PURPOSE OF THE SCOPING REPORT

Eskom Holdings Limited (Eskom) is currently undertaking an Environmental Impact Assessment (EIA) process to determine the environmental feasibility of the proposed Steelpoort Integration Project in the Limpopo Province. Eskom has appointed Savannah Environmental, as independent environmental consultants, to undertake the EIA. Afrosearch, as specialist public participation consultants are undertaking the required public participation process on behalf of Savannah Environmental. The EIA process is being undertaken in accordance with the requirements of the National Environmental Management Act (NEMA; Act No. 107 of 1998).

This Final Scoping Report documents the outcome of the Scoping phase studies of the EIA process, and contains the following:

» An overview of the proposed project and a description of the feasible alternatives considered;
» A description of the environmental issues identified and evaluation of the potential impacts associated with the proposed project;
» Issues, concerns and suggestions raised by stakeholders to date;
» Scoping and nomination of preferred alternatives for all components of the project; and
» A description of the scope of the environmental impact assessment phase.

PUBLIC REVIEW OF THE DRAFT SCOPING REPORT

The Draft Scoping Report was made available for review at the following public places in the project area from 10 August 2007 to 10 September 2007:

» Offices of Elias Motsoaledi Municipality
» Offices of Greater Tubase Municpality
» Offices of Makhuduthamaga Municipality
» SAPS Burgersfort
» SAPS Roossennekal
» Laerskool Roossennekal
» Laerskool Steelpoort
» www.savannahSA.com

Comments were requested to be submitted to Afrosearch by 10 September 2007 as written submission via fax, post or e-mail.

PUBLIC MEETING

In order to facilitate comments on the draft report, a public meeting was held during the review period for the Draft Scoping Report. All interested and affected parties were invited to attend the public meeting held on 18 August 2007 at the Steelpoort Primary School (10:30 – 12:30). The meeting was advertised in the local and regional printed media and registered I&APs were invited to attend. In addition, a meeting for key stakeholders was held in Polokwane on 16 August 2007. Registered key stakeholders were invited to attend.

In accordance with the EIA Regulations, a primary purpose of the Draft Scoping Report made available to the public for review was to provide stakeholders with an opportunity to verify that the issues they have raised to date had been captured and considered within the study, and provide the opportunity to raise any additional key issues for consideration. The Final Scoping Report has incorporated all issues and responses from stakeholders prior to submission to the National Department of Environmental Affairs and Tourism (DEAT), the decision-making authority for the project.

SUMMARY

1. Project Overview

Eskom Holdings Ltd (Eskom) is the primary supplier of the electricity in South Africa. Eskom is currently responding to the growing electricity demand within South Africa, and will need to establish new generation and transmission capacity in South Africa over the next few years. Through the Integrated Strategic Electricity Planning (ISEP) process, Eskom continually assesses the projected demand for electricity within South Africa. As part of this process, Eskom continues to investigate a variety of electricity generation options.

As part of its assessment of a range of electricity supply options, Eskom is planning a new Pumped Storage Scheme (PSS) approximately 40 km North-West of Eskom's existing Simplon substation in the Mpumalanga Province. This PSS will have an installed capacity of 1 520 MW, and is scheduled to be in operation by 2014. In order to integrate this PSS into the electricity transmission network, Eskom Transmission is proposing the following:

» The construction of a new 400kV substation, in close proximity to the PSS (hereafter referred to as the Steelpoort Substation).
» The construction of two 400kV transmission power lines looping in and out of the Duvha-Leseding 400kV transmission power line to the proposed Steelpoort Substation.
» A 400kV transmission power line between the proposed Steelpoort Substation and the existing Merensky Substation, located near the town of Steelpoort.
» The establishment of an additional feeder bay within the existing footprint of the Merensky Substation to connect the new 400kV transmission power line. This extension to the substation will be accommodated within the existing Eskom property boundaries at this existing substation. No impacts are anticipated to be associated with this extension work, and therefore this was not required to be considered in detail within the EIA.
» Associated works to integrate the proposed new substation into Eskom's electricity transmission grid (including the construction of service/access roads, the construction of a communication tower at the substation site, etc).

This project is to be known as the Steelpoort Integration Project.

2. Environmental Impact Assessment

The proposed Steelpoort Integration Project is subject to the requirements of the Environmental Impact Assessment Regulations (EIA Regulations) published in terms of Section 24(5) of the National Environmental Management Act (NEMA, No 107 of 1998).

The Scoping Study has been undertaken in accordance with these Regulations. This Scoping Study aimed at identifying potential issues associated with the proposed project, and defining the

extent of studies required within the EIA. This was achieved through an evaluation of the proposed project, involving the project proponent, specialists with experience in EIAs for similar projects, and within the study area and a consultation process with key stakeholders that included both relevant government authorities and interested and affected parties (I&APs). In terms of the EIA Regulations, feasible alternatives (including the 'do nothing' alternative) have been considered within the Scoping Study.

3. Consideration of the 'do-nothing' alternative

The 'do-nothing' alternative is the option of not constructing the Steelpoort Integration Project.

The electricity demand in South Africa is placing increasing pressure on Eskom's existing power generation and transmission capacity. South Africa is expected to require additional peaking capacity by 2007, and baseload capacity by 2010, depending on the average growth rate.

In response to the need for additional peaking capacity, Eskom is planning the planning a new PSS approximately 40 km North-West of Eskom's existing Simplon substation in the Mpumalanga Province. In order to integrate this PSS into the electricity transmission network, and thereby transmit the electricity generated to the country, Eskom Transmission is proposing the construction of a substation and power lines to integrate Steelpoort PSS into the Transmission grid.

The 'do nothing' alternative will therefore result in the PSS not being integrated into the transmission network and the power generated by the PSS not being transmitted.

The 'do nothing' alternative is therefore not considered to be a feasible alternative.

4. Evaluation of Substation Site Alternatives Identified

The location of the proposed new substation is constrained by the location of the PSS (determined through a separate EIA process), technical and economic constraints and physical factors (such as the underlying geotechnical conditions and the local topography). Therefore, only **one reasonable and feasible substation site** has been identified for consideration within the EIA process.

This proposed site is generally flat, with a slight slope to the south-east. The proposed substation site occurs within *Kirkia wilmsii-Acacia caffra* Mountain Bushveld in a part of the study area that is classified as having high sensitivity from an ecological perspective. The site is located adjacent to steep mountain slopes classified as having very high sensitivity and near to a non-perennial drainage line (200 m away) containing *Acacia gerrardii* woodland.

The broader area surrounding the substation site will be developed for the PSS (including the establishment of the lower dam, associated buildings and access roads), which will result in a

significant alteration of the local environment.

The majority of potential impacts identified to be associated with the construction and operation of the proposed substation are anticipated to be localised and restricted to the proposed Steelpoort Substation site. No environmental fatal flaws were identified to be associated with the site, although a number of issues requiring further study have been highlighted. These issues will be assessed in detail within the EIA phase of the process.

5. Evaluation of Transmission line Corridor Alternatives Identified for the turn in lines to the Duvha-Leseding line

As a result of topographical constraints of the area between the Steelpoort Substation and the existing Duvha-Leseding 400kV transmission power line only **one reasonable and feasible alternative transmission power line corridor** was identified for consideration within the EIA process (refer to Figure 1).

Technical alternatives identified for the construction of the lines looping-in and -out of the existing Duvha-Leseding 400kV transmission power line to the proposed Steelpoort Substation are:

» The construction of **two 400kV lines in parallel**, each with a servitude width of 55 m in width. This would involve the use of conventional towers which are approximately 35 m in height.

» The construction of the two 400kV lines as a **double-circuit line**. This would involve the use of one tower of approximately 55 m in height, which could accommodate both lines. This option would require a single servitude of 55 m in width.

The proposed turn-in lines cross some areas of high to very high ecological sensitivity, and potentially impact on the communities of Hlogotlou on the plateau. As the construction of a single double-circuit line instead of two power lines in parallel would limit the amount of space required for the establishment of the powerline (i.e. 55 m vs. 110 m) the use of this technical option could minimise the majority of impacts on both the biophysical and social. The **option of constructing a single double-circuit line** is the **preferred option** from an environmental perspective.

However, if self-supporting double circuit towers are used, it will result in more perching space for birds on the towers. This, in turn, could result in a bigger risk of streamer-induced faulting on these towers. This has the potential to impact on the operation of the transmission power line.

No environmental fatal flaws were identified to be associated with the proposed transmission power lines, although a number of issues requiring further study have been highlighted. These issues will be assessed in detail within the EIA phase of the process.

