

HE AMIS

Mineral Services Limited

COMPANY PROFILE

Contact Information



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1. Introduction

HETAMIS MINERAL SERVICES LIMITED is a privately owned company, incorporated on October 3rd, 2024 (Certificate of Incorporation No. 178474448) under the companies Act of 2002. We are proud to be wholly owned by Tanzanians and operate within the laws of The United Republic of Tanzania. With our Taxpayer Identification Number (TIN) as **178-474-448**, we are registered with Tanzania Revenue Authority (TRA).

2. Company Overview

HETAMIS Mineral Services Limited stands at the forefront of the mining industry, offering a comprehensive suite of consulting services that encompass environmental, technical, and operational aspects. Our team boasts a rich legacy in providing consultancy services for all mineral sector-related activities, including geology, mining, mineral processing, and environmental services. We pride ourselves on delivering high-quality solutions to meet the diverse needs of our clients.

3. Services

Our core focus is to offer comprehensive consultancy services across the mineral sector. The following expertise and services are offered;

3.1 Environmental Science and Management:

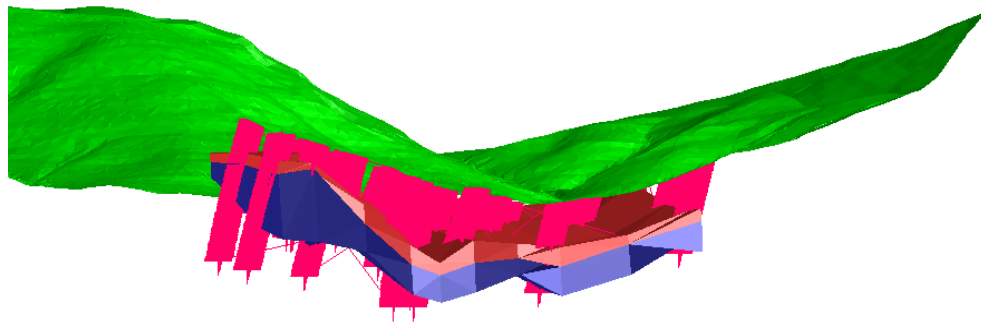
Expertly evaluating potential environmental consequences of mining operations to inform sustainable and responsible decision-making such as;

- Environmental Impact Assessment (EIA)
- Stakeholder and Public Engagement Consultation
- Environment Auditing (EA)
- Environmental Management Plan (EMP) and
- Health and safety projects.

Our environment experts are capable of providing an organized procedures to assess environmental impact associated with a program, plan, or policy; helps in providing a medium to explore overall impacts and address them properly along with economic and social aspects of decision making, during operations, and during closure phases.

3.2 Resource and Reserve Estimation:

At HETAMIS, our Resource and Reserve Estimation Department stands as a beacon of accurate and thorough determination of mineral resources, elevating your mining endeavours to their maximum potential. With a comprehensive suite of exploration services, we harness cutting-edge technologies and expert insights to drive your projects forward. Our commitment to excellence is reflected in a wide range of offerings, including field geological mapping and analysis, remote sensing and Geographic Information Systems (GIS), mineral modelling, geochemistry and geophysics, exploration management, mineral audits and valuations, health and safety guidance during exploration, and program implementation.



Our Diverse Service Portfolio Encompasses:

- **Mineral Exploration:** Uncover the hidden treasures beneath the Earth's surface with our innovative mineral exploration services. Our expert geologists and advanced methodologies ensure that no stone is left unturned in your quest for valuable mineral resources.
- **Structural Geology:** Gain a profound understanding of the geological architecture and structural complexities that shape your mineral deposits. Our structural geology services offer insights crucial for efficient extraction and mining operations.
- **GIS Data Integration:** Leverage the power of Geographic Information Systems (GIS) to seamlessly integrate and visualize diverse spatial data. This enables informed decision-making and empowers you with a holistic perspective of your mining assets.
- **Geological Modelling:** Harness the potential of advanced geological modelling techniques to construct accurate 3D representations of your mineral deposits. These

models serve as invaluable tools for resource estimation and optimizing extraction strategies.

