

1. INTRODUCTION

1.1. The Purpose and Need for the Proposed Project

The Witkop Substation (near Polokwane) is the main substation supplying electricity to major parts of the Limpopo Province. This substation is currently supplied with electricity via the No 1 400 kV Transmission line from the Matimba Powerstation (near Lephalale), as well as via a 400 kV Transmission line from Merensky Substation at Steelpoort in the Lowveld area. Witkop Substation supplies three 275 kV transmission substations in the Limpopo Province, namely Tabor, Spencer and Warmbad Substations (refer to Figure 1.1 below). These three substations, together with Witkop Substation, form what is known as the Polokwane Customer Load Network (CLN). Polokwane CLN supplies electricity to mines, industries, businesses, farms and homes from Bela-Bels (formerly Warmbaths), Modimolle (formerly Nylstroom), Mogalakwena (formerly Potgietersrus), Polokwane, Tzaneen and Musina (formerly Messina). The peak electricity load required in the Polokwane CLN area is expected to increase significantly within the next year due to the emergence of new mines in the area as well as the expansion of Polokwane and surrounding towns.

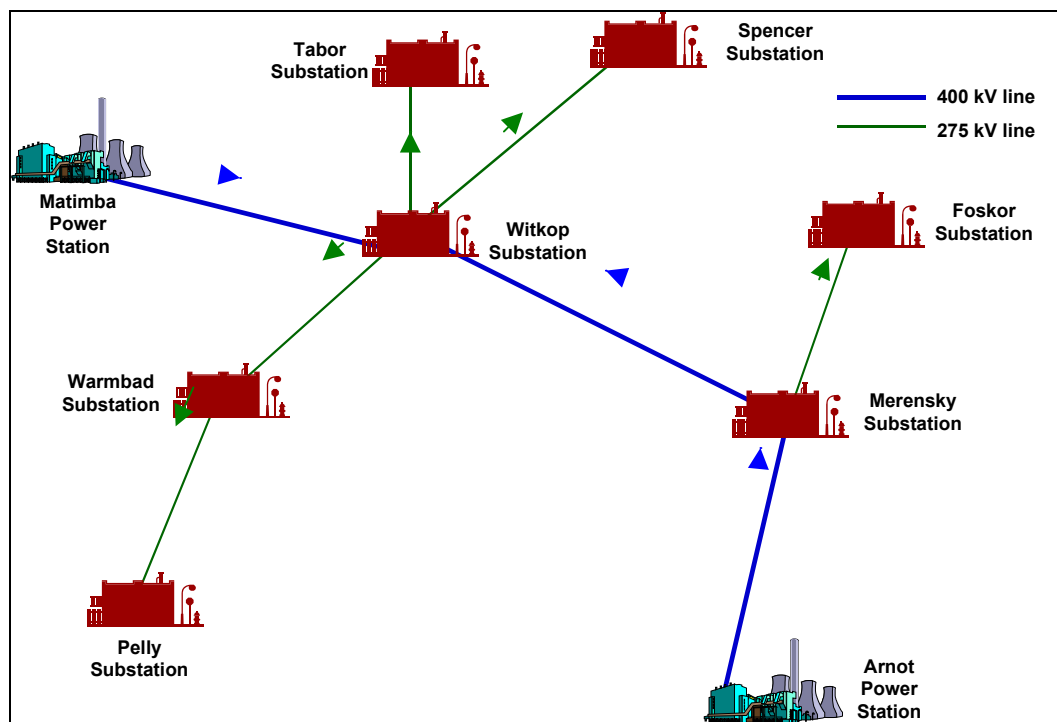


Figure 1.1: Existing transmission network within the Limpopo Province

The temporary loss of power transmission through one of the existing 400 kV Transmission lines supplying Witkop Substation due to failure (as a result of thunderstorms, veld fires, trees, birds, etc.), or the line being temporarily taken out of service for maintenance will result in power-outages, as one 400 kV

Transmission line alone cannot supply the required load, due to the voltage limits experienced at Witkop Substation.

