

# ENVIRONMENTAL IMPACT ASSESSMENT

for the proposed construction of

## TWO 400 kV TRANSMISSION LINES AND TWO SUBSTATIONS BETWEEN HENDRINA – PRAIRIE – MARATHON, IN THE MPUMALANGA PROVINCE



SEF CODE: 501096

DEAT Ref Nrs: (12/12/20/915) & (12/12/20/959)

### BACKGROUND INFORMATION DOCUMENT (BID) & INVITATION TO COMMENT

FIRST DOCUMENT FOR COMMENT

JUNE 2007

#### PURPOSE OF THIS DOCUMENT

The purpose of this document is to:

- Provide an overview of the proposed Eskom Transmission Lines and substations, between the Hendrina and Prairie substations, and Prairie and Marathon substations, located in the Mpumalanga Province (Refer to attached locality map: Proposed Hendrina-Prairie-Marathon 400 kV Line)
- Indicate how you, as an Interested and Affected Party (I&AP), can become involved and contribute your comments and concerns in the Environmental Impact Assessment (EIA) process to be followed for the proposed Transmission Lines and substations

#### LOCATION AND ALIGNMENT

Eskom proposes to construct the Hendrina – Prairie – Marathon Transmission Lines between Hendrina and Machadodorp substations, and Machadodorp and Nelspruit. The proposed 400 kV Transmission Line between the Hendrina and Prairie substations will cover a distance of approximately 85 km, and the 400 kV Transmission Line between Prairie and Marathon substations will cover a distance of approximately 100 km. In addition to the two 400 kV Transmission Lines, Eskom proposes to construct two new 400 kV substations at, or near, the existing Prairie and Marathon substations. The location of the existing substations, including their alternative locations, are given below:

##### *Existing substations*

- The existing Hendrina substation is located at Hendrina Power Station 162IS/R, and is situated approximately 17 km north-west of the towns Hendrina and KwaZamokhule,
- The existing Prairie substation is located on the farm Schoongezicht 364JT/4, and is situated approximately 5 km south of the town of Machadodorp, and
- The existing Marathon substation is located on the farm Marathon 275JT/R, and is situated approximately 9.5 km north-west of Nelspruit.

##### *Alternative locations for the proposed substations*

###### *Prairie B Substation:*

- Alternative 1 is located on the farm Dalmanutha 376JT/3, and is situated approximately 10km south of the town of Machadodorp,
- Alternative 2 is located on the farm Zevenfontein 388JT/2, and is also situated approximately 12 km south-west of the town of Machadodorp,
- Alternative 3 is located on the farm Schoongezicht 364JT/3, and is situated approximately 5 km south of the town of Machadodorp.

###### *Marathon B Substation:*

- Alternative 1 located on the farm Marathon 275JT/R, and is situated approximately 10 km north-west of Nelspruit, and
- The proposed Marathon B substation (Alternative 2) is located on the farm Boschrand 283JT/14, and is situated approximately 8 km north-west of Nelspruit.

Eskom is in the process of determining alternative routes for the Transmission Lines between the substations, and the EIA process aims to provide a final route selection of the Transmission Lines based on social and environmental considerations.

## **PROJECT MOTIVATION**

### **Introduction**

Electricity cannot be stored, it is therefore necessary to generate and deliver power over long distances at the very instant it is needed. Kilometres of high voltage Transmission Lines transmit power, mainly from the power stations located at the Mpumalanga coal fields to major substations around the country. At these substations voltage is reduced for distribution to smaller substations, from where the electricity is distributed to industries, businesses, homes and farms throughout the country.

Eskom has to supply power reliably to meet the increasing needs of end-users. Therefore, Eskom has to expand and establish its infrastructure of Transmission Lines and substations on an ongoing basis.

The substations have to be built while maintaining the balance between satisfying the society's needs and environmental constraints.