- **Resource Estimation:** Our rigorous resource estimation methodologies provide you with precise quantification of mineral resources. This critical information forms the foundation for effective project planning and resource management.
- **Feasibility Studies:** Ensure the viability of your mining projects through comprehensive feasibility studies. We evaluate technical, economic, and environmental aspects to provide you with a clear roadmap towards successful project execution.

3.3 Mine Planning and Design:

Mine Planning and Design: Orchestrating Efficient Strategies for Mineral Extraction in Open Pit and Underground Mines. At HETAMIS, our Mine Planning and Design division serves as a cornerstone in the realm of mineral extraction, catering adeptly to both open pit and underground mining operations. With an unwavering commitment to optimizing resource utilization, safety, and environmental stewardship, we offer a comprehensive suite of services that ensures the seamless arrangement of your mining activities.



Our Comprehensive Mine Planning and Design Services Encompass:

3.3.1 Open Pit Mining:

- *Pit Design and Optimization:* Utilize our cutting-edge technologies and industry expertise to craft open pit designs that maximize resource recovery, minimize waste generation, and ensure safe operations.
- *Bench and Ramp Design:* We create strategically designed benches and ramps that facilitate efficient extraction and transportation of minerals while adhering to safety standards.

3.3.2 Underground Mining:

- *Access and Shaft Design:* Our experienced engineers design safe and efficient access points, including shafts, declines, and tunnels, crucial for productive underground mining.
- *Stope and Void Design:* Employing advanced modelling techniques, we create intricate stope and void designs that harmonize productivity, safety, and mineral recovery.

3.3.2 Resource Optimization:

- *Strategic Extraction Planning:* Our experts formulate extraction strategies that align with geological complexities, ensuring optimal resource utilization and minimal dilution.
- *Scheduling and Sequencing:* We develop detailed schedules and sequences that streamline operations, balancing production targets and machinery deployment.

3.4 Our Approach: Integrating Science, Technology, and Sustainability for Success

At HETAMIS, we blend scientific rigor, technological innovation, and sustainable practices to craft mine plans that stand as blueprints for success. Our multidisciplinary team collaborates seamlessly, merging geological insights, engineering acumen, and advanced software tools to develop holistic mining solutions.

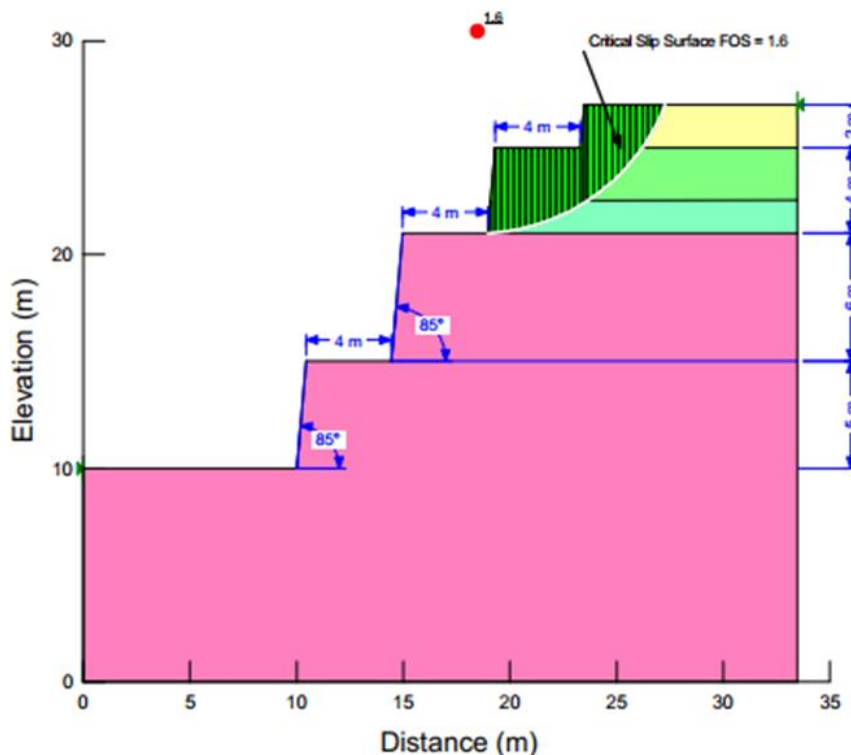
3.5 Metallurgy and mineral processing:

