MARGEN INDUSTRIAL SERVICES &
PBA INTERNATIONAL

ENVIRONMENTAL IMPACT ASSESSMENT

SCOPING PHASE

Proposed Braamhoek Substation

Social Impact Assessment

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Report prepared for:

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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 EIA.

This report presents the findings of the SIA for the Braamhoek Substation and is structured as per the Scoping Report format provided to all the specialists by PBA. The specialist studies are, therefore, not standalone 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 Braamhoek Pumped Storage Scheme site.

PROPOSED STUDY APPROACH

The anticipated environmental impact of the Substation is expected to be much lower than is usually associated with substations of this size. Braamhoek Substation will be one element of the Braamhoek PSS development, as the wider site area has already been committed to the construction of the PSS. Eskom is the landowner of the site. The Substation itself is expected to utilise a working platform prepared for the construction of the access tunnels.

Three possible Substation sites have been identified by Eskom, though it is understood that only one will allow the use of the working platform described above. This site is located near the tunnel portals on the farm Zaaifontein and will require no overhead cabling from the tunnel portal to the Substation (the other two sites are on the farm Braamhoek).

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 Substation. The description is structured according to the following:

- Land use and associated socio-economic activities.
- Settlement patterns.
- Land tenure and land reform.

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:

- Potential increase in employment opportunities (general).
- Potential increase in local employment opportunities.
- Opportunities for SMEs and local contractors.
- Construction camp related impacts.
- Potential risk of fires.
- Potential adverse effects of electromagnetic fields (EMFs)

CONCLUDING REMARKS

The assessment shows that there are no negative impacts which can be classified as fatal flaws, or which are of high significance thereby blocking the project, provided that the suggested mitigation measures are undertaken. ACER believes that the report accurately reflects the impacts that the proposed Braamhoek Substation 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
IDP	Integrated Development Plan
HIV	Human Immune Deficiency Virus
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 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 Braamhoek Substation.

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 PSS site.

The anticipated environmental impact of the Substation is expected to be much lower than is usually associated with substations of this size. The reasons for this are that Braamhoek Substation will be one element of the Braamhoek PSS development, and the wider site area has already been committed to the construction of the PSS. Also, Eskom is the landowner of the site and the Substation itself is expected to utilise a working platform prepared for the construction of the access tunnels.

Three possible Substation sites have been identified by Eskom, though it is understood that only one will allow the use of the working platform described above. This site is located near the tunnel portals on the farm Zaaifontein and will require no overhead cabling from the tunnel portal to the Substation (the other two sites are on the farm Braamhoek).

Based on discussions during the field visits between the various specialists and the lead consultant, it was decided that the preferred site, which would be the focus of the Specialist Studies and the Scoping Report, would be the Zaaifontein site. Due to the close geographical proximity to each other and great similarity in the social and socio-economic environments of the three sites, there is very little difference between the sites from a social and socio-economic perspective, in terms of potential impacts on the environment, or impacts of the environment on the proposed Substation. The preferred site which will be the key focus of the SIA is thus the site on the farm Zaaiontein.

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 Braamhoek Substation. These are:

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

The information has been sourced from Emnambithi Municipality Integrated Development Plan (IDP), discussions with a number of key stakeholders, study of 1:50 000 topographical 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.

The proposed site for the Braamhoek Substation falls within the Emnambithi Local Municipality, and is located on the farm Zaaifontein (Appendix 1 in the Scoping Report). The property has been purchased by Eskom as part of the land acquisition for the PSS, since the site is located in close proximity to the lower reservoir of the PSS.

3.1 Land use and associated economic activities

To date, land use on the proposed Zaaifontein Substation site and the surrounding areas has been agriculture, more specifically livestock production with the focus on beef and sheep (Emnambithi IDP: 2002).

This land use will cease on the farm Zaaifontein once the construction of PSS starts.

There are no tourism activities in any proximity to the proposed Substation site. Possible reasons may be the relative remoteness and difficult access to the area.

3.2 Settlement patterns

There are no people living on the site of the proposed Substation. However, a number of farm labour tenants reside in relative close proximity to the Substation site. Their homesteads comprise of dwellings and limited associated infrastructure such as chicken coups and goat pens. According to Eskom, these homesteads and tenants will be resettled as part of the PSS. There are a number of graves on the site, which also have to be resettled as part of the PSS.