### **The need for additional transmission capacity in the Highveld North and Lowveld areas**

The Highveld North network comprises of Arnot Power Station and Prairie substation and the network comprises mainly of 275 kV Transmission Lines. The existing Arnot-Prairie Transmission Line that supplies electricity to the Highveld North areas of Mpumalanga cannot reliably support the existing load during outages. In addition, with the current demand in the Highveld North and the Lowveld areas, there may be a risk that the demand exceeds the supply; which would ultimately result in load shedding. As a result, Eskom identified the need to strengthen the existing Transmission system between the Hendrina and Prairie substations in the Highveld North area by means of building a 400 kV Transmission Line between Hendrina and Prairie. The anticipated growth in the mining industry also serves as a further motivation for the proposed upgrade.

Prairie substation supplies electricity towards the Lowveld area at Marathon substation. Similarly to the Highveld North area, there may be a risk that the demand exceeds the supply in the Lowveld area; which would result in load shedding. The proposed Prairie-Marathon line is the only feasible alternative to ensure continuous supply is achieved in the Lowveld area. The expected growth in the mining, residential and economic spheres serves as a further motivation for the proposed Prairie-Marathon Transmission Line.

Based on the above and the anticipated growth around the Prairie substation, there is a need to establish a new 400 kV substation to ensure continuous supply to the end-users. The upgrade of the existing substations was considered as an alternative; but due to space constraints and reliability issues this option was found to be impractical.

The aim of the proposed project is to ensure that adequate power transfer into the Highveld North area is achieved. The abovementioned facts support the need for two additional 400 kV Transmission Lines between Hendrina and Prairie and Prairie and Marathon.

### **Project Benefits**

By strengthening the electrical supply into the Highveld North and Lowveld area, the foreseen load growth as well as the current constraints can be supported in a reliable and economical way.

The advantages of the newly proposed Transmission Line include:

- Avoid current and future possible voltage collapse,
- Creation of a more flexible electrical network,
- Improvement in the overall reliability of the electrical systems, which will be of benefit to both Eskom and to all electricity users in the region, and
- Sustain economic growth in the Highveld North and the Lowveld area.

### **Project Phases**

The establishment and operation of the proposed Transmission Line consists of the following phases:

- Identification of need
- Power system planning
- Environmental impact assessment
- Route selection
- Negotiation
- Surveying
- Construction, and
- Operation and maintenance.

### **EIA Project Phases**

The establishment and operation of the proposed Transmission Lines will consist of the following three phases:

**Phase 1:** This consists of the Scoping phase, characterised by the initiation of the public participation process, and also includes the scoping of issues for the various specialist studies that will be conducted. The Plan of Study for the Environmental Impact Assessment is also compiled and submitted to the lead authority, the national Department of Environmental Affairs and Tourism (DEAT), for approval,

**Phase 2:** Integration of the findings of the specialist reports into the EIA Report and the draft Environmental Management Plan (EMP), which will also be submitted to DEAT for final decision making, and

**Phase 3:** This phase includes the compilation of the final EMP, subsequent to the receipt of the environmental authorisation.

## **ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

### **National Environmental Management Act, 1998 (Act No. 107 of 1998)**

The National Environmental Management Act, 1998 (Act No. 107 of 1998) identifies the construction and operation of the proposed Transmission Lines and substations as activities that may have significant detrimental effects on the environment. Hence, an environmental impact assessment has to be undertaken in order to ensure that potential environmental impacts, are taken into consideration.

### **Box 1: Listed activities**

In terms of Sections 24 and 24(d) of the Act, as read with Government Notices R. 387 and R. 385 (Regulations 27 – 36), a **Scoping and Environmental Impact Assessment (EIA)** is required for the construction of Transmission Lines. Environmental authorisation is required in terms of the following listed activities:

Item 1(l): The construction of facilities or infrastructure, including associated structures or infrastructure, for the transmission and distribution of above ground electricity with a capacity of 120 kilovolts or more

Item 2: Any development activity, including associated structures or infrastructure, where the total area of the developed area is, or is intended to be, 20 hectares or more.

