

**ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR A PROPOSED  
400kV TRANSMISSION LINE BETWEEN PERSEUS SUB-STATION  
(DEALESVILLE) AND MERCURY SUB-STATION (VIERFONTEIN), FREE  
STATE PROVINCE**

**FOCUS GROUP MEETING MINUTES**

**14 MAY 2003 AT 10:00**

**OFFICES OF THE CIVIL AVIATION AUTHORITY, PRETORIA**

**1. OPENING AND WELCOME**

The meeting started very informally. Although all of the sections hereafter were not discussed in full, Ms. Oosthuizen indicated that she would include a full presentation in the minutes for the record.

**2. PURPOSE OF THE MEETING**

The Chairperson stated that the purpose of the meeting was to:

- Provide background to the proposed project;
- Introduce the EIA process;
- Give Eskom the opportunity to explain the rationale behind the project and give an overview of their construction practices;
- Indicate the potential environmental impacts identified;
- Discuss the proposed project and answer questions raised by the public; and
- Identify issues and concerns.

**3. PRESENTATIONS**

The Chairperson asked Messrs. Vollmer and Streaton to make their presentations. Ms. Vollmer's presentation was structured around the Environmental Impact Assessment (EIA) process with an emphasis on this proposed transmission line, while Ms. Streaton explained the rationale for the proposed project as well as Eskom's construction practices. She also outlined the basic negotiation process.