3.3 Land tenure and land reform

Eskom has purchased a number of farms for the PSS, i.e. Braamhoek Portions 1 and 3, and Zaaifontein Portions 2, 3 and 5 for the PSS. The proposed Substation site is located on Portion 2 and 5. There are no registered land claims for the site (Louwinger, F. Personal Communication).

While none of the farms bought by Eskom for the PSS and Substation are part of a land reform programme, some of the neighbouring farms are[1]. These include certain portions of the farm Zaaifontein (i.e. Portions 1, 4 and 7), as well as two portions of Kruisfontein and one portion of Roodepoort[2]. The planning stage of this project 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. (Scoping Report, Appendix 1) (Henderson, L. Personal Communication).

4. IDENTIFICATION AND ASSESSMENT OF IMPACTS

There are a number of potential social and socio-economic impacts that have been identified for the proposed Braamhoek Substation[3]. These 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.

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 (Department of Land Affairs: 2004).

2 Portions 2, 3 and 5 of Zaaifontein of the Eskom-owned farms border directly on Portions 1 and 4 of Zaaifontein, which, in turn border on the Portions of Kruisfontein and Roodepoort

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

- Potential risk of fires.
- Construction camp related impacts.
- Potential adverse effects of electromagnetic fields (EMFs)

As there are no people living on the proposed Substation site and those living in close proximity will have been resettled prior to the construction of the Substation as part of the PSS, there is no direct resettlement impact associated with the Substation. Therefore, this impact has been excluded from the impact assessment tables below. The same applies to resettlement of graves.

For the assessment of potential issues and impacts associated with the Substation, 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 the impact and/or any other additional information on any of the conventions.

Braamhoek Turn-in		
Nature of impact	***Increase in employment opportunities (in general)***	
Stage	Construction	Operation
Extent of impact	National	National
Duration of impact	For the duration of construction	During routine maintenance and emergency repairs
Intensity	Low	Low
Probability of occurrence	Highly probable	Highly probable
Status of the impact	Positive	Positive
Accumulative Impact	None	None
Level of significance	**Moderate**	**Low**
Mitigation measures	Not required	Not required
Level of significance after mitigation	**Moderate**	**Low**
EMP requirements	Not required	
Discussion: The construction and operation of a Substation include 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. The maintenance and emergency repair contract for the Substation would be allocated in a similar manner and would provide contractors opportunities during its operation.		

Braamhoek Substation		
Nature of impact	***Increase in local employment opportunities***	
Stage	Construction	Operation
Extent of impact	Local	Local
Duration of impact	For the duration of construction	During routine maintenance
Intensity	Low	Low
Probability of occurrence	Highly probable	Probable
Status of the impact	Positive	Positive
Accumulative Impact	Adds to job security in the region. Contributes to employment levels in the region.	Adds to job security in the region. Contributes to employment levels in the region.
Level of significance	**Low**	**Low**
Mitigation measures	Ensure that local labour is recruited where applicable.	Not required
Level of significance after mitigation	**Low**	**Low**
EMP requirements	Employ local labour where possible.	
Discussion: Limited opportunities exist for local labour, especially through local contractors and SMEs during construction and operation (See below for further explanation).		

Braamhoek Substation		
Nature of impact	***Increase in opportunities for SMEs and local contractors***	
Stage	Construction	Operation
Extent of impact	Regional	Regional
Duration of impact	For the duration of construction	During maintenance and emergency repairs.
Intensity	Low	Low
Probability of occurrence	Highly probable	Highly probable
Status of the impact	Positive	Positive
Accumulative Impact	Adds to job security in the region. Contributes to employment levels in the region.	Adds to job security in the region. Contributes to employment levels in the region.
Level of significance	**Low**	**Low**
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	**Low**	**Low**
EMP requirements	Use SMEs and local contractors for applicable tasks.	Use SMEs and local contractors for applicable tasks.

Discussion: Opportunities for SMEs and local contractors during construction are limited and mainly include tasks such as trenching, and the provision of services such as catering and security. The proposed site of the Substation is located on the site of the PSS construction camp and, therefore, bush clearing will not be required.