In addition, the following activities, as listed under Government Notice R. 386, are activities that are inherent to the construction of the Transmission Lines and substations, and also require environmental authorisation:

Item 1(m): The construction of facilities or infrastructure, including associated structures or infrastructure, for any purpose in the 1 in 10 year flood line of a river or stream, or within 32 meters from the bank of a river or stream where the flood line is unknown, excluding purposes associated with existing residential use, but including:

(i) Canals

(ii) Channels

(iii) Bridges

(iv) Dams

(v) Weirs

Item 7: The above ground storage of a dangerous good, including petrol, diesel, liquid petroleum gas or paraffin, in containers with a combined capacity of more than 30 cubic metres but less than 1 000 cubic metres at any one location or site

Item 12: The transformation or removal of indigenous vegetation of 3 hectares or more or of any size where the transformation or removal would occur within a critically endangered or an endangered ecosystem listed in terms of section 52 of the National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)

Item 14: The construction of masts of any material or type and of any height, including those used for telecommunication broadcasting and radio transmission, but excluding –

(a) masts of 15 metres and masts of 15 metres and lower exclusively used

(i) by radio amateurs

(ii) for lighting purposes

(b) flag poles

(c) lightning conductor poles

Item 15: The construction of a road that is wider than 4 metres or that has a reserve wider than 6 metres excluding roads that fall within the ambit of another listed activity or which are access roads of less than 30 metres long

Item 16(a): The transformation of undeveloped, vacant or derelict land to establish infill development covering an area of 5 hectares or more, but less than 20 hectares

According to Government Notice R. 385 (Regulations 27 – 36) these activities require that a Basic Assessment be undertaken, but will be addressed as part of the **Scoping and Environmental Impact Assessment (EIA)**.

### **Anticipated Environmental Issues**

It is anticipated that the following environmental aspects will be significant and will hence be considered by the Project Team in the EIA:

## Box 2: Anticipated Environmental Issues

BIOPHYSICAL ASPECTS	SOCIO-ECONOMIC ASPECTS	SOCIO-CULTURAL ASPECTS	CONSTRUCTION ASPECTS
Geotechnical suitability	Economic value of land and property	Historical sites	Contractor campsite position and layout
Topography and major land features	Safety and security	Archaeological and palaeontological sites	Electricity supply interruptions
Geomorphology	Job creation	Tourism	Road surface and infrastructure
Climate	Infrastructure	Aesthetics (visual impact)	Gates, fences and poaching
Hydrology and drainage	Existing and future developments	Sense of place	Speed limits and dust pollution
Fauna and Flora	Loss of amenities	Proximity to developed areas and farmhouses	Noise
Conservation areas	Telecommunication systems	-	-
Pollution	-	-	-

Management guidelines will be developed for the abovementioned issues and incorporated into the EMP. You are welcome to comment on the list above, and provide additional comments and/or issues of concern and potential impacts which should be considered.

### Specialists

The Project Team will identify potential issues and assess these impacts in terms of their significance in accordance with the guidelines for EIA published by the Department of Environmental Affairs and Tourism (DEAT). The Project Team includes:

### Box 3: Specialists

ORGANISATION	SPECIALIST	SPECIALIST FIELD
Strategic Environmental Focus (SEF)	Reuben Heydenrych Bharat Gordhan	Project management and integration
	Willem Lubbe Lael Buckham	Terrestrial Ecology
	Milicent Solomons Jessica de Beer	Social Impact Assessment and Public Participation
	Hennie Stoffberg	Visual Impact Assessment
	Antoinette van Wyk	Wetland Assessment (if required)
Pachnoda Consulting	Lukas Niemand	Avifauna
Moore Spence & Jones Consulting	Nino Welland	Engineering Geology
Demos Dracoulides & Associates Environmental Engineers	Demos Dracoulides	Impact of air quality on Transmission Line equipment
Agricultural Research Council	Garry Paterson	Soil and Agricultural Potential Impacts
National Cultural History Museum	Johnny van Schalkwyk	Heritage Impact Assessment

### Approving Authority

The DEAT is the relevant authority that will, in close liaison with the Mpumalanga Department of Agriculture and Land Administration (MDALA), review the Scoping and EIA Reports. The DEAT has to reach a decision as to

whether the project may proceed, and under what conditions, based on environmental and social considerations. An authorisation will be issued by the DEAT, based on the information provided in these reports.

