Z STAR
MINERAL RESOURCE
CONSULTANTS

Specialist mineral resource consulting services for the global exploration, mining and investment communities

Z analysts are skilled in the use of geostatistical mineral resource estimation techniques*

ESTIMATION

Z* offer specialised services, extensive technical experience and competence in all aspects of mineral resource estimation. Mineral resource estimation can be performed by Z* analysts to applicable scales (global, zonal, local block estimates) depending on the spatial representivity of the data. Estimation can be performed on any regionalised variable and Z*'s technical expertise can be applied to any mineral commodity.

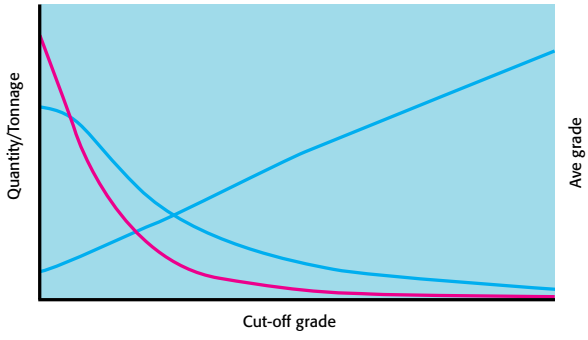
Estimates are commonly performed on volume, density, grade, geological and geo-metallurgical parameters. Z* principals have extensive technical training, knowledge and experience in the application of linear and non-linear geostatistics and we offer the following specialist services:

GLOBAL AND ZONAL MINERAL RESOURCE ESTIMATION

Global and zonal mineral resource estimates are performed when there are insufficient sample data to permit local block estimation. Estimates of this kind are generally calculated at the exploration and early evaluation stages of a project. Z* utilize applicable estimation methodologies which may include grade tonnage curves, polygon kriging or more simplistic zonal averages. Z* always applies an appropriate methodology having considered the geological model. Importantly, the level of detail provided in the estimate must be aligned with the extent and confidence of the available information on the deposit. Where applicable, grade tonnage curves are calculated to facilitate LOM planning and for global estimation.

LOCAL BLOCK MINERAL RESOURCE AND RESERVE ESTIMATION

When sufficient sampling data are available and variography can be modelled, a local block estimate can be calculated. Firstly, an exploratory data analysis (EDA) is undertaken to assess the integrity and correlations of the sample data. Once the estimation data set has been finalised a structural analysis will identify the extent and orientation of any spatial correlation in the applicable regionalised variables. Z* analysts are skilled in the use of a vast array of kriging and simulation estimation techniques.



The move from mineral resource to mineral reserve can require the application of modifying factors coupled with an assessment of "payability" and "mineability" scenarios. Z* have extensive experience in assessing mineral resource performance, identifying inefficiencies and calculating resource to reserve coefficients.

ESTIMATION

RECONCILIATION OF MINERAL RESOURCES AND RESERVES

Detailed analysis of the reconciliation between estimates and production can be performed. Independent assurance in this area can provide an objective unbiased view that can prove to be extremely beneficial in terms of ensuring efficient mining and realising financial benefits. Z* will audit a clients mineral resources and reserves on a routine assurance basis or as part of a "one off" task team investigation.

COMPETENT PERSONS REPORTS

Z* is fully familiar with the requirements for international reporting codes e.g. JORC, SAMREC and NI 43-101. Z* specialises in diamonds, base metals gold and uranium and are recognised Competent Persons in these commodities. In addition, Z* Principal Analysts have performed estimation on other commodities including base metals. Technical review of CP reports to identify and assess the risks associated with mineral resource estimates can be performed for the investment community.

GEOSTATISTICAL SIMULATIONS

Geostatistical simulations are useful quantitatively, to obtain realistic images of spatial variability and provide distributions around the mean estimate. In the case of conditional simulations, the sample data are used to provide a spatially representative estimate for the entire deposit. Applicable simulation methods include both continuous (Sequential and Turning Bands) and categorical (e.g. Pluri-Gaussian) techniques. The method applied is dependent on the nature of the data and a detailed understanding of the geological model.

SPECIALIST SERVICES:

Micro Diamond Estimation

Z* have unique skills and experience in the analysis of micro diamond data. Micro diamond modelling can be complex and Z*'s considerable experience in this field enable us to provide a differentiating capability in modelling micro/macro diamond relationships and determining a representative mineral resource estimate. Z* also has extensive experience in the optimisation of micro diamond sampling programmes.

Size Frequency Distribution Modelling

Interpreting size frequency distributions (SFD) is an essential component of diamond mineral resource estimation. Z* has extensive experience in this area and can model SFDs and grade–size distributions to facilitate diamond revenue estimation, stone size estimation, calculation of mineral resource to reserve modifying factors and the amalgamation of different grade sampling programmes.

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