

# LIVE DUST & ROAD INTELLIGENCE FOR MINE FLEETS

hello@dustscout.com  
dustscout.com

**DUSTSCOUT**   
HAUL ROAD INTELLIGENCE

# Why mine site dust monitoring matters

## Focusing on health, safety and efficiency

Accurate monitoring of dust emissions along haul routes is essential for safeguarding the health and safety of mine workers and nearby communities. Mobile and fixed dust monitoring stations provide reliable data to track site-specific emission levels and support regulatory compliance.

**DustScout** offers a highly efficient solution, enabling real-time detection of dust events and providing actionable insights into haul road conditions — helping operators respond quickly and maintain safer, more efficient operations.

**DustScout** provides effective monitoring of dust emissions generated by haul road traffic — a key contributor to overall dust levels on mining sites. Left unmanaged, this can escalate into serious health, safety, and operational risks.

In addition to dust detection, **DustScout** also monitors track temperature, humidity, corrugation, inclination and potholes in real time, offering valuable insights to optimise road conditions, reduce tyre wear and tear, and improve the efficiency of water truck deployment — ultimately contributing to safer, more cost-effective operations.

In an industrial landscape where dust-related challenges cast a long shadow over mining operations and urban construction, **DustScout** takes centre stage as the ultimate partner. Skilfully integrated onto vehicles, **DustScout** heralds a new era of dust monitoring, characterized by unparalleled agility and adaptability. This revolutionary solution transforms the complexities of monitoring ever-shifting particulate dynamics into a seamless, real-time endeavor.





# Designed and manufactured in Africa, to meet the demands of African mining

## Global expertise, local knowledge

We empower industries, governments, and communities to make informed decisions backed by accurate, real-time data. Our integrated solutions drive operational efficiency, environmental responsibility, and better outcomes across complex industries.

With deep experience working alongside mining operations and environmental agencies, we understand the unique demands of African mining — from harsh climates to remote locations.

**DustScout** has been designed and manufactured in Africa, specifically to meet these challenges. Engineered for durability, mobility, and accuracy, it delivers reliable performance in even the most demanding mining environments across the continent.

Our mission is to tackle dust at its source — on the move, in real time, and with the actionable data operators need to protect people, improve road conditions, and keep operations running efficiently.

## Why DustScout™?

### Comprehensive monitoring of dust, road conditions, and environmental parameters

**DustScout** is a fully integrated mobile monitoring system designed to deliver real-time data on dust levels, road quality, and environmental conditions across mining operations and other heavy-duty transport networks.

With its advanced sensor suite, **DustScout** monitors critical parameters including airborne dust emissions, road temperature, surface corrugation, potholes, and inclination — all while tracking precise vehicle location and movement. This enables operators to gain a complete picture of haul road conditions and environmental performance.

