ELIAS
CONSULTING ENGINEERS

# COMPANY PROFILE

2026



+27736479555/+27108249032

wwww.eliasce.co.za

selaelo@eliasce.co.za /
info@eliasce.co.za

# TABLE OF **CONTENT**

About Company
Our Vision and Mission
Our Service
Our Approach
Why Choose Us
Our Partners
Our Clients
Connect With Us
Previous Projects

ELIAS
CONSULTING ENGINEERS

# ABOUT **COMPANY**

Elias Consulting Engineers (Pty) Ltd is a forward thinking engineering firm that specialises in integrated engineering solutions for mining operations, combining expertise in electrical systems, reliability engineering and mining technology solutions. Our team delivers optimised sustainable solutions that enhance operational efficiency and safety. With extensive experience in the mining sector, we understand the unique challenges of mining operations and offer tailored solutions that drive measurable results.

Registered Business Name: Elias Consulting Engineers (Pty) Ltd
BBBEE Level: Level 01
Company Registration: 2016/405731/07
CSD Number: MAAA0611926
VAT Number: 4730316173

CERTIFICATE
OF COMPLIANCE TO
ISO 9001:2015
ISO LOGIC
THE LOGICAL CHOICE
COMPLIANCE DIVISION

cidb
Construction Industry Development Board
6ME 6GB 1CE 6EP

ELIAS
CONSULTING ENGINEERS

# OUR **VISION**

To create exceptional value in the mining industry by combining engineering excellence with innovative technology, setting the benchmark for integrated mining solutions.

# OUR **MISSION**

To deliver innovative, reliable and sustainable engineering solutions that enhance mining operations through the integration of electrical expertise, maintenance optimisation and mining technology solutions.



ELIAS
CONSULTING ENGINEERS



# OUR SERVICE

## ELECTRICAL ENGINEERING SERVICES

### Power Systems & Quality

**Power Factor Correction (MV & LV)**
- Power quality analysis and improvement
- Reactive power compensation design
- Harmonic mitigation strategies
- Installation and commissioning support
- Performance monitoring and optimisation

**Power Transformer Services**
- Condition assessment and testing
- Oil analysis and diagnostics
- Performance optimisation
- Maintenance program development
- Online transformer monitoring

**Protection Systems**
- Protection relay upgrades
- Coordination studies
- Settings calculation and implementation
- System selectivity analysis
- Modern relay integration

### Compliance & Safety

**Arc Flash Studies**
- ETAP Analysis
- Incident energy calculations
- PPE recommendations
- Label development
- Safety procedure documentation
- Training program development

**Single Line Diagrams**
- System documentation
- As-built verification
- Digital conversion
- Asset registration
- System documentation

**Site Compliance Certification**
- Regulatory compliance audits
- Standards assessment
- Documentation review and updates
- Compliance monitoring systems
- Risk assessment and mitigation

### Substation

**Substation Automation**
- Control system design
- SCADA integration
- Remote monitoring implementation
- Smart grid solutions
- Communications system design

**Protection Grading**
- Overcurrent coordination
- Earth fault protection
- Distance protection settings
- Relay characteristic analysis
- Protection scheme design

**Electrical system maintenance**
- Electrical repairs
- Panel redesigns and refurbishment
- Equipment replacement

ELIAS
CONSULTING ENGINEERS



# OUR SERVICE

## RELIABILITY AND MAINTENANCE ENGINEERING SERVICES

### Maintenance

Strategic enhancement of operational reliability through comprehensive analysis and improvement.

**Equipment maintenance**
- Plant equipment maintenance
- Shutdown optimisation
- HME Overhaul
- HME maintenance

**Tactics Optimisation**
- Maintenance strategy development
- Resource allocation optimisation
- Performance monitoring
- Cost benefit analysis

**Downtime Analysis**
- SAP downtime data analysis
- Critical event assessment
- Performance impact quantification
- Improvement strategy development
- Real-time monitoring solutions

### Failure Analysis and Prevention

Systematic approach to identifying, analysing and preventing reliability issues.

