 carat box (see Figure 2.2a below) suggesting that the Phase 2 bulk sample for PFS diamond price estimation could be in two stages commencing with an additional 4,800 carat parcel giving a total of 5,000 carats for valuation.

With the benefit of hindsight from Monte Carlo simulations on production data, for a combined parcel size of 5,000 carats with an SFD and SQD similar to production, the project owners could have expected the parcel price to be accurate to within +25% -20% at the 90% level of statistical confidence.

If the project economics had warranted more certainty in the price (operating margins were tighter) the Phase 2 parcel size could have been increased to reduce the uncertainty to ±10% nine times out of ten (see section below). The presence of higher value stones in a small parcel, the slightly coarser-tending SFD and the relatively high proportion of gem quality diamonds meant that larger parcels were required to reduce the uncertainty in the price estimate.

Phase 2 Bulk Sampling

Initially, the Phase 2 bulk sampling comprised a larger surface pit (3,004 tonnes of kimberlite) yielding 5,211 carats (+3 DTC size class) valued at US$170/Ct.

The cumulative prices per size class were US$23/Ct and US$49/Ct for the <0.1 Ct and <0.9 Ct sizes respectively (Figure 2.1). The incremental US$/Ct for the 0.1 to 0.9 Ct size range was US$26/Ct. The incremental US$/Ct plotted on the x-axis of the "C90/20" Parcel Size chart within the 1,000 to 10,000 carats box (see Figure 2.2b below). Examination of the size versus weight and value distributions for this parcel indicated that the initial sample was insufficient and a follow-up Phase 2 sample of at least 5,000 carats was recommended.

A follow-up bulk sample (5,500 tonnes of kimberlite) yielding 9,409 carats (+3 DTC size class) was taken and valued at US$147/Ct. This follow-up Phase 2 parcel reduced the uncertainty in the PFS price estimate to ±12% at the 90% level of statistical confidence as described below (see Figure 2.3).

