Biodiversity mainstreaming at Ingula Pump Storage Scheme

Eskom Holdings SOC Ltd (Eskom), South Africa's state-owned power utility, generates approximately 95% of the electricity used in South Africa and approximately 45% of the electricity used in Africa. The focus of this case study is Eskom's Ingula Pumped Storage Scheme (hereafter referred to as Ingula), which is located within the Little Drakensberg mountain range, 55 km north of Ladysmith. The infrastructure is composed of an upper dam (Bedford), situated in the Free State, and a lower dam (Braamhoek) and reservoir residing in KwaZulu-Natal. The escarpment forms the border between the two provinces. The reservoirs are connected through underground waterways to an underground powerhouse complex, which houses four 333 MW pump turbines, with a total capacity of 1 332 MW, as well as four generator transformers. Ingula also harbors Eskom's flagship conservation site, a formally declared nature reserve which is just under 8000 hectares.

What is the business case for biodiversity at Ingula? Why biodiversity matters to Ingula.

Spanning across two provinces, Ingula's important grassland and wetland habitats are home to a number of threated species, such as Oribi (*Ourebia ourebi*) and Grey rhebok (*Pelea capreolus*). Around 1 000 hectares of wetlands supply water to the Wilge River throughout the year. The Bedford/Chatsworth wetland area is recognised by BirdLife South Africa as an 'Important Birding Area' (IBA). Yet, the site was mismanaged, with years of inappropriate burning and overgrazing resulting in the degradation of grasslands and large tracts of erosion.

What are Ingula's biodiversity impacts and dependencies?

On the one hand, grassland and wetland habitats supply the water needed by the Ingula Pumped Storage Scheme. Their restoration and appropriate management is essential to Ingulas's sustainability. On the other hand, the infrastructure can potentially negatively impact the biodiversity on site as well as on the supply of various ecosystem services (e.g. stream flow, base flow, water quality) to beneficiaries downstream of the catchments.

What strategy and action plan have Ingula adopted towards biodiversity?

During construction of the Pumped Storage Scheme, a team of full-time, professional environmentalists monitored all activities and ensured that all legal requirements were complied with. Following the environmental impact assessment process, Eskom then decided to reduce livestock pressure on site, and efforts are being put in place to rehabilitate and stabilize eroded areas. The area surrounding the dams and infrastructure are managed as a conservation area. In June 2017, 8 000 hectares of land were formally declared nature reserve. This protected area, as well as cooperation of neighbouring land owners, aims to form the core of a larger conservation area protecting the high altitude grasslands of the eastern Free State and northern KwaZulu-Natal.

Ingula has also partnered with various non-governmental organisations to assist with the management of the nature reserve and to protect biodiversity on site. For example, a partnership between Eskom, BirdLife South Africa and Middelpunt Wetland Trust aims to aims to expand awareness of threatened bird species. More than 300 bird species have already been sighted at Ingula. One of these, the Wattled Crane, is among the three critically endangered birds according to the National Biodiversity Act. Eskom has also involved the Endangered Wildlife Trust in various projects, such as donating Livestock Guard Dogs to community members on site to protect their livestock from predators.

Does Ingula monitor and improve its biodiversity performance?

Ingula was the first Eskom construction site to receive ISO14001 certification in March 2011. Eskom monitors progress on the execution of its Biodiversity Implementation Plan via the following key performance areas and their respective indicators as per the following table.

Key Performance Area	Key Performance Indicators
Legal Compliance	Number of legal contraventions that occur in relation to biodiversity
Alien Invasive Species Implementation plan	Compilation, submission and implementation of Eskom Control Plan as per the Department of Environmental Affairs requirement
Reduction in Bird Mortalities	Red Data Bird Mortalities recorded on Eskom infrastructure through collision or electrocution
	Distribution Wildlife Interactions Score (Composite Index)
	Transmission Wildlife Interactions Score (Composite Index)
Game Management Plans for all relevant Eskom Real Estate or Generation sites	Number of game management plans drafted, implemented and monitored

Contact details:

Mr Kishaylin Chetty

Senior Environmental Advisor

Biodiversity Centre of Excellence, Environmental Management, Sustainability Division, Eskom

Work: +27 (0)11 800 2559

Cell: +27 (0)82 516 1046

Fax: +27 (0)86 767 3046