

**MARGEN INDUSTRIAL SERVICES &
PBA INTERNATIONAL**

ENVIRONMENTAL IMPACT ASSESSMENT

SCOPING PHASE

Proposed Braamhoek 400kV Turn-in

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 comprising the EIA.

This report presents the findings of the socio-economic specialist for the Braamhoek Turn-in. The SIA is based on a generic template for the Scoping Report provided to specialists by PBA, into which each specialist has to feed certain information. The specialist studies are, therefore, not standalone reports and need to be read in conjunction with the Scoping Report. Due to the unusual circumstances of these projects, in particular the existing servitudes along the Majuba-Venus I (MV I) and MV II 400kV Transmission Lines, and the location of the Braamhoek substation on ground that will already be disturbed and used during the construction of the power station, it was considered reasonable to undertake a detailed Scoping Study for each of the three projects on the study.

PROPOSED ALTERNATIVES

Route options for Turn-ins from the Majuba-Venus II are fairly limited. Two options were identified, i.e. a route along the foothills of the Drakensberg escarpment, and a route along the top of the escarpment, utilising access roads already planned for the Braamhoek PSS, and then dropping down the steep escarpment at a location between the Upper and Lower reservoirs of the PSS.

DESCRIPTION OF THE RECEIVING ENVIRONMENT

The description of the receiving environment provides a very concise outline of some of the characteristics of the social environment, which have relevance to the proposed Braamhoek Turn-in. The description is structured to include the two alternatives and include an outline of:

- Locality.
- Land use.
- Settlement patterns.
- Land tenure and land reform.

PRELIMINARY ASSESSMENT OF ALTERNATIVES

Alternative 2 is the preferred alternative from a social and socio-economic perspective. However, there are numerous other issues that need to be considered in decision-making. The visual and bird specialists found this route to be highly undesirable and thus, strongly favour Alternative 1.

As it is believed that the social impacts associated with Alternative 1 can be successfully mitigated (provided the recommended mitigation (Section 4) is implemented), and that therefore, the resettlement impact cannot be considered a fatal flaw, it is agreed that Alternative 1 can be taken forward as the preferred alternative. A more detailed assessment of Alternative 1 is provided in Section 5.

IDENTIFICATION AND ASSESSMENT OF IMPACTS

For the assessment of potential issues and impacts associated with the Braamhoek Turn-in, 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 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.
- Loss of or injury to livestock and game.
- Impacts on safety and security.
- Risk of fires.
- Potential adverse effects of electromagnetic fields (EMFs)

CONCLUDING REMARKS

The assessment shows that there are no negative impacts associated with Alternative 1 which can be classified as fatal flaws, or which are of high significance that would require this Turn-in 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 Turn-in 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	Electro Magnetic 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 EIA.

Following a Pre-feasibility Study, PBA submitted applications for environmental authorisation to the Department of Environmental Affairs and Tourism (DEAT) in November 2004. DEAT granted approval of 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 has to feed certain information. The specialist studies are, therefore, not standalone 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, since 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, either. All maps are consolidated in Appendix 1 of the Scoping Report and reference in the text has been made accordingly.

This report contains the SIA findings for the proposed Turn-in.

2. PROPOSED ALTERNATIVES

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 PPS site. Route options for Turn-ins from the Majuba-Venus II are fairly limited. Two options were identified, i.e. a route along the foothills of the Drakensberg escarpment, and a route along the top of the escarpment, utilising access roads already planned for the Braamhoek PSS, and then dropping down the steep escarpment at a location between the Upper and Lower reservoirs of the PSS.

3. DESCRIPTION OF THE RECEIVING ENVIRONMENT

This section describes the social environment and focuses on the key social characteristics, which are of particular relevance to the proposed Turn-in Alternatives. These are:

- Locality.
- Land use and associated economic activities.
- Settlement patterns.
- Land tenure

3.1.1 *Locality*

Both alternatives are located in the Emnambithi Municipality, and stretch from the MV II line to the proposed Braamhoek Substation.

3.1.1.1 *Alternative 1 (foothills of the Drakensberg escarpment)*

After the Turn-in veers away from the MV II, it 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).

3.1.1.2 *Alternative 2 (top of the Drakensberg escarpment)*

Alternative 2 turns in from Majuba-Venus II line further to the north than Alternative 1. After turning in, it potentially crosses portions of the farms of Cotswold, Chatsworth and Bedford

3.1.2 *Land use and associated economic activity*

3.1.2.1 *Alternative 1 (foothills of the Drakensberg escarpment)*

All the farms potentially crossed by Alternative 1 are currently still used for commercial farming activities. The main activities centre around livestock, predominantly cattle but with some sheep as well. There is therefore limited associated farming infrastructure such as irrigation systems on the farms. Land use on properties bought by Eskom as part of the PSS may cease closer to construction of the PSS and later the Turn-in and Substation. However, depending on the sale agreement, land may be leased back to the farmer, once the whole scheme is operational.