### **3.1 BACKGROUND TO THE STUDY AND THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

A summary of Ms. Vollmer's presentation follows:

#### **OVERVIEW OF THE PRESENTATION**

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Ms. Vollmer thanked everybody for the opportunity to make her presentation. She began an overview of her presentation:

- Introduction and need for this study;
- Background to the project;
- Study area;
- The process
- The Public participation process;
- Preliminary issues identified;
- Potential impacts identified to date; and the
- Way forward.

#### **BACKGROUND TO THE PROJECT**







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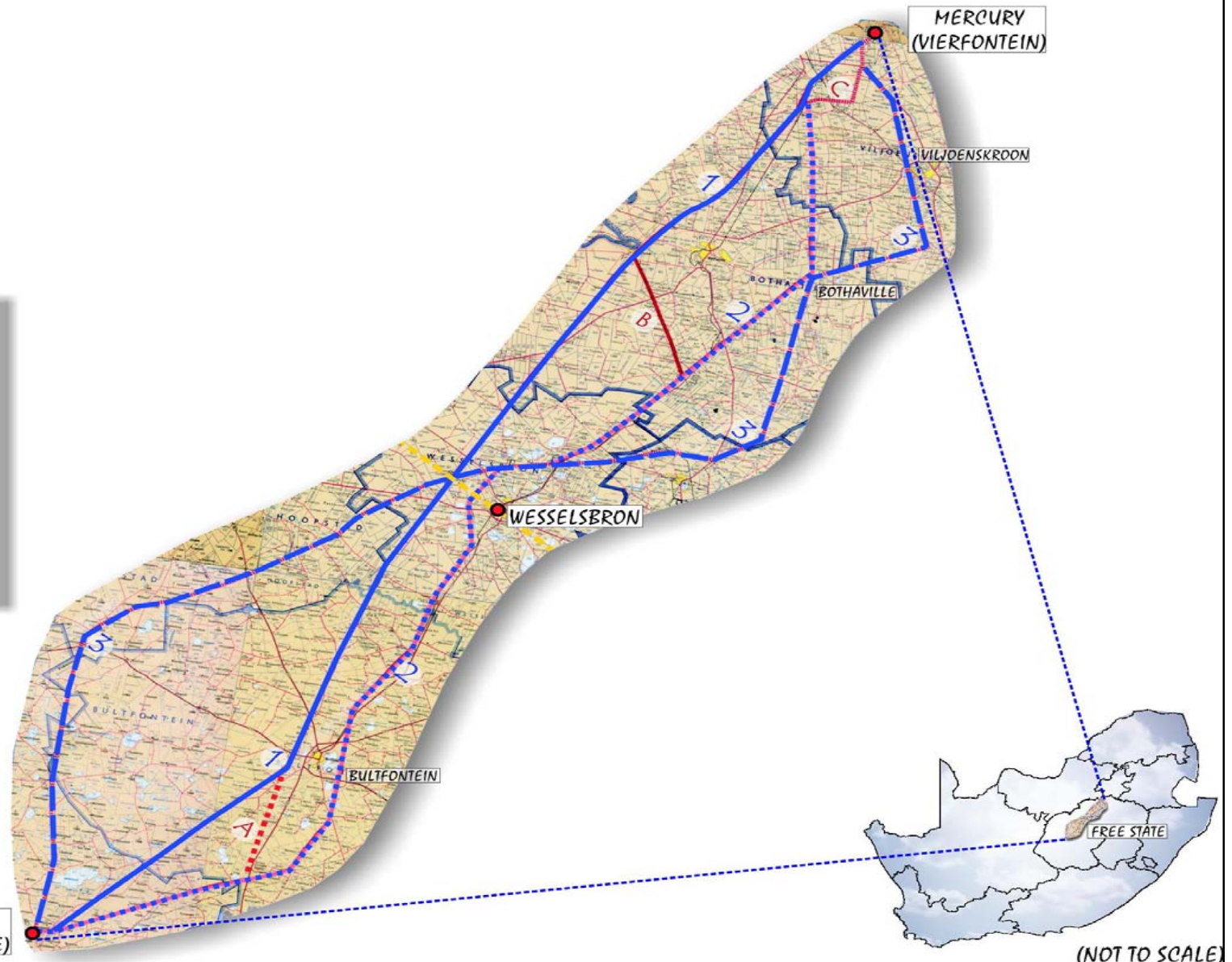
Ms. Vollmer noted that a full explanation of the need for the project is part of Eskom's presentation. In brief, Eskom proposed to develop a 400kV transmission line to provide additional capacity to support the network supplying the Greater Cape Region south of Bloemfontein. The proposed transmission line would be 300 – 350km in length.