6. Evaluation of Transmission line Corridor Alternatives Identified for the Steelpoort-Merensky 400kV line

Two reasonable and feasible alternatives were identified for consideration for the construction of the proposed Steelpoort-Merensky 400kV line (refer to Figure 1), i.e.:

» An alignment to the west of the R555, approximately following this road more for the majority of the route to the Merensky Substation, referred to as the **western alternative**.
» An alignment to the east of the R555 and the De Hoop Dam to the Merensky Substation, referred to as the **eastern alternative**.

Through the public consultation process and the evaluation of potential impacts, a number of localised sub-alternatives were identified for consideration, i.e.:

» The northern sub-alternative
» The southern sub-alternative
» The R555 sub-alternative

The identified transmission power line alternatives cross different proportions of habitats in different sensitivity classes and potentially impact on numerous land uses and communities.

From the specialist studies undertaken there are varying conclusions with regards to the preferred alternative alignment for the proposed Steelpoort-Merensky 400 kV transmission power line. The following has been concluded:

» The **western alternative** will minimise potential impacts on ecology and agricultural potential as this alternative traverses transformed areas. The selection of the **northern sub-alternative** will aid in further minimising ecological impacts.
» The **R555 sub-alternative** is nominated as the preferred option from an avifauna perspective as this alternative holds the least risk of bird interactions.
» The **eastern alternative** is nominated as the preferred alternative from a social and heritage perspective.
» The **southern sub-alternative** is nominated as the preferred option from a visual perspective.

The eastern alternative crosses the DWAF Conservation Area, an area which is protected in terms of the National Forests Act (No 84 of 1998), and any activities which may cause deforestation in this area (such as the establishment and maintenance of a power line servitude) are prohibited. DEAT and DWAF have indicated that an alignment through this Conservation Area would, therefore, not be considered favourably for authorisation. This is considered to be a fatal flaw to the establishment of a transmission power line within this section of the eastern alternative alignment. Therefore, this section of the eastern alternative is eliminated as a feasible option. Therefore, from a social and heritage perspective, the next best option will need to be selected for further investigation.

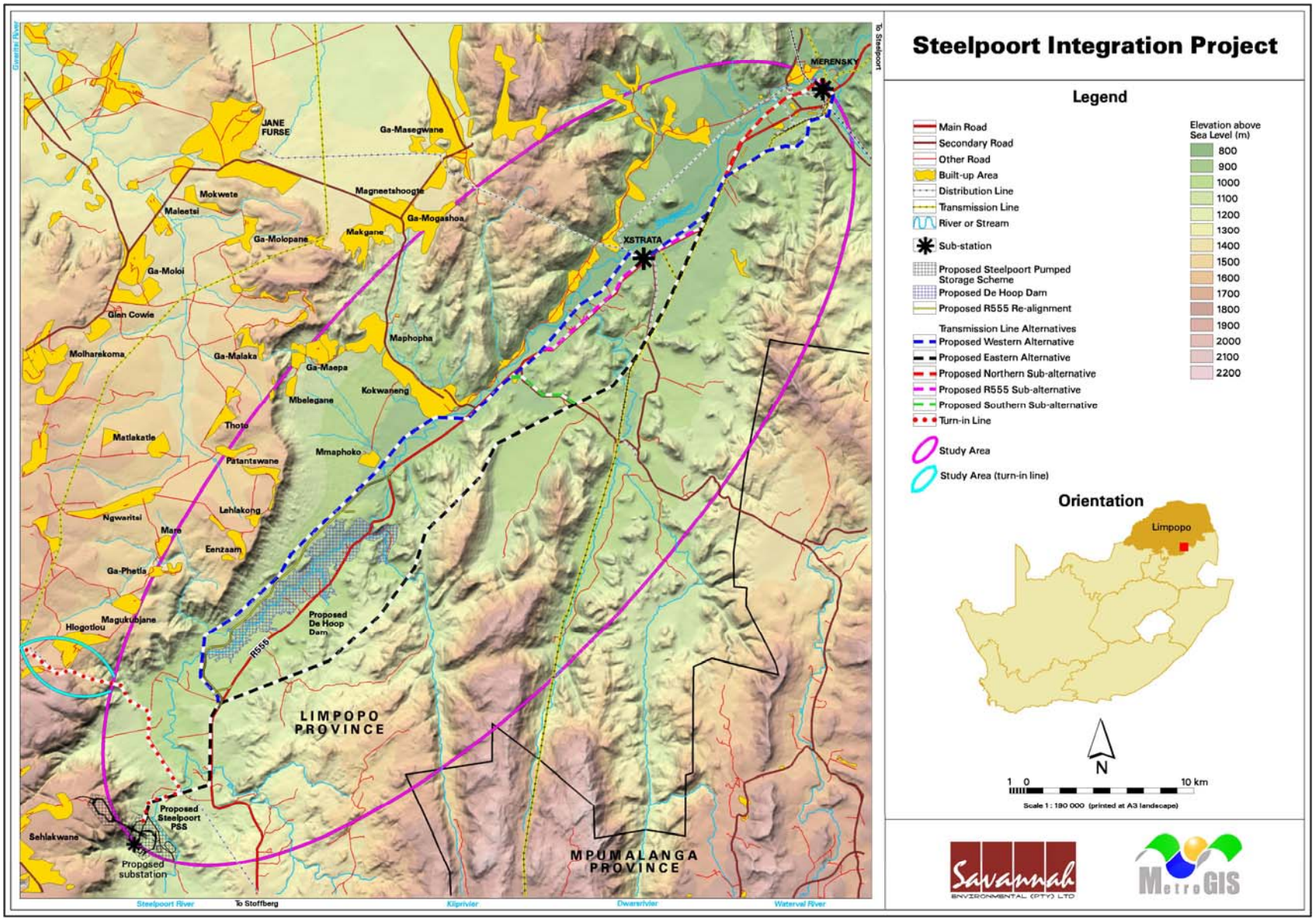

Figure 1: Map showing alternatives considered within the Environmental Scoping Study

From a heritage perspective, the majority of sites of potential significance which could be potentially impacted are located within the south western section of the study area. Alignment of the proposed transmission power line along any of the sub-alternatives identified will make little difference to the significance of the potential impacts on these sites. Impacts on these sites may be of high significance and this aspect requires further investigation within the EIA phase.

From an overall social perspective, the second preferred alignment is the western alternative following **the R555 sub-alternative** alignment. Potential impacts associated within this alternative could potentially include impacts on settlements, established tourism areas (game lodges) or areas with tourism potential (the De Hoop Dam). Therefore, detailed assessment of this alternative will be required in the EIA phase of the study in order to define mitigation measures which are required to be implemented in order to minimise potential impacts.

A possible mitigation measure includes a slight deviation on the western alternative where this alignment crosses the portion of Tigershoek 140JS belonging to Mr J Roux. It is proposed that the western alternative be re-aligned in this area to follow the R555 more closely in order to minimise the cumulative impact on this property. This proposed deviation will require further investigation within the EIA phase in order to assess potential impacts associated with this proposed deviation.

From the above it is clear that there are varying conclusions with regards to the preferred alternative alignment for the proposed Steelpoort-Merensky 400 kV transmission power line, although the **R555 sub-alternative** appears to be the most favoured. In order to make clear recommendations regarding the preferred alternative, more detailed studies are required to be undertaken within the EIA phase for the **western alternative**, the **southern sub-alternative**, the **R555 sub-alternative** and the **northern sub-alternative** (refer to Figure 2). Potentially significant impacts identified are required to be further assessed through the undertaking of detailed specialist studies for these alternatives.

A number of issues requiring further study have been highlighted through the environmental scoping study. These issues will be assessed in detail within the EIA phase of the process.

