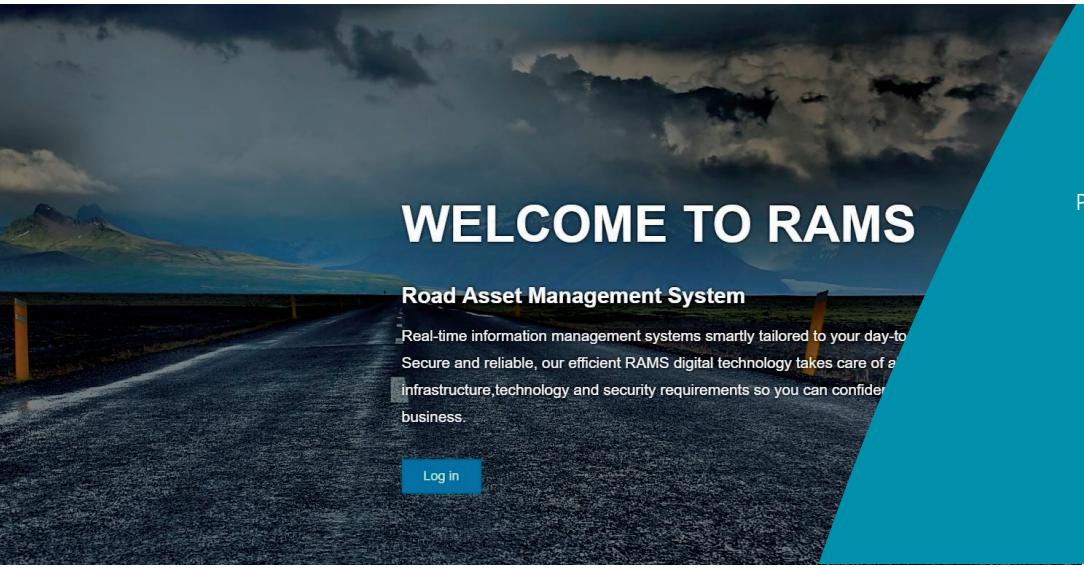
Royal HaskoningDHV
Enhancing Society Together



YOUR COMPLETE LIFECYCLE ROAD ASSET MANAGEMENT SYSTEM

PROUDLY SOUTH AFRICAN, DEVELOPED LOCALLY, IN ACCORDANCE WITH TMH GUIDELINES AND BASED ON SANS ISO 55000

DYNAMIC GEOSPATIAL INTEGRATION

ZA-RAMS: An Integrated Planning Tool

A complete, integrated Road Asset Management Solution

South Africa's road network, as a crucial driver of economic growth, is in a state of disrepair.

Municipalities don't have a clear understanding of the state of their road infrastructure, nor can they pinpoint the reason for deterioration, which could be a result of poor construction, normal degradation patterns, or substandard maintenance.

With a strained fiscus, road operators need to find sustainable and cost-effective solutions to infrastructure challenges, starting with optimising existing assets.

Royal HaskoningDHV's Road Asset Management System (ZA-RAMS) is an integrated planning tool that collects, stores, and presents road data to help municipalities extend the life of their assets through improved maintenance planning.

The system's ability to rapidly analyse data gives decisionmakers access to real-time road network information, allowing them to prioritise the road maintenance budget.

TMH guidelines and industry standards are embedded within our locally developed ZA-RAMS Road Asset Management Software, a solution architected by qualified pavement and geo-metric design domain experts.

With the convergence of these specialists and our systemic approach to problem solving, we are able to provide our clients with a holistic infrastructure asset management solution developed around our local conditions, supporting maintenance and lifecycle asset management.

ZA-RAMS features include:

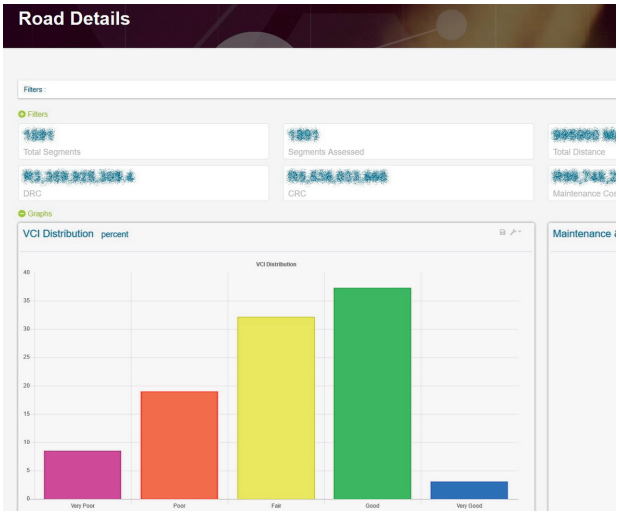
Real-time monitoring, reporting, and spatial integration

Intuitive dashboards provide real-time access to critical insights and information, allowing for the interactive assessment of the road network information through a GIS interface.

Reports can be easily compiled and exported to PDF from within the system. It can also be configured to send out automated emailed reports and SMS notifications at specific time intervals to users monitoring the system, or managers monitoring project progress.

Each road asset is mapped, and thematic schemes applied to indicate the location of road outputs of the various RAMS analyses. Designated reports based on the TMH and TRH guidelines come preconfigured with dynamic filters to view the data as the user requires.

Superior data management



Superior data management and quality

Data quality and management is a fundamental part of ZA-RAMS and informs the system's outputs.

As such, it supports the following quality assurance processes:

- Use of national standards for RAMS data,
- Training and calibration of field data collection teams,
- Formalised data collection forms and hardware,
- Secure database storage, and
- Data quality control and verification

Mobile data collection

ZA-RAMS efficiently collects data via two mobile applications – Mobenzi and MOBICAP – which automatically import information into the system.

Importing the Road Network Definition (RND) as well as the road furniture can be done in the Road Inventory Module (Shapefile / KML). ZA-RAMS supports integration with external software via APIs, CSVs, and other sources.

Data can be exported according to the TMH data formats specification, in a range of file formats including KML/KMZ, RCL, VCF/VCC/VCB, CSV, XLSX, shapefiles, and PDF.

More than a traditional Pavement Management System, ZA-RAMS supports additional functionality, including:

- Bridge and culvert assessments,
- Visual condition assessments,
- Borrow pit assessments,
- Road sign assessments,
- Data collection for roadside furniture,
- Road network verification, and
- Maintenance actions

Additional features and capabilities include:

- Fully compliant with South African standards and legislation,
- Developed in accordance with TMH guidelines,
- Based on SANS ISO 55000,
- Web-based, database-driven, and accessible from desktop PCs and mobile devices
- Flexible, scalable, and frequently updated,
- Efficient and intuitive, and
- Ability to drill down into hierarchical data for provinces, districts, wards, and towns.

Visit www.royalhaskoningdhv.com for more information or contact Rene Pearson at rene.pearson@rhdhv.com or on 083 777 2246.