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as requested by the CIM Mineral Resource & Mineral Reserve Committee

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Version 25 represents the continuation of a review process that could take up to five months

The document has been laid out using a CIM template for Best Practice Guidelines
It has not been approved by the CIM Council, it is for public review only

Leading Practice Guidelines for the Reporting of Diamond Exploration Results, Resources and Reserves, specific to Primary Diamond Deposits

Submitted by the
CIM Mineral Resource & Mineral Reserve Committee
Adopted by CIM Council Month XX, 20XX

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Appendices

1 Introduction (Version 25, 20 of December 2024)

These guidelines supersede and replace in one guideline, 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 a Mineral Resource or Mineral Reserve 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 (the CIM) established a Diamond 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 update the guidelines considering changes in the diamond industry since 2003, NI 43-101 requirements, CIM Best practice guides and diamond codes from other jurisdictions. Also, given the importance of diamond price in determining the mineral resource, there was a desire to better understand and improve the transparency of the diamond price estimation process for both practitioners and investors.

In constructing these new guidelines, the Peer Group acknowledges the use of language from CIM Best Practice Guides (references 5 and 6), the CIM Definitions Standards (2014), SAMREC Diamond Guidelines 2019 and JORC 2012.

Diamonds are produced commercially from primary and secondary diamond deposits. “Primary diamond deposits" refer here 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” herein 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 ore treatment process. 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 evaluating the resource and estimating the reserve of a deposit.

Diamonds from the major producing mines are typically valued for export and/or preparation for sale ten times per year but this schedule can vary 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. Table 1 summarizes some of the distinctive aspects of diamonds.

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)	Typically, these variables are linked to deposit rock types and petrogenesis; unique distributions within the host material are possible.
Mineral Abundance	Carats per dry metric tonne (cpt) or per dry 100 metric tonnes (cpht).	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' by drilling, trenching and underground methods.	Determining optimal sample size and spacing requires assumptions of diamond abundance, geostatistics and deposit geology.
Price Sampling	Several thousand carat samples are recommended to estimate the Run-of-Mine (ROM) diamond price in $US per carat. 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 instance in the coarser size classes, it is possible to model these distributions. See Section 6.3.
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.	The combination of 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 material).	Methods require careful standardization to control the bottom aperture size cut-off and to quantify diamond damage/breakage.
Sample Treatment	Technology used to liberate and recover stones from host material (e.g., dense media separation, XRL, XRT, 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 - Practitioners

The target audience for these updated guidelines are Qualified Persons, Geoscientists, Engineers and Diamond Valuators (collectively referred to here as Practitioners) involved in the exploration for and evaluation of primary diamond source rocks.

A Qualified Person (QP) is defined in NI 43-101 and the CIM Definition Standards (2014).

Practitioners should be aware of the following items specific to diamonds:

- Kimberlite/olivine lamproite petrology, terminology and diamond indicator mineralogy.
- Equipment and techniques used in diamond resource exploration, delineation and sampling.
- 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 to reconcile mini-bulk sampling with bulk sampling.
- Diamond sorting, valuation and the methods for estimating diamond prices.

The reporting QP is accountable for technical information in the public domain (NI 43-101, 2011). This accountability includes elements of the Diamond Price, an essential component of project/mine economics and the declaration of resources and reserves.

It is recognized that diamond valuation is a specialized skill set. Diamond valuation is carried out by a Valuator and the QP can rely on the Valuator as an expert to provide raw pricing information. In such a situation, the Valuator is *accountable* for the raw pricing information.

The raw diamond pricing information can be used to create a modeled diamond price (see Section 6.3). In such a situation, the Modeller, as an expert, must take *accountability* for the modeled diamond price. The Modeller could be a Valuator or a QP with appropriate experience.

The QP must take *responsibility* for the valuation and modeling processes by using reasonable measures to confirm the information provided by the Valuator and the Modeller. It is recommended that the QP conducts a review of and due diligence on these processes. This review will assist the QP to identify and discuss any material risks arising from the valuation and modeling and make recommendations regarding the robustness of the modeled diamond price just as would happen with the geological model, drilling density or grade estimation.

The QP is best able to consider factors such as geological complexity and the spatial representivity of the sampling and is, therefore, *accountable* for how the modeled diamond price(s) is used to define the Resource and Reserve estimates and Project economics.

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

Finally, it is recommended that any variances from the CIM Best Practice guides (including this update) are explained in a clear and transparent manner on an ‘if not, why not’ basis.

3 Definitions and Units

Diamond Weights: All diamond weights should be reported 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 reported 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).

Diamond Grades: Macro-diamond grades (i.e., commercial grades > 0.85mm) should be reported in carats per dry metric 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. Macro-diamond grade estimates can be underpinned by the micro-diamonds (-0.850+0.075 mm) recovered from samples (kilograms or tonnes) or the macro-diamonds recovered from larger samples (tonnes). When expressing the grade of Exploration Samples, Mineral Resources and Mineral 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 Tables 1 and 2 for standard industry practice as it relates to diamond sizing.

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 up to 12,000 pricebook items.

Diamond Prices: Diamond prices are established and reported in US$ per carat with a date for the associated rough diamond valuation exercise and a pricebook (for a defined period). Diamond prices are expressed only in US$ per carat, i.e., never in local currencies. Diamond prices must 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 Parcel Size: Diamond parcel sizes from sampling programs can range in size 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 Practitioner should be able to track any rolling (combining) of small parcels and ensure the 'root' 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 6).