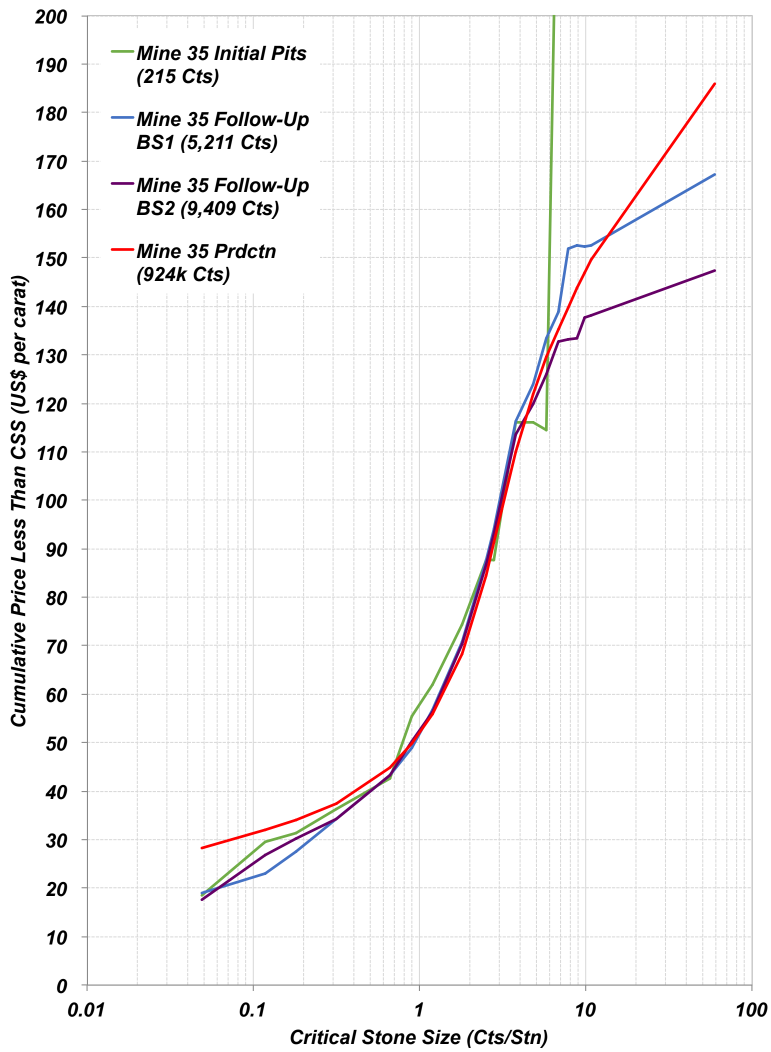

Figure 2.1: Cumulative Price less than versus Critical Stone Size

Mine 35 Production

When Mine 35 came into production, the data from much larger parcels of diamonds became available for Monte Carlo simulations. A simulation using a parcel of production (924k carats), revealed that, for a combined Phase 2 bulk sample parcel totaling 14,620 carats with the same SFD and SQD as production, the certainty in the 14,620 carats parcel price was ±12% at the 90% level of statistical confidence. This simulation revealed also that a parcel of 7,260 carats would have provided a "C90/20" price estimate (Figure 2.2a).

As mentioned above, if the project economics (i.e., tighter margins) had warranted more certainty in the ROM price estimate (say, ±10% nine times out of ten), the Monte Carlo simulation on the Mine 35 production parcel revealed that a Phase 2 parcel size would need to be in the region of 27,000 carats (Figure 2.2b)

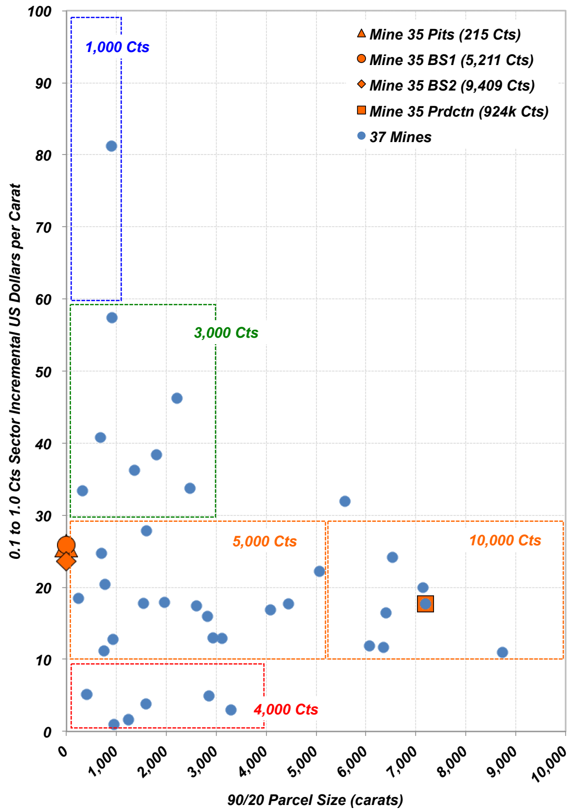

Figure 2.2a: Incremental US$/Ct versus Parcel Size for a "C90/20" confidence interval.

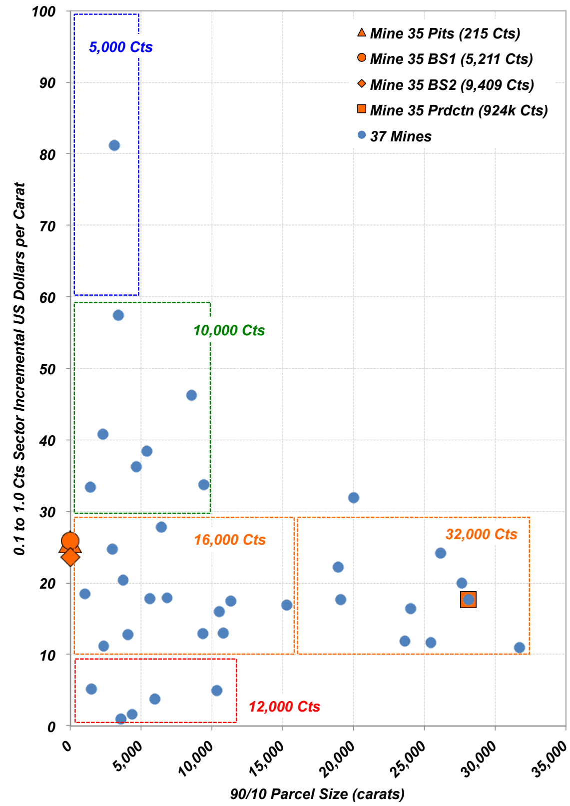

Figure 2.2b: Incremental US$/Ct versus Parcel Size for a "C90/10" confidence interval.

