

**MARGEN INDUSTRIAL SERVICES &
PBA INTERNATIONAL**

ENVIRONMENTAL IMPACT ASSESSMENT

SCOPING PHASE

**Proposed Braamhoek-Venus 400kV Transmission
Line**

Social Impact Assessment

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Social Impact Assessment

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EXECUTIVE SUMMARY

INTRODUCTION

Margen Industrial and PBA International (PBA) were appointed by Eskom to conduct an Environmental Impact Assessment (EIA) for the proposed Braamhoek Integration Study, which is to make provision for the integration of the Braamhoek Pumped Storage Scheme (PSS) into the national electricity grid of South Africa. This will require three basic components, viz.:

- The construction of a 400kV Substation (Braamhoek Substation) near the scheme.
- A connection with the national grid via a 'turn-in' from the existing Majuba-Venus II 400kV Transmission Line.
- A further direct link from the substation to the grid linking the Braamhoek Substation and the Venus Substation (near Estcourt)

ACER (Africa) Environmental Management Consultants (ACER) was sub-contracted by PBA to conduct a Social Impact Assessment (SIA) for each of the three components, as part of a suite of specialist studies conducted for the EIAs.

This report presents the findings of the SIA for the Braamhoek-Venus 400kV Transmission Line and is structured as per the Scoping Report format provided to all the specialists by PBA. The specialist studies are, therefore, not stand-alone reports and need to be read as part of the Scoping Report. The approach to undertake a detailed Scoping Study for each of the three projects that comprise the Braamhoek Integration Study was approved by the Department of Environmental Affairs and Tourism (DEAT) because there are existing servitudes along the Majuba-Venus I (MV I) and MV II 400kV Transmission Lines, and the proposed site for the Braamhoek Substation falls within the existing Braamhoek Pumped Storage Scheme site.

PROPOSED STUDY APPROACH

Three route alternatives have been considered for the new 400kV line connecting the proposed Braamhoek Substation to the existing Venus Substation:

- Alternative 1:
Running parallel to Majuba-Venus I along the eastern side of the study area.
- Alternative 2:
Running parallel to Majuba-Venus II along the western side of the study area.
- Alternative 3:
Following a middle route between Alternatives 1 and 2.

DESCRIPTION OF THE RECEIVING ENVIRONMENT

The description of the receiving environment provides a concise outline of some of the characteristics of the social environment which have relevance to the proposed Braamhoek-Venus 400kV Transmission Line. The description is structured according to the three alternatives, and the discussion on each alternative includes:

- Land use and associated economic activities.
- Settlement patterns.
- Land tenure and land reform.
- Socio-economic status and social dynamics.

SELECTION OF ALTERNATIVES

By far the largest negative impact on the social environment is resettlement and where possible, residential properties need to be avoided. However, a transmission line has technical constraints associated with it, which limit the degree to which a route can deviate from its set course, as determined by its two end points (i.e. Venus and Braamfontein Substations). Thus, a preliminary assessment and comparison of the three alternatives was undertaken in order to identify a preferred alternative based on how much resettlement would likely be required per route. In this regard, Alternative 2 was preferred.

As Alternative 2 was also the preferred alternative of the majority of the specialists (other than the visual impact specialist), PBA requested that it be taken forward for assessment.

IDENTIFICATION AND ASSESSMENT OF IMPACTS

For the assessment of potential issues and impacts associated with Alternative 2, impact tables provided by the lead consultant were used. These include the following conventions:

- Nature of the impact.
- Stage of the proposed project where the impact may occur.
- Extent of impact.
- Duration of impact.
- Intensity of impact.
- Probability of occurrence.
- Status of the impact.
- Accumulative impact.
- Level of significance prior to mitigation.
- Mitigation measures.
- Level of significance after mitigation
- EMP requirements.

Each table also provides for a brief discussion of the impact and/or any other additional information on any of the conventions.

The impacts identified and assessed are as follows:

- Increase in national employment opportunities.
- Increase in local employment opportunities.

- Opportunities for SMEs and local contractors.
- Resettlement of households, homesteads and farm infrastructure.
- Resettlement of graves.
- Reduction in property values of commercial farms.
- Potential loss of, or injury to, livestock and game.
- Construction-camp related impacts.
- Increased spread of diseases (including sexually transmitted diseases and HIV/AIDS).
- Impacts on safety and security.
- Potential risk of fires.
- Potential adverse effects of electromagnetic fields (EMFs)

CONCLUDING REMARKS

The assessment shows that there are no negative social impacts associated with Alternative 2 which can be classified as fatal flaws, or which are of high significance that would require this alternative to be rejected, provided that the suggested mitigation measures are undertaken. ACER believes that the report accurately reflects the impacts that the proposed Braamhoek-Venus Transmission Line may have on the social environment. Allied to this, ACER has provided sound suggestions to mitigate any anticipated negative impacts and enhance the positive ones. It is, however, important that these suggestions are implemented in order for the project to be environmentally acceptable.

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ACRONYMS

ACER	ACER (Africa) Environmental Management Consultants
AIDS	Acquired Immune Deficiency Syndrome
DEAT	Department of Environmental Affairs and Tourism
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
HIV	Human Immune Deficiency Virus
IDP	Integrated Development Plan
MV I	Majuba-Venus I 400kV Transmission Line
MV II	Majuba-Venus II 400kV Transmission Line
PBA	PBA International
PSS	Pumped Storage Scheme
SIA	Social Impact Assessment
SMEs	Small and Medium Enterprises
STD	Sexually Transmitted Disease

REPORT CONTRIBUTORS

The following ACER personnel contributed to the compilation of this report - Mr BJ van der Walt (Socio-economic Specialist) and Ms J Tooley (Internal Reviewer).

1. INTRODUCTION

1.1 Background

Margen Industrial and PBA International (PBA) were appointed by Eskom to conduct an Environmental Impact Assessment (EIA) for the proposed Braamhoek Integration Study, which is to make provision for the integration of the Braamhoek Pumped Storage Scheme (PSS) into the national electricity grid of South Africa. This will require three basic components, viz.:

- The construction of a 400kV Substation (Braamhoek Substation) near the scheme.
- A connection with the national grid via a 'Turn-in' from the existing Majuba-Venus II 400kV Transmission Line.
- A further direct link from the substation to the grid linking the Braamhoek Substation and the Venus Substation (near Estcourt)

ACER (Africa) Environmental Management Consultants (ACER) was sub-contracted by PBA to conduct a Social Impact Assessment (SIA) for each of the three components, as part of a suite of specialist studies comprising the EIAs.

Following a Pre-feasibility Study, PBA submitted applications, on behalf of Eskom, for environmental authorisation to the Department of Environmental Affairs and Tourism (DEAT) in November 2004. DEAT approved the proposed Plans of Study submitted with the applications, whereby PBA is to undertake detailed Scoping Studies for each of the project components.