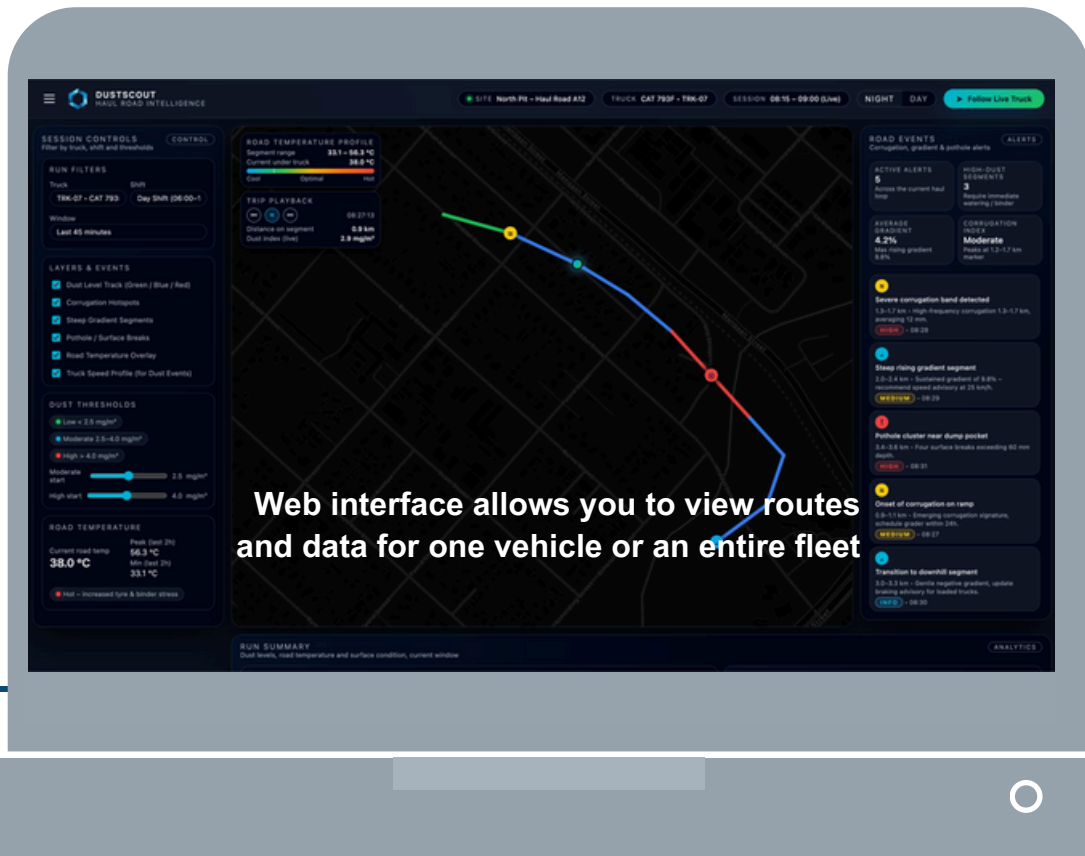
Compact, robust, and built to handle Africa's toughest terrains, DustScout can be easily installed on haul trucks or other mobile assets, continuously gathering valuable operational insights and transmitting them to central monitoring teams.

Users can set custom data collection intervals — from seconds to hourly reporting — and configure threshold alerts aligned to internal health, safety, and environmental requirements or external compliance standards.

All information is processed through our intuitive, cloud-based platform, providing live dashboards, historical reports, and actionable insights accessible from any authorised web-enabled device — supporting proactive maintenance, safety, and regulatory compliance.

# Stay Informed. Act Fast.

Real-time alerts empower your team to take immediate, targeted action — from dust suppression to road maintenance. DustScout helps you stay ahead of hazardous conditions, improving safety, compliance, and operational efficiency.



**Indicates optimal track conditions with acceptable dust emission levels. Acceptable road surface temperature and moisture levels.**

**Indicates marginal track conditions with an increase in dust emission levels. Intervention with water cooling / spraying may be required.**