Ms. Vollmer showed a map depicting the study area (figure 1 – on the following page).

**FIGURE 1**

**LEGEND**

-  PROPOSED ROUTE 1
-  PROPOSED ROUTE 2
-  PROPOSED ROUTE 3
-  ALTERNATIVE A
-  ALTERNATIVE B
-  ALTERNATIVE C



## **NEED FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA)**

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Ms. Vollmer explained that in terms of Section 26 of the Environmental Conservation Act (Act 73 of 1989), the development falls within the ambit of listed activities (Section 1 of Government Notice R. 1183 of 05 September 1997) and is therefore subject to an Environmental Impact Assessment (EIA).

In terms of Government Notice R 1183, Schedule 1 clause 1a, states that EIAs need to be conducted for *“the construction or upgrading of facilities for commercial electricity generation and supply.”*

### **THE LEGAL ENVIRONMENTAL PROCESS**

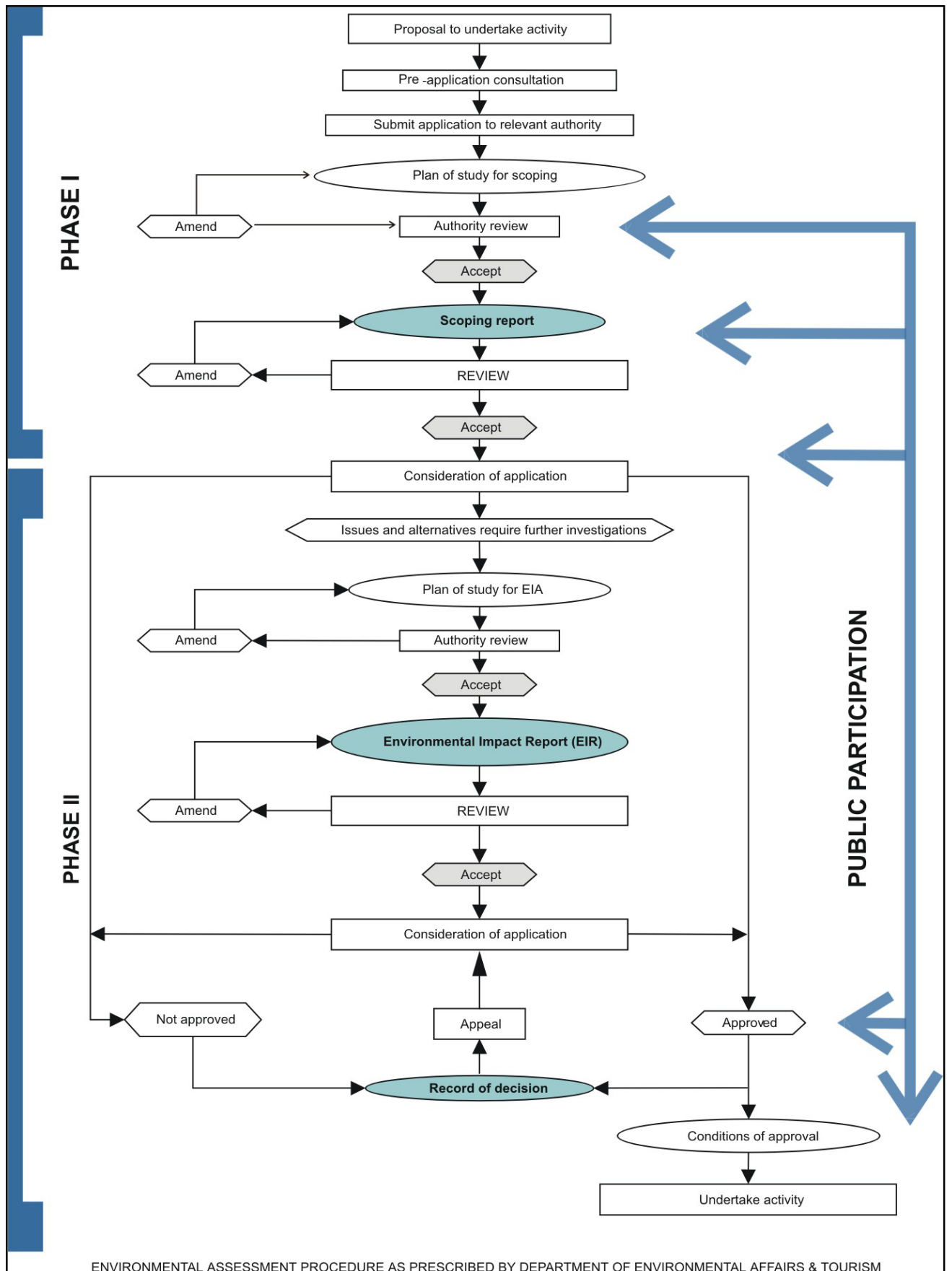
Ms. Vollmer showed a slide depicting the EIA process (figure 2- following page). She noted that it was a two-tiered process that entails a Scoping Phase (Phase I), followed by an Environmental Impact Assessment Phase (EIA Phase or Phase II). The Scoping phase entails the identification of the possible impacts that the development may have on the environment, and makes a recommendation as to the preferred alignment. The EIA phase then investigates in greater depth the environmental impact that the preferred alignment will have on the environment and proposes a series of mitigation measures.

Ms. Vollmer indicated to attendants that the study was currently in the Scoping Phase. She also highlighted the parts during these phases that Public Participation will take place.

Ms. Vollmer indicated that, during the Scoping Phase, the environmental team had the following objectives:

- Introduce the project;
- Provide information on the status of the project;
- Register and obtain comments from Interested & Affected Parties (I&APs);
- Proactively identify areas of concern; and
- Achieve a synergistic relationship between development, environment and I&APs.

In order to achieve these objectives, Ms. Vollmer explained, public involvement was of paramount importance.