At HETAMIS, the mineral processing and metallurgical section is experienced in most of the processing of minerals such as precious and base metals, industrial and energy minerals, gemstones, and rare earth elements. Our experts can develop the value added and cost-effective processes that will have high positive impact to the project.

3.6 Rock Mechanics & Geotechnical Expertise:

At HETAMIS, our distinguished Rock Mechanics and Geotechnical division stands at the forefront of geotechnical analysis, leveraging advanced techniques to unravel the complexities of rock masses. Our comprehensive suite of services encompasses both rock mechanics and geotechnical assessments, delivering invaluable insights to ensure the stability, safety, and efficiency of your projects.

| Color | Name | Slope Stability Material Model | Unit Weight (kN/m ³) | Effective Cohesion (kPa) | Effective Friction Angle (°) |
|-------|----------------|--------------------------------|----------------------------------|--------------------------|------------------------------|
| ■ | Hard Limestone | Mohr-Coulomb | 21.53 | 900 | 41.6 |
| ■ | Marl | Mohr-Coulomb | 18.3 | 39 | 29 |
| ■ | Red Soil | Mohr-Coulomb | 19.11 | 23 | 31 |
| ■ | Shale | Mohr-Coulomb | 17.97 | 16 | 21.05 |



Our Comprehensive Rock Mechanics & Geotechnical Services Encompass:

- **Rock Mass Characterization:** Employing state-of-the-art digital mapping techniques, we meticulously dissect and analyse rock formations. This provides a deep understanding of the structural and mechanical properties critical for engineering robust and safe solutions.
- **Slope Stability Analysis:** Our experts delve into the intricate interplay of forces shaping natural and engineered slopes, enabling us to predict and prevent potential failures.
- **Ground Support Design:** Drawing from geotechnical data, we craft tailored ground support solutions that enhance the stability of underground openings and excavations, minimizing risks and ensuring operational continuity.
- **Tunnelling and Excavation Planning:** By fusing geological insights with geotechnical analysis, we create detailed plans for tunnels and excavations that balance engineering requirements with safety considerations.
- **Rockfall Hazard Assessment:** Through rigorous assessment, we identify areas prone to rockfall hazards, implementing mitigation strategies to safeguard personnel, infrastructure, and surrounding environments.

At HETAMIS, we harmonize the expertise of our seasoned geologists, engineers, and data scientists to drive innovation in rock mechanics and geotechnical analysis. Our methodologies seamlessly blend classical geological fieldwork with cutting-edge digital mapping technologies, resulting in unparalleled insights into rock mass behaviours.

3.7 Waste Rock Management:

At HETAMIS, our Waste Rock Management division takes centre stage in delivering comprehensive and sustainable waste disposal solutions. Guided by our unwavering commitment to environmental safety and responsibility, we excel in designing waste rock dumps that ensure minimal impact on the environment while maximizing resource utilization.