**Root Cause Analysis**
- Structured problem solving methodology
- Advanced analysis techniques
- Solution development
- Prevention strategies

**Defect Elimination**
- Defect analysis
- Root cause identification
- Preventative measure implementation
- Continuous monitoring

**Failure Mode and Effect Analysis**
- Systematic risk assessment
- Failure mode identification
- Severity evaluation
- Mitigation strategies
- Control plan development

### Asset Performance Management

Comprehensive management of asset reliability and lifecycle optimisation.

**Reliability Block Modelling**
- System performance modelling
- Risk assessment
- Redundancy analysis
- Optimisation planning

**Warranty Management**
- Lifecycle tracking
- Cost recovery
- Performance monitoring
- Documentation management

**Predictive Maintenance**
- Condition monitoring
- Failure prediction
- Maintenance forecasting
- Performance trending

ELIAS
CONSULTING ENGINEERS



# OUR SERVICE

## CONDITION MONITORING SERVICES

### Mechanical systems

**Vibration Analysis**
- Detects misalignment, imbalance, looseness, and bearing faults by analyzing vibration patterns.

**Laser Shaft Alignment**
- Ensures precise alignment of rotating shafts to reduce wear and increase efficiency

**Acoustic Emission Testing**
- Identifies cracks, leaks, and material degradation by capturing high-frequency sound waves.

**Oil Analysis**
- Analyzes lubricant condition, contamination, and wear particles to predict component failures

**Structural Health Monitoring (SHM)**
- Monitors stress, strain, and vibrations in structures to detect damage and prevent failures.

### Electrical & Thermal Systems

**Thermography (Infrared Analysis)**
- Uses infrared imaging to detect heat anomalies indicating electrical faults, bearing wear, and insulation failures.

**Motor Current Signature Analysis (MCSA)**
- Evaluates electrical signals to detect rotor, stator, and power supply faults in motors and generators.

**Dissolved Gas Analysis (DGA)**
- Identifies transformer faults by analyzing gases dissolved in insulating oil.

**Partial Discharge Testing**
- Detects insulation breakdown in high-voltage equipment to prevent electrical failures.

### Multi-System Monitoring

**Ultrasound Testing**
- Uses high-frequency sound waves to identify leaks, electrical discharges, and bearing defects.

ELIAS
CONSULTING ENGINEERS



# OUR SERVICE

## MINING TECHNOLOGY SERVICES

### Advanced Drone Inspection (Elios 3)

Confined space and critical infrastructure inspection using collision tolerant Elios 3 drone technology.

**3D Mapping & Digital Twin**
- Point cloud generation
- 3D modelling of confined spaces
- Structural analysis
- Asset visualisation
- Volumetric calculations

**Inspection Capabilities**
- GPS-denied environments
- Confined space access
- Infrastructure assessment
- Real-time visual feedback
- Thermal imaging analysis

### Artificial Intelligence Solutions

Advanced AI applications customised for mining operations.

**Custom RAG Solutions**
- Document intelligence
- Knowledge base creation
- Maintenance manual analysis
- Procedure optimisation
- Technical query handling

**Machine Learning Applications**
- Bespoke systems based on site requirements
- Pattern recognition
- Anomaly detection
- Predictive analytics
- Performance optimisation
- Decision support system

**Digital Twin**
- Bespoke digital twin services based on mining requirements.

ELIAS
CONSULTING ENGINEERS

# OUR APPROACH

## DAEEE FRAMEWORK: ENGINEERING EXCELLENCE IN MINING

### DISCOVER

*Uncovering the True Challenge*

**Problem Identification**
- Root cause analysis
- Site investigations
- Stakeholder engagement
- Data collection

**Context Mapping**
- Operational environment
- System interactions
- Existing constraints
- Historical patterns
- Business impact

### ANALYSE

*Deep Dive Investigation*

**Technical Assessment**
- System evaluation
- Performance analysis
- Risk assessment
- Compliance review
- Failure patterns analysis

**Data Intelligence**
- Trend analysis
- Impact quantification
- Opportunity identification
- Cost implications
- Performance metrics

### ENGINEER

*Solution Design & Development*

**Solution Architecture**
- Technical specifications
- Integration requirements
- Resource planning
- Risk mitigation
- Value engineering

**Design Optimisation**
- Cost benefit analysis
- Performance modelling
- Sustainability check
- Innovation integration
- Implementation roadmap