Successful applicants to the current Land Reform projects in the area (see Section 3.1.4) should be settling onto farms designated for land reform before the end of 2005. The planning stage is scheduled to be completed by March 2005, followed by implementation, set for completion by August 2005. Among other actions, the implementation of the plan includes the physical settlement of applicants on the respective farms (Department of Land Affairs: 2004).

Except for birders, who sometimes visit the crane breeding areas in close proximity to the Turn-in, there is almost no other tourism activity in the immediate vicinity of Alternative 1.

3.1.2.2 *Alternative 2 (top of the Drakensberg escarpment)*

All the farms potentially crossed by Alternative 2 are used for commercial cattle farming activities. The main activities centre around livestock, predominantly cattle, and the land is often used as winter grazing.

Similar to Alternative 1, except for birders, who sometimes visit the crane breeding areas in the area, there is no other tourism activity in the immediate vicinity of Alternative 2.

3.1.3 **Settlement patterns**

3.1.3.1 *Alternative 1 (foothills of the Drakensberg escarpment)*

Settlement density along Alternative 1 is low. Settlement consists of scattered farm homesteads, interspersed with farm labourer housing. These farm labourer homesteads typically contain a number of housing structures with limited associated infrastructure, such as chicken coups and goat pens.

The type of settlement which is to take place on farms designated as part of the Land Reform process, is unclear at this stage. It is also not clear which parts, if any, are to be affected by the Turn-in.

3.1.3.2 *Alternative 2 (top of the Drakensberg escarpment)*

The area through which Alternative 2 runs is open and exposed to the elements. There are, therefore, no settlements in close proximity to this alternative.

3.1.4 **Land tenure and land reform**

3.1.4.1 *Alternative 1 (foothills of the Drakensberg escarpment)*

Five of the farms along the Turn-in route have been purchased by Eskom as part of the PSS (section 3.1.1) (Louwinger, F. Personal Communication). However, this does not constitute all the farms which will potentially be crossed by the Turn-in. A number of farms are still privately owned and others are include in the current Land Reform projects¹.

¹ 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. 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 tenants 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.

Portions of the parent farms Maritzdrift and Boschfontein are included in this Land Reform process and some of the portions may be crossed by the Turn-in (Henderson, R. Personal Communication). Only once the final alignment of the Turn-in is determined, will it be possible to identify the exact portions affected.

3.1.4.2 *Alternative 2 (top of the Drakensberg escarpment)*

All the land crossed by Alternative 2 is privately owned, and not included in any Land Reform project at present.

4. PRELIMINARY ASSESSMENT OF ALTERNATIVES

4.1 Preliminary assessment of alternatives

From a social and socio-economic perspective, Alternative 2 (the route along the top of the escarpment) should have less impacts as the land use is predominantly dryland grazing and there are no people living along the route nor does there appear to be any plans for people to settle there in the future. There is also no infrastructure other than fencing, gates and small farm roads, and these will not be affected by the Turn-in other than to a small degree during construction.

Comparatively, there is settlement and infrastructure along Alternative 1 (the route along the foothills of the escarpment) although this is at a low density and the resettlement impact is likely to be relatively small. The mitigation that would be required is limited resettlement of farm labourer homesteads. The people who would need to be resettled are farm labour tenants who can be moved a short distance away from their current location, thereby maintaining similar access to resources and ancestral graves.

However, there is an unknown factor for Alternative 1 as the land use that will take place on those farms which are part of the land reform project has not yet been finalised. It is thus recommended that Eskom, through the Department of Land Affairs, participate in the land use planning process to ensure that final route selection and detailed positioning of the Turn-in and the proposed land use of the land reform project are compatible.

4.2 Preferred alternative

As shown in Section 4.1, Alternative 2 is the preferred alternative from a social and socio-economic perspective. However, there are numerous other issues that need to be considered in decision-making. The visual and bird specialists found this route to be highly undesirable and thus, strongly favour Alternative 1.

As it is believed that the social impacts associated with Alternative 1 can be successfully mitigated (provided the recommended mitigation (Section 4) is implemented), and that therefore, the resettlement impact cannot be considered a fatal flaw, it is agreed that Alternative 1 can be taken forward as the preferred alternative. A more detailed assessment of Alternative 1 is provided in Section 5.

5. IDENTIFICATION AND ASSESSMENT OF IMPACTS

There are a number of potential social and socio-economic impacts² that have been identified for the proposed Turn-in (Alternative 1). The majority of these impacts also apply to Alternative 2, apart from the resettlement as there are no people living along this route. The issues are not listed or discussed in any ranking of importance, although the resettlement option is most likely one of the most significant impacts.

- Increase in 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.
- Loss of or injury to livestock and game.
- Impacts on safety and security.
- Risk of fires.
- Adverse effects of electromagnetic fields (EMFs)

For the assessment of potential issues and impacts associated with the Turn-in, 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.

² Separate specialist studies were undertaken for visual impacts and cultural heritage resources. Therefore, these issues are not covered in the SIA.