3.7.1 Our Comprehensive Waste Rock Management Services Encompass:

- **Waste Rock Dump Design:** Leveraging a fusion of engineering precision and environmental consciousness, we design waste rock dumps that mitigate potential environmental hazards and ensure long-term stability.
- **Environmental Impact Assessment:** Our experts conduct rigorous assessments to evaluate the potential environmental effects of waste rock disposal, enabling proactive measures to safeguard ecosystems.
- **Geochemical Characterization:** We analyse waste rock materials to understand their geochemical properties, aiding in designing effective containment and leachate management systems.
- **Liner and Cover System Design:** Employing advanced materials and technologies, we design liner and cover systems that prevent the migration of potentially harmful substances into the environment.
- **Reclamation Planning:** Our reclamation plans focus on restoring waste rock dumps to a state that harmonizes with the surrounding landscape, promoting ecological balance and minimizing long-term environmental liabilities.

3.8 Tailings Management Expertise: Engineering Sustainable Containment Solutions for Operational Excellence and Environmental Protection.

At HETAMIS, our Tailings Management division plays a pivotal role in delivering comprehensive and environmentally responsible solutions for the containment of tailings. Driven by our unwavering commitment to both operational efficiency and environmental preservation, we excel in designing tailings storage facilities that meet the highest industry standards while safeguarding ecosystems.

In addition to our design and management services, we also conduct rigorous audits of tailings storage facilities to ensure ongoing compliance, structural integrity, and environmental safety. Our audits are an essential part of our commitment to sustainable tailings management, helping to identify potential risks and ensure that all facilities operate at the highest levels of safety and efficiency.

3.8.1 Our Comprehensive Tailings Management Services Encompass:

- ***Tailings Storage Facility Design:*** We bring together engineering precision and environmental consciousness to design tailings storage facilities that ensure containment integrity and mitigate potential environmental risks.
- ***Hydraulic Design and Analysis:*** Our experts conduct hydraulic assessments to ensure the efficient management and distribution of tailings within containment systems, reducing the risk of overflows and breaches.
- ***Geochemical Characterization:*** We analyse tailings materials to understand their geochemical properties, enabling the design of containment systems that prevent leachate migration and contamination.
- ***Liner and Cover System Design:*** By employing advanced materials and technologies, we design liner and cover systems that prevent the release of harmful substances into the environment.
- ***Emergency Response Planning:*** We develop comprehensive emergency response plans to address unforeseen events, ensuring swift and effective actions to protect both operations and the environment.
- ***Tailings Storage Facility Audit:*** We conduct in-depth audits of tailings storage facilities to assess their structural integrity, operational efficiency, and compliance with environmental regulations. These audits are crucial for identifying potential vulnerabilities, ensuring that the facilities meet industry standards, and implementing corrective actions where necessary to maintain long-term safety and environmental protection.

3.9 Advanced Mining Excel Models: Tailored Solutions Spanning Mine Closure to Operational Efficiency

At HETAMIS, our expertise extends beyond the traditional confines of mining. We specialize in crafting intricate Excel models methodically designed to address a spectrum of mining intricacies, ensuring accuracy, efficiency, and informed decision-making throughout your mining operations.

3.9.1 Our Comprehensive Range of Specialized Excel Models Encompass:

- ***Mine Closure Liability Cost Estimation:*** Our tailored Excel models offer a sophisticated platform for precise forecasting and evaluation of mine closure costs, ensuring thorough financial planning and compliance with regulatory standards. At the core of our solution is a comprehensive cost estimator, comprising interconnected worksheets meticulously crafted to calculate the environmental liability expenses entailed by mining activities.

Facilitating seamless user interaction, our model features a dedicated tab accurately tailored for initializing user forms and generating reports. This tab is seamlessly integrated with a dynamic backend database, which efficiently stores and manages data via user-friendly Excel forms. These forms, serving as intuitive graphical user interfaces (GUIs), streamline the data entry process, enhancing user convenience and efficiency.

Central to our system's architecture is the backend database, serving as the cornerstone for overcoming the limitations inherent in relying solely on Excel. Its robust capabilities empower it to effortlessly handle extensive data volumes, fostering adaptability across various facilities of similar nature and enabling centralized management of multiple mine sites within a unified framework. This pivotal role significantly augments operational efficiency, ensuring smooth and effective operations.

