

Ecologists open shop

Golder Associates has placed three of 15 ecologists in its new Lydenburg office, an area with a strong need for ecological services owing to the development of rich platinum, chrome, nickel and coal reserves in the region. "As a result, Golder decided it would make sense for us to become a part of the landscape that we are working in so often," says senior ecologist, Johan Engelbrecht.

Together with Engelbrecht, senior wetland ecologist, Anton Linstrom and, senior ecologist, Koos de Wet specialise in five main niche areas, namely terrestrial ecology, aquatic ecology, ecological surveys, wetland ecology and biodiversity services. "The Lydenburg team is equipped with the resources to give advice on measures to mitigate the impacts of development on the environment and to protect the environmental integrity of our clients in all of these areas," says Linstrom. "Almost 80% of the Mpumalanga highveld is affected by mining activities, and the public is fast becoming more aware of this situation."

The range of ecological services provided to mainly mining and industrial clients includes comprehensive baseline surveys, which include vegetation, fish, macro-invertebrates, mammals, birds, amphibians and reptiles. The team applies innovative techniques to develop biodiversity action plans, rehabilitation and river or wetland restoration plans and endangered species rescue and reintroduction programmes.

The team's recent Matla project for Exxaro's Matla coal mine, some 20 km west of Kriel in Mpumalanga, saw the team's work and expertise reducing the impact of underground, short-wall mining activities on the functionality and biodiversity of the wetland directly above the operation.

Golder's involvement related to the design and implementation of a river diversion and the management and monitoring of the wetland above the undermined area. The river diversion was changed in places to accommodate sensitive ecological areas and to make provision for the migration of small-scale, yellow fish by using breeding pools above and below the gabion fish ladders. Additional conservation measures involved the elimination of cattle grazing in the wetland area and the repopulation of the area with small game species.

The team's ecological survey capabilities include in-field surveys for environmental baselines and limno-ecological surveys for aquatic, terrestrial and wetland ecology. In addition to its survey offering, the team offers the direct estimation of ecological effect potential, reserve determination, in-field microcosm and mesocosm studies, sediment characterisation and bio-geomorphology, habitat assessment and carrying capacity calculations and surveys.

What's more, the team's terrestrial ecology service offering includes comprehensive fauna surveys, the Sherman and camera trapping of mammals, vegetation surveys using adapted belt-transects and satellite image processing and phyto-remediation through the use of hyper-accumulation trees, covers and wetlands for biological pollution control. In addition, the team is able to cut off a receptor from its source via geochemistry and groundwater modelling. "Certain South African scoring system bio-monitoring and ETP macro-invertebrate surveys pick up certain toxicity that cannot be determined through chemical testing," explains Otto.

"A specialist terrestrial study conducted for an opencast mine in the Burgersfort area resulted in the Lydenburg team proposing measures for the conservation of the critically-endangered Euphorbia shrub, which is found in close vicinity to the mine," says De Wet. "This client specifically went with the Lydenburg team as we have an intimate and in-depth knowledge of the area."

The trio's aquatic ecology capabilities are at the cutting edge of this field, with electro-fishing capabilities using three sets of Smith Root apparatus, allowing for safe and effective fish surveying without any ill effects for aquatic organisms. "Surveying a specific habitat requires a highly-trained eye and the ability to understand the sensitivity of each area," adds Otto. Golder Associates' ecological services team is at the forefront of ecological conservation through the preservation of Red Data and critically-endangered flora and fauna, as well as the identification of a new critically-endangered species of small fish – the shellear Kneria.

The ecological services team works closely with Golder Associates' in-house team of water resource and geotechnical engineers, social scientists and other environmental professionals. "Our multidisciplinary experience ensures that ecological issues are considered within the framework of the overall project goals. We pride ourselves in providing solutions," concludes Engelbrecht.