### **Public Participation Processes**

Public Participation (PP) is a joint effort between stakeholders, the proponent, technical specialists and decision-makers who work together to produce better decisions than they would have, had they acted independently. The PP process provides Interested and Affected Parties (I&APs) who may be affected by the proposed Transmission Lines and construction of the substations, with an opportunity to provide comments and to raise issues of concern, or to make suggestions that may result in enhanced benefits for the project.

Comments and issues raised during the PP process will be captured, evaluated and included in Comment and Response Reports, which will inform and be incorporated into the Scoping and EIA Reports. The Scoping and EIA Reports will be made available for public review.

## **INVITATION TO COMMENT**

Strategic Environmental Focus (Pty) Ltd (SEF) has been appointed by Eskom Holding Limited (Transmission Services) to manage and facilitate the environmental and public participation process required for the project. In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), we would like to encourage you to participate in the EIA process, by contributing your comments, concerns and/or suggestions.

### **Public Open Days and Public Meeting**

As part of the PP process, several Public Open Days and Public Meetings will be held in accessible venues in close proximity to the study area. Registered Interested and Affected Parties in addition to identified key stakeholders will be notified of these meetings. These meetings will aim to:

- Provide project specific information,
- Explain the environmental and public participation processes that will be followed, and
- Provide I&APs with an opportunity to contribute issues of concern.

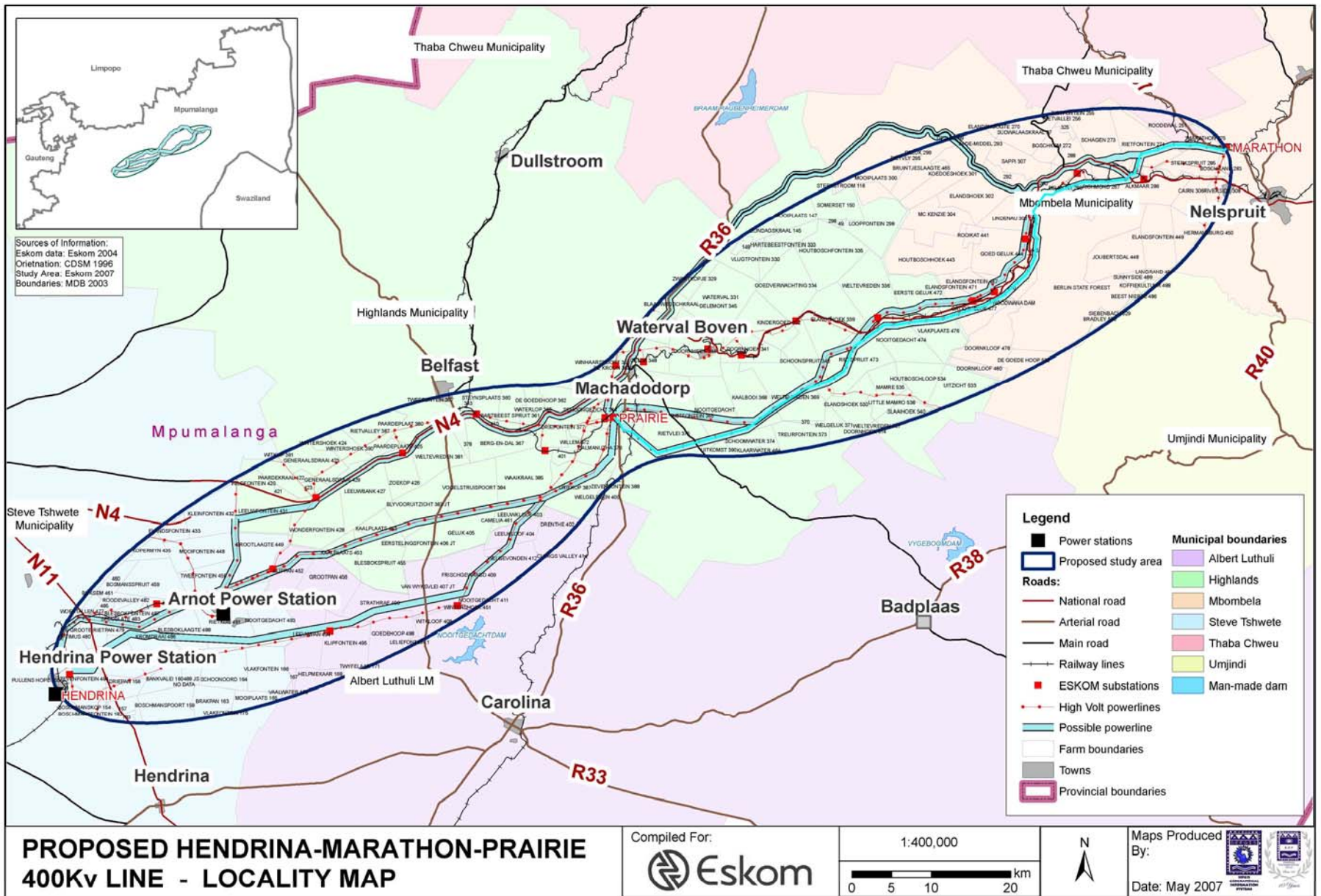
Should you wish to participate in the EIA process and receive information regarding these meetings, please register and provide any comments you may have on the enclosed registration sheet.