Furthermore, our model delivers a comprehensive array of outputs, including Damage Cost Analysis, Reliability, and Liability assessments post-escalation and discounting of restoration and decommissioning costs. Leveraging geometric principles, our cost model accurately calculates the measurements and volumes of physical components such as waste rock dumps, open pits, and yards. Geographic Information System (GIS) and CAD software further enrich our capabilities, enabling precise measurements and volume calculations. Additionally, drone imagery is seamlessly integrated into GIS software, geo-referenced, and utilized to facilitate accurate measurements, enhancing the accuracy and reliability of our outputs.

The screenshot shows a software window titled "Open Pits" with a close button (X) in the top right corner. Below the title bar are three tabs: "Open Pit" (selected), "Safety Bund", and "Trench". The main area contains several input fields and a dropdown menu:

- Pit Name:
- Pit Status:
- Start (yr):
- End of Mining (yr):
- Pit Footprint (m):
- Max Pit Depth (m):
- Pit Perimeter (m):
- Pit Volume (m³):
- Max Ramp Width (m):

At the bottom right of the form area are two buttons: "Save" and "Cancel".

- ***Drilling and Blasting Optimization:*** We offer tailored models that optimize drilling and blasting operations, leading to improved fragmentation, reduced costs, and enhanced safety.
- ***Loading and Hauling Efficiency:*** Our models streamline loading and hauling processes, optimizing equipment allocation, route planning, and resource utilization for maximized productivity.
- ***Cashflow Projections:*** We develop sophisticated Excel models that provide detailed cashflow projections, aiding in strategic financial planning and investment decision-making.
- ***Cost Modelling:*** Our Excel models provide comprehensive cost analysis, helping you accurately assess expenses related to various aspects of your mining operations.
- ***Equipment Maintenance Planning:*** Our custom models enable effective equipment maintenance scheduling, minimizing downtime and extending equipment lifespan.

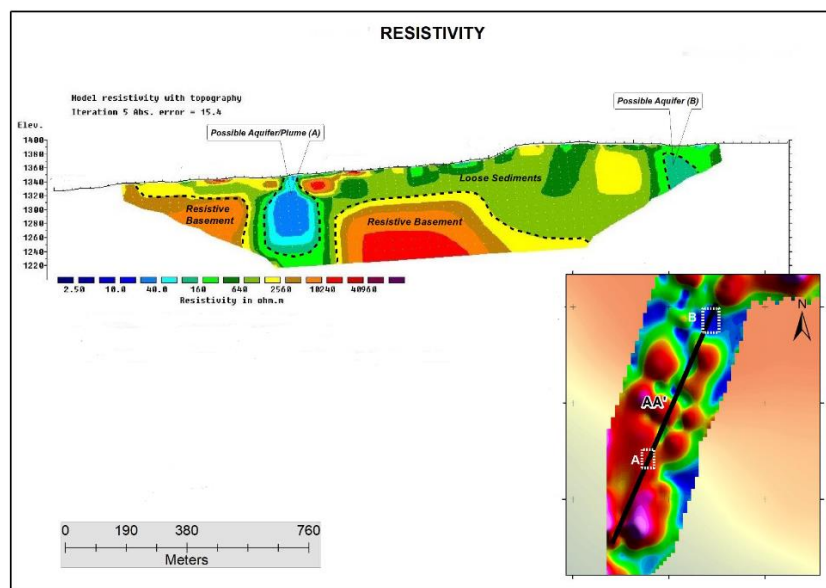
At HETAMIS Ltd., our team blends mining acumen with technological mastery to create Excel models that stand as invaluable tools in your operational arsenal. With a combination of industry knowledge, data analytics, and software expertise, we ensure our models align seamlessly with your unique mining challenges.

3.10 Geophysical survey

At HETAMIS, our geophysical division plays a pivotal role in delivering comprehensive and environmentally responsible solutions for the Near Surface Magnetic and Resistivity Geophysical surveys to map the structures associated with aquifer system and accurately locate dewatering boreholes to reduce groundwater problems.