PBA provided all the specialists with a generic template for the Scoping Report into which each specialist had to feed certain information. The specialist studies are, therefore, not stand-alone reports and need to be read in conjunction with the Scoping Report. Report sections such as Background to the Study, Overall Description of the Study Area, and Technical Details of the proposed infrastructure, are not included in the SIA, as they are dealt with in detail in the Scoping Report. Where applicable, reference will be made to these sections in the SIA. No maps or figures are included in the SIA. All maps are consolidated in Appendix 1 of the Scoping Report and reference in the text has been made accordingly.

2. PROPOSED STUDY APPROACH

The approach to undertake a detailed Scoping Study for each of the three projects that comprise the Braamhoek Integration Study was approved by the Department of Environmental Affairs and Tourism (DEAT) because there are existing servitudes along the Majuba-Venus I (MV I) and Majuba-Venus II (MV II) 400kV Transmission Lines, and the proposed site for the Braamhoek Substation falls within the Braamhoek Pumped Storage Scheme site.

Three route alternatives have been considered for the new 400kV line connecting Braamhoek to the existing Venus Substation:

- Alternative 1:
Running parallel to Majuba-Venus I along the eastern side of the study area.
- Alternative 2:
Running parallel to Majuba-Venus II along the western side of the study area.
- Alternative 3:
Following a middle route between Alternatives 1 and 2.

Given that there are two vacant servitudes on the Majuba-Venus I and II lines, these options already have significant environmental advantages over a new route through the area (Scoping Report: Section 2.5). Nevertheless, a middle route was identified during the Pre-feasibility Study and further refined after stakeholder consultation and specialist investigation, and this option has been assessed in the Scoping Study.

At the pre-feasibility stage there were already important differences between the alternatives:

- Following the Majuba-Venus I line would still require the new line to divert across 'new' ground for a considerable distance, either through the settlements of Driefontein, Peace Town and Watersmeet, or around the western side of these settlements.
- Following a middle route between Venus and Braamhoek would cross large irrigation lands near Colenso and would then have to divert around the new Qedusizi Dam that lies to the west of Ladysmith. This diversion would bring it closer to the Majuba-Venus I or II options depending on whether it runs east or west of the dam and it would therefore be best following either of these routes from that point on to Braamhoek. In this event it is seen to be preferable to follow either Majuba-Venus I or II from the start and avoid the middle route altogether. Nevertheless, this option has been considered in the Scoping Study in the event that there are problematic areas along the other two alternative routes.
- Following the Majuba-Venus II line has the advantages of being the shortest line, having a vacant servitude for the greater part of the route, and running parallel to other 400kV lines for the entire route (i.e. it would run parallel to the Majuba-Venus II Turn-in).

3. DESCRIPTION OF THE SOCIAL AND SOCIO-ECONOMIC ENVIRONMENT

This section describes the social environment in more detail than is provided in the general description of the study area in Section 5.3 of the Scoping Report (Description of the Study Area). It focuses on the key social characteristics which are of particular relevance to the proposed Braamhoek-Venus 400kV Transmission Line. These are:

- Land use and associated economic activities.
- Settlement patterns.
- Land tenure
- Socio-economic status and social dynamics.

The information has been sourced from the Emnambithi Municipality Integrated Development Plan (IDP), the Umtshezi Municipality IDP, the District Municipality IDP, discussions with a number of key stakeholders, study of 1:50 000 topographical/other maps as well as in-field observations by the specialist, made during two three-day field visits to the project area. The level of detail is consistent with the level of detail required for a detailed Scoping Study and by PBA.

As the receiving social and socio-economic environments differ across the three alternatives, a description is provided per alternative.

3.1 Alternative 1: (Running parallel to the existing Majuba Venus I line)

3.1.1 *Land use and associated economic activities*

Land use along Alternative 1 varies greatly. A number of commercial farms are privately owned and activities include cattle farming, some game farming, and limited crop cultivation (Emnambithi IDP: 2002 & Umtshezi IDP: 2002). There are a number of densely settled areas along the route of the existing MV I line, predominantly in the northern third of the route but also scattered along it towards the south (see Section 3.1.2 and 3.1.3 for more detail). In most of these areas, there are homesteads close to the existing servitude as well as within the existing vacant servitude. Limited subsistence agriculture (e.g. small maize and vegetable patches) is practiced close to or around homesteads. Communal grazing areas are located around the settlements.

There are also conservation and ecotourism activities along Alternative 1. The Umsuluzi Game Reserve is located between the Venus and Bloukrans Sub-stations (Scoping Report, Appendix 1). It was established in 1993. Together with surrounding properties, the Reserve has subsequently been subject to a successful land claim. The new owners are the Sibuyelo Matiwane Community Trust. Three concessions have been let by the new owners, i.e. a game concession, a tourism concession, and a traverse concession to private landowners located within the Reserve. This area, together with Mtontwane and Weenen Game Reserves, managed by Ezemvelo KZN Wildlife, will form part of Phase 1 of the Weenen Conservation Area (PBA: 2005).

Recently, the farm Rietfontein (in the northern half of the study area) (Scoping Report, Appendix 1), was purchased by a foreign investor for the specific purpose of establishing a

game lodge and eco-tourism venture (Reddy, R. Personal Communication). This can potentially link with the proposed biosphere development around the Windsor Dam. According to the Town Planning Department of the Emnambithi Municipality (Le Roux, B. Personal Communication), Development Facilitation Act applications have been submitted for the biosphere development and planning is underway. A number of landowners to the east and west of this proposed development have indicated that they will be eager to become part of a greater conservation/tourism initiative (Bristow, M. Personal Communication).

Both these initiatives, together i.e. the Windsor Dam Biosphere and the Rietfontein development, are aimed at attracting tourists to the area by broadening the battlefields experience (Van Wyk, L. Personal Communication).

The proposed alternative also runs alongside the eastern boundary of the so-called 'Battlefields Corridor' (Scoping Report, Appendix 1), which includes battlefields from both the Great Trek and Anglo-Boer War. In recent years, interest in the battlefields has grown, and guided-tour operators and bed and breakfast accommodation have increased in numbers (Emnambithi IDP: 2002).

3.1.2 Settlement patterns

Settlement density along this alternative varies between very low and very high, with high-density settlements occurring in clustered nodes along the route. From south to north, these settlements are, *inter alia*, Cornfields (south-east of Colenso), Bloukrans (east of Colenso), Quinisa, Pieters, St Chads (east of Ladysmith), Watersmeet, Peace Town, Mashiseleni, Driefontein, Burford, Mkutu and Roodepoort (in the northern half of the study area) (Plate 1) (Scoping Report, Appendix 1). The settlements consist of clustered homesteads, predominantly constructed of bricks and mortar, but with a substantial number of structures built with traditional material.

