



# Metallurgical Consulting.

Focussing on optimising the extraction of minerals.

VBKOM's metallurgical consulting services focus on optimising the extraction of minerals, identifying niche markets and supplying independent, fit for purpose solutions to maximise value for the client. This is achieved by strategic alliances with external technology partners, close co-operation with industry experts, applying and improving existing processes and methodologies, and staying abreast with new technology developments.

Our team has considerable plant experience and high-level competency in LIMN and Excel based simulation skills. We have experience in various commodities including iron ore, coal, chrome, heavy mineral deposits, industrial minerals (such as refractory minerals, clay deposits, limestone deposits and silica), manganese, rare earth deposits, platinum, gold and tungsten all over the African continent.

We deliver services through feasibility studies, operational support and audits.  
Our services include:

## **Studies**

- › Sampling campaigns
- › Mineral characterisation
- › Conceptual designs
- › Process plant audits
- › Due diligence studies

## **Feasibility testwork management and review**

- › Pilot plant testing
- › Gravity separation
- › Fines DM separation
- › Downstream beneficiation

## **Process engineering**

- › Process plant optimisations
- › Mass and water balances
- › PFD's and P&ID's
- › CAPEX & OPEX evaluations
- › Financial modelling
- › Sensitivity analysis
- › Trade-off studies
- › Detailed design and implementation of brown and green field projects
- › Commissioning and training

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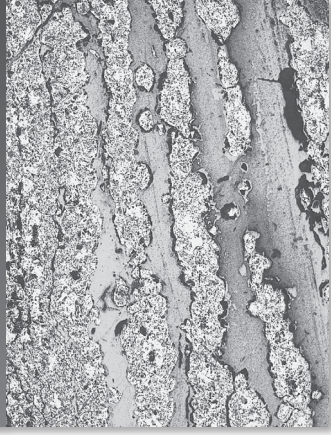
# Process Engineering Methodology

## Process Simulation Key inputs

- Geological Data
- Mine Plan
- Marketing
  - Product Specification
  - Product Volumes
- ROM Characterisation
  - PSD Analysis
  - Liberation Data
  - Density Fractionation
  - Pilot Plant Testwork
- Equipment Specifications
- Plant Throughput

## Process Flowsheet

- Plant Yields
- Sizing Envelopes
- Plant Recoveries



## Other Inputs

- Engineering Design Criteria
- Equipment Availabilities
- Geotechnical Studies
- Environmental Studies



## Design Outputs

- Process Design Criteria (PDC)
- Mass and Energy Balances
- Process Flow Designs (PFD)
- Piping and Instrumentation Diagrammes (P&ID's)
- Control Philosophy
- Equipment lists/sizing
- Plant Capacity Analysis
- Operating Manuals
- Plant OPEX
- Plant CAPEX

Financial Modelling | Sensitivity Analysis | Trade-off Studies

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