**Indicates extreme track conditions with potentially hazardous dust emission levels. Immediate intervention required.**

## Traffic light system

Alerts tailored to your site's individual requirements

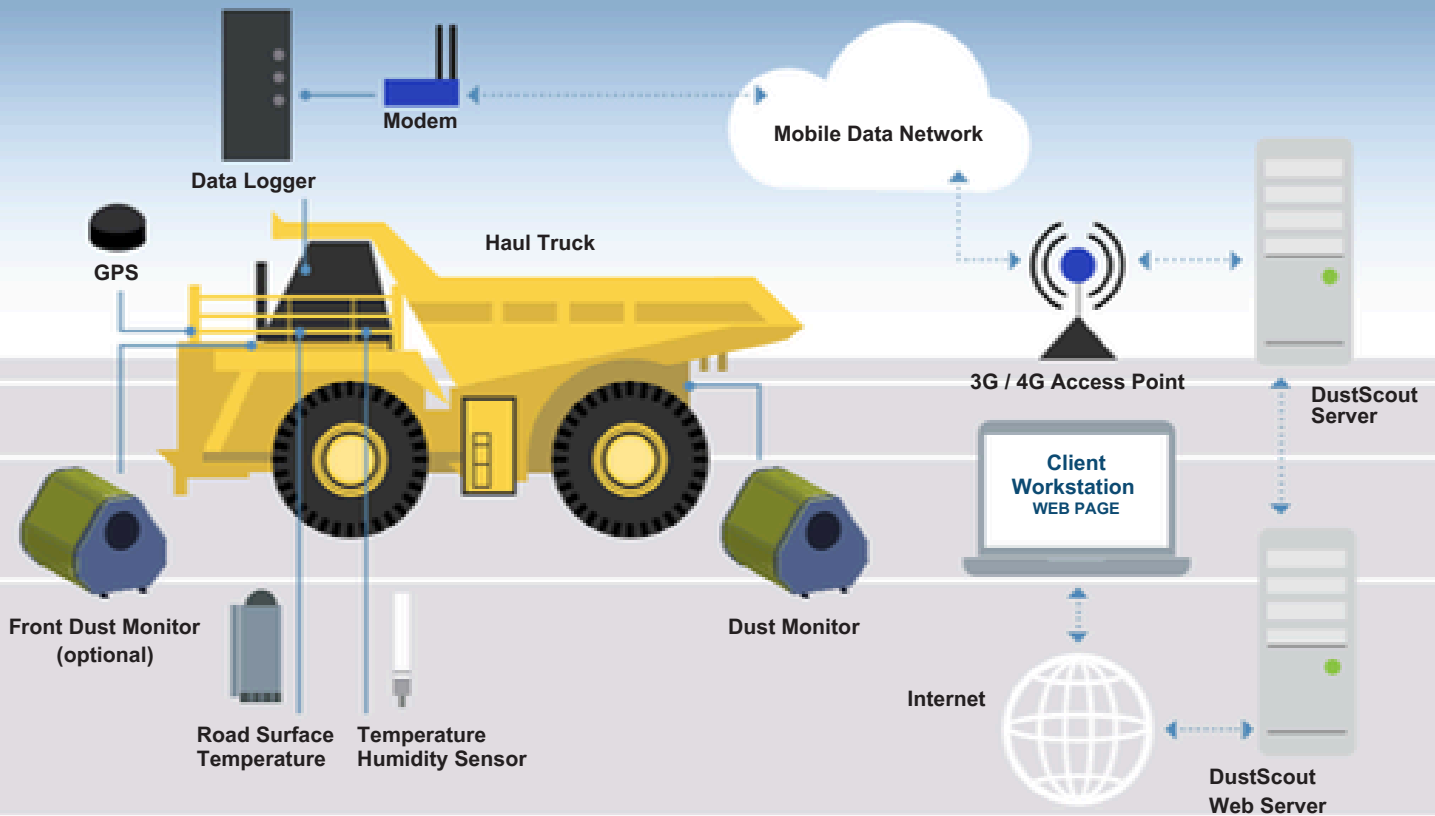
At the first sign of elevated dust levels, DustScout triggers an immediate alert using a simple traffic light system — prompting timely action such as activating ventilation, dust suppression, or other control measures.

The system continuously monitors dust concentration, detecting fluctuations from low to high, with the capability to measure particle sizes down to 0.3 micrometres ( $\mu\text{m}$ ).

This provides accurate, real-time, location-specific data, enabling operators to pinpoint high-risk areas along haul roads and implement targeted dust mitigation exactly where it's needed most.

# Our Architecture

DustScout combines real-time monitoring, smart sensors, and advanced connectivity to give your team complete visibility of dust levels, road conditions, and environmental factors. From predictive dust alerts to live road surface insights, DustScout helps optimise operations, improve safety, and extend the life of your haul roads.



✓	Compact & lightweight
✓	Designed for easy 'set + forget' installation
✓	Robust industry-proof enclosure
✓	Trending tool for accurate location & monitoring information
✓	Simple traffic light alert system
✓	Low maintenance
✓	24 x 7 x 365 support
✓	Suitable for multiple mobile applications

# The **DustScout™** System. Rugged, Intelligent, Ready for Africa

DustScout combines cutting-edge monitoring technology with proven durability, built to deliver reliable, real-time insights even in the harshest mining environments. Designed and manufactured in Africa, DustScout helps operators stay ahead of dust risks, road degradation, and environmental compliance.