The existing MV I does not pass by any of the larger formal towns in the area. Alternative 1 will therefore also not be close to any of these.

On commercial farmland there are scattered farm homesteads interspersed with farm labourer housing. These farm labourer homesteads usually contain a number of housing structures with limited associated infrastructure (Emnambithi IDP: 2002 & Umtshezi IDP: 2002).

3.1.3 Land tenure

Land tenure along Alternative 1 varies between State Land, Ngonyama Trust Land, and privately owned land. Table 1 lists the Traditional Authority area traversed by Alternative 1 in the northern half of the study area.



Plate 1 Homesteads in close proximity to an existing transmission line.

Table 1 Areas under Traditional Authority traversed by Alternative 1

Name of Nkosi and Traditional Authority	Name of area
Abatungwa-Kholwa Traditional Authority Nkosi TR Nxumalo	Driefontein Watershed Doornhoek Randjieslaagte Watersmeet Hlathini Peacetown Kirkintulloch Kleinfontein/Nkutu Mathondwana Hobsland Riversdale

(Information source: Msomi, B. Personal Communication)

In a number of the settlements along Alternative 1 (whether under Traditional Authority or not) e.g. Peacetown, Driefontein and Mkutu, land ownership is unclear. Some land titles in these areas were issued as far back as 1910, and were issued to some of the first black South Africans to hold formal title to land. Since then, however, most of the original landowners have passed away, many of them in *testate*. This creates certain difficulties in tracing legal ownership. For example, an extended family can be living on a piece of land, which originally belonged to a grandfather or great grandfather, but after his death, the title was never transferred to a rightful heir. There have also been numerous incidents of conflict within extended families over the years, relating to the inheritance and transfer of title (Section 4.1.2) (Van Wyk, L. Personal Communication). Therefore, in order to initiate negotiations for a servitude, such a family will need to resolve a sometimes conflict-filled internal process, after which official changes have to be made at the deeds office. This implies that it could potentially take years to initiate servitude negotiations.

There are also active land reform projects in the area. In November 2004, an offer to purchase was signed between a number of landowners and the Department of Land Affairs, for 14,240.758 ha of privately owned farmland, which falls in the area of the Besters Farmers' Association, to the north of the study area ¹. A total of nearly R 22 million was made available under the Land Redistribution For Agricultural Development funding, for the purchase of the land as well as the initial start up of an agriculture development scheme. The applicants for the grant are the Besters Cluster Committee, which comprises labour tenants² and/or current occupiers, all residing in the Besters area (Department of Land Affairs: 2004). There are a total of 183 applicants and 390 associates who have formed Communal Property Associations to take ownership of these properties. The Besters Farmers' Association and the Qedusizi Communal Property Association have jointly drafted an implementation and management plan, for implementation once the land has been transferred to the various communities.

Farms included in this Land Reform process which are potentially crossed by Alternative 2 are:

- Walkershoek.
- Trekboer.
- Nooitgedacht.
- Spitzkop.
(Henderson, L. Personal Communication).

The four farms listed above are parent farms, portions of which are included in the Land Reform process. These will only be affected if an Alternative 1 alignment skirting south of the Hobsland (Peace Town) area is followed. Only if Alternative 1 is selected as the preferred alternative, and a final alignment determined, can exact affected farm portions be identified.

3.1.4 Socio-economic status and social dynamics

The population of the Umtshezi and Emnambithi Municipalities are generally poor with low annual household incomes (Table 1).

Income	(%) Umtshezi Municipality	(%) Emnambithi Municipality
R 1 – R 18,000	45.96	32.12
R 18,001 – R 30,000	22.57	25.08
R 30,001 – R 72,000	10.64	6.71
R 72,001 – R 132,000	4.53	4.64
R 132,000 – R 192,000	0.88	1.00
Over R 192,000	0.58	0.67
Other	14.84	31.38
Total	100	100

(Umtshezi IDP: 2002 & Emnambithi Municipality: 2002)

Table 1 shows that 68.53% of the households in the Umtshezi Municipality and 57.20% of the population in the Emnambithi Municipality, earn below R 30,000 per annum. The average household size is 5.62 (Umtshezi IDP: 2002 & Emnambithi Municipality: 2002).

¹ This offer was signed in terms of the Provision of Land and Assistance Act, No. 126 of 1993.
² As defined by the Labour Tenants Act, No 3 of 1996.

A large portion of the households earning less than R 30,000 per annum are located in settlement areas outside of the larger formal towns or in township areas surrounding these towns (section 3.1.2) (Scoping Report, Appendix 1).

There is strong reliance on natural resources among people in settlements outside of the larger formal towns and in settlements along Alternative 1. According to the IDPs of the two Local Municipalities (Umtshezi IDP: 2002 & Emnambithi Municipality: 2002), these settlements are strongly reliant on boreholes and streams for water supply. Also, approximately 50% of the population uses wood as a major energy source for cooking.

There is a large number of Community Based Organizations in the two municipal areas. These include Community Garden Groupings, Sewing Clubs, Development Committees and Small Farmer Groups. There are also a number of well organised Farmers' Associations, which cover the whole of the commercial farming areas within the study area. Alternative 1 crosses through areas where most of these organisations and associations are represented.

3.2 Alternative 2: (Running parallel to the existing Majuba-Venus II line)

3.2.1 Land use and associated economic activities

The dominant land use along Alternative 2 is commercial agriculture, with cattle farming being the largest agricultural activity. A number of farmers have also started introducing game onto their farms over the last few years (Emnambithi IDP: 2002).

Although the N3 highway is used as a major access corridor between Gauteng and KwaZulu-Natal, which experiences high traffic volumes during holiday seasons, there is little tourism activity along this Alternative. A number of farmers have established small bed and breakfast facilities on their farms, but these are mostly used as overnight accommodation and not necessarily for longer holiday periods. Although a number of farmers have also started introducing game onto their farms (Section 3.2.1), as yet no formal eco-tourism ventures have been established in this area.

3.2.2 Settlement patterns

Settlement density along this alternative is low. Settlement consists of scattered farm homesteads, interspersed with farm labourer housing. These farm labourer homesteads generally contain a number of housing structures with limited associated infrastructure (Emnambithi IDP: 2002 & Umtshezi IDP 2002).

3.2.3 Land tenure

All the land along Alternative 2 is privately owned, either by Trusts or individuals, except for two areas which fall under the authority of Nkosi Shabalala.

A number of farms are included in the Land Reform process, similar to that described in Section 3.1.3, are potentially crossed by Alternative 2.