Reporting Diamond Prices: When reporting a diamond price the Practitioner should state clearly whether the price is an observed or a modeled price. If the price is based on a modeled size frequency distribution (SFD) and/or size quality distribution (SQD), the Modeler should describe the nature of the modeling. See Section 6.3. The Practitioner should address the effect of single, high value stones on the reported diamond price. The Practitioner should confirm that the valued parcel has been cleaned, the nature of the cleaning (acid, deep boil, caustic) and that the reported SFD is for the cleaned diamonds. See Appendix 3.

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 in 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

The best practice guidelines do not address the earlier stage reporting of geophysical, geochemical or kimberlite and lamproite indicator mineral results.

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

Reports of diamonds recovered from 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 report only when the diamonds are considered to be too small to be of commercial significance. For specific guidance on the reporting of exploration results generated by:

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

the Practitioner is referred to Tables 1 and 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 modeled prices that can 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 meet the requirements of Mineral Resource and Mineral Reserve (MRMR) estimation.

5 Diamond Resource Evaluation

5.1 Resource Database

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

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

In complex deposits, it may be very difficult to ensure that the bulk samples taken are truly representative of the whole deposit. The Practitioner shall provide an opinion on the representivity of the bulk sampling and on the validity of the conclusions drawn from this information.

Larger bulk samples from surface pits or underground workings are collected to confirm the results from smaller drill samples (e.g., cores or chips) and to provide sufficient stones for valuation to facilitate modeling 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 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 remains unchanged, i.e., a preliminary sample of say, 1,000 carats, followed by further bulk 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 reported where used and should conform to CIM Best Practice Guidelines for Mineral Exploration, QA and QC, November 2018.

The Practitioner should account for the relationship that exists between sample collection type (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. The Practitioner should be prepared to comment on the suitability of the chosen treatment facility as it pertains to a commercial (production) scale ore processing facility and flowsheet.

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

5.3 Geological Interpretation and Modeling

It is fundamental to a MRMR estimate, that the Practitioner develops a valid 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. The 3D model will 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 depends on the size and complexity of the deposit being evaluated, and the 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 could be highly variable and influenced by the country rock setting, the volume and composition of the melt, the variable emplacement processes, re-sedimentation processes, and the extent of erosion. The duration and type of explosive fragmentation processes that occur 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. These systems evolve over time and could involve multiple emplacement events with different phases of rock carrying different diamond packages from the mantle. The Practitioner should establish the main volumetrically significant phases of kimberlite present within a deposit, and the relationship between them.

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 Practitioner should establish the proportion and distribution of each phase within all geological domains that have multiple rock types or phases modeled within them. 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 and the Practitioner should ensure that geological sampling is representative.

The Practitioner should document 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. Changes within the mantle constituents or the proportion of country rock xenocrysts/xenoliths present within a phase or geological domain will 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).

The Practitioner should establish a 3D geology model as a foundation for representative sampling of all variables including the diamond size frequency, the size quality distributions for the kimberlite and/or lamproite phases that make material contributions (10% or greater) 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 Practitioner should verify 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. Any adjustments to the diamond size frequency distribution and sample grades that are necessary to reconcile plant recoveries should be reported.
- The Practitioner should determine optimum sample size and interpolator, e.g., grade in carats per tonne or stone density in stones per tonne and document the reasoning for the choice of variable.
- The diamond price is fundamental to resource estimation; however, it may not be known with accuracy at any given time. At the resource evaluation stage at least a preliminary valuation of a spatially representative parcel of diamonds should be completed to comply with the CIM resource definitions requirement that the resource has economic potential. For guidance on diamond price estimation, the Practitioner is referred to Section 6 of these guidelines.

5.5 Reasonable Prospects of Economic Extraction (RPEE)

RPEE shall be demonstrated through the application of an appropriate level of consideration of the potential viability of the Diamond Resources. Such a consideration shall include a reasoned assessment of the geological, engineering (including mining and processing parameters), mining, metallurgical, legal, infrastructural, environmental, marketing, socio-political and economic assumptions which, in the opinion of the Practitioner, are likely to influence the prospect of 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 RPEE 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.

In order to demonstrate that a Diamond Resource has RPEE, an appreciation of the likely stone size distribution and price is necessary, however preliminary these estimates of size distribution and price may be. Further, the spatial data distribution of the data, as well as geological and grade continuity must also be considered.

It is critical that the project's economic risk factors be clearly defined, 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.

6 Diamond Valuation

6.1 Valuation

Diamond valuation should involve the assistance of a current diamond producer, or an accredited Government Diamond Valuator currently providing service to a diamond producing country, or an experienced Diamantaire. The CIM committee acknowledges that exploration companies will not necessarily want to show their diamonds to another producer since the data are commercially sensitive.

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

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[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.

Caution should be expressed when an average diamond price is based on smaller parcels with truncated size distributions since medium and large stones that can contribute significantly to the ROM diamond price may not be present in the smaller parcels.

Further definitions and guidance for price estimation are provided in Appendix 1 (Tables 3 and 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 establishing a resource and a reserve. The size of the valuation parcel depends on 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 may 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 Practitioners to identify technical risk in broad terms, best practice includes identification and ranking of risks associated with each input of the Mineral Resource estimate (Section 6.14 of the CIM Best Practices). When considering a rock-hosted diamond Project, the technical risk includes diamond price.

Bulk sampling for price estimation can take place in at least two phases (see Figure 1); an initial phase producing hundreds of carats followed by a second phase with a parcel size dependent on the results from Phase 1.