## **Dust & Air Quality Monitors**

**DustScout** features robust, high-precision dust monitors that provide real-time data on dust concentration relative to vehicle location — pinpointing elevated dust zones along haul roads and within operational areas. An optional secondary monitor can be installed near the cabin to track ambient air quality within the operator's breathing zone.

## **Integrated Connectivity (3G/4G/5G)**

A ruggedised cellular router ensures all data collected by **DustScout** is transmitted in real-time to our cloud-based platform, enabling remote access to dust levels, environmental conditions, and road quality — anytime, anywhere.

## **High-Accuracy GPS**

**DustScout** is equipped with precision GPS, tracking vehicle position, speed, and route with accuracy. The GPS antenna is easily mounted on the vehicle or securely integrated into the system enclosure, ensuring consistent location data even in demanding terrain.

## **Road surface temperature sensor**

An infrared sensor continuously measures road surface temperature, helping identify wet, dry, or overheated conditions that affect dust control and road stability.

## **Corrugation, Tilt & Pothole Detection**

Our advanced AI-enabled system analyses road surface conditions in real-time — detecting corrugation, potholes, and dangerous inclinations. These insights help reduce vehicle damage, tyre wear, and improve haul road safety and efficiency.

## **Ambient temperature and relative humidity**

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# The DustScout™ Specification

Technical details for performance, durability, and connectivity in demanding environments.

Parameter	Device	Specification
Control enclosure	System	Dimensions: 300mm x 200mm x 80mm Material: Stainless steel
Power	System	Nominal 2.0 A @ 24 VDC $\pm$ 2.5 VDC provides an accurate indication of the dust concentration near the road surface. Other power options available: 12 VDC (current consumption based on system fitted with all options)
Sensor polling rate	Logger	2 seconds
Memory storage	Logger	60 days
Data transmission	Modem	Internal: 3G / 4G
Dust emissions	Monitor	Calibrated range: 0 - 10,000 $\mu$ g/m <sup>3</sup>
Navigation / position	GPS	Units: Decimal Degrees Location Accuracy: 5 meters (with full satellite coverage) Other parameters measured: elevation, speed over ground (SOG), course over ground (COG), signal strength, number of satellites
Road temperature	IR Sensor	Surface Temperature Range: 0 to 100C
Ambient temperature	HMP60	Temperature Range: 0 to 60 OC Analog Output: 0 - 1.0 VDC
Relative humidity	HMP60	Relative Humidity: 0 to 100 % Analog Output: 0 - 1.0 VDC
Operating status	System	Logger: Data download status GPS: Signal quality indicator Dust monitor: Operating status Road surface temperature: Operating status
Data Transmission	3G / 4G Modem	Data push to server: FTP or SFTP Transmissions rate: Data push every 10 seconds Data averaging period minimum: 2 seconds
Operating temperature	System	-10 OC to + 60 OC





At **SentinelData**, we believe that better decisions start with better data. Our mission is to empower industries, governments, and communities with the insights they need to protect people, optimise operations, and manage environmental risks — in real time.

We design and deliver rugged, intelligent monitoring solutions purpose-built for the harshest environments, with a strong focus on Africa's mining, industrial, and infrastructure sectors. From airborne dust and road condition monitoring to advanced AI-driven predictive tools, our technology helps operators stay ahead of health, safety, and environmental challenges.

With **SentinelData**, you're not just measuring — you're managing. Our systems turn raw field data into actionable insights that improve efficiency, reduce costs, and support compliance with global standards. Whether it's through **DustScout**, our AI-powered mobile dust and road monitoring system, or our broader portfolio of environmental technologies, we help you build safer, smarter, and more sustainable operations.

**SentinelData Pty Ltd**  
197 Smit Street  
Fairland  
South Africa

[hello@dustscout.com](mailto:hello@dustscout.com)  
[sentineldata.co.za](https://sentineldata.co.za)

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