Footnote 1: Further context for the Monte Carlo Simulation

A Fortran program was required to run the Monte Carlo simulations. In a simulation, a stone was drawn at random from a ROM population of diamonds (all sizes, shapes, qualities and colours), a value (US$) was attached to that stone and the information was stored. This process was repeated until the desired parcel size had been achieved (e.g., 500 stones, or 500 carats) with an associated weight, stone count and value. The price of that parcel (US$/carat) was then calculated and stored. In the Monte Carlo simulation described in Section 6, this process was repeated 10,000 times, generating 10,000 prices for the 500-carat parcel. Once complete, the 10,000 prices were sorted into ascending order to find the desired confidence intervals (e.g., ±10% or ±20%) at a given level of statistical confidence as determined by the lead Diamond Practitioner (e.g., 90%, or nine times out of ten, or 80%, eight times out of ten) for the selected parcel size. The whole process was repeated for different parcel sizes (e.g., 1,000 carats, 5,000 carats, etc.) until upper and lower confidence intervals were determined for 20 parcel sizes ranging from 10 carats to 1,000,000 carats.

The outcomes of the Monte Carlo simulations were displayed as a trumpet chart (see Figure 2.3 below). A trumpet chart can be used for indicating:

1. The parcel size required for a price estimate at a selected level of certainty (e.g., ±10% or ±20%), or
2. The certainty in a price estimate for a particular parcel size (e.g., 5,000 carats).

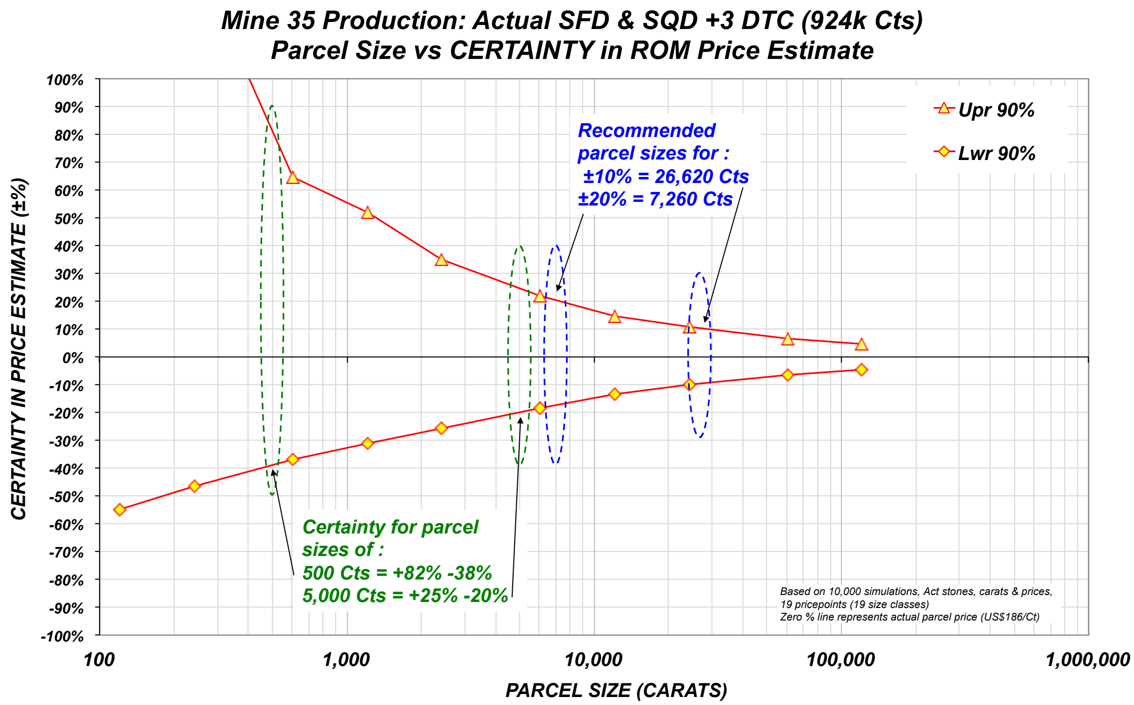

Figure 2.3: Trumpet curves for Mine 35 production – certainty in price estimate versus parcel size at 90% level of statistical confidence.