7. Evaluation of Cumulative Impacts

Apart from the proposed Steelpoort Integration Project which is the subject of this scoping study, there are currently numerous development projects underway in the study area, including:

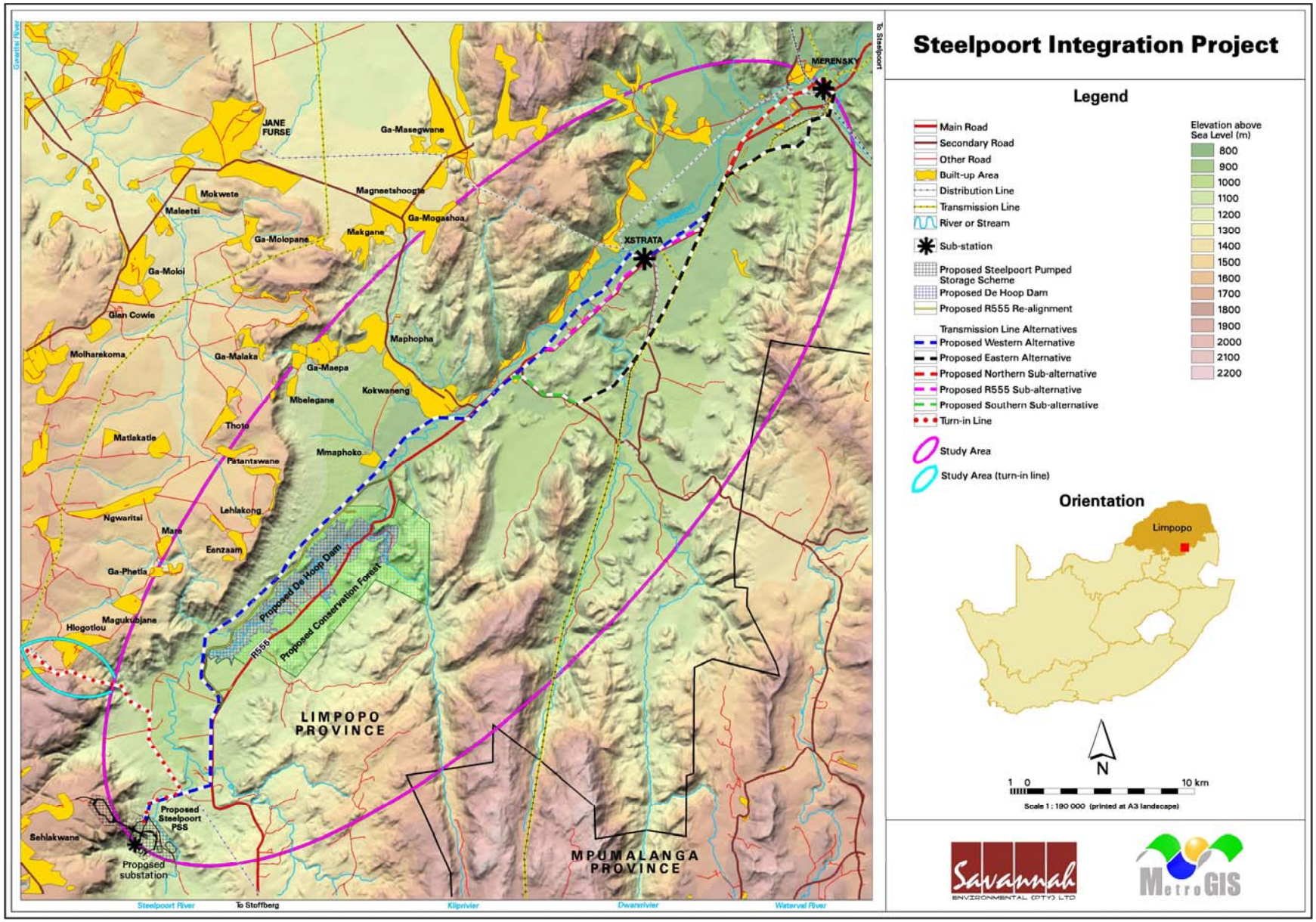

Figure 2: Alternatives nominated for consideration within the EIA phase

» The investigation into the establishment of a Pumped Storage Scheme (being undertaken by Eskom Generation)
» The investigation into a pipeline alignment to provide water to the PSS from the De Hoop Dam (being undertaken by DWAF in consultation with Eskom)
» The investigation of numerous new mining operations within the northern potion of the study area (being undertaken by various mining companies)
» The investigation of residential developments in the northern section of the study area (being undertaken by the Greater Tubatse Local Municipality).
» Existing transmission and distribution power lines and substations
» Existing gravel and tarred roads (including the R555 which passes through the centre of the study area).

There is, therefore, the potential for the proposed project to add to the cumulative impact on the environment in the area. Potential cumulative impacts identified include:

» Potential impacts on flora, fauna and ecological processes
» Potential impacts on heritage sites
» Potential impacts on aesthetics and the visual character of the area

These developments will all impact in some way on the surrounding environment.

In addition, current operations and infrastructure in the area which may impact on the environment include:

» The construction if the De Hoop Dam & associated infrastructure (being undertaken by DWAF)
» The realignment of the R555 to the west of the De Hoop Dam (being undertaken by DWAF)
» Numerous mining operations being undertaken within the northern section of the study area by various mining companies

» Potential impacts on the social environment, including impacts on tourism potential and land use

In order to determine the significance of cumulative impacts associated with the proposed Steelpoort Integration Project, these potential cumulative impacts will require further investigation within the EIA.

TABLE OF CONTENTS

PAGE

APPENDICES

DEFINITIONS AND TERMINOLOGY

Alternatives: Alternatives are different means of meeting the general purpose and need of a proposed activity. Alternatives may include location or site alternatives, activity alternatives, process or technology alternatives, temporal alternatives or the 'do nothing' alternative.

Assessment criteria and grading of archaeological sites: The following categories are distinguished in Section 7 of the National Heritage Resources Act (Act no 25 of 1999):

» *Grade I:* Heritage resources with qualities so exceptional that they are of special national significance;
» *Grade II:* Heritage resources which, although forming part of the national estate, can be considered to have special qualities which make them significant within the context of a province or a region; and
» *Grade III:* Other heritage resources worthy of conservation, and which prescribes heritage resources assessment criteria, consistent with the criteria set out in Section 3(3), which must be used by a heritage resources authority or a local authority to assess the intrinsic, comparative and contextual significance of a heritage resource and the relative benefits and costs of its protection, so that the appropriate level of grading of the resource and the consequent responsibility for its management may be allocated.

Cumulative impacts: Impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities (e.g. discharges of nutrients and heated water to a river that combine to cause algal bloom and subsequent loss of dissolved oxygen that is greater than the additive impacts of each pollutant). Cumulative impacts can occur from the collective impacts of individual minor actions over a period of time and can include both direct and indirect impacts.

Direct impacts: Impacts that are caused directly by the activity and generally occur at the same time and at the place of the activity (e.g. noise generated by blasting operations on the site of the activity). These impacts are usually associated with the construction, operation or maintenance of an activity and are generally obvious and quantifiable.

Do nothing alternative: The 'do nothing' alternative is the option of not undertaking the proposed activity or any of its alternatives. The 'do nothing' alternative also provides the baseline against which the impacts of other alternatives should be compared.

Endangered species: Taxa in danger of extinction and whose survival is unlikely if the causal factors continue operating. Included here are taxa whose numbers of individuals have been reduced to a critical level or whose habitats have been so drastically reduced that they are deemed to be in immediate danger of extinction.

Endemic: An "endemic" is a species that grows in a particular area (is endemic to that region) and has a restricted distribution. It is only found in a particular place. Whether something is endemic or not depends on the geographical boundaries of the area in question and the area can be defined at different scales.

Environment: the surroundings within which humans exist and that are made up of:

i. the land, water and atmosphere of the earth;
ii. micro-organisms, plant and animal life;
iii. any part or combination of (i) and (ii) and the interrelationships among and between them; and
iv. the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Impact: An action or series of actions that have an effect on the environment.

Environmental impact assessment: Environmental Impact Assessment (EIA), as defined in the NEMA EIA Regulations and in relation to an application to which scoping must be applied, means the process of collecting, organising, analysing, interpreting and communicating information that is relevant to the consideration of that application.

Environmental management: Ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental management plan: An operational plan that organises and co-ordinates mitigation, rehabilitation and monitoring measures in order to guide the implementation of a proposal and its ongoing maintenance after implementation.

Extinct species: Taxa which are no longer known to exist in the wild after repeated searches of their type localities and other known or likely places. This category is used for a taxon which no longer occurs in the wild but survives in at least some form in cultivation or in a seed bank, but is probably so genetically impoverished or altered as to make it impossible to return it to a natural habitat. A plant may be listed as Extinct in one country while surviving in another (e.g. *Protea gaguedi*). It is important to note that extinction can never be regarded as

more than a probability, and rediscoveries are occasionally made, hence this category is sometimes referred to in the literature as "Presumed Extinct".

Historical Period: Since the arrival of the white settlers - c. AD 1840 - in this part of the country.

Indirect impacts: Indirect or induced changes that may occur as a result of the activity (e.g. the reduction of water in a stream that supply water to a reservoir that supply water to the activity). These types of impacts include all the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Interested and Affected Party: Individuals or groups concerned with or affected by an activity and its consequences. These include the authorities, local communities, investors, work force, consumers, environmental interest groups and the general public.