**FIGURE 2: THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS**

## **PUBLIC PARTICIPATION**

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In order to actively participate, I&APs need to understand the nature and objectives of Public Participation. Ms. Vollmer touched on the following:

### **WHAT IS PUBLIC PARTICIPATION?**

A process leading to informed decision-making through the joint effort of:

- Interested and Affected Parties (I&APs);
- The proponent;
- Technical experts; and
- Authorities.

...who work together to produce better decisions than if they had acted independently (Greyling, 1999).

### **OBJECTIVES OF PUBLIC PARTICIPATION:**

To provide stakeholders with information on:

- The purpose of the proposed project;
- Technical and participatory processes to be followed;
- The way in which the contributions of the I&APs will be incorporated;
- Environmental impacts of the proposed project; and
- for stakeholders to assist in determining issues that should receive attention in the report.

## **THE PROJECT SPECIFIC PROCESS**

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### **THE ESKOM PROCESS:**

Ms. Vollmer indicated that Eskom had taken the following actions prior to appointing an independent EIA Consultant:

1. The first step in the process was to identify various alternatives to accomplish the said objective; and
2. This lead to the creation of a study area
3. The appointment of independent Environmental Consultants, whose task it is to assess the feasibility of each alternative in terms of the physical, biological and social environment (the current study), which will result in a decision on which is the most feasible alternative.
4. The most feasible alternative will be investigated in greater detail during the EIA phase.
5. Finally, Eskom would secure a servitude for the transmission line.

## **THE ENVIRONMENTAL PROCESS:**

Ms. Vollmer explained that PD Naidoo (consultants), in association with Strategic Environmental Focus (SEF) won the tender to conduct the EIA and appointed Afrosearch (Pty) Ltd. to conduct the Public Participation Process for the EIA. To date, the following actions have been taken by the EIA Consultants:

- Project registration with Department of Environmental Affairs and Tourism (DEAT) and the Free State Department of Tourism, Environment and Economic Affairs (DTEEA):
  - 27 February 2003;
- Approval of Plan of Study for Scoping:
  - 12 March 2003; and
- Public participation process:
  - April 2003
    - Focus Group Meetings – 15 and 16 April 2003
    - Open Days and Public Meetings – 23 and 24 April 2003
    - Availability of Draft Scoping Reports for public comment – May 2003
  - BID, newspaper advertisement and letters to I&APs
    - Continual

Before finalising the Scoping Phase, Focus Group Meetings, and a series of Open Days with Public Meetings must still be completed. Thereafter, the Draft Scoping Report would be circulated in the public domain for a period of two weeks for comment. After finalising the Scoping Report, it will be submitted to the relevant authorities for decision-making.

## **THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA)**

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Ms. Vollmer informed attendants that a team of specialists were appointed to assist the environmental consultants in conducting the EIA. For this project, the following specialist have been appointed:

- Geo-Technical;
- Soils (Pedologist);
- Bird Specialist (Ornithologist);
- Aquatic;
- Visual Impact;
- Heritage;
- Tourism; and
- Social Impact.

The following issues were to be investigated by the specialists:

- Physical & biological environment:
  - Soils, Geo-Technical Aspects, Topography etc.;
  - Hydrology; and
  - Fauna & Flora.
- Social environment:
  - Social assessment;

- Tourism; and
- Heritage Resources.

Ms. Vollmer noted that the following potential impacts have already been identified to date:

- Contamination of surface water;
- Disturbance of riverine habitats;
- Impacts on bird life;
- Increased surface water run-off;
- Increased erosion along river banks;
- Floral disturbance;
- Faunal displacement and disturbance;
- Visual intrusion;
- Health, safety and security risks;
- Impact on land with a historical value and heritage resources; and
- Increased ambient noise levels (during construction only).

She said that the natural pans were highlighted as being particularly sensitive. The pans were unique and had an ecological integrity that needed to be maintained due to:

- Their unique biodiversity brought about by the physical environmental conditions;
- Habitat for a variety of fauna and flora (important for breeding and feeding); and
- The fact that pans are sensitive ecological systems (symbiotic relationships).