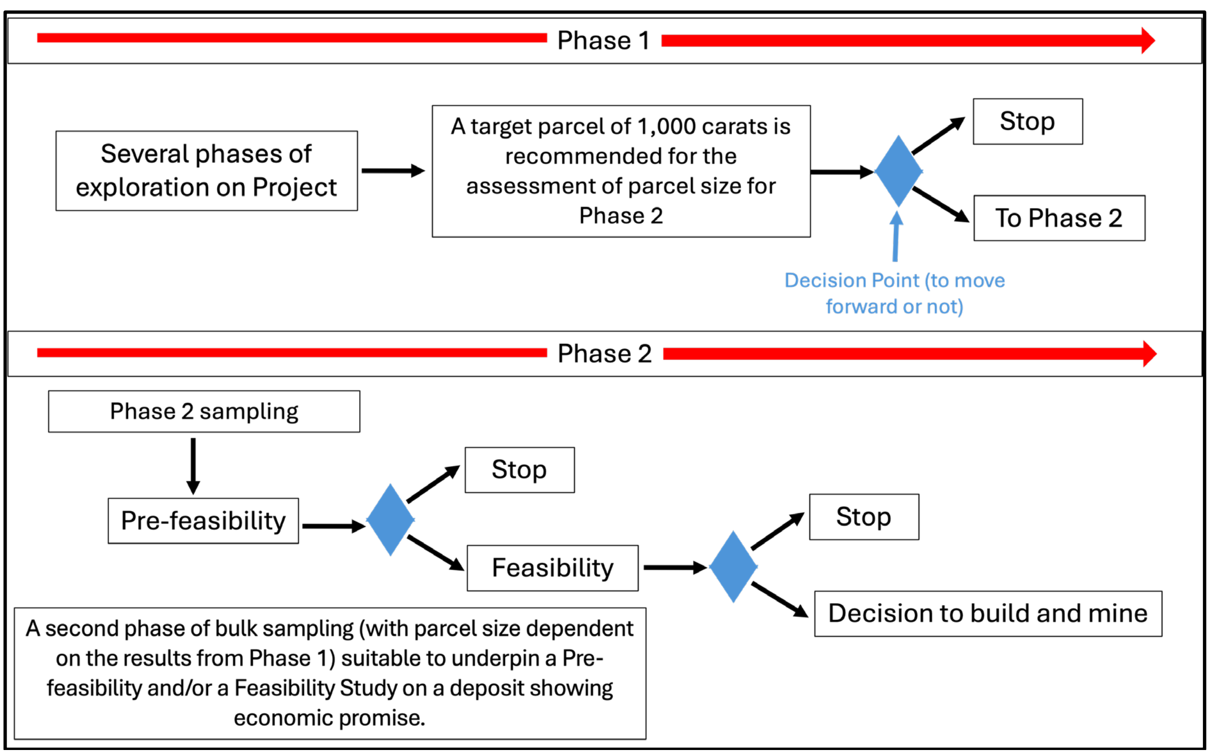

Figure 1: Schematic showing Phase 1 and Phase 2 bulk sampling for price investigation

Ideally, Phase 1 would target a parcel of 1,000 carats for sorting and valuation. Such a parcel may be suitable to underpin a Preliminary Economic Analysis on a deposit showing early promise. The diamonds recovered during both phases can be combined (physically or digitally) and used to support a Pre-feasibility or Feasibility Study.

To improve the guidance provided to Practitioners on parcel size selection, a 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 more than 30 assets (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, each asset name was replaced with a number.

A Monte Carlo (MC) simulation approach was used to obtain the indicative confidence limits for diamond prices for each asset 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 out of ten times, was designated as a "C90/10" level of confidence. A relative error that lies within ±20% of the actual mean, nine out of ten times, was designated as a "C90/20" level of confidence. The ±10% relative error represents a tighter error margin and the ±20% relative error, a looser error margin.

The empirical results of the study showed that a Phase-2 target parcel of 5,000 carats was sufficient for 76% of the assets 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 assets assuming a "C90/20" level of confidence. This proportion reduced to 57% for a "C90/10" level of confidence.

The "C90/20" parcel sizes are not dissimilar to previous "wisdom" on parcel sizes (see Table 2); the "C90/10" parcel sizes are larger.

QP Guidance	Units	CIM (2008)	JORC (2012)	SAMREC (2019)	CIM 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 for 50% and 75% respectively of the mines in the 2024 study

Table 2: Guidance on Parcel Sizes from three Diamond Codes and the CIM 2024 Study

An empirical graphical tool was developed for use by resource geologists to help create an estimate of 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 2a and 2b).

In preparation for using this tool, the Phase 1 diamond parcel must be sorted and valued to determine the prices per size class (Ct/Gr/DTC sizes). The cumulative price less than the upper boundary size of each size class should be calculated and the incremental US$/Ct value over the size range 0.1 to 1.0 carats (+5s to 3 Grs inc.) established (see Appendix 2, Table 1). Typically, this value will lie between US$1/Ct and US$100/Ct (see Appendix 2, Figures 2a and 2b). The parcel sizes required to meet "C90/10" or a "C90/20" level of accuracy correlated with the incremental US$ per carat values from the production of each asset. These graphical relationships were converted into a set of tabular recommendations (see Table 3 below). For example, 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. Practitioners are guided to Table 3 to identify the recommended parcel sizes for Phase 2 bulk sampling.

Incremental 0.1-1.0 Ct (Δ $/Ct) *	E.g., Conf. Limit & Intvl C90, +/-20% (carats)	E.g., Conf. Limit & Intvl C90, +/-10% (carats)	Prptn of Assets (%) †
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%

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

Table 3: Parcel Size versus a given US$/Ct Increment for two confidence intervals (both intervals at a C90 level of confidence).