Insufficiently known species: Taxa that are suspected but not definitely known to belong to any of the above categories, because of the lack of information (Note, most of South African literature has used the term "Uncertain (U) for this category).

Iron Age: Period covering the last 1800 years, when new people brought a new way of life to southern Africa. They established settled villages, cultivated domestic crops such as sorghum, millet and beans, and they herded cattle as well as sheep and goats. These people, according to archaeological evidence, spoke early variations of the Bantu Language. Because they produced their own iron tools, archaeologists call this the Iron Age.

» Early Iron Age AD 200 - AD 1000
» Late Iron Age AD 1000 - AD 1830

Rare species: Taxa with small world populations that are not at present Endangered or Vulnerable, but are at risk as some unexpected threat could easily cause a critical decline. These taxa are usually localised within restricted geographical areas or habitats or are thinly scattered over a more extensive range. This category was termed Critically Rare by Hall and Veldhuis (1985) to distinguish it from the more generally used word "rare".

Red data species: Species listed in terms of the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species, and/or in terms of the South African Red Data list. In terms of the South African Red Data list, species are classified as being extinct, endangered, vulnerable, rare, indeterminate, insufficiently known or not threatened (see other definitions within this glossary).

Significant impact: An impact that by its magnitude, duration, intensity or probability of occurrence may have a notable effect on one or more aspects of the environment.

Stone Age: The first and longest part of human history is the Stone Age, which began with the appearance of early humans between 3-2 million years ago. Stone Age people were hunters, gatherers and scavengers who did not live in permanently settled communities. Their stone tools preserve well and are found in most places in South Africa and elsewhere.

» Early Stone Age 2 000 000 - 150 000 Before Present
» Middle Stone Age 150 000 - 30 000 Before Present
» Late Stone Age 30 000 - until c. AD 200

ABBREVIATIONS AND ACRONYMS

DEDET	Limpopo Department of Economic Development, Environment & Tourism
DEAT	National Department of Environmental Affairs and Tourism
DWAF	Department of Water Affairs and Forestry
EIA	Environmental Impact Assessment
EMLM	Elias Motsaledi Local Municipality
EMP	Environmental Management Plan
GDP	Gross Domestic Product
GG	Government Gazette
GN	Government Notice
GTLM	Greater Tubatse Local Municipality
I&AP	Interested and Affected Party
IDP	Integrated Development Plan
kV	Kilovolt
LHRA	Limpopo Heritage Resources Agency
MDB	Municipal Demarcation Board
MLM	Makhuduthamaga Local Municipality
MW	Mega Watt
NEMA	National Environmental Management Act (No 107 of 1998)
NERSA	National Energy Regulator of South Africa
NHRA	National Heritage Resources Act (No 25 of 1999)
OWRDP	Olifants Water Resources Development Project
PSS	Pumped Storage Scheme
SAHRA	South African Heritage Resources Agency
SCPE	Sekhukhuneland Centre of Plant Endemism
SDM	Sekhukhune District Municipality
SDF	Spatial Development Framework
SIA	Social Impact Assessment

INTRODUCTION CHAPTER 1

1.1. Background and Project Overview

Eskom Holdings Ltd (Eskom) is responsible for the provision of reliable and affordable power to its consumers in South Africa, and currently supplies approximately 95% of the electricity used in the country. Electricity by nature cannot be stored and therefore must be used as it is generated. Therefore, electricity is generally generated in accordance with supply-demand requirements, and must be efficiently transmitted from the point of generation to the end-user. It is vital that transmission capacity keeps up with both electricity generation capacity and electricity demand.

If Eskom is to meet its mandate and commitment to supply the ever-increasing needs of end-users, it has to plan, establish and expand its infrastructure of generation capacity and transmission power lines on an on-going basis, in support of the generation processes.

As part of its assessment of a range of electricity supply options, Eskom is planning a new Pumped Storage Scheme (PSS) approximately 40 km North-West of Eskom's existing Simplon substation in the Mpumalanga Province. This PSS will have an installed capacity of 1 520 MW, and is scheduled to be in operation by 2014[1]. A PSS utilises surplus electricity generation capacity during off-peak periods by pumping water from the lower to upper reservoirs and releases this water again during peak periods (i.e. between 600 am and 8:00 am and between 6:00 pm and 8:00 pm) to generate electricity.

In order to integrate this PSS into the electricity transmission network, Eskom Transmission is proposing the following:

» The construction of a new 400kV substation, in close proximity to the PSS (hereafter referred to as the Steelpoort Substation). The total footprint area required for the new substation site is estimated to be approximately 150 m x 310 m.
» The construction of two 400kV transmission power lines looping in and out of the Duvha-Leseding 400kV transmission power line[2] to the proposed

[1] An EIA for the proposed PSS is the subject of a separate EIA process (Bohlweki Environmental, 2007).

[2] This transmission power line has received approval from DEAT, and Eskom are currently in the process of negotiating the final alignment. The line is expected to be completed by December 2008

Steelpoort Substation. These two powerlines are proposed to be constructed in parallel, each requiring a servitude width of approximately 55 m.

» A 400kV transmission power line between the proposed Steelpoort Substation and the existing Merensky Substation, located near the town of Steelpoort. A servitude width of approximately 55 m is required for the establishment of this new transmission power line.
» The establishment of an additional feeder bay within the existing footprint of the Merensky Substation to connect the new 400kV transmission power line.
» Associated works to integrate the proposed new substation into Eskom's electricity transmission grid (including the construction of service/access roads, the construction of a communication tower at the substation site, etc).

This project is to be known as the Steelpoort Integration Project.

1.2. The Purpose and Need for the Proposed Project

South Africa is an energy intensive country, largely as a result of an historic focus economic on energy intensive industries such as mining and primary metal processing. With current energy and electricity demands within the country projected to continue increasing, new investments in electricity generation and transmission capacity are required over the next few years. The Steelpoort and Burgersfort areas are supplied from the Merensky substation. Therefore, at a regional level, the transmission power line to Merensky substation will assist with the strengthening of the electricity network in the Steelpoort area.

The Steelpoort Integration Project (and the Pumped Storage Scheme) is therefore proposed within the context of the need for additional national, regional and local electricity capacity.

1.3. Requirement for an Environmental Impact Assessment Process

The proposed Steelpoort Integration Project is subject to the requirements of the Environmental Impact Assessment Regulations (EIA Regulations) published in terms of Section 24(5) of the National Environmental Management Act (NEMA, No 107 of 1998). This section provides a brief overview of EIA Regulations and their application to this project.

NEMA is national legislation that provides for the authorisation of certain controlled activities known as "listed activities". In terms of Section 24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority (the decision-maker) charged by NEMA with granting of the relevant environmental authorisation. The National Department of Environmental Affairs and Tourism (DEAT) is the competent authority for this project. Through

the decision-making process, DEAT will be supported by the Limpopo Department of Economic Development, Environment and Tourism (DEDET).

The need to comply with the requirements of the EIA Regulations ensures that decision-makers are provided the opportunity to consider the potential environmental impacts of a project early in the project development process, and assess if environmental impacts can be avoided, minimised or mitigated to acceptable levels. Comprehensive, independent environmental studies are required to be undertaken in accordance with the EIA Regulations to provide the competent authority with sufficient information in order for an informed decision to be taken regarding the project.

In terms of sections 24 and 24D of NEMA, as read with Government Notices R385 (Regulations 27–36) and R387, a Scoping and EIA are required to be undertaken for this proposed project as it includes the following activities listed in terms of GN R386 and R387 (GG No 28753 of 21 April 2006):.

Number & date of relevant notice	**Activity No (s) (in terms of relevant Regulation or notice)**	**Description of listed activity**
Government Notice R387 (21 April 2006)	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 kV or more
Government Notice R386 (21 April 2006)	12	The transformation or removal of indigenous vegetation of 3 ha 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).
Government Notice R386 (21 April 2006)	14	The construction of masts of any material of type and of any height, including those used for telecommunications broadcasting and radio transmission, but excluding: (a) masts of 15 m and lower exclusively used by (i) radio amateurs; or (ii) for lightening purposes flagpoles; and lightening conductor poles
Government Notice R386 (21 April 2006)	15	The construction of a road that is wider than 4 m or that has a reserve wider than 6 m, excluding roads that fall within the ambit of another listed activity or which are access roads of less than

Number & date of relevant notice	Activity No (s) (in terms of relevant Regulation or notice)	Description of listed activity
		30 m long.
Government Notice R386 (21 April 2006)	16(a)	The transformation of undeveloped, vacant or derelict land to residential, mixed, retail, commercial, industrial or institutional use where such development does not constitute infill and where the total area to be transformed is bigger than 1 ha.
Government Notice R386 (21 April 2006)	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 m^3 but less than 1 000 m^3 at any one location or site.
Government Notice R386 (21 April 2006)	1 (m)	The construction of facilities or infrastructure, including associated structures or infrastructure, for any purpose in the one in ten year flood line of a river or stream, or within 32 m 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; and (v) weirs

This project has been registered with the DEAT, the Competent Authority for this proposed project, under Application Reference Number 12/12/20/866.