### EXECUTE

*Systematic Implementation*

**Project Delivery**
- Phased implementation
- Quality control
- Progress tracking
- Risk management
- Team coordination

**Change Management**
- Stakeholder communication
- Training delivery
- Documentation
- Process integration
- Performance validation

### EVALUATE

*Performance Monitoring & Optimisation*

**Performance Tracking**
- KPI monitoring
- Success measurement
- Impact assessment
- Value verification
- Trend analysis

**Continuous Improvement**
- Optimisation opportunities
- Process refinement
- Knowledge capture
- Best practices
- Future recommendations

ELIAS
CONSULTING ENGINEERS

# WHY
# CHOOSE US

At Elias Consulting Engineers, we are dedicated to upholding the highest standards in every project we undertake. We go beyond conventional approaches to deliver value driven, innovative solutions that are specifically tailored to meet your unique needs. Our team combines extensive technical expertise with cutting edge solutions to help clients achieve both sustainability and operational efficiency.

## CLIENT BENEFITS

### Environmental

- Reduced energy consumption
- Reduced carbon footprint
- Waste reduction
- Environmental compliance

### Social

- Enhanced worker safety
- Community protection
- Skills development
- Sustainable operations

### Governance

- Regulatory compliance
- Transparent reporting
- Risk management

### Operational

- Reduced downtime
- Improved reliability
- Enhanced safety
- Better compliance

### Financial

- Lower maintenance costs
- Improved asset lifecycle
- Reduced energy costs
- Better ROI

### Strategic

- Future ready operations
- Technology advancement
- Risk mitigation
- Competitive advantage

ELIAS
CONSULTING ENGINEERS

# OUR **PARTNERS**

Microsoft

Samotics

ABB

IBM

Schneider Electric

OXMT

SIEMENS

FLYABILITY

ELIAS
CONSULTING ENGINEERS

# OUR **CLIENTS**

Valterra PLATINUM

ANGLO AMERICAN

exxaro
POWERING POSSIBILITY

Johannesburg Water

IMPLATS
EXCELLENCE IN PGMs

Eskom

Road Accident Fund

HBIS | PMC PALABORA MINING COMPANY

ELIAS
CONSULTING ENGINEERS

# PREVIOUS **PROJECTS**

## HAUL TRUCK REBUILD

**Haul Truck Rebuild** – Exxaro Full rebuild of heavy haul trucks at Exxaro mining operations. This project involved complete mechanical disassembly, component refurbishment, and structural restoration of large earth moving equipment, including tyre and wheel assembly replacement, returning all units to full operational service in compliance with OEM specifications and mine safety standards.







ELIAS
CONSULTING ENGINEERS

# PREVIOUS **PROJECTS**

## SCREEN AND SCRAPER CONVEYOR REPLACEMENT

**Scraper Conveyor and Screen Replacement** - Exxaro Complete replacement of scraper conveyor system and screening equipment at Exxaro mining operations. This project involved removing existing worn equipment and installing new conveyor and screening systems to optimize material handling efficiency and restore reliable coal processing operations.



## SCRAPER CONVEYOR MAINTENANCE



**Scraper Conveyor Component Renewal** - Exxaro Comprehensive replacement of critical scraper conveyor components including flights, chains, and protective liners at Exxaro facilities. The project focused on restoring operational reliability and extending equipment service life through the installation of high-quality replacement parts.

ELIAS
CONSULTING ENGINEERS

# PREVIOUS **PROJECTS**

## UPS MAINTENANCE

**UPS System Maintenance** - RAF Repair and maintenance services for Uninterruptible Power Supply (UPS) systems at RAF facility. This critical infrastructure support ensured continuous power reliability and system availability for essential operations.



## MAGNETIC SEPARATOR REPLACEMENT



**Magnetic Separator replacement**- Exxaro Wet Coal Plant Installation of new magnetic separator system at Exxaro's wet coal processing plant. This project enhanced coal quality control and improved separation efficiency by removing magnetic contaminants from the coal processing stream.

ELIAS
CONSULTING ENGINEERS

# PREVIOUS **PROJECTS**

## CONVEYOR MAINTENCE

**Coal Conveyor Maintenance** - Exxaro Preventive maintenance and repair of coal conveyor systems at Exxaro operations, including roller replacement and structural repairs. This comprehensive maintenance program ensured continuous conveyor operation and minimized production downtime.