During operation, general maintenance and emergency repairs such as clearing vegetation around and within the Substation grounds, repair of fences and gates will be required and should be outsourced to local SMEs and contractors.

Braamhoek Substation		
Nature of impact	***Risk of fires***	
Stage	Construction	Operation
Extent of impact	Local	Local
Duration of impact	For the duration of construction	Permanent
Intensity	Low	Low
Probability of occurrence	Probable	Improbable
Status of the impact	Negative	Negative
Accumulative Impact	An additional fire hazard in the area.	An additional fire hazard in the area.
Level of significance	**Moderate**	**Low**
Mitigation measures	The 'Code of Conduct' for construction personnel should include stipulations regarding the making of fires, e.g. where, when, how contained etc. Ensure that there is an adequate firebreak surrounding the Substation perimeter so that any fire starting at the Substation is contained. Have functioning fire fighting equipment on site and ensure staff and contractors are trained to deal with such an event. Compile an emergency procedure to deal with fires. This should be inclusive of contact number of local fire and emergency services.	Ensure that there is an adequate firebreak surrounding the Substation perimeter so that any fire starting at the Substation is contained. Have functioning fire fighting equipment on site and ensure staff and contractors are trained to deal with such an event. Compile an emergency procedure to deal with fires. This should be inclusive of contact number of local fire and emergency services.
Level of significance after mitigation	**Low**	**Low**
EMP requirements	Include fire safety and rules in the 'Code of Conduct'. Have functioning fire fighting equipment on site and train teams from construction personnel in its use.	Ensure that there is an adequate firebreak surrounding the Substation perimeter so that any fire starting at the Substation is contained. Have functioning fire fighting equipment on site and ensure staff and contractors are trained to deal with such an event. Compile an emergency procedure to deal with fires. This should be inclusive of contact number of local fire and emergency services.

Discussion: Construction workers residing in construction camps, or while busy with construction 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.

During operation of the Substation, no vegetation is allowed to grow within the Substation or in a wide perimeter around it. Should a fire start within the Substation, the likelihood of it spreading to surrounding areas is almost nil.

Braamhoek Substation		
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	Construction of the Substation may coincide with construction of the Transmission Lines/Turn-in.	
Level of significance	**Moderate**	
Mitigation measures	Include a strict code of conduct for construction workers in all contractor contracts. 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. Establish a rigorous HIV/AIDS awareness and prevention campaign among construction workers. Make condoms freely available to construction workers. Manage the construction camp efficiently e.g. water, sanitation and waste facilities.	
Level of significance after mitigation	**Low**	
EMP requirements	Include a strict code of conduct for construction workers in all contractor contracts. Environmental Control Officer (ECO) should monitor that this is implemented and adhered to.	

Discussion: The proposed location of the Substation is on the site of the construction camp used for the construction of the PSS. Therefore, a new site will need to be found for the construction camp for the Substation. This construction camp will be in close proximity to the construction site, and therefore, still on property bought by Eskom for the PSS. The number of people in the camp at any given time would be relatively small, since specialised teams come to site to carry out specific tasks e.g. steelworks, and leave after their component has been completed.

Potential impacts which are generally associated with construction camps are:

- Pressure on existing infrastructure and services in close proximity to the construction camp.
- 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 and a province where infection rates are high. 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.
- If the construction camp is 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 Substation, but may also spread to local communities.
- Potential in-migration of people, e.g. employment seekers, criminal opportunists, etc.

Although there are very limited settlement on farms bordering on those purchased by Eskom at present, this situation is due to have changed by the end of 2005, with the completion of the implementation of the Land Reform process. This will imply that, by the time construction starts on the PSS (and later the Substation), farms neighbouring on Eskom property will have more settlement than at the moment. Eskom Generation, the joint venture responsible for construction of the PSS, as well as the consultants conducting the EIA for the access roads to the PSS, need to take cognisance of the implication of the Land Reform process.

However, Eskom should still include a strict code of conduct in all contractor contract agreements whereby construction workers' behaviour and conduct can be regulated.

5. CONCLUDING REMARKS

The assessment shows that there are no negative impacts which can be classified as fatal flaws, or which are of high significance thereby blocking the project, provided that the suggested mitigation measures are undertaken. ACER believes that the report accurately reflects the impacts that the proposed Braamhoek Substation 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.

6. REFERENCES

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