This report documents the scoping evaluation of the potential environmental impacts of the proposed construction and operation of the proposed Steelpoort Substation and associated transmission power lines. This scoping assessment was conducted in accordance with the requirements of the EIA Regulations in terms of Section 24(5) of the National Environmental Management Act (NEMA; No 107 of 1998).

1.4. Eskom's Planning Process and the Role of the Environmental Impact Assessment Process

Eskom Transmission's planning process is required to be based on anticipated load requirements, rather than immediate load requirements in order to timeously supply the anticipated increased demand in the country. This is due to the time-

consuming process of acquiring the necessary permissions to construct such infrastructure from DEAT and the National Energy Regulator of South Africa (NERSA), servitude negotiations with landowners, and transmission power line design and construction.

The EIA process forms part of the initial planning process of a new transmission power line. Route alternatives (corridors of approximately 1 km in width) are identified (primarily based on technical feasibility), and the number of options are narrowed down based on environmental criteria through the EIA process. The findings of the EIA determine those areas in which impacts can be anticipated to be significant, and results in the nomination of a preferred corridor for environmental authorisation (by DEAT), provided no environmental fatal flaws be identified to be associated with the proposed project.

While there should be reasonable confidence in the environmental feasibility of the preferred corridor nominated, other criteria may require minor alteration to the corridor which received environmental authorisation during the land negotiation process undertaken by Eskom. These may include:

» Identification of a technical problem during the detailed design phase which will require excessive cost to resolve (e.g. unstable subsurface conditions identified by detailed geotechnical investigations).
» Request by a landowner during the course of the negotiation process that the alignment be shifted to avoid disruption of a particular activity on his property, but provide a feasible new alignment.

Provided such potential deviations to the corridor are not unreasonable, it is fair for Eskom Transmission to investigate and negotiate local adjustments within to the authorised corridor alignment. This may be required to occur at a number of points along the alignment. If such deviations fall outside of the authorised corridor alignment, the environmental consultant may, at the instruction of DEAT, or their provincial office, be required to undertake further investigation. The need and extent of such investigations would be judged individually.

1.4.1. Servitude Negotiation and the EIA Process

Transmission power lines are constructed and operated within a servitude (55 m wide for 400kV lines) that is established along the entire length of the line. Within this servitude, Eskom Transmission has certain rights and controls that support the safe and effective operation of the line. The process of achieving the servitude agreement is referred to as the Servitude Negotiation Process, or just the negotiation process. The negotiation process is undertaken directly by Eskom Transmission and is independent of the EIA process. It is important that the aims of the two processes are seen as separate.

1.5. Details of Savannah Environmental's Expertise to carry out Applicable Scoping Processes

Savannah Environmental was established in January 2006, and benefits from the pooled resources, diverse skills and experience in the environmental field held by its team.

The Savannah Environmental staff has acquired considerable experience in environmental assessment and environmental management over the last 10 years, and have been actively involved in undertaking environmental studies for a wide variety of projects throughout South Africa. Strong competencies have been developed in project management of environmental EIA processes, as well as strategic environmental assessment and compliance advice, and the identification of environmental management solutions and mitigation/risk minimising measures.

Jo-Anne Thomas and Karen Jodas, the principle authors of this draft Environmental Scoping Report, have gained extensive knowledge and experience on electricity generation and distribution projects through their involvement in EIA processes for such projects over the past ten (10) years. They have successfully completed various EIAs for transmission power lines, as well as EIAs for several substations, distribution power lines and power generation projects for Eskom Holdings Limited.

1.6. Objectives of the Scoping Study

The Scoping Phase of the EIA refers to the process of identifying potential issues associated with the proposed project, and defining the extent of studies required within the EIA. This is achieved through an evaluation of the proposed project, involving the project proponent, specialists with experience in EIAs for similar projects and in the study area, and a consultation process with key stakeholders that includes both government authorities and interested and affected parties (I&APs).

The main purpose of the Scoping Study is to focus the environmental assessment in order to ensure that only significant issues, and reasonable and feasible alternatives are examined.

In accordance with the EIA Regulations, the main purpose of the Draft Environmental Scoping Report is to provide stakeholders with an opportunity to verify that the issues they have raised to date have been captured and considered within the study, and to raise any additional key issues for consideration. The Final Scoping Report will incorporate all issues and responses prior to submission to the DEAT, the decision-making authority for the project.

The Scoping Report consists of seven sections:

» **Chapter 1** provides background to the proposed Steelpoort Integration project and the environmental impact assessment process
» **Chapter 2** provides an overview of the proposed project and the process followed in identifying reasonable and feasible alternatives
» **Chapter 3** outlines the process which was followed during the Scoping Phase of the EIA process
» **Chapter 4** provides a description of the environment which may be potentially affected by the proposed project
» **Chapter 5** provides an evaluation of the potential issues associated with the proposed project
» **Chapter 6** presents the conclusions and recommendations of the Scoping Study
» **Chapter 7** describes the plan of study for EIA describes the activities associated with the project (project scope)
» **Chapter 8** provides a list of references and information sources used in undertaking this Scoping Study

2.1. Background to the Selection of Reasonable and Feasible Alternatives for the Proposed Steelpoort Integration Project

Eskom is the primary supplier of the electricity in South Africa. Eskom is currently responding to the growing electricity demand within South Africa, and will need to establish new generation and transmission capacity in South Africa over the next few years. Through the Integrated Strategic Electricity Planning (ISEP) process, Eskom continually assesses the projected demand for electricity within South Africa. As part of this process, Eskom continues to investigate a variety of electricity generation options, including conventional pulverised fuel power stations, pumped storage schemes, gas-fired power stations, nuclear plants, and renewable energy technologies (mainly wind and solar projects).

As part of its capacity expansion programme, Eskom is planning to construct a new Pumped Storage Scheme (PSS), approximately 50 km south of Steelpoort in the Limpopo Province. In order to integrate this PSS into the electricity transmission grid, Eskom Transmission considered linkages to various points within the system. As a result of the location of the proposed PSS in relation to other Transmission infrastructure (refer to Figure 2.1), technical considerations in terms of the optimal operation of the transmission power line, and the requirements of the National Energy Regulator of South Africa (NERSA) to ensure that electricity generated can be transmitted to the grid at all times, it was determined that the construction of the following transmission infrastructure was the most feasible and cost-effective solution:

» A new 400kV substation, in close proximity to the PSS, consisting of 3 feeder bays.
» Two 400kV transmission power lines looping-in and -out of the Duvha-Leseding 400kV transmission power line to the Steelpoort Substation.
» A 400kV transmission power line between the proposed Steelpoort Substation and the existing Merensky Substation, located near the town of Steelpoort.
» An additional feeder bay within the existing footprint of the Merensky Substation to connect the new 400kV transmission power line.
» Associated works, including the construction of service/access roads, the construction of a communication tower at the substation site, etc.