## CHUTE MAINTENANCE



**Chute Maintenance and repair services** for material handling chutes across mining processing facilities. These services optimize product flow, reduce material spillage and minimize operational downtime through proactive maintenance strategies.

ELIAS
CONSULTING ENGINEERS

# PREVIOUS PROJECTS

## DRONE MILL INSPECTION

**Ball Mill Inspection Using ELIOS3 Drone Technology at Anglo American** Advanced inspection and scanning of ball mill equipment utilizing cutting-edge ELIOS3 drone technology. This innovative approach enabled safe, comprehensive internal inspection of grinding mill components without requiring equipment shutdown, providing detailed condition assessment and maintenance planning data through state-of-the-art aerial inspection capabilities.



## MOTOR CONTROL CENTRE PROTECTION AUDIT



**Motor Control Centre Protecttion Audit** - Exxaro Systematic audit and assessment of Motor Control Centre (MCC) systems at Exxaro facilities. This project evaluated electrical control systems, identified potential issues, and provided recommendations for improving operational reliability, safety standards, and regulatory compliance.

ELIAS
CONSULTING ENGINEERS

# PREVIOUS **PROJECTS**

## MAINTENANCE STRATEGY

**Heavy Mobile Equipment Maintenance Plan and Strategy Improvement - Matsamba Colliery**
This project involved analyzing existing maintenance practices, optimizing maintenance schedules and establishing strategic maintenance frameworks to enhance equipment reliability, reduce operational costs, and maximize fleet availability through improved preventive maintenance programs.



## ROOT CAUSE FAILURE ANALYSIS



**Root Cause Analysis for Motor Failures** - Exxaro Detailed Root Cause Analysis (RCA) investigation into recurring motor failures at Exxaro operations. This analytical project identified underlying causes of equipment failures, developed corrective action plans, and implemented preventive measures to reduce future motor breakdowns and associated downtime.

ELIAS
CONSULTING ENGINEERS

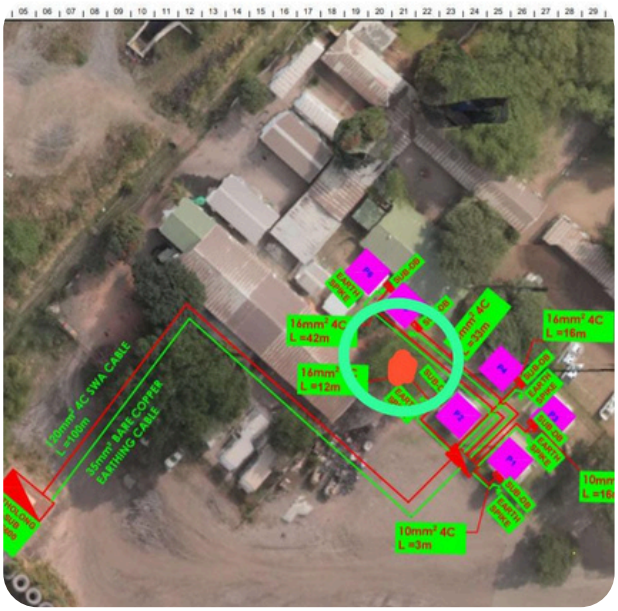
# PREVIOUS PROJECTS

## MCC ONLINE CONDITION MONITORING

MCC Online Condition Monitoring Using Samotics SAM4 Implementation of advanced online condition monitoring system for Motor Control Centre (MCC) operations utilizing Samotics SAM4 technology. This project involved installing and configuring cutting-edge monitoring equipment to provide real-time analysis of motor and electrical system performance, enabling predictive maintenance strategies, early fault detection, and optimized equipment reliability through continuous data analytics and intelligent monitoring capabilities.



## ELECTRICAL DESIGN AND IMPLEMENTATION




**Electrical Supply Design for Parkhomes Design and engineering of electrical supply systems for parkhomes development.** This project involved creating comprehensive electrical infrastructure plans, load calculations, and distribution system layouts to provide safe, reliable, and code-compliant electrical services for residential parkhome facilities, ensuring adequate power supply for all residential requirements and future expansion needs.

ELIAS
CONSULTING ENGINEERS

# CONNECT **WITH US**


+27736479555

wwww.eliasce.co.za

info@eliasce.co.za / selaelo@eliasce.co.za