The current status of the transmission network to the Polokwane CLN is clearly not ideal to satisfy the electricity requirements of the customers in the area. Therefore, additional Transmission capacity is required in this area to:

- a) reinforce the local transmission network's reliability by ensuring a back-up supply to the area,
- b) maintain quality of supply to customers supplied from Witkop Substation, and
- c) meet the escalating electricity demands in the greater Polokwane area.

In situations like this, Eskom Transmission considers all possible network reinforcement options to alleviate the supply problem. On occasions, it may be possible to reinforce the transmission network without erecting new lines or cables, through technological improvements which permit the existing transmission network to be worked harder. However, in some cases additions to the network are required. The technical, financial and environmental implications of all possible solutions are assessed before making the final decision. Ultimately, the most cost-effective solution that satisfies the customer requirements is chosen.

The expenses incurred by consumers when their electricity supply is interrupted is the primary motivation for Eskom to expand the network in order to improve the reliability of their electricity supply. The loss of production or revenue for businesses, expenses to repair damaged equipment, the losses and inconvenience caused for residential customers are all considered in determining the loss to the country's economy when electricity is interrupted. The criterion used to economically justify "electricity supply reliability enhancement projects" is based on the "least cost concept". In other words, the criterion says that "*a network expansion project should be implemented when the extra costs incurred by Eskom for owning and operating the new assets is less than the expenses incurred by the customers due to electricity supply interruptions if the project is not implemented.*"

1.2. Background to the Project

An Environmental Impact Assessment was undertaken the construction of a second 400 kV Transmission line between the Matimba Substation (located near Ellisras) and the Witkop Substation (located near Polokwane) (Bohlweki Environmental, July 2002). The nominated preferred alignment identified through the environmental impact assessment process followed the existing Matimba-Witkop No 1 400 kV Transmission line (referred to as Corridor 1 in the EIA; refer to Figure 1.2). A Record of Decision was received from the National Department

of Environmental Affairs and Tourism (DEAT) for the construction of the Matimba-Witkop No 2 400 kV Transmission line along this alignment.

During the negotiations undertaken by Eskom Transmission to secure the servitude for the construction of the new Transmission line, Eskom have not been able to obtain servitude rights across the following farms, which make up Rhinoland:

- George IV 523 LR,
- Boschdraai 524 LR,
- Montague 520 LR,
- Swea 528 LR,
- Klavervley 529 LR, and
- Portions of Johannesburg 529 LR

Due to the urgent requirement for the construction of the second 400 kV Transmission line between the Matimba and Witkop Substations (as outlined in 1.1 above), Eskom Transmission have explored the possibility of utilising the other alternative corridors considered within the environmental impact assessment undertaken in 2002. Due to limitations identified within that study, Eskom Transmission have now proposed the use of a combination of the two corridors investigated within the EIA, together with an alternative "deviation" alignment in an attempt to avoid hot-spot areas identified within the EIA. Therefore, this new alignment under consideration for the construction of the second Transmission line was not considered within the EIA in its totality, and this addendum considers the use of a short deviation alignment.

This new alignment proposes the construction of the Transmission line parallel to the existing Matimba-Witkop No 1 400 kV Transmission line from Matimba Substation to the Farm Windsor Castle 493 LQ. Thereafter, the Transmission line is proposed to be constructed parallel to the northern boundary of the Elliras-Marken Road (R518) up to Setateng. At Setateng the proposed alignment crosses to the south of the R518, crosses the Lephhalala River and then turns southwards to run parallel to and to the west of a gravel road which links Setateng and Overysseel from the Farm Kroonstad in the north to the Farm Nachtwacht in the south (approximately 15 km). From this point the alignment is proposed to cross the Lephhalala River onto the farm Johannesburg, from where it follows the river course (for approximately 6 km) until it reaches the existing Matimba-Witkop No 1 400 kV Transmission line (refer to Figures 1.2 and 1.3).