- Bluebank.
- Maritzdrift.
- Zandspruit.
- Boschfontein.
- Trekboer.
(Henderson, L. Personal Communication).

The five farms listed above are parent farms, of which only portions are included in the Land Reform process. Only if Alternative 2 is selected as the preferred alternative, and a final alignment determined, can exact affected farm portions be identified.

After the alternative veers away from the MV II, it crosses commercial farmland and may potentially cross portions of the farms Boschfontein, Maritzdrift, Welkom and Braamhoek, up to where it joins the Braamhoek Substation. Eskom has purchased a number of farms for the PSS, i.e. Braamhoek Portions 1 and 3, and Zaaifontein Portions 2, 3 and 5. (Louwinger, F. Personal Communication).

3.2.4 Socio-economic status and social dynamics

The socio-economic status of the population along Alternative 2 is less varied than that of the population along Alternative 1. There are two main groupings i.e. commercial farmers on privately owned farmland and farm labour tenants. The majority of commercial farms would fall within the middle to higher income categories outlined in Table 1. On the other hand, the majority, if not all farm labour tenants, would fall within the lower two categories.

On some of the farms, labour tenants have access to electricity and potable water, but in other instances, they rely on natural resources for water, energy etc.

The majority of landowners belong to the one or more Farmers' Associations. Labour tenants are not often organised into any form of association. However, towards the north of the study area, the Besters Cluster Committee comprises more than 500 applicants and associates from the ranks of labour tenants (Section 3.1.3).

3.3 Alternative 3: (Following a middle route between Alternatives 1 and 2)

3.3.1 Land use and associated economic activities

Land use along Alternative 3 also varies, but not as greatly as along Alternative 1. There are three areas of relatively dense settlement along Alternative 3 situated towards the south and central area of the study area (see Section 3.3.2 for further detail).

North of Colenso, where the alternative will cross the R103 (whether it crosses the Qedusizi Dam or bypasses it), Alternative 3 ceases to follow existing infrastructure. From there to the proposed Braamhoek Substation, Alternative 3 crosses privately owned farmland. These are predominantly cattle farms with small pockets of maize interspersed.

The proposed alternative runs through the southern part of the 'Battlefields Corridor', and then runs up the western side of the corridor until it passes Ladysmith (Scoping Report, Appendix 1). Similar to Alternative 1, but to a slightly lesser extent, guided-tour operators and bed and breakfast accommodation have increased in numbers over recent years (Emnambithi IDP: 2002).

3.3.2 Settlement patterns

There are three areas of relatively dense settlement, i.e. Cornfields in the south, the area where the Alternative passes to the west of Colenso, and further along to the east of Roosboom (Roosboom, Pieters and Rietkuil fall under two Traditional Authority areas (see Section 3.3.3). The alternative will, in all likelihood, bypass the Mkutu settlement area (Emnambithi IDP: 2002) (Scoping Report, Appendix 1).

The types of settlements found along this alternative are similar to those along Alternative 1 (Section 3.1.2), consisting of clustered homesteads, predominantly constructed of bricks and mortar, but with a substantial number of structures built with traditional material.

On commercial farmland there are scattered farm homesteads, interspersed with farm labourer housing. These farm labourer homesteads usually contain a number of housing structures with limited associated infrastructure (Emnambithi IDP: 2002).

3.3.3 Land tenure

Land tenure along Alternative 3 is similar to that along Alternative 1, varying between State owned, Traditional Authority (Table 2), and privately owned land. Most farmland is privately owned. In a number of the settlements along Alternative 3 (whether under Traditional Authority or not), land ownership is unclear. Some land titles in these areas were issued as far back as 1910, and were issued to some of the first black South Africans to hold formal title to land. In some instances this leads to confusion as to current ownership and status of the land (Van Wyk, L. Personal Communication).

Table 2 Traditional authority areas traversed by Alternative 3

Name of Nkosi and Traditional Authority	Name of area
Amantesha Traditional Authority Nkosi MP Zondi	Roosboom Pieters Rietkuil
Amahlubi Traditional Authority Nkosi MA Radebe	Roosboom Pieters Rietkuil

(Information source: Msomi, B. Personal Communication)

A number of farms included in this Land Reform process, similar to what is described in Section 3.1.3, are potentially crossed by Alternative 3.

- Walkershoek.
- Trekboer.
- Nooitgedacht.
- Spitzkop.
(Henderson, L. Personal Communication).

The four farms listed above are parent farms, of which portions are included in the Land Reform process. Only if Alternative 3 is selected as the preferred alternative, and a final alignment determined, can exact affected farm portions be identified.

There is no vacant 400 kV servitude for Alternative 3 to follow, and therefore, a whole new servitude will need to be negotiated and registered on both privately owned land, land as part of the Land Reform process and on land with unidentified tenure.

3.3.4 Socio-economic status and social dynamics

Due to the variations on type and distribution of land use along Alternative 3, the socio-economic status of the population along this alternative also varies. On commercial farms, the income is similar to that described under Section 3.2.4. In smaller settlements and Traditional Authority areas, income levels are predominantly low, i.e. within the lower two categories outlined in Table 1.

There are a large number of Community Based Organisations in the two municipal areas. These include Community Garden Groupings, Sewing Clubs, Development Committees and Small Farmer Groups. There is also a number of well organised Farmers' Associations, which cover the whole of the commercial farming areas within the study area. Alternative 3 crosses through areas where most of the organisations and associations are represented.

4. DISCUSSION ON ALTERNATIVES, PRELIMINARY ASSESSMENT OF ALTERNATIVES AND SELECTION OF THE PREFERRED ALTERNATIVE

A Specialist field visit was conducted between 12 and 14 January 2005. During this field visit, Specialists had the opportunity to visit the alternative routes proposed and make observations regarding potential discipline-specific impacts. Towards the end of the field visit, the Specialists had an in depth discussion on these observations and potential impacts. Through the discussions, the three alternatives were ranked from most to least preferred according to each individual Specialist's perspective. Based on this initial ranking, Alternative 2 was seen as the preferred alternative. Specialists were, however, instructed by PBA to discuss all three alternatives in their respective Specialist Studies, and to indicate which one was preferred from a particular discipline perspective. However, only Alternative 2 was to be taken forward into the assessment section of the Specialist Studies.

4.1 Preliminary assessment of alternatives

There are a number of potential social and socio-economic impacts that have been identified for the proposed transmission line³.

