

PROJECT DESCRIPTION

Boteti Mining Ltd.

South Africa



Karowe Mine, located approximately 16 kilometers (km) southwest of the town of Letlhakane, is a diamond mine where the second largest diamond ever found on record, with a weight of 1,111 carats, was discovered. This project involved simulating mine dewatering and excavation to evaluate future dewatering requirements, as well as providing guidance for future monitoring borehole and piezometer designs.

ITASCA'S ROLE

Based on available geologic, pumping, and water-level data, Itasca developed a conceptual hydrogeologic model of the Karowe Mine. This conceptual model was then used as the basis for the development of a *MINEDW* three-dimensional groundwater flow model for Karowe Mine. The groundwater flow model was calibrated to water-level and pumping data at the site. Subsequently, Itasca used the groundwater flow model to provide estimates of seepage, dewatering requirements, and water-levels to Karowe Mine to aid in the development of the Karowe pit. In addition, Itasca provided guidance for future monitoring borehole and piezometer designs in order to help Karowe Mine personnel monitor water levels and compare with target water levels.

PROJECT RESULTS

The results were used by Karowe Mine to plan for dewatering requirements over the life of mine plan. In addition, strategic piezometers were recommended to help improve the confidence level of the predicted dewatering requirement.

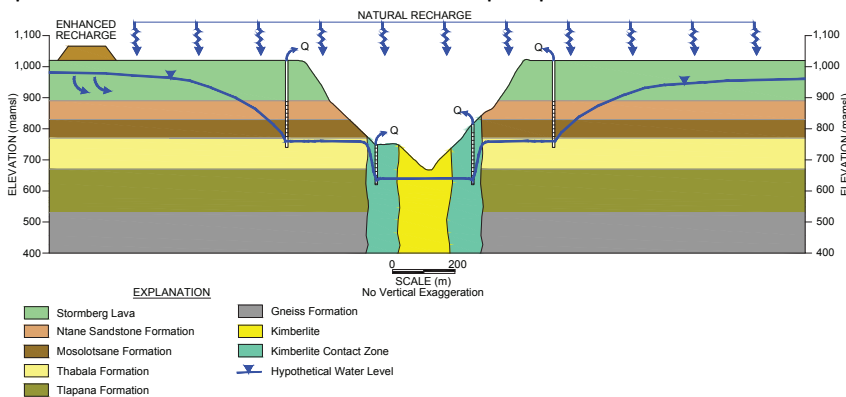


Figure 1. Hydrogeologic Conceptual Model of Karowe Mine



Figure 2. 1,111 Carat Type IIa Karowe Diamond

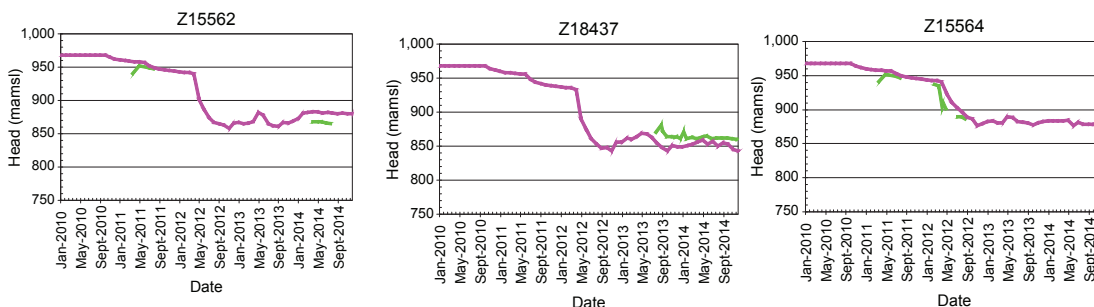


Figure 3. Simulated Versus Observed Groundwater Heads

— Observed — Simulated