### **PLEASE COMMENT BY WEDNESDAY, 15 AUGUST 2007**

You are requested to complete and return the enclosed registration sheet and forward your comments to:

**Public Participation Office**  
Strategic Environmental Focus (Pty) Ltd  
**Jessica de Beer / Milicent Solomons**  
PO Box 74785, Lynnwood Ridge, Pretoria, 0040  
**Tel:** (012) 349 1307  
**Fax:** 086 640 5815  
**E-Mail:** ctu@sefsa.co.za

**This assessment is being conducted on behalf of Eskom.**





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**REGISTRATION & COMMENT SHEET**



Title \_\_\_\_\_ Name \_\_\_\_\_

Surname \_\_\_\_\_

Company Name / Interest \_\_\_\_\_

Postal or Residential Address \_\_\_\_\_

Area \_\_\_\_\_

Postal Code \_\_\_\_\_

Tel (            ) \_\_\_\_\_

Mobile \_\_\_\_\_

Fax (            ) \_\_\_\_\_

Email Address \_\_\_\_\_

Please mark with an **X** to indicate whether you would like to participate in EIA process:

<b>Yes, I would like to participate in this EIA</b>	<b>YES</b>
<b>No, I am not interested in participating</b>	<b>NO</b>

**COMMENTS** (You are welcome to attach separate sheets)

The following issues must be addressed by the EIA :

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Please provide details of any of your friends/colleagues that you want us to add to our mailing list:

Title \_\_\_\_\_ Name \_\_\_\_\_

Surname \_\_\_\_\_

Company name \_\_\_\_\_

Tel (            ) \_\_\_\_\_

Fax (            ) \_\_\_\_\_

**I would like to receive the BID in another language**  
(please tick the appropriate box)

<b>Ndebele</b>	<input type="checkbox"/>
<b>IsiSwati</b>	<input type="checkbox"/>

Please complete & return to SEF by no later than  
**Wednesday, 15 August 2007:**

**Attention: Jessica de Beer / Milicent Solomons**  
**Fax: 086 640 5815**  
**Email: ctu@sefa.co.za**  
**Post: PO Box 74785, Lynnwood Ridge, Pretoria, 0040**

Please feel free to **phone** us on (012) 349 1307 should you not have access to a fax or e-mail facility.

**Thank you for your participation**

Please be assured that your comments will form part of the documents, which will be submitted to the decision making authority.

**This assessment is being conducted on behalf of Eskom.**