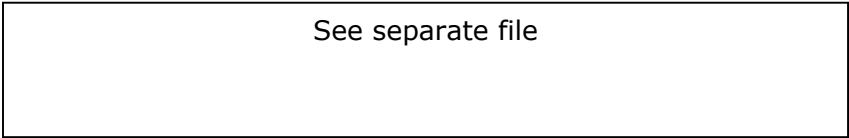


Figure 1.2: Basemap of the study area showing Transmission line Corridors 1 and 2 considered in the EIA undertaken for the Matimba-Witkop No 2 400 kV Transmission line, as well as the proposed alternative alignment

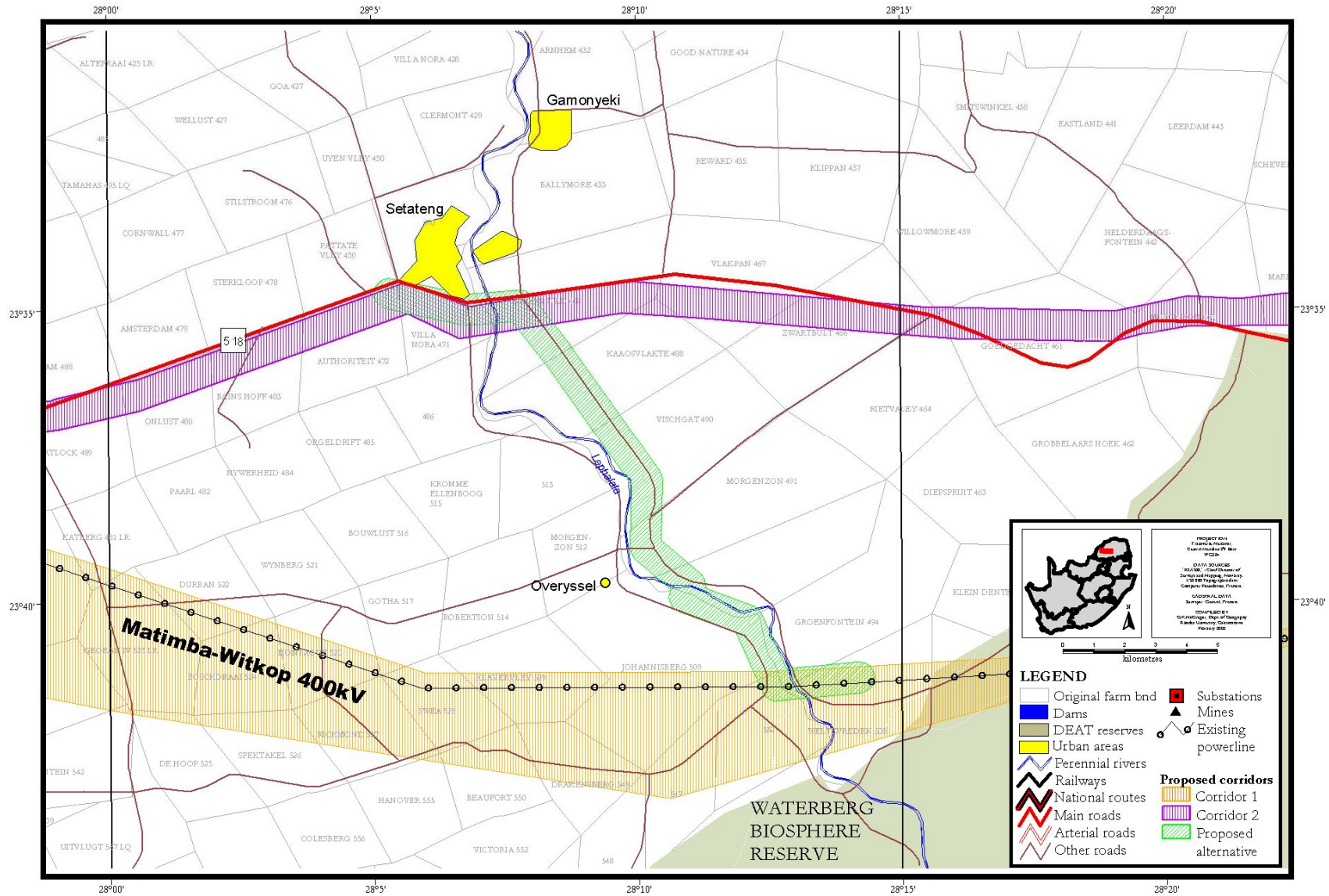


Figure 1.3: Basemap showing the proposed alternative Transmission line alignment from Setateng along the Lephalala River to the Farm Johannisberg 509 LR