Our Comprehensive geophysical survey Services Encompass:

- Self-Potential Survey (SP)
- Ground Magnetic Survey
- Electrical Magnetic Survey (EM)
- Induced Polarization Survey (IP)
- Electrical Resistivity Tomography (ERT)



3.11 Aerial mapping and LiDAR survey

At HETAMIS, our survey division plays a pivotal role in delivering comprehensive survey solutions. Our Comprehensive survey Services Encompass:

- Established survey reference points
- LiDAR survey technology by drone to establish various parameters such as volumes of material stock, reference points, etc
- Measurements of horizontal control points by DGPS STATIC solution
- Measurements of the vertical control points by spirit levelling in loops

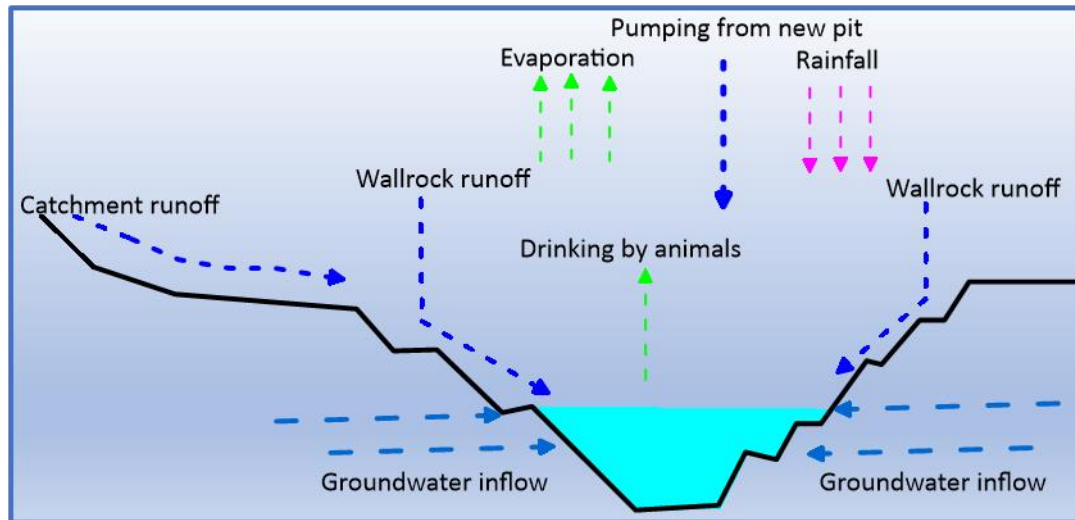
- GPS Data and Control Network Plotting

3.12 Hydrological and geohydrological assessment

At HETAMIS, our hydrology division plays a pivotal role in delivering comprehensive hydrology solutions. The identification of the potential surface and groundwater sources in the area will involve a number of methods and approaches. These methods include reconnaissance for identification of biophysical equilibrium settings using maps. The biophysical equilibrium settings to be identified will include climate, topography, drainage patterns, geology, and soils. This will also include land use/cover patterns. The coordinates of all locations for surface water discharge measurement, sampling, and geophysical investigation will be recorded by using a global positioning system (GPS) device.

Our Comprehensive Survey Services Encompass:

- Characterize the climate of the area
- Carry out hydrological assessment at the mine site
- Develop water balance of the mine pits
- Determine the future status of the pit lakes, including recommendation of the post-mine closure use of the pits
- Determine groundwater flow direction
- Carry out hydrogeochemical assessment to determine groundwater provenance and evolution using major ions
- Establish a Site-Wide Mine Water Balance: In addition to developing water balances for individual mine pits, we conduct a thorough site-wide mine water balance to assess the overall water input, storage, and output across the entire mine site. This comprehensive approach ensures the efficient management of water resources, identifies potential water surplus or deficits, and helps mitigate the risk of adverse environmental impacts on surrounding water bodies and ecosystems



4. Technological Edge:

In the rapidly-evolving landscape of the mining industry, staying ahead technologically is paramount. HETAMIS Mineral Services Limited integrates digital mapping in its geotechnical studies and utilizes state-of-the-art equipment for sample collection, ensuring accuracy and precision in every project.