Braamhoek Turn-in		
Nature of impact	<i>Increase in 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 which 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. Due to the relatively short length of the Turn-in, this impact cannot be rated as being of high significance.</p>		

Braamhoek Substation		
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.	Ensure that local labour is recruited where applicable.
Level of significance after mitigation	Moderate	Low
EMP requirements	Employ local labour where possible.	
<p><u>Discussion:</u> Opportunities exist for local labour, especially through local contractors and SMEs during construction and operation (See below for further explanation). Due to the relatively short length of the Turn-in, this impact cannot be rated as being of high significance.</p>		

Braamhoek Substation		
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	Definite	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. Due to the relatively short length of the Turn-in, this impact cannot be rated as being of high significance.</p> <p>During operation, general maintenance and emergency repairs such as bush clearing, repair of fences and gates will be required and should be outsourced to local SMEs and contractors. Due to the relatively short length of the Turn-in, this impact cannot be rated as being of high significance.</p>		

Braamhoek Turn-in		
Nature of impact	<i>Resettlement of households and homesteads</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 proposed Braamhoek-Venus Transmission Line, which is to follow the same alignment as the Turn-in.	
Level of significance	Moderate	
Mitigation measures	Practice avoidance where practically possible. If resettlement is required, ensure that households, homesteads and associated infrastructure are resettled in line with world best practise (e.g. World Bank Operational Policy 4.12). Include affected labour tenants in resettlement planning. Participate in the land use planning process for land reform project.	
Level of significance after mitigation	Low	
EMP requirements	Apply world best practise in resettlement.	
<p><u>Discussion:</u> Residence under a Turn-in (Transmission Line) or within its servitude is not permitted. Therefore, people who may be living in the area where the servitude may need to be positioned, will need to be resettled. There are no areas which are densely settled along the Turn-in. Observations during fieldwork, showed that there are a few 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.</p> <p>Negotiations for the resettlement and replacement of land and assets should not only take place with landowners but should include affected labour tenants.</p>		

Braamhoek Turn-in		
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	The impact may be exacerbated by the proposed Braamhoek-Venus Transmission Line, which is to follow the same alignment as the Turn-in.	
Level of significance	Low	
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 Turn-in servitude, it is possible that there will be graves located within the servitude. Where possible, Eskom Transmission practices 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 Turn-in		
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 proposed Braamhoek-Venus Transmission Line, which is to follow the same alignment as the Turn-in.	
Level of significance	Moderate	
Mitigation measures	<p>Ensure that negotiations and valuations of servitudes take cognisance of, and compensate for the potential cumulative impact. Attempt to align the Turn-in along farm boundary lines (e.g. between Boschfontein and Maritzdrift), thereby reducing the in-farm impacts.</p> <p>Participate in the land use planning process for land reform project.</p>	
Level of significance after mitigation	Moderate	
EMP requirements	Mitigation measures need to be effected in the planning stage.	
<p>Discussion: The Turn-in will run from the MV II line to Braamhoek Substation across farmland with limited existing external infrastructure. The farms include Boshfontein (possibly only a very 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 Turn-in, as most of the land around the Turn-in is used for grazing. As land use planning has not yet been done for the farms which are part of the land reform project, it is difficult to know the significance of this impact on these farms.</p>		

Braamhoek Turn-in		
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, along the same route as the Turn-in.	Maintenance and repairs may need to be done to the Braamhoek Venus 400kV Transmission Line at the same time.
Level of significance	Moderate	Low
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. 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.

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.

Construction vehicles drivers 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 kilometres per hour 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.

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 Turn-in and the Braamhoek-Venus Transmission Line between the MV II and the Braamhoek Substation simultaneously, thereby reducing the length of time that construction takes place on a farm.

Braamhoek Turn-in		
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 repairs
Intensity	Low	Low
Probability of occurrence	Probable	Probable
Status of the impact	Negative	Negative
Accumulative Impact	None	None
Level of significance	Moderate	Moderate
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.	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 Turn-in and Transmission Line servitudes 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. Agri-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 lead to conflict between the landowner, the contractor, and/or Eskom.

Braamhoek Turn-in		
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	The impact may be exacerbated by the proposed Braamhoek-Venus Transmission Line, which is to follow the same alignment as the Turn-in.	The impact may be exacerbated by the proposed Braamhoek-Venus Transmission Line, which is to follow the same alignment as the Turn-in.
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	Include fire safety and rules in the 'Code of Conduct'.	

Discussion: Contractors may make fires during their construction activities, 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.

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 Turn-in		
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		Ensure that Eskom's policy of no one living under lines is fully implemented.
Level of significance after mitigation		Unknown
EMP requirements		

Discussion: 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 were inconclusive.

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).

People are not allowed to reside within the servitude, which will prevent any potential effects of prolonged EMF exposure. However, during the site visit 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.

6. CONCLUDING REMARKS

The assessment shows that there are no negative impacts associated with Alternative 1 which can be classified as fatal flaws, or which are of high significance that would require this Turn-in 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 Turn-in 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

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