

INGULA PUMPED STORAGE SCHEME

Introduction

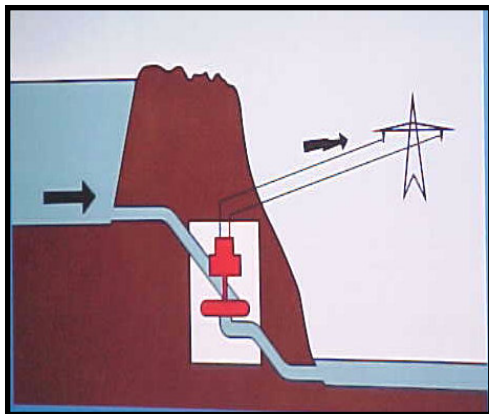
Prerequisites for a pumped storage scheme are favourable geology, availability of water and dam sites that are located relatively close together but with significant difference in altitude. Eskom initiated a study on suitable sites for a pumped storage scheme in the 1980's. Initially more than 90 potential sites were investigated, culminating in the short listing of three sites. The final selection was a site north-east of Van Reenen's Pass, spanning the escarpment of the Little Drakensberg and straddling the provincial boundary of the Free State and KwaZulu-Natal. This is also the continental watershed between the Vaal River, flowing into the Atlantic Ocean, and the Thukela River catchments, flowing into the Indian Ocean.

History behind the name Ingula

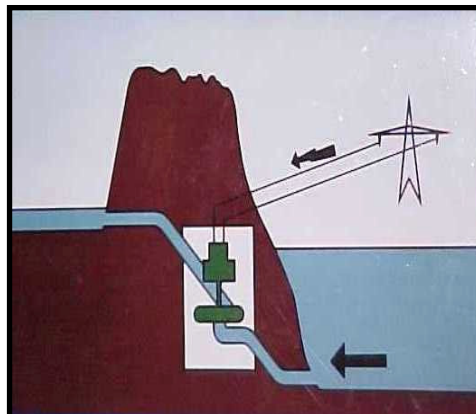
The name change from Braamhoek to Ingula was officially announced in March 2007. Ingula alludes to the creamy contents at the top of a milk calabash. The quest to find an appropriate name for Ingula Power Station was inspired by the mountains and the river waters, which represent the rich cultural symbols and traditions of the indigenous people on both sides of the border.

The scheme

The pumped storage scheme consists of an upper and a lower dam, each capable of holding approximately 22 million cubic metres of water. The dams, 4.6km apart, will be connected by underground waterways passing through an underground powerhouse with four 333 MW generators. To generate electricity during times of peak demand, water will be released from the upper dam and pass through the pump/turbines into the lower dam. During times of low energy demand the pump/turbines will be used to pump the water from the lower dam back to the upper dam.

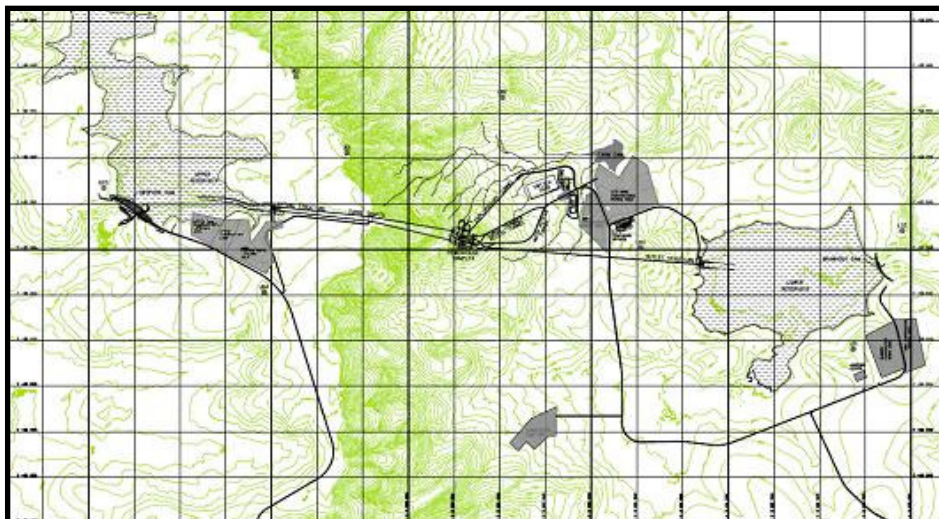


Generating cycle



Pump cycle

Operation of a pumped storage scheme



The two dams will be connected by a series of tunnels passing through the escarpment.

The environment

Eskom has taken a decision to manage the area surrounding the dams and construction sites as a conservation area. This area, located in both the Free State and KwaZulu-Natal, is of significant value as a source of water for the highveld and serves as a habitat for a variety of plants, birds and animals. A team of full time, professional environmentalists monitor all activities on site, ensuring all legal requirements are met and that the project operates within the terms of the government authorisation.

Conservation

The Eskom conservation site, together with the cooperation of landowners in the district, may form the core of a larger conservation area protecting the moist, high grasslands of the eastern Free State and northern KwaZulu-Natal.

A partnership between Eskom, BirdLife South Africa (BLSA) and the Middlepunt Wetland Trust (MWT) was launched in March 2004. The aim is to generate benefits at international, national, regional and local levels to offset the negative impacts of the construction and operation of the pumped storage scheme. This will be done by effectively managing the impacts of the scheme on the environment and projects related to the area.

Birdlife: More than 230 species of birds have already been sighted at Ingula. One of these, the Wattled Crane, is among the top five endangered birds in terms of regulations issued in the National Biodiversity Act.

Wildlife: The threatened Oribi occurs on site and grey rhebok and steenbok are also present. Historically, the site has been heavily utilised by livestock and large tracts of erosion can be seen. Livestock numbers have been reduced and eroded areas will be rehabilitated. The area has also been subject to high intensity poaching and illegal plant harvesting. Through the development of a protected area, it is hoped to increase numbers of animals on site and, in a secure environment, establish viable populations. A reduction in unsustainable activities will improve general conditions on site.

Wetlands: Wetlands on the property serve as a continual supply of water to the Wilge River and springs flow throughout the year. The wetland system is host to a variety of species and is in need of protection following years of overgrazing and inappropriate burning. The formal conservation of the Wilge River and associated wetlands will be explored in conjunction with the Free State Department of Tourism, Environmental and Economic Affairs. Rehabilitation done in the past will be continued and the sustainable functioning of the wetlands ensured.

Grasslands: Grasslands are the ecosystem most in need of conservation attention in South Africa and it is hoped this area will go some way towards conserving a representative part of this system. The cooperation of landowners, possibly through the development of a conservancy, will ensure an improved environment in the area and will lead to the development of communities in the area, from both a social and an economic perspective.

Rehabilitation: In addition to the wetlands, there are a variety of habitats on the property, including grassland slopes and mountain forests, all with a large number of plant species. Harvesting opportunities will be explored and, if appropriate, sustainable programmes implemented. Programmes to remove vegetation in the construction sites have been initiated. These plants will be used during rehabilitation and opportunities for propagation are being investigated.

Ecotourism: As part of the conservation programme, a network of walking and hiking trails will be developed and other ecotourism opportunities investigated and implemented. These include campsites, river trails, birding and cycling. Marketing of the area may lead to an increased demand for accommodation, an opportunity for surrounding landowners and members of the conservancy.

Sustainability: The site aims to be an internationally renowned sustainable conservation area and all activities on site are carried out with this long-term objective in mind.

The project is scheduled to come on-line during 2013, with a unit being commissioned each quarter of that year.

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