- Increase in national employment opportunities.
- Increase in local employment opportunities.
- Opportunities for SMEs and local contractors.
- Resettlement of households, homesteads and farm infrastructure.
- Resettlement of graves.
- Reduction in property values of commercial farms.
- Potential loss of, or injury to, livestock and game.
- Construction-camp related impacts.
- Increased spread of diseases (including sexually transmitted diseases and HIV/AIDS).
- Impacts on safety and security.
- Potential risk of fires.
- Potential adverse effects of electromagnetic fields (EMFs)

The nature and intensity of these impacts are closely related to different social and socio-economic environments through which the three alternatives traverse. As described in Section 3, these environments vary between alternatives.

Furthermore, not all issues and impacts are of the same intensity and some are far easier to mitigate than others. By far the largest negative impact on the social environment is resettlement and where possible, residential properties need to be avoided. However, a transmission line has technical constraints associated with it, which limit the degree to which a route can deviate from its set course, as determined by its two end points (i.e. Venus and Braamfontein Substations). Thus, a preliminary assessment and comparison of the three alternatives was undertaken in order to identify a preferred alternative based on how much resettlement would likely be required per route.

³ Separate specialist studies were undertaken for visual impacts and effects on cultural heritage resources. Therefore, these matters are covered in the SIA.

4.1.1 Alternative 1: (Running parallel to the existing Majuba Venus I)

Alternative 1 has the most potential resettlement impacts, as it crosses through numerous, densely settled areas. Due to the density of some of the settlements, replacement land may not be readily available close by. Therefore, people may have to be moved some distance away from their original position, thereby disturbing the sense of community and increasing their distance from currently used services and facilities, jobs, natural resources as well as ancestral graves.

The cost of resettlement of one homestead can vary between R 50,000 and R 100,000.00⁴. Thus, for every 10 homesteads which need to be resettled, project costs can potentially increase by R 500,000.00 to R 1,000,000.00. Therefore, where resettlement can be avoided or minimised, it not only reduces the negative impacts on potential resettlers, it also incurs a substantial project cost saving.

4.1.2 Alternative 2: (Running parallel to the existing Majuba-Venus II line)

For the largest part, Alternative 2 will follow the existing servitude of the MV I Transmission Line. Land, in all except two areas, is under private ownership. There are a number of places along the Alternative where there are farm labourer homesteads close to the servitude, if not within the vacant servitude. Due to the fact that this alternative will follow the vacant servitude, it will be impossible to avoid these homesteads, and they will have to be resettled. Alternative 2 does not cross through any densely settled areas, and therefore, resettlement can be limited to the small number of farm labourer homesteads. Along the entire route, Alternative 2 has the least potential resettlement impacts, with only a small number of homesteads which may need to be resettled. For the most part, these are farm labour tenants who can be moved a short distance away from their current location, thereby keeping close to resources and ancestral graves.

4.1.3 Alternative 3: (Following a middle route between Alternative 1 and 2)

Alternative 3 will have less potential resettlement impacts, than Alternative 1, since there are only three areas of relatively dense settlement, i.e. around Cornfields, to the west of Colenso and to the east of Roosboom. For the remainder, the Alternative will traverse much less populated areas. Fairly limited resettlement may be required. The potential resettlement impacts of Alternative 3 are also less than Alternative 2, regardless of which direction it takes to bypass Qedusizi Dam. However, Alternative 3 has to cross the Qedusizi Dam, which makes it fairly impractical from most perspectives.

4.2 Preferred alternative

Based on the preceding sections, Alternative 2 (along the existing MV II Transmission Line) appears to be the preferred alternative from a resettlement perspective. Alternative 3 is the next preferred with Alternative 1, the least preferred, due to its high resettlement requirement, which could be viewed as socially unacceptable.

⁴ These figures are based on ACER's experience of other projects involving resettlement.

As Alternative 2 was the preferred alternative of most of the specialists (other than the visual impact specialist), PBA requested that this Alternative be taken forward for assessment purposes.

5. IMPACT ASSESSMENT OF ALTERNATIVE 2

There are a number of potential social and socio-economic impacts that have been identified for the proposed Braamhoek-Venus 400kV Transmission Line, Alternative 2. It should be noted that separate specialist studies were undertaken for visual impacts and effects on cultural heritage resources. Therefore, these are not covered in this SIA. The impacts below are not listed or discussed in any ranking of importance.

- Increase in national employment opportunities.
- Increase in local employment opportunities.
- Opportunities for SMEs and local contractors.
- Resettlement of households and homesteads.
- Resettlement of graves.
- Reduction of property values of commercial farms.
- Potential loss of or injury to livestock and game.
- Construction camp related impacts.
- Increased spread of diseases (including sexually transmitted diseases and HIV/AIDS).
- Impacts on safety and security.
- Risk of fires.
- Potential adverse effects of electromagnetic fields (EMFs)

For the assessment of potential issues and impacts associated with Alternative 2, impact tables provided by PBA were used. These include the following conventions:

- Nature of the impact.
- Stage of the proposed project where the impact may occur.
- Extent of impact.
- Duration of impact.
- Intensity of impact.
- Probability of occurrence.
- Status of the impact.
- Accumulative Impact.
- Level of significance prior to mitigation.
- Mitigation measures.
- Level of significance after mitigation
- EMP requirements.

Each table also provides for a brief discussion of the impact and/or any other additional information on any of the conventions.

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Increase in national employment opportunities</i>	
Stage	Construction	Operation
Extent of impact	National	National
Duration of impact	For the duration of construction	Permanent
Intensity	Low	Low
Probability of occurrence	Highly probable	Highly probable
Status of the impact	Positive	Positive
Accumulative Impact	Contribution to Gross Geographic and National Product	Contribution to Gross Geographic and National Product
Level of significance	Moderate	Low
Mitigation measures	Not required.	Not required
Level of significance after mitigation	Moderate	Low
EMP requirements	Not required.	
<p><u>Discussion:</u> The construction and operation of transmission lines are highly specialised tasks for which Eskom predominantly makes use of existing contractors with the necessary skills to fulfil the task. The various construction components will go out to tender and contractors from all over South Africa (and even internationally) can tender for the contracts.</p>		

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Increase in local employment opportunities</i>	
Stage	Construction	Operation
Extent of impact	Local	Local
Duration of impact	For the duration of construction	Permanent
Intensity	Low	Low
Probability of occurrence	Definite	Probable
Status of the impact	Positive	Positive
Accumulative Impact	Contribution to Gross Geographic Product (GGP)	Contribution to Gross Geographic Product (GGP)
Level of significance	Moderate	Low
Mitigation measures	Ensure that local labour is recruited where applicable. Maximise opportunities for training and capacity building	Not required
Level of significance after mitigation	Moderate	Low
EMP requirements	Employ local labour where possible.	
<u>Discussion:</u> Opportunities exist for local labour, especially through local contractors and SMEs during construction and operation (See below).		