The tool is less discriminatory for incremental US$/Ct values ranging from US$10-30/Ct and Practitioners with values in this range are recommended to take an initial Phase 2 sample of 5,000 carats. Examination of the size versus weight and value distributions for this parcel may indicate that the initial sample is sufficient to achieve a 90/20 level of accuracy in the price estimate, or that a follow-up Phase 2 sample of 5,000 carats is required.

A detailed explanation of the tool and application is provided in Appendix 2 (Mine 35 Case Study). 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.

Although the study selected "C90/20" and "C90/10" levels of confidence, every Project is unique and the 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 would drive the Phase 2 sampling. Alternatively, if the Phase 2 sampling is complete, the Practitioner can present the level of uncertainty in the diamond price for the parcel size that was available. 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 Practitioner adopt 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 2). These recommendations are compared to the current 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 prices lie at or below this parcel size. Similarly, the 75th percentile represents the parcel size for which 75% of the prices lie at or below this parcel size.

CIM Best Practice Guidelines for MRMR (Section 6.14) 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.

When deciding the target level of confidence, it is useful to consider the "rule of thumb" confidence intervals for technical studies (see Table 4). For example, a typical cost accuracy for a Pre-feasibility is ± 15% to ± 25% and for a Feasibility study, a tighter accuracy of ± 10% to ± 15%.

Table 2: Rule of thumb accuracy levels for technical studies (after Noppé 2014).

Measure / Item	Scoping Study	Pre-feasibility Study	Final Feasibility Study
Cost accuracy	±25%-50%	±15-25%	±10-15%
Cost contingency	30-50%	15-30%	<15%
Proportion of Engineering complete	<5%	<20%	<50%
Resource categories	Mostly Inferred	Mostly Indicated	Measured and Indicated
Reserve categories	None	Mostly Probable	Proved and Probable
Mining method	Assumed	General	Optimized
Mine design	None or high-level conceptual	Preliminary mine plan and schedule	Detailed mine plan and schedule
Scheduling	Annual approximation	3-monthly to annual	Monthly for much of payback period
Risk tolerance	High	Medium	Low

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 Modeling 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 carat sizes. This parcel should reveal the form of the size frequency and size quality distributions over the size range 0.01 Ct to 1.0 Ct, but the forms of these distributions will be uncertain in the grainer and carats sizes.

To overcome these difficulties, the size frequency and size quality distributions can be modeled (or extrapolated) into the size classes that were not represented in the Phase 1 evaluation parcel. Modeling size frequency and size quality distributions requires specialist knowledge. Practitioners are recommended to seek advice and engage an expert to conduct this task. An expert Modeler 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 modeling 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 of the distributions for the 40 mines observed were constant with increasing diamond size. This observation implies that modeling truncated quality distributions carries more risk than has been perceived previously by the industry. Therefore, if a price estimate is modeled, the Practitioner shall state clearly the assumptions that were used by the Modeler to underpin the modeled price. The Practitioner must appreciate that modeled distributions are "educated best guesses" and hence do not eliminate uncertainty in the ROM price estimate from a Phase 1 sampling program. It is important that the Practitioner communicates this fact to colleagues, management and investors. Monte Carlo simulations can be used to produce quantitative assessments of confidence in the modeled price estimates, but these assessments will be underpinned by the Modeler's assumptions (the size and quality models) and if these 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 may be revealed into the carat sizes, possibly up to 4 carats. Therefore, the Practitioner should be aware that modeling could be required at the end of Phase 2 sampling to produce the final ROM price estimates for resource and reserve reporting. However, as mentioned above, even these ROM price estimates will be underpinned by the Modeler's assumptions and if these assumptions are incorrect, un-quantifiable uncertainty will remain in the Phase 2 price estimates.

6.4 Modeling Methodology

Expert Modelers will have preferred methodologies for generating size frequency and size quality distributions over the size range 0.01 Ct to 10.8 carats. In each case, the Modeler will make judgements as to which model or modeling approach best fits the raw data. These judgments are subjective hence the selected method should be recorded and discussed. The accountability for the ROM price estimates passed on to the Practitioner rests with the Modeller. The Practitioner should describe the methods of modeling and state clearly the reliance placed on the Expert's modeling.

Generally, it is accepted that the form (or shape) of the diamond size frequency distribution can be revealed from smaller parcels (i.e., tending coarser, finer or intermediate) and can be 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 stronger because diamond prices increase exponentially with increasing size and the contribution to ore value (US$ per tonne) from the larger stones can become very significant. Practitioners are referred to Lucara Diamond Corp's Karowe kimberlite mine where 60-70% of the ROM value is contributed by diamonds larger than 10.8 Ct, see reference 10.

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. As mentioned above, these methods require specialist knowledge and Practitioners are recommended to seek advice and engage an expert to apply them.

Practitioners are reminded of the usefulness and importance of benchmarking the size frequency and size quality distributions with similar data from other kimberlites, and where possible sharing/reviewing this information with colleagues and investors. Such actions will instill confidence and/or highlight uncertainty in the price estimates that underpin the project/mine economics.

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 Practitioner must report the results of any diamond breakage studies completed where mechanical breakage is a modifying factor in the diamond population. Assessing diamond damage requires specialist knowledge. Practitioners are recommended to seek advice and engage an expert to conduct such assessments.