5. Achievement and Milestones

Since our establishment, HETAMIS has successfully assisted numerous clients in achieving their mineral sector objectives. Our expertise and dedication have earned us a reputation for delivering outstanding results. We continue to make significant contributions to the development and growth of the industry.

Why Choose Us: A Holistic Approach to Mining Excellence

At HETAMIS, we stand apart as your ultimate partner in mining excellence. Our commitment extends far beyond a single facet of the industry; instead, we offer a comprehensive approach that addresses the entirety of your mining journey. When you choose us, you're choosing a collaborative partnership that encapsulates innovation, expertise, and a shared vision for success.

Our Unmatched Advantages:

- **Tailored Solutions:** We understand that each mining project is unique. Our team meticulously tailors our services to meet the specific challenges and goals of your operation, ensuring that you receive solutions that align seamlessly with your vision.
- **Multidisciplinary Expertise:** With a diverse team of geologists, engineers, data scientists, and industry specialists, we bring a comprehensive range of expertise to the table. This allows us to approach challenges from various angles, fostering comprehensive and innovative solutions.
- **Cutting-Edge Technologies:** Our dedication to staying at the forefront of technological advancements empowers us to provide you with the most advanced tools and methodologies available in the industry, enhancing the accuracy, efficiency, and effectiveness of our services.
- **Sustainability Focus:** Environmental responsibility and operational sustainability are woven into every aspect of our solutions. From resource estimation and planning to waste management and reclamation, we prioritize long-term viability and minimize environmental impact.
- **End-to-End Support:** Our commitment doesn't end with design or assessment. We offer support throughout the entire mining lifecycle, from inception to closure, ensuring a seamless and well-coordinated journey that leads to successful outcomes.
- **Collaborative Partnership:** We view every project as a collaborative endeavour. Your insights and goals are integral to our process, fostering an environment of open communication and mutual understanding that paves the way for shared success.

Choosing HETAMIS, means choosing a partner that's as invested in your success as you are. Our holistic approach means that every aspect of your mining project receives the attention, expertise, and dedication it deserves. Contact us today at to embark on a journey that leads to mining excellence through innovation, integrity, and unwavering commitment.

Team and Expertise

At HETAMIS, we take pride in our diverse team composition, which combines the dynamic energy of junior members with the seasoned expertise of senior professionals deeply rooted in

the mineral sector. With a collective wealth of knowledge and hands-on experience, our team is adept at navigating complexities and delivering optimal outcomes for our clients.

Furthermore, our strategic alliances bolster our capabilities, enabling us to offer innovative and customized solutions that meet the unique needs of clients. Our collaborative approach ensures that we leverage the full spectrum of expertise available to us, delivering unparalleled value to our clientele.

While our team comprises numerous talented individuals, we'd like to highlight the profiles of our most distinguished senior staff members below. Their leadership, insights, and wealth of experience serve as guiding beacons, driving our success and cementing our reputation as industry leaders.

1. Dr. Abubakary Salama, Managing Director

Dr. Salama has more than 17 years' experience as consultant in Mining Engineering specialized in mine planning, design, and optimization of mining systems. Dr. Salama expertise focus on Feasibility studies, numerical modelling of hard and soft rock masses, Waste Rock Dump and Tailings' Storage facility design, mine closure plan, ground deformation and open pit slope stability, and Cost management for Mining systems. Has experience in using various mining, geotechnical, and cost software such as Geovia Surpac, Datamine, Rocscience, and standardized reclamation cost estimator.