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Increase in opportunities for SMEs and local contractors</i>	
Stage	Construction	Operation
Extent of impact	Regional	Regional
Duration of impact	For the duration of construction	During maintenance and emergency repairs.
Intensity	Medium	Low
Probability of occurrence	Highly probable	Highly probable
Status of the impact	Positive	Positive
Accumulative Impact	Contribution to GGP	Contribution to GGP
Level of significance	Moderate	Moderate
Mitigation measures	Ensure the use of SMEs and local contractors are used where practical. Outsource all applicable non-core business activities.	Ensure the use of SMEs and local contractors are used where practical. Outsource all applicable non-core business activities.
Level of significance after mitigation	Moderate	Moderate
EMP requirements	Use SMEs and local contractors for applicable tasks.	Use SMEs and local contractors for applicable tasks.
<p><u>Discussion:</u> Opportunities for SMEs and local contractors during construction mainly include tasks such as bush clearing, trenching, and the provision of services such as catering and security.</p> <p>During operation, general maintenance and emergency repairs such as bush clearing, alien plant control, repair of fences and gates will be required and should be outsourced to local SMEs and contractors.</p>		

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Resettlement of households, homesteads and farm infrastructure</i>	
Stage	Construction	Operation
Extent of impact	Local	
Duration of impact	Permanent	
Intensity	Low	
Probability of occurrence	Highly probable	
Status of the impact	Negative	
Accumulative Impact	None	
Level of significance	High	
Mitigation measures	Ensure that households, homesteads and associated infrastructure are resettled in line with world best practise (e.g. World Bank Operational Policy 4.12).	
Level of significance after mitigation	Moderate	
EMP requirements	Apply world best practise in resettlement.	
<p><u>Discussion:</u> Residence under a transmission line or within its servitude is not permitted. Therefore, people living within the existing 55 m servitude, as well as those who may be living in the area where the servitude may need to be extended, will need to be resettled. There are no areas, which are densely settled. Observations during field work, showed that there are a number of farm labour tenants' homesteads which may be affected by the construction of the transmission line. The potentially affected houses vary from traditional structures ("wattle and daub" construction), to structures made of bricks and mortar, with corrugated iron or tiled roofing. Due to the new line following an existing vacant servitude, avoidance will not be possible.</p> <p>Negotiations for the resettlement and replacement of land and assets should not only take place with landowner but should include affected labour tenants.</p>		

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	Resettlement of graves	
Stage	Construction	Operation
Extent of impact	Local	
Duration of impact	Permanent	
Intensity	Low	
Probability of occurrence	Probable	
Status of the impact	Negative	
Accumulative Impact	None	
Level of significance	Moderate	
Mitigation measures	Practice avoidance where practically possible. If resettlement is required, ensure that graves are resettled in line with world best practise (e.g. World Bank Operational Policy 4.12).	
Level of significance after mitigation	Low	
EMP requirements	Apply world best practise in resettlement.	
<p><u>Discussion:</u> Due to the length and width of the transmission line servitude, it is likely that there will be graves located within the servitude. Where possible, Eskom Transmission practises the principle of avoidance, thus moving the location of a pylon a few meters either way, depending on other factors such as topography, in order not to disturb graves. Family and relatives may still visit these graves located within the servitude to perform rituals and rites.</p> <p>However, in certain instances, based on traditional and/or religious beliefs, relatives may prefer to have graves moved, rather than leaving them under or close to a transmission line. In such instances, graves are exhumed and re-interred away from the transmission line. Should this need to happen, it will have to be in accordance with local customs, and the guidelines outlined in the National Heritage Resources Act and the KwaZulu-Natal Heritage Act, as well as recommendations made by the specialist cultural heritage resources study.</p>		

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Reduction in property values of commercial farms</i>	
Stage	Construction	Operation
Extent of impact	Local	
Duration of impact	Permanent	
Intensity	Low	
Probability of occurrence	Probable	
Status of the impact	Negative	
Accumulative Impact	The impact may be exacerbated by the existence of other bulk infrastructure on the farm.	
Level of significance	Moderate	
Mitigation measures	Ensure that negotiations and valuations of servitudes take cognisance of, and compensate for, the potential cumulative impact. Attempt to align the Transmission Line along farm boundary lines (e.g. between Boschfontein and Maritzdrift), thereby reducing the in-farm impacts.	
Level of significance after mitigation	Moderate	
EMP requirements	Mitigation should be effected during the planning stage	
<u>Discussion:</u> For the most part, the proposed transmission line will follow a registered vacant servitude next to existing infrastructure such as the current MV II transmission line and the N3 highway. Farming activities should not be hampered by the new transmission line, as most of the land in close proximity to the line is used for grazing.		
Where the transmission line turns away from the MV II to the Braamhoek Substation, it crosses farmland with limited existing infrastructure. The farms include Boschfontein (possibly only a small part close to the eastern boundary), Maritzdrift (possibly only a small portion along its western boundary), Welkom and Braamhoek. Daily farming activities should not be hampered by the Transmission Line as most of the land around the Transmission Line is used for grazing.		

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Loss of or injury to livestock and game</i>	
Stage	Construction	Operation
Extent of impact	Local	Local
Duration of impact	For the duration of construction	During routine maintenance and repairs
Intensity	Low	Low
Probability of occurrence	Probable	Probable
Status of the impact	Negative	Negative
Accumulative Impact	Construction of the Braamhoek Venus 400kV Transmission Line may take place at the same time.	Maintenance and repairs may need to be done to the Braamhoek Venus 400kV Transmission Line at the same time.
Level of significance	Moderate	Moderate
Mitigation measures	Inform landowners of any access that will be required onto private property for construction. Ensure that construction personnel adhere to a speed limit of 40 km/h on internal farm roads. Any accidents involving animals (or humans) must immediately be reported to the landowner and construction supervisor.	Inform landowners of any access that will be required onto private property. Access gates must remain closed at all times. Maintenance vehicles must adhere to a speed limit of 40 km/h on internal farm roads. Any accidents involving animals (or humans) must immediately be reported to the landowner and Eskom Supervisor.
Level of significance after mitigation	Low	Low
EMP requirements	Inform landowners of any access that will be required onto private property for construction. Ensure that construction personnel adhere to a speed limit of 40 km/h on internal farm roads. Access gates must be kept closed at all times. Ensure excavated holes are always covered. No poaching or interference with animals may be permitted. Any accidents involving animals (or humans) must immediately be reported to the landowner and construction supervisor.	Inform landowners of any access that will be required onto private property. Access gates must remain closed at all times. No poaching or interference with animals may be permitted. Maintenance vehicles must adhere to a speed limit of 40 km/h on internal farm roads. Any accidents involving animals (or humans) must immediately be reported to the landowner and Eskom Supervisor.