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 UV 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. Practitioners are recommended to seek advice and engage an expert to conduct such assessments and to comment on any impact on prices. These features should be documented during the valuation process (see Appendix 3).

7 Diamond Resource Classification

When estimating a diamond resource, the CIM Best Practice Guides (references 5 and 6) 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).

The Practitioner responsible for the Resource estimate must determine the appropriate Mineral Resource category based upon the quantity, distribution and quality of data available, and the level of confidence attached to the data with reference to Table 2.

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

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 RPEE, a 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 Practitioner should comment on the representivity of the bulk sample parcel(s) used to estimate the run-of-mine diamond price(s).
- When estimating an Inferred Diamond Resource, it is necessary to identify significant geological domains each of which should have at least an initial indication of volume, density, stone size distribution, grade and ROM diamond price, such information shall be obtained from bulk samples.
- In order to progress to an Indicated Diamond Resource (and from there to a Probable Diamond Reserve), it is likely that much more extensive, representative bulk sampling (and/or trial mining) would be needed to determine fully the stone size distribution, stone quality distribution and ROM diamond price. Commonly, such bulk samples would be obtained by opencast pitting or underground development designed to obtain sufficient diamonds to enable an estimate of diamond price with accuracy appropriate to the level of study (see Section 6 and Table 4 for examples describing appropriate levels of accuracy).

8 Technical Studies

A mining project typically passes through exploration, resource definition and design phases; each of which involves escalating levels of investment. Each phase requires an increasing level of economic and technical assessment with increasing levels of confidence in the project design, scheduling, costs and 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 Best Practice Guidelines (2019) apply. The main components of a diamond reserve are listed in Appendix 1, Table 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).

The following points apply:

- Diamond price estimation is a key factor in the reserves estimate for a diamond deposit and valuation of a significantly sized and spatially representative parcel of diamonds should be carried out and reported by an experienced Valuator (see section 6.1). Grade and price are integral to establishing mining cut-off grade.
- The Practitioner responsible for the treatment plant should consider the relationship (reconciliation) that exists between the resource SFD, SQD and recovery efficiency from a pilot facility or laboratory and the reserve SFD, SQD and recovery efficiency.
- If a Probable Diamond Reserve is declared, 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 Reporting

The purpose of reporting is to provide a summary of the material information about the Project so that investors or other interested parties are informed on the risks and uncertainties associated with the mineral property.

When reporting any aspect of a mineral property, the requirements in NI 43-101 and in 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 the Project.

The Practitioner should describe 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 mini-bulk and mined bulk 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 Practitioner should report the bottom cut-off used in the resource and reserve and confirm it has been accounted for in the grade, the diamond size distribution and the diamond prices for the resource and reserve. The bottom cut-off of the resource and reserve may be different, and if so, this difference should be explained and discussed by the Practitioner. The Practitioner should make clear the variable used for estimating the concentration of diamonds, in a kimberlite or olivine lamproite, this is usually stones per tonne (stone density) or carats per tonne (grade).

Mineral Resource classification is discussed in Section 7 of these guidelines. While the classification of the Mineral Resources into the Measured, Indicated, or Inferred categories allows Practitioners to identify technical risk in broad terms, best practice includes identification and ranking of risks associated with each input of the Mineral Resource estimate. It is recommended that the Practitioner adopt a quantitative approach for expressing uncertainty in the key variables contributing to the Project and Project economics. The methodology applied, ranking, and analysis should be well documented.

Similarly, the classification of Mineral Reserves into either the Proven or Probable categories allows the QPs to identify technical risk in broad terms, establishment of a methodology to identify and rank risks associated with each input of the Mineral Reserve estimate is recommended. Again, the methodology, ranking and analysis should be well documented.

The ROM diamond price is key input for the RPEE test used for the declaration of Mineral Resource, the declaration of a Mineral Reserve and for defining the Project economics. In order that potential investors become informed on the robustness of, and risks associated with the ROM diamond prices for the major geological domains, it is recommended that the following key information is reported:

- Weights and stone counts per size class
- Prices per size class (US$ per carat), parcel price (US$ per carat) and parcel value (US$)
- Impact of high value stones (% of parcel value)
- Weight % and value % per size class
- Modeled size frequency distribution (weight % per size class)
- Modeled prices per size class and ROM price estimate (US$ per carat)
- Gem, Near-gem and Boart – weight % per size class
- Reconciliation to the geological model
- Confidence intervals (i.e., ±% in price estimate) and selected confidence limit(s)

For an example of this type of reporting, the Practitioner is referred to NI 43-101 Technical Reports on the Mothae and Karowe kimberlite mines prepared by Lucara Diamond Corp (references 9 and 10).

It may be appropriate for the Practitioner to comment on market supply and/or demand projections or constraints to marketing and the impact of these criteria on future diamond prices.

Grade measurements and declarations in carats per dry metric tonnes or carats per hundred tonnes are recommended for primary deposits.

When reporting, the QPs are reminded that any variances from the CIM Best Practice Guidelines or these guidelines must be explained in a clear and transparent manner on an ‘if not, why not’ basis.

The reporting QP is accountable for technical information in the public domain. This accountability includes elements of the diamond price. Diamond valuation is carried out by a Valuator and the Qualified Person can rely on a Valuator to provide raw pricing information. If this pricing information is used to create a modeled diamond price (see Section 6.3), the QP can reply on an experienced Modeler for the modeled diamond price.

As the Practitioner is best able to consider factors such as geological complexity and the spatial representivity of the sampling he must take *responsibility* for the valuation and modeling processes by using reasonable measures to confirm the information provided by the Valuator and the Modeler and take *accountability* for how the modeled diamond price(s) is used in the Resource and Reserve estimates and Project economics.