### **3.2 ESKOM CONSTRUCTION PRACTICES**

A summary of Ms. Streaton's presentation follows:

#### **CAPACITY NEEDS**

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Eskom: Transmission has an existing power line backbone that runs from the ALPHA sub-station (near Standerton) to the BETA sub-station (near Bloemfontein).

Currently the Port Elizabeth area is experiencing rapid growth due to the Coega development. There is 650MW of electricity currently available to the area, but it is anticipated that a further 1 500MW will be needed (1 000MW for the proposed smelter and a further 500MW due to expected new industrial developments). Eskom forecasts a 1.5% natural load growth in the PE region.

The construction of the 400kV line from Mercury to Persues is part of Eskom's network strengthening programme. Eskom investigated several options to provide the necessary electricity to the PE region. FIGURE 1 shows the proposed alternative transmission lines, of which one alternative needs to be selected to meet the requirements if the desired development in the PE region took place.



## **OVERHEAD VS. UNDERGROUND**

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To construct a 400kV transmission line underground, would require a 60m wide piece of land. Within this servitude, all trees, bushes, buildings and structures would have to be removed and remain so even after construction. This would mean that the land would be sterile as no developments can be undertaken in the servitude.

One of the main problems of an underground power line is cooling. Conductors would have to be either air cooled (with air conditioners) or oil cooled. Cooling of the conductors does not present a problem when power lines are constructed overhead, as they are cooled by the natural flow of air.

An underground power line costs in the region of 20 times more than an overhead power line (R 20 million as opposed to R 1 million per kilometer.)

## **SERVITUDE RESTRICTIONS**

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Eskom does not allow people to live within the servitude and tall trees would be removed. Eskom prefer not to have centre pivot irrigation systems within the servitude, although a strategy could be established to accommodate this type of irrigation.

Activities such as grazing and crop planting can continue as before.

## **GATES**

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Eskom would identify all places where gates were needed in terms of accessing the servitude. A-grade gates are erected. Eskom does take cognizance of the type of gate required, for instance, if there is a jackal proof fence, a jackal proof gate would be erected.

## **ACCESS ROADS**

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Construction activities do not require that an actual road be built adjacent to the power line. The road 'develops' as a result of the construction vehicles moving up and down this strip over the construction period.

Access roads are only erected under special circumstances to gain access to the servitude for construction and maintenance purposes. Such instances would be discussed with the landowner.

## **BUSH CLEARING**

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The whole servitude area (55m) will not be cleared of vegetation. Construction activities require that a 4m wide strip be cleared in the middle of the servitude for stringing purposes and the area where the foundation for the tower needs to be constructed will be cleared.

In sensitive areas such as valleys, endemic vegetation or by special agreement between a landowner and Eskom vegetation would not be removed. Plants such as Sekelbos, Lantana and Port Jacksons were removed and treated with herbicide.

## **CAMPS**

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For a power line of this length (300 – 350 km) it is anticipated that two construction camps would be necessary. Each camp could house about 300 or more construction workers at a given point in time.

The camps are controlled and monitored by the Environmental Officer according to the requirements set out in the Environmental Management Plan (EMP). The EMP typically makes the following recommendations: construction camps have to be fenced, no live animals may be kept, and fires are only allowed in designated areas. Rehabilitation measures that need to be carried out once construction is complete are stated.

## **ENVIRONMENTAL MANAGEMENT PLANS (EMP) AND THE ENVIRONMENTAL OFFICER**

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The EMP covered a number of generic aspects with regard to the general conditions relating to the protection of the environment during the construction phase. It may include specific stipulations as requested by each landowner during the negotiation phase. The EMP forms part of the legal contract that Eskom has with the contractor and is therefore enforceable.

An environmental officer would be available throughout the construction phase and all affected landowners would have his/her contact details. In the case of any irregularities, the environmental officer is to be contacted to resolve the matter.