Discussion: During construction, foundation holes are excavated for the pylons and anchor lines. The foundation holes are approximately 16 m² in size and are fenced off with three-strand temporary wire fences. The anchor holes are approximately 0.3 m in diameter and 6 m deep and are covered with a safety cover plate. Despite the precautionary measures, there is still the potential risk of livestock and game stumbling into the holes and being seriously or fatally injured, should the plate be removed, the fence broken, or before the precautionary measures are put in place.

In order to gain access to properties for construction purposes, existing roads and gates will be used where possible, but fences may need to be cut and gates installed in places where the line veers away from the existing servitude. If these access points (either existing or new) are not properly managed, there is a risk of livestock straying through and getting lost, injured on roads, or even stolen. There is also a risk that fences may be disturbed or damaged during construction activities, resulting in a breach through which livestock can stray, with the same consequences as above.

During operation and maintenance, Eskom Transmission workers/contractors may be required to gain access to properties for routine maintenance checks or maintenance work. If access to private property and the use of gates is not properly managed, this may also lead to livestock injury or loss. Access by workers to properties will provide the technical opportunity for poaching.

A number of landowners whose property is crossed by the existing MV II raised complaints during the Public Involvement Programme, regarding Eskom teams leaving access gates open and livestock and/or game being lost as a result. A further complaint raised was that maintenance teams did not give landowners sufficient notice of the need to get access to a property. If sufficient notice is given, a farmer can move livestock out of areas that need to be accessed by the maintenance teams, thereby reducing the potential for stock loss. This is a serious issue which needs to be addressed by Eskom, not only on the proposed Braamhoek-Venus Transmission Line, but on other lines in the area as well. The potential for the loss and injury to game and livestock can be reduced by constructing the Braamhoek-Venus Transmission Line between the MV II and the Braamhoek Substation and the Turn-in simultaneously, thereby reducing the length of time that construction takes place on a farm.

Drivers of construction vehicles driving irresponsibly e.g. travelling at high speed on farm roads can also kill or injure livestock and/or game. Speed limits should be set at 40 km/hr for all construction vehicles when travelling on internal farm roads. All landowners should be given the number of the local Eskom emergency centre, so that any problems can be reported directly.

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	Construction camp related impacts	
Stage	Construction	Operation
Extent of impact	Local	
Duration of impact	For the duration of construction	
Intensity	Low	
Probability of occurrence	Highly probable	
Status of the impact	Negative	
Accumulative Impact	None anticipated	
Level of significance	Moderate	
Mitigation measures	<p>Include a strict code of conduct for construction workers in all contractor contracts. An Environmental Control Officer (ECO) should monitor that this is implemented and adhered to. Establish temporary emergency and health facilities at construction camps to deal with initial trauma in the event of an accident. The location of construction camps should be determined in close liaison between the ECO, local communities/land owners and the Emnambithi Local Municipality. Establish suitable security measures.</p>	
Level of significance after mitigation	Moderate	
EMP requirements	<p>Include a strict code of conduct for construction workers in all contractor contracts. An ECO should monitor that this is implemented and adhered to. Provide First Aid facilities and adhere to the health and safety provisions stipulated in the Construction Regulations Under the Health and Safety Act. The location of construction camps should be determined in close liaison between the ECO, local communities/land owners, and the Emnambithi Local Municipality.</p>	

Discussion: There are various potential impacts that are generally associated with construction camps:

- Pressure on existing infrastructure and services in close proximity to the construction camp.
- Spread of diseases, including STDs and HIV/AIDS between the construction workers and the surrounding community.
- Potential in-migration of people, e.g. employment seekers, criminal opportunists, etc.

To date, Eskom has left the location of construction camps largely to be determined by contractors in liaison with landowners. However, the Emnambithi Local Municipality has indicated that they will be more than willing to assist in determining where construction camps be located, and requested that they be involved in the selection process. Thereby, the camps can be located in places where they will have the least negative impact on the surrounding environment.

Braamhoek-Venus 400kV Transmission Line	
Nature of impact	<i>Increased spread of diseases (including sexually transmitted diseases and HIV/AIDS)</i>
Stage	Construction
Extent of impact	Regional
Duration of impact	For the duration of construction
Intensity	Medium
Probability of occurrence	Highly probable
Status of the impact	Negative
Accumulative Impact	None
Level of significance	High
Mitigation measures	<p>Establish a rigorous HIV/AIDS awareness and prevention campaign among construction workers. Make condoms freely available to construction workers.</p> <p>Manage the construction camp efficiently e.g. water, sanitation and waste facilities, in accordance with relevant legislation.</p>
Level of significance after mitigation	Moderate
EMP requirements	<p>Establish a rigorous HIV/AIDS awareness and prevention campaign among construction workers. Make condoms freely available to construction workers.</p> <p>Manage the construction camp efficiently e.g. water, sanitation and waste facilities, in accordance with relevant legislation.</p>

Discussion: Workers living in construction camps are often separated from their families and/or place of residence for a significant period of time. It is not uncommon for sex workers to visit construction camps, or for construction workers to establish temporary sexual relationships with local residents. By implication, the potential increase in the transmission of sexually transmitted diseases (STDs) and HIV/AIDS becomes an issue of great concern. These diseases may be transmitted between sex workers, local residents and construction workers, who when they move on to other areas may further transmit these diseases to others. In this manner, construction workers may also infect local communities. This issue is especially problematic in a country where infection rates are high.

If the construction camps are not managed efficiently, a lack of adequate water, sanitation and waste facilities may lead to unhygienic living conditions and the easy spread of water borne diseases. Such events will not only affect construction workers and thereby the progress on the construction of the transmission line, but may also spread to local communities.

Eskom undertook to embark on an HIV/AIDS awareness campaign to communities. This needs to be co-ordinated through Emnambithi Municipality structures, and should be done prior to construction.

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	Impacts on safety and security	
Stage	Construction	Operation
Extent of impact	Local	Local
Duration of impact	For the duration of construction	During routine maintenance and emergency repairs
Intensity	Low	Low
Probability of occurrence	Probable	Probable
Status of the impact	Negative	Negative
Accumulative Impact	None	None
Level of significance	Moderate	Low
Mitigation measures	Establish a Code of Conduct between Eskom and relevant agricultural bodies and ensure it is adhered to.	Establish a Code of Conduct between Eskom and relevant agricultural bodies and ensure it is adhered to.
Level of significance after mitigation	Moderate	Low
EMP requirements	Include the Code of Conduct in the EMP. ECO to ensure it is adhered to.	

Discussion: There will most probably be a number of temporary access roads constructed. Increased access to the Transmission Line servitude may make previously restricted areas more accessible. Therefore, there may be a potential safety and security risk to landowners and employees, as increased access to restricted areas could result in increased theft of crops, livestock, fauna and flora and private property. If the presence of construction (and later maintenance) teams is not effectively co-ordinated, landowners will not be certain as to whether it is the Eskom teams or criminal opportunists who are at work on their property.