11 Reconciliation of Mineral Reserves

In reconciling a Mineral Reserve estimate with mine-mill production, the General Guidelines of the Estimation of Mineral Resources and Mineral Reserves apply. Annual reconciliation for diamonds would encompass the production rate, the blend of ore sources (% of recovered carats drawn from each kimberlite phase/domain), 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 reserves.

12 References

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16. Verly, G., Postolski, T., and Parker, H.M., 2014, Assessing Uncertainty with Drill Hole Spacing Studies, Application to Mineral Resources: in Orebody Modeling and Strategic Mine Planning, Perth, WA, pp. 109-118.

Appendix 1 - Tables 1 to 4

Table 1: Processing of samples using chemical dissolution or total liberation laboratory methods for the recovery of diamonds >0.075 millimetres (micro-diamonds)

Table 2: Processing of samples using methods simulating commercial ore treatment (bulk sample treatment plants) for the recovery of diamonds >0.85 millimetres (macro-diamonds)

Table 3: Reporting of Diamond Mineral Resources (Modified after SAMREC*)

Table 4: Assessment of Diamond Price (US$ per carat) and Value (US$ per parcel)

Table 5: Reporting of Diamond Mineral Reserves (modified from SAMREC)

Table 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 Qualified Person	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	Disclose 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 reported 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 QP should comment on why the reported grade is relevant, the representivity of the sample and include appropriate cautionary language highlighting that the grade reported 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 (report individually) 6.70 to 9.50 4.75 to 6.70 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	Number of diamonds (stones)	Weight of diamonds (carats)

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 QP, 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 QP 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 reported for samples processed using these methods. Prices of small parcels can mislead the public.	Valuation of commercial size diamonds is discussed in Table 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 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 Qualified Person	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	Disclose 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).
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 modeling.
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	Count by size class.

	recovered >0.85 mm square mesh (or >#1 DTC sieve)	
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 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.	These classes are known as "Caraters" and "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** * report 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** * report 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** * report 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 reported with a zone of influence. For example, it could be representative of a particular kimberlite phase or geological domain	Important the QP clarifies that the sample grade is a local grade and not the grade of the whole deposit

Modeling of the diamond size weight distributions.	Commercial grade estimates are often underpinned by modeled diamond size distributions. The accuracies of modeled size distributions become less certain with smaller diamond parcels. Only a Qualified Person should report modeled estimates of commercial grades. The QP should explain the modeling methodology and state the confidence in the estimate. Ideally this should be a quantitative measure of uncertainty accompanied by a probabilistic confidence statement (e.g., ±15% at a 90 percent level of confidence).	The report must state, describe and list: - The lower cut-off size for these grade estimates - The method used for modeling the SFD - The qualifications (experience) of the Qualified Person
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 QP, 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/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 price-book. A price-book can contain thousands of individual price points.
Price Estimation	Valuation of commercial size diamonds is discussed in Table 4.	

Table 3: Reporting of 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.
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. Sample bulk density determination. Percent concentrate and undersize per sample. Grade with change in bottom cut-off screen size. Geostatistical techniques applied.
Price estimation	Diamonds parceled per phase or by depth. 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 4.
Resource volume	Geological model by phase, volume and 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. Recrush, top, middle and bottom cut-off screen sizes. Reference ore dressing studies.
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 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. It must be treated with the same respect as that afforded to grade and tonnage estimates in being reported by a qualified expert.	A price estimate is the end product of a sorting and valuation exercise that may include modeling. 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. It is recommended that assistance is 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 QP 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 QP 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 QP should be in possession of a written report of the valuation exercise from an experienced diamantaire and/or analyst stating: - QP should confirm that 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 sorting - The basis of the price estimation buying price, selling	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 reported separately in a table showing stone weight, price per carat and value per stone. The impact of market volatility is almost impossible to quantify and can

	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	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 - The effects of 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 Modeling	Commercial price estimates are often underpinned by modeled diamond size and quality distributions. The accuracies of these modeled distributions become less certain with decreasing parcel size. Only a Modeler or a suitably experienced QP should produce modeled ROM price estimates. The expert should explain the modeling methodology and state the confidence in the estimate. Ideally this should be a quantitative measure of uncertainty accompanied by a probabilistic confidence statement (e.g., ±15% at a 90 percent level of confidence).	The report should state the lower cut-off size for these price estimates and should list the qualifications (experience) of the Valuator. The level of confidence in the price estimates is of prime importance in assessing any associated risk. The QP 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 5: Reporting of Diamond Mineral Reserves (Modified after SAMREC*).

Criteria	Explanation
Geotechnical	A QP with appropriate experience in rock mechanics should be consulted on the slope angles per domain (surface mine) and on mine design and draw control strategy (underground mine).
Mine planning	Define business plan strategy and life of mine plan. Mining methods considered. Mineability of domains. Specific |Gravity of various ore and waste rock types. Capital cost estimates. Working cost estimates and contractor strategy. Revenue per facies with depth and block contributions. Mining efficiency and dilution factors. Pit optimization. Underground plan. Ore blending, mine stockpile strategy. Environmental constraints. Waste disposal. Machine replacement plan. Closure plan. Risk analysis.
Process Engineering	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, recrush 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.
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

Appendix 2 - Mine 35 Case Study

Mine 35 Kimberlite

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$55/Ct for the <0.09 Ct and <0.9 Ct sizes respectively (Figure 1). Therefore, the incremental US$/Ct for the 0.09 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 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 MC 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$49/Ct for the <0.09 Ct and <0.9 Ct sizes respectively (Figure 1). The incremental US$/Ct for the 0.09 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 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 3).