## **TOWER TYPES**

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Eskom uses a variety of tower types for the construction of transmission lines. On this line, cross-rope suspension towers would be used for the straight stretches, while self-supporting towers (so-called bend or strain towers) would be used on bends. Eskom tries to keep bends to a minimum, because the strain towers use more steel are therefore far more expensive and are visually more intrusive.

## **CONSTRUCTION**

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It is anticipated that construction could take approximately 2 years. Construction is a cyclical process, all the gates are erected first, followed by bush clearing, the digging of foundations, the erection of the towers and finally stringing. The implication of this is that over the two-year construction period landowners would have construction workers on their property intermittently.

Construction equipment is very large. Towers were assembled on site, except in cases where there was not enough space. In sensitive areas construction activities are undertaken mostly by hand (digging of foundations) and helicopters are used to place the towers.

Foundation holes were covered to prevent humans and animals from falling into the holes.

Crop planting can go on as normal. If crops were destroyed during construction, Eskom compensates the farmer according to the market value of the crop.

Vegetation usually re-establishes once construction has been completed, however, additional rehabilitation will be done where necessary.

## **STRINGING**

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Stringing is a specialized activity. The conductors need to be kept under tension during the stringing process because they get damaged when they touch the ground. Stringing is usually done by a machine, but could also be done by hand or helicopter.

Storage camps will be established in areas negotiated with the landowners to store various materials such as cable drums. All construction waste will be removed once the construction of the transmission line is complete.

## **LABOUR**

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The construction activities relating to the construction of transmission lines are specialized and therefore skilled labour is required. For this reason very few local labour opportunities exist.

## **IMPACTS GO BOTH WAYS**

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The environment also has an impact on the transmission lines. Examples are veld fires, lightning, bird streamers (excretion) and birds flying into the earth wires.

Eskom has done a lot of work on managing the impact of birds on power lines. Bird guards are erected in areas where there are insulator strings and conductors. "Bird flappers" are placed on the line where the ornithologist anticipates that the power lines cross flight paths.

## **ARCHAEOLOGICAL AND HISTORIC SITES**

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Once the final alignment for the transmission line has been decided on, the archaeologist and botanist walked the entire area to identify sites of historical importance or ecological sensitivity.

## **SUB-STATION CONSTRUCTION**

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Both sub-stations will be upgraded. It should be noted that the property on which the substation occurs is big enough and will not need to be extended.

## **NEGOTIATION**

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Eskom does not buy the land, only the rights to convey electricity across the land within the agreed servitude.

An individual contract is negotiated between Eskom and each affected landowner and this results in the signing of an option. Eskom has one year to exercise the option.

An independent valuator assists in the valuation process to ensure that a fair price is obtained by the land owner.

Once Eskom decided to exercise the option, the servitude is registered against the title deeds attached to the property at the deeds office. At that stage the compensation is paid out with interest (the interest will be paid from the time the option contract was entered into, until the servitude is registered.)

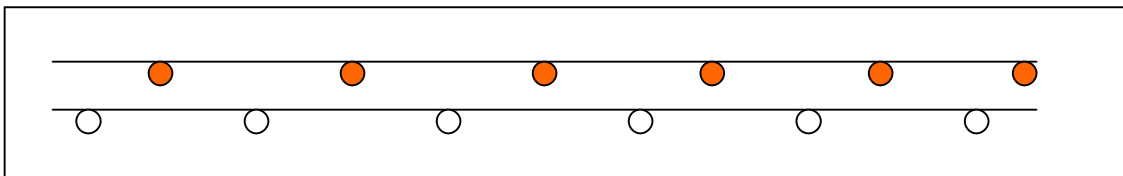
## 4. DISCUSSION

Ms. Oosthuizen asked Messrs. Pretorius and Welmans if there were any principles that had to be taken into consideration? Mr. Pretorius highlighted the following:

- Firstly, he stated that the international and local standards vary greatly and largely depends on the size and capacity of the aerodrome. The information given at this meeting, was to be generalized for ease of implementation and also because the status of an aerodrome can change over time (e.g. Lanseria airport or the new international airport at Nelspruit “Primkop”).
- AERODROMES:

It is important to know that an aerodrome includes everything from the biggest airport to a hot air balloon or hang gliding launching site or helipad/stop.