During construction, foundation holes are excavated for the pylons and anchor lines. The foundation holes are approximately 16 m² in size and are fenced off with three-strand temporary wire fences. The anchor holes are approximately 0.3 m in diameter and 6 m deep and are covered with a safety cover plate. Despite the precautionary measures, there is still the potential risk of people, especially children, stumbling into the holes and being seriously or fatally injured, should the plate be removed, the fence broken, or before the precautionary measures are put in place. Also, there will be far more heavy construction vehicle traffic in areas where construction takes place, thereby creating safety risks to people, especially children living in the areas where construction takes place.

Codes of conduct have in the past been established between Eskom and agricultural bodies (e.g. Agric-Eastern Cape). These codes of conduct outline protocol regarding Eskom (or its contractors and sub-contractors) gaining access to private farmland, as well as conduct while on private farmland. However, landowners often complain that Eskom contractors (either for construction or maintenance) do not adhere to these codes of conduct, which leads to conflict between the landowner, the contractor, and/or Eskom.

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	Risk of fires	
Stage	Construction	Operation
Extent of impact	Local	Local
Duration of impact	For the duration of construction	During routine maintenance and repairs
Intensity	Low	Low
Probability of occurrence	Probable	Probable
Status of the impact	Negative	Negative
Accumulative Impact	None	More than one Transmission Line through a property increases the risk of fires.
Level of significance	Moderate	Moderate
Mitigation measures	<p>The 'Code of Conduct' for construction personnel should include stipulations regarding the making of fires, e.g. where, when, how contained etc.</p> <p>Have functioning fire fighting equipment on site and train teams from construction personnel in its use.</p> <p>Compile an emergency procedure to deal with fires. This should be inclusive of contact number of local fire and emergency services</p>	A 'Fire Risk Strategy' should be agreed upon between Eskom and landowners (e.g. Farmers' Associations).
Level of significance after mitigation	Low	Low
EMP requirements	<p>Include fire safety and rules in the 'Code of Conduct'.</p> <p>Have functioning fire fighting equipment on site and train teams from construction personnel in its use.</p> <p>Include 'Fire Risk Strategy' in EMP.</p> <p>Compile emergency procedure to deal with fires</p>	Include 'Fire Risk Strategy' for operations.

Discussion: Construction workers residing in construction camps, or while busy with construction or maintenance activities may make fires for either cooking or heating. If not controlled properly, these fires can spread into surrounding vegetation, potentially causing major damage to game and other livestock and property, as well as risk to human life. Workers who throw out burning cigarette stubs also pose a fire hazard.

Another potential risk of fires, although not a high likelihood of occurrence, exists when live transmission line cables break, fall to the ground and set surrounding vegetation alight through sparks. Damage can also be caused to livestock and property. Commercial landowners' insurance does not cover damage caused by fires in this way.

Contractors and Eskom should adhere to the stipulations outlined by the National Veld and Forest Fire Act of 1998 (Government Gazette: 1998), when constructing and maintaining the proposed transmission line.

Braamhoek-Venus 400kV Transmission Line		
Nature of impact	<i>Adverse effects of electromagnetic fields (EMFs)</i>	
Stage		Operation
Extent of impact		Local
Duration of impact		Permanent
Intensity		Unknown
Probability of occurrence		Unknown
Status of the impact		Negative
Accumulative Impact		Where more than one transmission line is in close proximity to another, the potential effects of EMFs may be exacerbated.
Level of significance		Unknown
Mitigation measures		Not required
Level of significance after mitigation		Unknown
EMP requirements		
<p><u>Discussion:</u> Reports relating the alleged impacts of EMFs on health arose as early as the 1970s. Suggestions were made that exposure to EMFs might cause symptoms such as headaches, depression and even cancer. However, there were numerous discrepancies between the results of various studies conducted and, therefore, the evidence proving or disproving the potential health-related risks of EMFs was inconclusive.</p> <p>The current situation is summarised in the conclusion of an article in the British Journal of Cancer which anticipates ‘...more years of speculation surrounding the supposed adverse health effects of EMF with respect to leukaemia, despite the fact that our present scientific knowledge points... to a minute risk of EMF verging on the point of non existence’ (Electricity Association, 1994).</p> <p>People are not allowed to reside within the servitude, which will prevent any potential effects of prolonged EMF exposure. However, during the site visits it was observed in more than one area that there are houses constructed under existing transmission lines. This phenomenon should be monitored once the proposed transmission line has been constructed.</p>		

6. CONCLUDING REMARKS

The assessment shows that there are no negative social impacts associated with Alternative 2 which can be classified as fatal flaws, or which are of high significance that would require this alternative to be rejected, provided that the suggested mitigation measures are undertaken. ACER believes that the report accurately reflects the impacts that the proposed Braamhoek-Venus Transmission Line may have on the social environment. Allied to this, ACER has provided sound suggestions to mitigate any anticipated negative impacts and enhance the positive ones. It is, however, important that these suggestions are implemented in order for the project to be environmentally acceptable.

7. REFERENCES

Department of Land Affairs. 2004. *Designation memorandum for approval of Land Reform for agricultural development grant for acquisition of land development thereof: Situated in the Besters Cluster, Emnambithi/Ladysmith Local Municipality, in the Uthukela District Municipality, KwaZulu-Natal Province*. Memorandum DC23/KZ232/280. 30 November 2004.

Electricity Association. 1994. *Electric and Magnetic Fields*. London.

Emnambithi Municipality. 2002. *Emnambithi/Ladysmith Phase One: Perspective Report*.

Umtshezi Municipality. 2002. *Emnambithi/Ladysmith Phase One: Perspective Report*.

PBA International. 2005. *Notes on meeting with Umsuluzi Game Reserve: 15 January 2005*.

Personal communications

Bristow, M. Chairman: Skeurklip Conservancy.

Henderson, R. Chairman: Besters Farmers Association.

Le Roux, B. Integrated Development Planning: Emnambithi/Ladysmith Local Municipality.

Louwinger, F. Eskom: Corporate Specialist – Hydro.

Msomi, B. District Head Administrator, Emnambithi Regional Authority.

Reddy, R. Councillor Ward 3: Emnambithi/Ladysmith Local Municipality.

Van Wyk, L. Integrated Development Planning: Emnambithi/Ladysmith Local Municipality.

Personal communications undertaken but not cited in the SIA

Luthuli, J. Chairman: Van Reenen Development Committee.

Madlala, V. Deputy Major: Emnambithi/Ladysmith Local Municipality.

Mchunu, L. Chairman: Bluebank/Siqobile Development Committee.