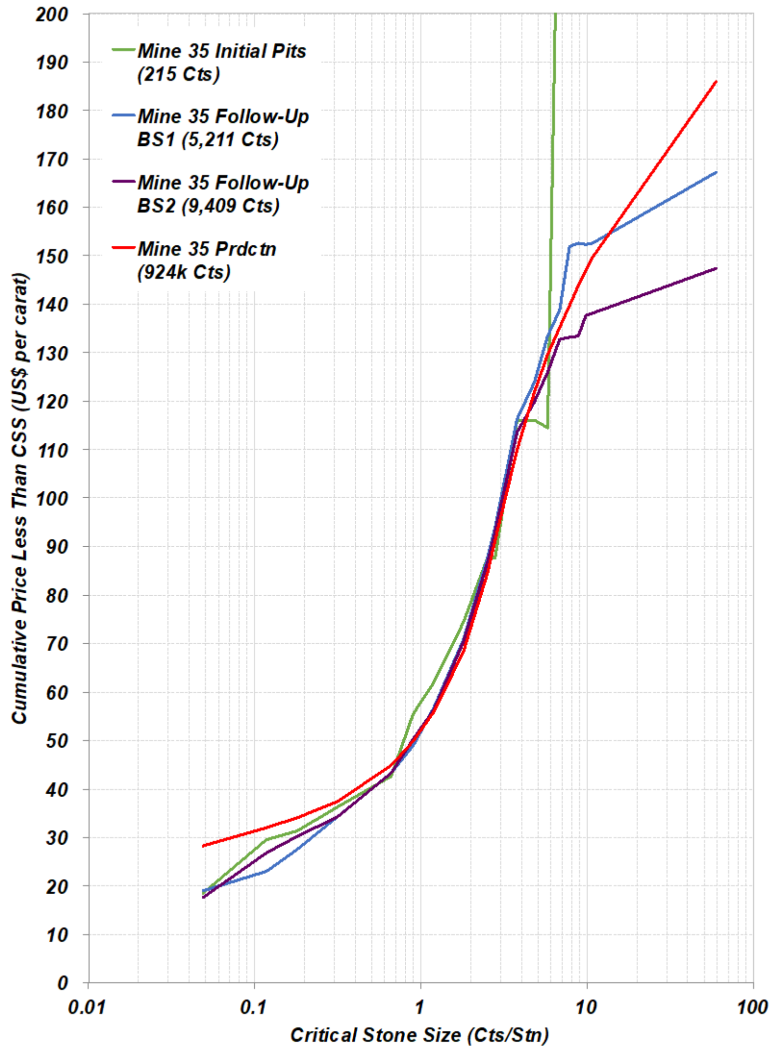

Figure 1: Cumulative Price less than versus Critical Stone Size

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 parcels 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 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 2b)

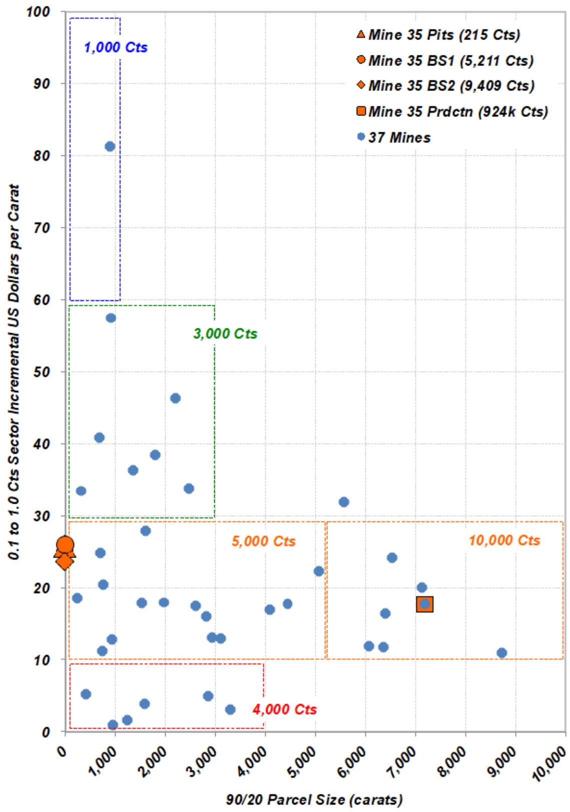

Figure 2a: Incremental US$/Ct versus Parcel Size for a "C90/20" confidence interval.

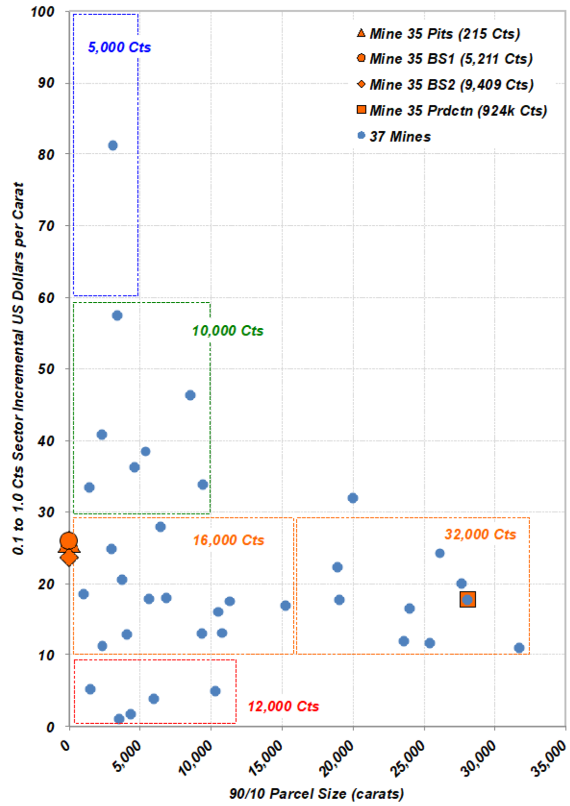

Figure 2b: Incremental US$/Ct versus Parcel Size for a "C90/10" confidence interval.