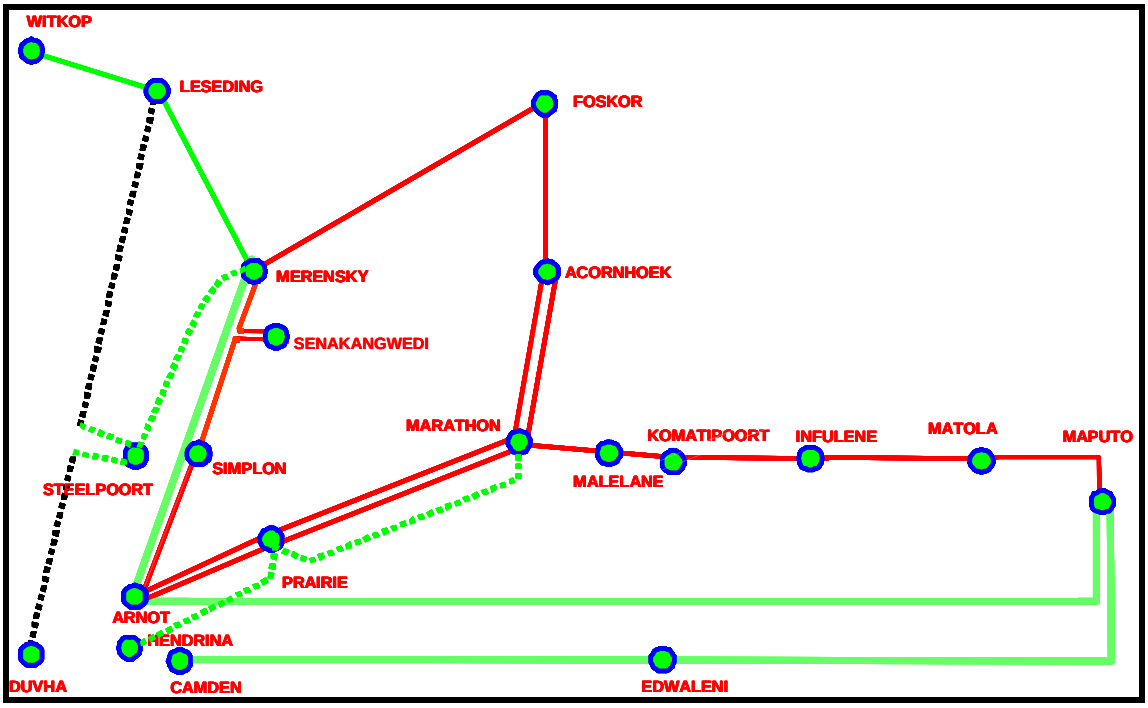

Figure 2.1: The proposed Steelpoort Integration Project in relation to the Transmission grid

2.1.1. Identification of Alternative Substation Sites

The location of the proposed new substation is constrained by the location of the PSS. Feasible alternatives for the siting of the PSS have been considered within a separate EIA process (Bohlweki Environmental, 2007), and a preferred alternative has been nominated for consideration by the environmental authorities.

From a technical and economic perspective, the HV yard of the Steelpoort Substation is required to be located within 1 km of the PSS generator tunnel. In addition, the PSS design could not accommodate the main entrance to be to the south of the lower dam due to access requirements, which places further limitations on the positioning of the substation. As the proposed substation is also constrained by physical factors, such as the underlying geotechnical conditions and the local topography (being required to be located on as flat an area as possible), only one technically feasible substation site has been identified (refer to Figure 2.2 overleaf). This proposed site is located on Portion 7 of farm Luipershoek 149 JS and partly in Portion 1 of farm Luipershoek 149 JS. These properties are owned by a private landowner (Dr Enslin). This is the development site which is considered within this Scoping Report.

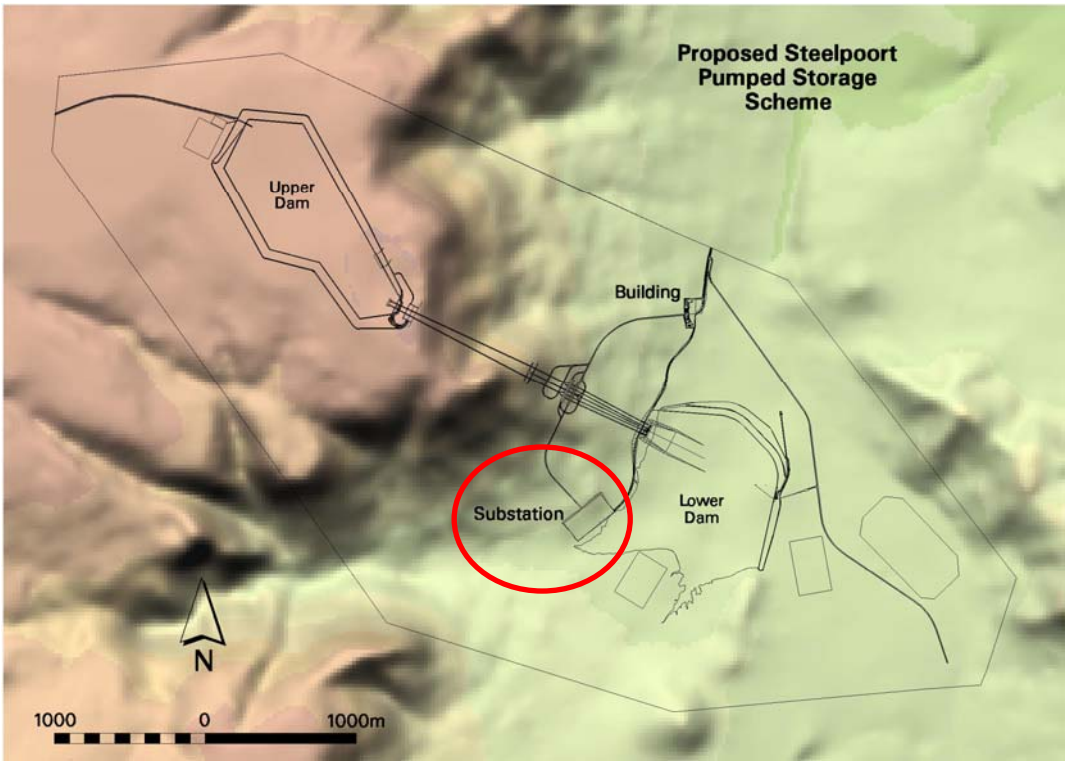

Figure 2.2: Schematic diagram indicating the proposed positioning of the Steelpoort Substation in relation to the PSS

2.1.2. Identification of Alternative Transmission Power Line Corridors

Reasonable and feasible alternative transmission power line corridors have been identified for:

i) the proposed 400kV transmission power lines looping-in and -out of the Duvha-Leseding transmission power line and the Steelpoort Substation, and
ii) the proposed 400kV transmission power line between the new substation and the existing Merensky Substation.

The extent of the study area and the selection of corridors within the study area give consideration to such aspects as ecological impacts, social impacts, visual impacts, technical feasibility and cost.

The following technical requirements were considered in the identification of feasible corridors for the establishment of the required transmission power lines:

» Technically viable and cost effective corridors of approximately 1 km in width were identified. The environmental feasibility of these corridors was

determined through the identification of “no-go” or “fatal flaw” areas, and preferred corridor alignments were nominated.

» As far as possible, the servitude lengths between supply points should be minimised.
» As far as possible, the number and magnitude of angles along the power line should be minimised in order to allow the use of less expensive and visually intrusive tower types.
» As far as possible, the proposed new 400kV Transmission power lines should be constructed in parallel with existing linear infrastructure. This will assist to minimise the physical impact on individual properties along the proposed route.
» Crossing over of existing major power lines should be avoided as far as possible, as this increases the potential for technical incidents during operation.
» The alignment should cater for known topographical/terrain constraints of the tower types to be used, and soil conditions for the foundations in terms of geotechnical suitability and costs.
» The proposed alignment should provide for the need of appropriate access roads to the servitude and tower positions for the both construction and maintenance/operation phases.
» Care should be taken to avoid the following as far as tower positioning and access road construction are concerned:
    o extensive rock outcrops;
    o rugged terrain, hills and mountains;
    o active clay soil, vleis and floodplains;
    o potential unstable side-slope terrain; and
    o eroded and unstable areas (e.g. shallow undermining).
» Other issues which technically affect the location of a transmission power line include:
    o agricultural lands, in particular those under irrigation (such as centre-pivot systems);
    o large water bodies;
    o open-cast mining;
    o crossing points with roads, rail and telecommunication lines at off-set angles less than 60°.
» The following obvious and observable environmental issues should be taken into account:
    o human settlements and communities;
    o land use (where possible);
    o passing between water bodies (bird flight paths usually extend between water bodies);
    o ecologically sensitive areas;
    o scenic areas with high visual/aesthetic quality; and
    o untransformed indigenous vegetation.

2.1.3. Identification of Alternatives for the Construction of Two 400kV Transmission Power Lines Looping-in and -out of the Existing Duvha-Leseding 400kV Transmission Power Line to the Proposed Steelpoort Substation

In identifying a feasible transmission line corridor for the proposed construction of two 400kV transmission power lines looping-in and -out of the existing Duvha-Leseding 400kV transmission power line to the proposed Steelpoort Substation, a number of alternatives were considered:

1. A straight line between the Steelpoort Substation and the Duvha-Leseding transmission power line.
2. An alignment in a north-north-easterly direction, and then following an existing 132kV sub-transmission line to the Duvha-Leseding line (refer to Figure 2.3).
3. An alignment following an existing gravel road in a north-easterly direction out of the PSS across property which is to be acquired by Eskom for the establishment of the PSS, and then following an existing 120kV sub-transmission line to the Duvha-Leseding line (refer to Figure 2.4).