- No power line should be erected closer than 3 000m from the threshold of a runway in the approach / take-off area of a runway;
- In the event that a powerline is within 3000m from the threshold of a runway within the approach slope area. Aviation spheres should be put up to 10% of the distance from the threshold on either side of the extended center line of the runway (e.g. if the powerline is 2000m from the threshold, aviation spheres must be put up to 200m either side of the intersection with the extended centreline of the runway) if the power line is up to 3 000m away and shall be below the approach slope (generalized slope shall be taken as 1:50). The threshold and the it's elevation shall be the point of reference; and
- At large airports (e.g. Port Elizabeth, Bloemfontein, Johannesburg International, etc.) the power line should be marked with aviation spheres, lights and the pylons should be marked in accordance with legislation.
- AVIATION SPHERES (Please refer to the information box below the list):
  - Aviation spheres should be red / orange and white alternately. (The spheres that is half white / half red is in opposition to the Aviation Act). If there are two lines next to each other, the spheres on one line should be red / orange and on the other white. The spheres should be interlaced;



- Mr. Pretorius noted that orange is a more visible colour than red. The principle is that the colours used should be in stark contrast with the background;
- There are various regulations on the diameter of spheres and their maximum distances from each other. It should be remembered that aviation spheres should have a MINIMUM diameter of 600mm and, at that size, should be a maximum of 30m apart. (Aviation spheres should be visible for not less than 1000m from the air and not less than 300m from the ground)

**INFORMATION OBTAINED DURING A LATER DISCUSSION WITH MR. PRETORIUS:**

**DEFINITIONS:**

**AERODROME:** The Convention on Civil Aviation (Chicago 1944), defined an aerodrome as an area on land or water (including any buildings, insulations and equipment) intended to be used either wholly or in part for the arrival, departure and surface movement of aircraft.

**AIRCRAFT:** An aircraft can loosely be defined as any “heavier than air” craft (incl. microlites, hot air balloons and hang gliders).

**RELEVANT SECTIONS FROM THE INTERNATIONAL CIVIL AVIATION ORGANISATION – (ICAO) ANNEX 14, CHAPTER 6**

6.1.10 Overhead wires cables etc., crossing a river valley or highway shall be marked and their supporting towers marked and lighted if an aeronautical study indicates that the wires or cable could constitute a hazard to aircraft, except that the marking of the supporting towers may be omitted when they are lighted by High Intensity Obstacle Lights – Type A. *(Such lights are extremely difficult to have authorized in South Africa, due to environmental considerations).*

6.1.11 When it has been determined that an overhead wire, cable, etc., needs to be marked, but it is not practical to install markers on the wire, cable, etc. then High Intensity Obstacle Lights – Type B – should be installed. *(Same problem as stated above).*

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6.2.7 Markers displayed on or adjacent to objects, shall be located in a conspicuous position, so as to retain the general definition of the object and shall be recognizable in clear weather from a distance of at least 1000 m for an object to be viewed from the air and 300m for the object to be viewed from the ground in all directions from which an aircraft is likely to approach. The shape of the marker shall be distinctive to the extent necessary to ensure that they are not mistaken for markers employed to convey other information, and they shall be such that the hazard presented by the object they mark shall not be increased.

6.2.8 A marker displayed on an overhead wire, cable, etc., should be spherical and have a diameter of not less than 60 cm.

***THIS INFORMATION BLOCK CONTINUES ON THE FOLLOWING PAGE...***

INFORMATION OBTAINED DURING A LATER DISCUSSION WITH MR. PRETORIUS  
(CONTINUED):

6.2.9 The spacing between two consecutive markers or between a marker and a supporting tower should be appropriate to the diameter of the marker, but in no case shall the spacing exceed:

- a) 30m where the marker diameter is 60cm progressively increasing with the diameter of the marker to;
- b) 35m where the marker diameter is 80cm and further progressively increasing to a maximum of;
- c) 40m where the marker diameter is of at least 130cm diameter.

