

Mega Sabeka Residue Storage Facility, South Africa



PROJECT SUMMARY

PROJECT NAME: Mega Sabeka Residue Storage Facility

PROJECT DATE: 2021

CLIENT: Tronox Fairbreeze Mine

CONSULTANT: SRK Consultants

CONTRACTOR : Fairbreeze Mine

INSTRUMENTATION SPECIALIST: Terra Monitoring



OVERVIEW

The KZN Sands mining operation is located at Empangeni KwaZulu Natal, South Africa.

The Fairbreeze Mine uses hydraulic mining techniques to mine slurry that is later transported to the primary wet plant at the mine to produce a heavy mineral concentrate (HMC). The HMC is then transported to the Empangeni Smelter Complex for mineral separation followed by beneficiation processes to produce zircon, rutile and ilmenite. Ilmenite is later reduced into high titania slag and low manganese pig iron.

The Mega Sabeka Residue Storage Facility (MSRSF) sand walls are the main containment measure for fine tailings deposited in this facility and as such it is of paramount importance that the phreatic levels within the sand wall and pore pressure within their underlying foundation be closely monitored to verify the seepage flow, pore pressure regimes and associated stabilities.

MONITORING

Seven instrumentation lines that each consist of two vibrating wire piezometers and one five channel node were installed to monitor porewater pressure. The nodes transmit data by long range radio to a single Gateway. The data is accessible remotely and can be accessed and downloaded by the engineers through the WI-SOS 480 Web centre.

Due to the size and topography of the mine site, the Geosense WI-SOS 480 wireless observation system is an excellent solution allowing the installation engineers to confidently install the network without the risk of transmission issues between sensor locations and the Gateway.

PRODUCTS USED

VWP - 3300 Vibrating Wire Piezometer
Used to measure pore pressure.

Vibrating Wire Node 5 Channel
Used to read the vibrating wire piezometers.

Gateway
Used to communicate with the nodes and store the data. Provide an internet connection for the client to connect remotely to download the data