Dr. Salama has previously work with various mining companies in Tanzania and Sweden. From 2014 to 2016, Dr. Salama was an interim Manager of the I² mine project funded by EU under 7th Framework program in Collaboration with Kiruna Underground mine and Lulea University of Technology, Sweden, in analysing the performance of the mining methods with respect to safety, productivity and environmental, and thereafter develop innovative technology to be used when mines operating at great depth.

Dr. Salama hold PhD in Mining Engineering from Lulea University of Technology, Sweden, MSc in Mining Engineering from Ecole Nationale Supérieure Des Mines De Paris, France, and BSc in Mining Engineering from University of Dar es Salaam, Tanzania. He is also a senior lecturer at the University of Dar es Salaam, and doing research collaborations with Lulea University of Technology, Sweden and Queensland University, Australia. Dr Salama is

registered with Tanzania Engineers Registration Board (ERB) as professional mining engineer, and with Ministry of water as Approved Professional Person (APP).

2. Mr Selemani Msangi, Director of Mining Operations

Selemani has more than 18 years' experience as a mining engineer. He has extensive experience in Design and planning for the short and medium-term underground polymetallic mines. He has previously worked as short Term Mine Planner and Design engineer for Nyrstar Myra Falls, British Columbia Canada, from 2011 to 2015.

He has also an extensive experience in the application of key Mining engineering software such Mine Planning and Design (Vulcan, Surpac, GEMS & Promine), Rocscience (Dips, Swedge, Unwedge), GeoSlope GeoStudio, and Programming (VBA, Python). He holds BSc. Mining engineering from the University of Dar es Salaam and Meng. in Mining Engineering from the University of British Columbia in Canada. He is a member of the Society for Mining, Metallurgy & Exploration (SME).

3. Dr. Zainab Katima

Dr. Zainab holds BSc. degree in Chemical and Process Engineering from the University of Dar es Salaam, MSc. degree in Environmental Sanitation from Ghent University (Belgium) and PhD in Environmental Management from Tshwane University of Technology (South Africa).

Dr. Zainab is a chemical engineer and environmental expert with more than 13 years of experience in environmental science and auditing, air pollution control, modelling and monitoring as well as design, optimization and establishment of chemical processing industries. She is registered as an Environmental Impact Assessor (Environmental expert) by National Environment Management Council (NEMC)-NEMC/ EIA/ 0390 and Environmental Auditor NEMC/ EA/ 0183. Also, she is a member of the Institute of Directors Tanzania (IoDT)-No. 1555. She has also attended several short course trainings on various programs and among being Proposal and Scientific Writing, Centre for Climate Change Studies (CCCS), Livingstone Beach Resort, Bagamoyo-Tanzania in 2013, Consultancy Project Execution, University of Dar es Salaam in 2020 and Risk Management in Project Management by Institute of Engineers Tanzania in 2014.

Dr Zainab involved in various EIA, SEA, EA, in various areas such as Oil/Gas Exploratory Drilling at North Mandawa Block, Kilwa / Dominion Oil and Gas Ltd; Msoga Dam and Irrigation Scheme, Bagamoyo; Electricity Transmission Pole Treatment Plant, Iringa, Tanzania, Sao Hill Industries Ltd; Proposed Construction of Natural Gas Transmission Pipeline from Tegeta to Bagamoyo, TPDC; and Liuiga River Hydropower Project II, Green Growth Ltd.

Business Approach

At HETAMIS, we are committed to excellence in every aspect of our business. We prioritize delivering top-notch consultancy services that exceed client expectations. Our approach is rooted in professionalism, integrity, and a deep understanding of the challenges and opportunities within the mineral sector.

Future Goals

Looking ahead, HETAMIS aims to further expand its footprint in the mineral sector consultancy domain. We strive to continuously enhance our capabilities, develop strategic partnerships, and embrace emerging technologies to better serve our clients. Our goal is to be the go-to consultancy firm for all mineral sector-related solutions in Tanzania and beyond.