As a result of topographical constraints of the area between the Steelpoort Substation and the existing Duvha-Leseding 400kV transmission power line option 1 described above is not considered by Eskom to be technically feasible to construct or operate. Therefore, this alternative was excluded as a reasonable and feasible alternative and is not required to be considered further within the EIA process.

Through the public consultation process, and in considering impacts to private landowners (and subsequently the environment) in the southern portion of the study area, it was determined that alternative 2 described above is not considered reasonable, as the proposed lines could be re-routed to cross properties which they would be required to acquire for the establishment of the PSS. Therefore, this alternative was excluded as a reasonable and feasible alternative and is not required to be considered further within the EIA process.

Therefore, only one reasonable and feasible alternative corridor alignment has been identified for the construction of the transmission power lines two 400kV transmission power lines looping-in and -out of the existing Duvha-Leseding 400kV transmission power line to the proposed Steelpoort Substation (refer to Figure 2.4). This is the alignment which is considered within this Scoping Report.

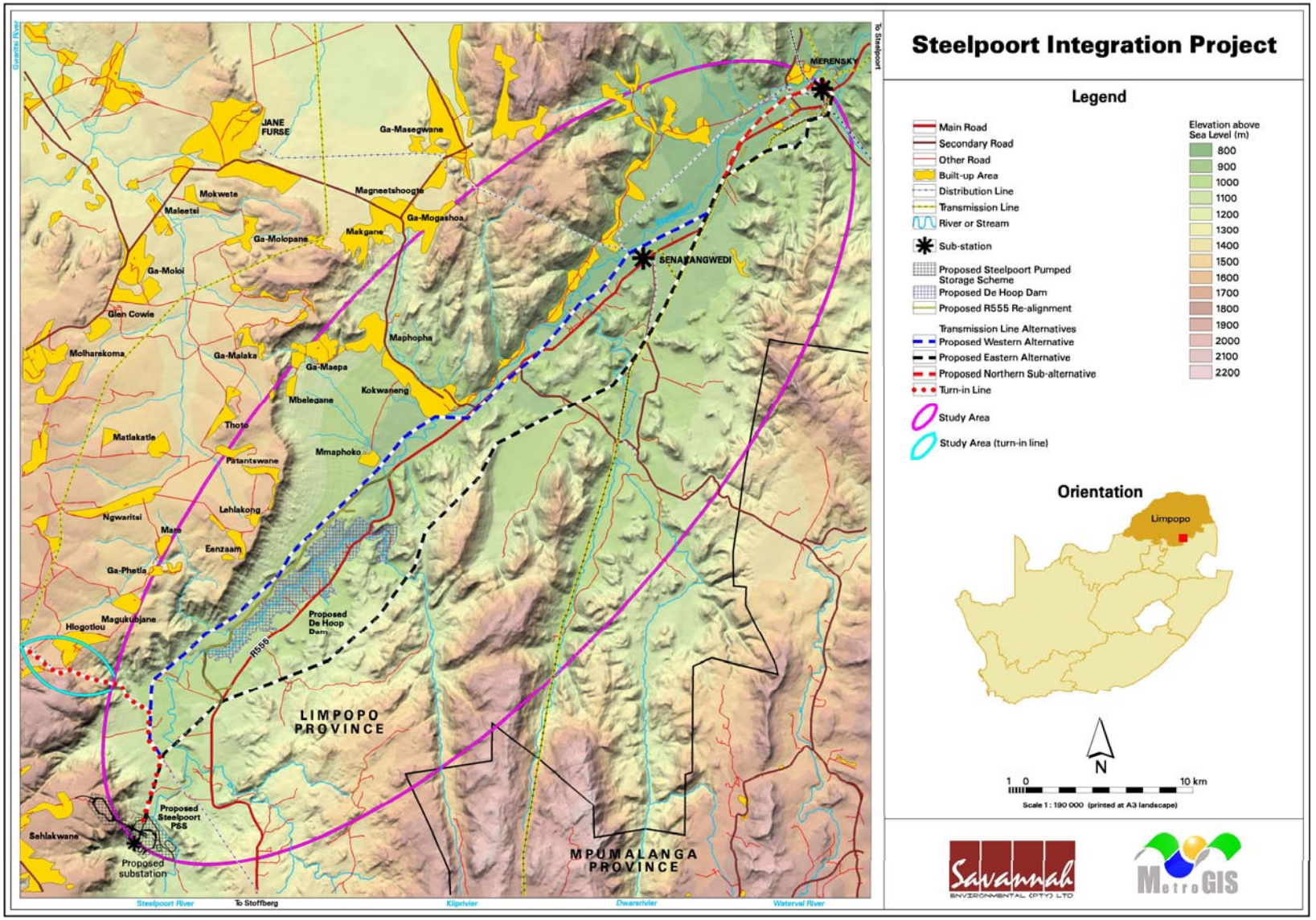

Figure 2.3: Map showing alternatives initially considered for the proposed transmission power lines associated with the Steelpoort Integration Project

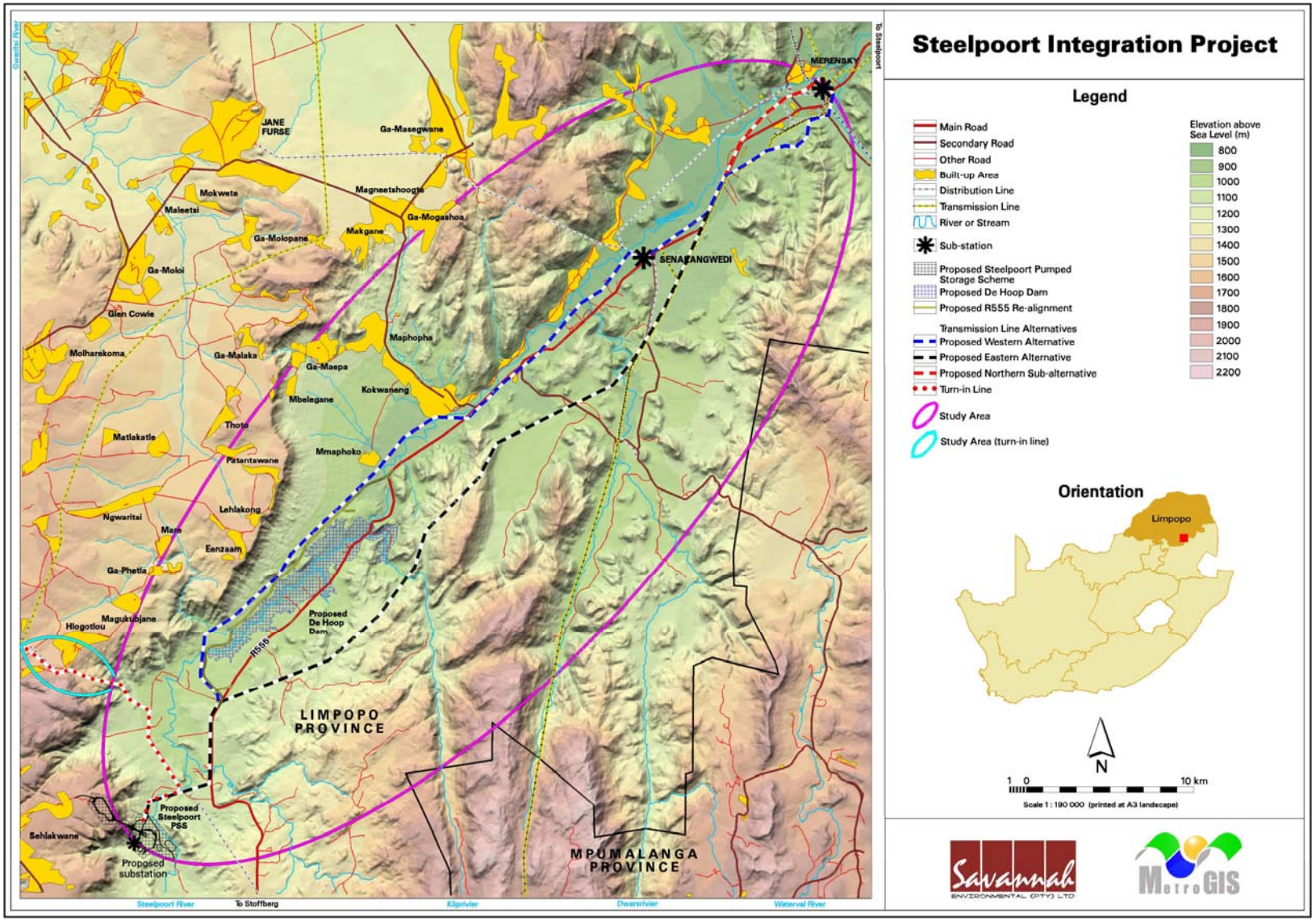

Figure 2.4: Map showing alternatives considered within the Environmental Scoping Study for the proposed transmission power lines associated with the Steelpoort Integration Project

The following technical alternatives associated with the construction of the two 400kV transmission power lines looping-in and -out of the existing Duvha-Leseding 400kV transmission power line to the proposed Steelpoort Substation have been identified for consideration:

1. The construction of two 400kV lines in parallel, each with a servitude width of 55 m in width. This would involve the use of conventional towers which are approximately 35 m in height.
2. The construction of the two 400kV lines as a double-circuit line. This would involve the use of one tower of approximately 55 m in height, which could accommodate both lines. This option would require a single servitude of 55 m in width.