Footnote 1: Further context for the Monte Carlo Simulation

An App was required to run Monte Carlo (MC) 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 MC 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 (e.g., 90%, or nine times out of ten) for the selected parcel size. The whole process was repeated for different parcel sizes (e.g., 1,000 Ct, 5,000 Ct, etc.) until upper and lower confidence intervals were determined for 20 parcel sizes ranging from 10 Ct to 1,000,000 Ct. The process was repeated for different levels of statistical confidence (e.g., 80%, or eight times out of ten).

The outcomes of the MC simulations were displayed as a trumpet chart (see Figure 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).

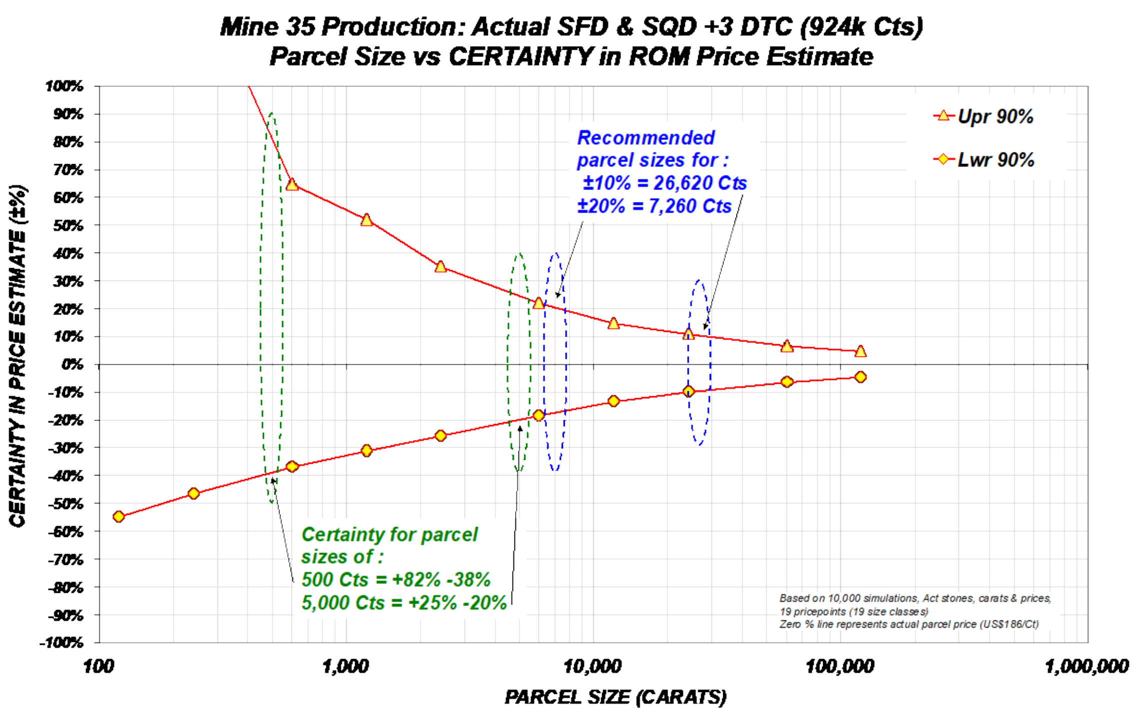

Figure 3: Trumpet curves for Mine 35 production – certainty in price estimate versus parcel size at 90% level of statistical confidence.

Footnote 2: Additional comments on the Monte Carlo Simulation

The Monte Carlo simulation described in Section 6 simplified the process by using data for 19/20 size classes (+3 DTC to +10.8 Ct) as opposed to detailed assortments. Using prices per size class (often reported in NI 43-101 documents) removed variability from the dataset resulting in smaller parcel sizes.

The simulations discussed in Section 6 estimated the parcel size required to accommodate a two-sided confidence interval. As Figure 3 illustrates, the upper and lower confidence limits were asymmetric. If the lower limit is considered only (i.e., a one-sided confidence interval), the parcel size would be smaller. The degree of asymmetry decreased with increasing parcel size.

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Appendix 3 - Diamond Price Estimation

Valuation Exercise Checklist

Diamond Price Estimation - Recommended Valuation Exercise Checklist

This recommended checklist is designed for the valuation of a large parcel of diamonds that is 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 disclosure. 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 (Carats/Grainers/DTC sieves)
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 (MLT for definition).
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) - depends 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$)
Impact of high value stones (% of parcel value)
Weight % and Value % per size class
Size frequency distribution and size quality distribution models (for truncated distributions)
Modeled prices per size class and modeled ROM price estimate (US$ per carat)
Diamond size vs price curves (actual, modeled and cumulative less than upper CSS)
Gem, Near-gem and Boart – weight % per size class

Reconciliation to geological model
Monte Carlo simulations, confidence intervals, confidence levels on a modeled 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.