6.2.10 A marker shall be of one colour. When installed, white and red, or white and orange markers shall be displayed alternately. The colour selected shall contrast with the background against which it shall be seen.

IMPORTANT OMISSION:

During a conversation with Mr. Pretorius on 16 May 2003, he noted that he forgot to mention an important point (note that this is current legislation, but needed to be emphasized):\

No power lines shall be allowed in the near vicinity of a radio navigation aid, instrument landing system or surveillance equipment, which could adversely affect the performance of the above. Prior approval shall be obtained from the Commissioner of Civil Aviation. (Aviation Act of 1962).

- FOR THE PURPOSES OF THIS STUDY, WHERE – IN GENERAL - SHOULD AVIATION SPHERES BE ERECTED?
  - Near aerodromes (of any description);
  - International regulations stipulate that aviation spheres should be erected where power lines cross major routes (e.g. national routes). This is for traffic patrol and emergency aircraft.
- OTHER ACTIVITIES

The CAA does not cater for highly specialized activities such as crop spraying and game capture.
- WHAT INFORMATION DOES THE CAA AND SAAF REQUIRE FROM ESKOM?
  - The co-ordinates of pylons; and
  - The height of the pylon. (Please note that this should be the height to the highest point of the pylon and NOT the so-called “attachment height” that is generally used in Eskom.)
- WIND FARMS:

Currently, legislation regarding wind farms is being prepared. It is envisaged that a wind farm shall not be allowed closer than 20 km from an aerodrome and no closer than 34 km from an aerodrome where Instrument Landing Systems (ILS) are used. This is because international

studies indicated that the rotating turbine blades could interfere degrade radio signals by reflections (multi-path interference) and cause signal modulation effects.

## **5. 5. THE WAY FORWARD**

Ms. Vollmer explained the way forward to be as follows:

- The meeting would be minuted and concerns raised addressed in the Scoping Report;
- The Scoping Report would be made available for public comment in May 2003 for 14 days at libraries, on the internet, and on CD by request;
- Once all I&APs comments have been received within the timeframe, the report will be submitted to the national and provincial environmental departments;
- DEAT (national) issues a Record of Decision for the EIA process to begin;
- The EIA phase will be advertised in the newspaper;
- Further public meetings will be held on 10 – 11 September 2003 to give feedback to I&APs;
- Meetings will be minuted and concerns raised addressed in the EIR;
- The draft EIR will be made available for public comment in September 2003 for 14 days at libraries, on the internet and on CD by request;
- Once all I&AP comments have been received within the timeframe, the report will be submitted to the national and provincial Departments of Environmental Affairs and Tourism;
- A final record of decision will be obtained from DEAT (national). and
- The record of decision will be advertised (anticipated to be in January 2004).

Ms Vollmer emphasized that any further questions that the I&Aps may have can be forwarded to Marita Oosthuisen before the 30<sup>th</sup> of April 2003 to:

### **AFROSEARCH**

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## **6. CLOSURE**

The Chairperson thanked everybody present and said that they could expect a set of minutes for comment within a week.

The meeting adjourned at approximately 12:00.

## **7. ATTENDANCE REGISTER**

The attendance register for the meeting is attached.

NAAM EN VAN NAME AND SURNAME	ORGANISASIE EN POSISIE ORGANISATION AND POSITION	TELEFOONNOMMER TELEPHONE NO.	FAKSIMILE FAXIMILEE	POSADRES POSTAL ADDRESS	E-POS E-MAIL
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Welmans, A. P. (Bielie) (Mr.)	SA Air Force  (SO2 Navigation Facilities)	(012) 322-9926 (H) (012) 312-2143 (W) 073 222 7352 (C)	(012) 312-2291	A P. O. Box 15430 LYTTLETON, 6140	apwelmans@absamail.co.za