Due to topographical and land availability constraints, the double-circuit option would be required to be implemented for the last 5 km before the line joins with the Duvha-Leseding line.

These two alternatives have been considered within this Scoping Report.

2.1.4. Identification of Alternatives for the Construction of a 400 kV Transmission Power Line between the Proposed Steelpoort Substation and the Existing Merensky Substation

In identifying a feasible transmission power line corridor for the proposed 400kV transmission power line between the proposed Steelpoort Substation and the existing Merensky Substation, a number of alternatives were considered:

1. An alignment in a north-north-easterly direction, then parallel to an existing 132kV sub-transmission line, then in a northerly direction to meet up with the re-routed R555 alignment to the west of the De Hoop Dam, and then approximately following the re-routed R555 to the Merensky Substation (referred to as the western alignment; refer to Figure 2.3).
2. An alignment in a north-north-easterly direction across the R555 to follow an alignment to the east of the De Hoop Dam to the Merensky Substation (referred to as the eastern alignment; refer to Figure 2.3).
3. An alignment following an existing gravel road in a north-easterly direction out of the PSS across property which is to be acquired by Eskom for the establishment of the PSS up to the R555, and then approximately following the re-routed R555 to the Merensky Substation (referred to as the western alignment; refer to Figure 2.3).
4. An alignment following an existing gravel road in a north-easterly direction out of the PSS across property which is to be acquired by Eskom for the establishment of the PSS up to the R555, and then following the R555 up to where the R555 re-alignment begins. Thereafter the alignment is

proposed to follow an alignment to the east of the De Hoop Dam to the Merensky Substation (referred to as the eastern alignment; refer to Figure 2.4).

5. A northern sub-alternative to both the western and eastern alternatives identified which passes to the west of the R555 before entering the Merensky Substation.

Through the public consultation process, and in considering impacts to private landowners (and subsequently the environment) in the southern portion of the study area, it was determined that alternatives 1 and 2 described above are not considered reasonable, as the proposed line could be re-routed to cross properties which they would be required to acquire for the establishment of the PSS. Therefore, these alternatives were excluded as reasonable and feasible alternative and are not required to be considered further within the EIA process.

Alternatives 3, 4 and 5 have been determined to be technically feasible and are therefore considered in more detail within this Scoping Report.

Through the public consultation process, localised alternatives have been identified in order to address specific land use issues in the northern section of the study area. These are reflected in Figure 2.5, and are reflected as the proposed R555 sub-alternative and the proposed southern sub-alternative.

2.1.5. Construction of an additional feeder bay at the existing Merensky Substation

In order to accommodate the new 400kV transmission power line from the Steelpoort Substation, the existing Merensky Substation will require an additional 400kV line feeder bay. This extension to the substation will be accommodated within the existing Eskom property boundaries at this existing substation. No impacts are anticipated to be associated with this extension work, and therefore this was not required to be considered in detail within the EIA.

2.2. Consideration of the 'do-nothing' alternative

The 'do-nothing' alternative is the option of not constructing the Steelpoort Integration Project.

The electricity demand in South Africa is placing increasing pressure on Eskom's existing power generation and transmission capacity. South Africa is expected to require additional peaking capacity by 2007, and baseload capacity by 2010, depending on the average growth rate.

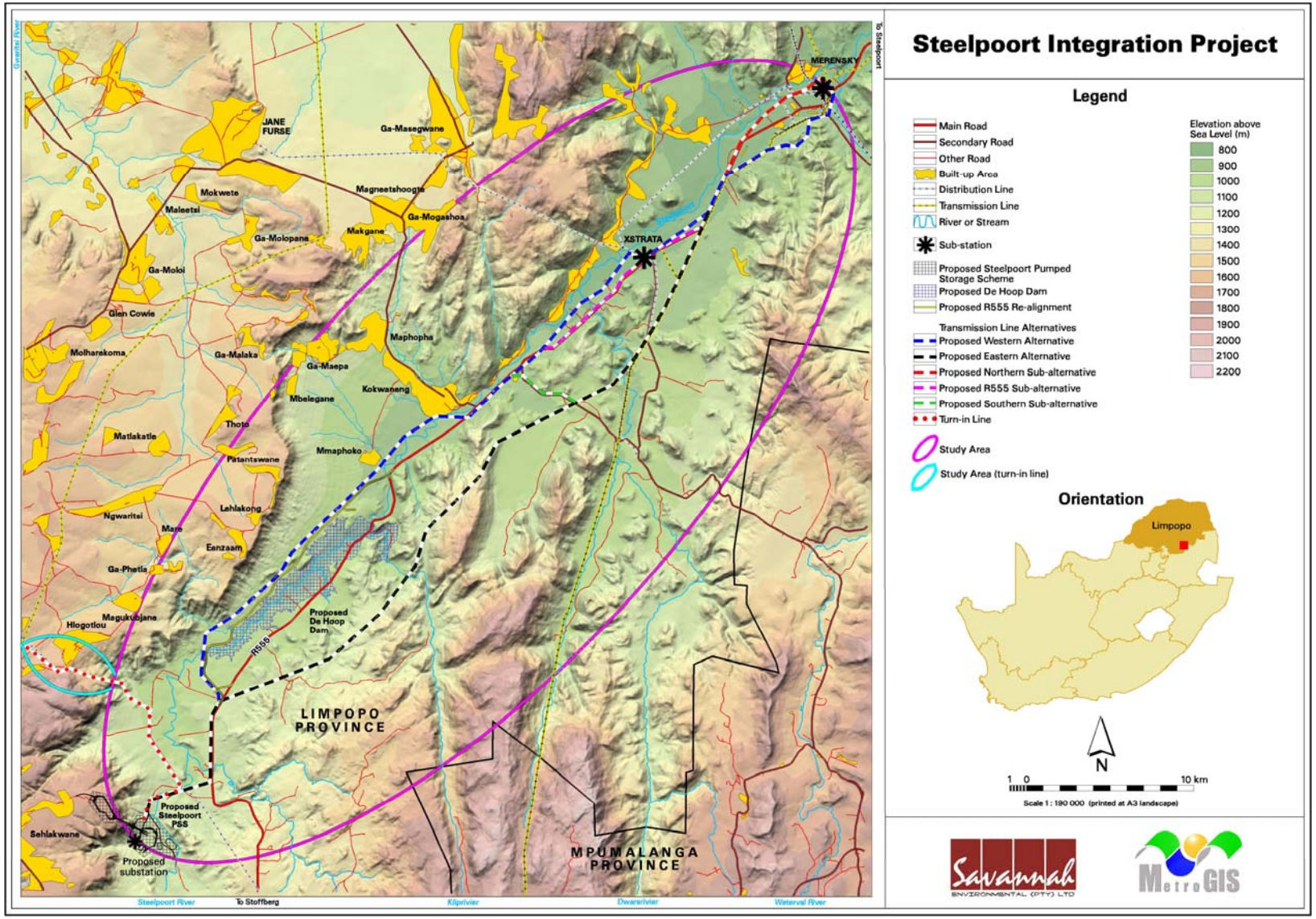

Figure 2.5: Map showing localised sub-alternatives considered within the Environmental Scoping Study for the proposed transmission power lines associated with the Steelpoort Integration Project

In response to the need for additional peaking capacity, Eskom is planning the planning a new Pumped Storage Scheme (PSS) approximately 40 km North-West of Eskom's existing Simplon substation in the Mpumalanga Province. In order to integrate this PSS into the electricity transmission network, and thereby transmit the electricity generated to the country, Eskom Transmission is proposing the construction of a substation and power lines to integrate Steelpoort PSS into the Transmission grid. The project is called Steelpoort Integration Project.

The 'do nothing' alternative will therefore result in the PSS not being integrated into the transmission network and the power generated by the PSS not being transmitted.

The 'do nothing' alternative is therefore not considered to be a feasible alternative.