Footnote 2: Additional comments on the Monte Carlo Simulation

The Monte Carlo simulation described in Section 6 simplified the process by using data for 19 or 20 size classes (+3 DTC to +10.8 Ct) as opposed to using data from detailed assortments. Using prices per size class removed variability from the dataset resulting in tighter confidence intervals and smaller parcel sizes.

The simulations discussed in Section 6 estimated the parcel size required to accommodate a two-sided confidence interval. As Figure 2.3 illustrates, the upper and lower confidence limits were asymmetric. If only the lower limit was considered (a one-sided confidence interval) then the parcel size would have been smaller. The degree of asymmetry decreased with increasing parcel size.

Appendix 3
Diamond Price Estimation: Valuation Exercise Checklist

Diamond Price Estimation – Valuation Exercise Recommended Checklist

This recommended checklist is designed for the valuation of a large parcel of diamonds being conducted under ideal conditions in an office environment. The diamond parcel would be from a Phase 2 bulk sampling program targeted at a ROM price estimate supporting the Mineral Resources and Mineral Reserves underpinning the business case in a Feasibility Study. Best efforts to employ these guidelines for smaller exploration or Phase 1 parcels would ensure consistency in data collection and documentation.

Note: A few elements (*listed in italic font*) are not applicable to smaller parcels.

- Parcel size selection – plan for the maximum carats possible.
- Valuator(s) with extensive experience in valuing mine production parcels from multiple sources
- Valuation manager (Diamantaire + analyst)
- Fully secure process (parcels weighed in and out, video recordings, establish chain of custody)
- Parcels cleaned (deep boiled)
- Parcels sized after cleaning using the Carat/Grainer/DTC sizing series – see Appendix 1, Table 2
- Weights and stone counts per size class
- Full sorting equipment (e.g., bench lights above and beneath, sieves, sorting pads, colour papers, calibrated scales, tweezers, loupes)
- Ambient lighting (even light, natural light, never full sunlight)
- Assortments (price-points) per size class linked to a pricebook as defined by valuator, approved by client and consistent with any previous valuations.
- Pricebook- each individual assortment (size and quality category) has a price and these prices are recorded in a pricebook. Pricebooks are maintained by sales teams and updated (usually) on a monthly basis.
- Quality control - ideally, access to master assortments (reference parcels)
- All sizes valued 100%, or minimum:
    - 400 stone cut-offs (cone and quartering) from each size class (+5s and larger)
    - 200 stone cut-offs (+1s and +3s)—depending on broadness of quality and colour within a parcel
- Sarine technology, ideally used for assessing 5 Ct & larger gemstones
- Diamond damage assessment
- Fluorescence measurements (Yehuda).
- Infra-red typing for % Type IIAs (+11s & larger)
- Tension/stress assessments
- Process plant top, recrush and lower cut-off sizes
- Were parcels from one or more sampling programs
- Were parcels rolled by:
    - geological domain (phase)
    - zone
    - depth
- Multiple valuations are recommended using Diamantaires (say, five) and/or Corporates and/or GDVs
- Method for combining diamantaire valuations (simple averaging with ranges per size class, outliers)
- Timing (hours/days, date and pricebook) and basis of valuation (selling or buying price)
- Format of valuation data (data capture template)
- Reconciliation to 100% parcel
- Prices per size class (US$ per carat), parcel price (US$ per carat) and parcel value (US$)

- Impact of high value stones (% of parcel value)
- Weight % and Value % per size class
- *Size frequency distribution and size quality distribution models (for truncated distributions)*
- *Modelled prices per size class and modelled ROM price estimate (US$ per carat)*
- Diamond size vs price curves (actual, modelled and cumulative less than upper CSS)
- Gem, Near-gem and Boart – weight % per size class
- *Reconciliation to the geological model, i.e. compare the parcel price to previous prices achieved or estimated for the geological domain or phase, or contrast the result with prices from other geological domains*
- *Monte Carlo simulations, confidence intervals, confidence levels on a modelled ROM diamond price*
- *Parcel size vs uncertainty (±%) in price estimate (trumpet charts)*
- Valuation Report or Presentation

Reference: *The Diamond Valuation - what can a CP do to ensure it is fit for purpose? Chris Gordon-Coker - De Beers UK Limited, SAMREC/SAMVAL Companion Volume Conference, May 17-18, 2016.*

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