

## SUMMARY

### BACKGROUND

Eskom's transmission network, supplying electricity to the greater Eastern and Western Cape areas, is running short of capacity. Eskom is planning to strengthen its transmission network by constructing a 765 kV transmission line backbone through the centre of the country, linking its main generating facilities in Mpumalanga, with demand centres in the Western and Eastern Cape. In order to transmit electricity over long distances, Eskom requires sub-stations. The location of the proposed Gamma Sub-station is indicated by an optimal distance between the Perseus (Dealesville) and Omega (Koeberg) Sub-stations, being approximately equidistant. It also serves as an off-take for the proposed 765 kV transmission lines to the Grassridge Sub-station near Port Elizabeth. Environmental authorisation was issued in 2005 for the proposed Gamma Sub-station to be located on the farm Uit Vlugt Fontein near Victoria West, Northern Cape. However, recent planning has indicated that the proposed Gamma Sub-station would be more ideally located about 10 km to the east of the original site (on the farm Uit Vlugt Fontein No. 233 with a small encroachment onto the farm Schietkuil No. 3).

Eskom Transmission (proponent) has appointed ACER (Africa) Environmental Management Consultants as the Environmental Assessment Practitioner to undertake the independent Environmental Impact Assessment for the proposed Gamma Sub-station. The Environmental Impact Assessment is being undertaken in accordance with the National Environmental Management Act, 1998 (Act No. 108 of 1998) (as amended) and its associated EIA Regulations published in July 2006. The competent authority for this project is the national Department of Environmental Affairs and Tourism, with its provincial counterparts, viz. the Northern Cape Department of Tourism, Environment and Conservation and the Western Cape Department of Economic Affairs and Development Planning.

The Environmental Impact Assessment is currently in the Scoping phase, and this Draft Scoping Report is one of several information documents that will be produced. All registered Interested & Affected Parties will be provided with access to this Draft Scoping Report and given time to respond and comment. Following the period of public review, the report will be updated and a Final Scoping Report will be submitted to the environmental authorities for consideration. Thereafter, DEAT will indicate whether or not the Environmental Impact Assessment can proceed to the Impact Assessment Phase.

### DESCRIPTION OF THE PROJECT

A sub-station's function is to transform voltages from high to low or the reverse, using transformers and other heavy-duty electrical switchgear. In addition to these functions, the proposed Gamma Sub-station will house equipment used to correct or neutralise inductive reactance, or voltage rise, and enable Eskom to safely tap off power from the 765 kV backbone and distribute it to other areas. The Gamma Sub-station will eventually accommodate five incoming and five outgoing lines, together with the associated switching, protection and control equipment, line termination structures, high-voltage switchgear, reactors, low voltage switchgear, transformers, reactors, busbars, surge protection controls and metering. The proposed Gamma Sub-station will cover an area of 1,290 m x 465 m (approximately 60 ha) and a small corridor (approximately 400 m x 2,000 m, an area of 80 ha) will be used for an access road to the R63. There will also be turn-in lines to connect the existing 400 kV transmission lines to the sub-station, with these turn-in lines having their own servitude requirements. The whole complex will be surrounded by a substantial security fence.

The first construction activity will be to clear the site of vegetation and to level off and terrace the ground surface. After this will follow the concrete and building construction for foundations for the supporting steelwork, transformers and switchgear, storm water drainage pipes, slabs, bund walls, the control room, small buildings and storage areas that are needed, and the construction of a tarred access road and a telecommunication (microwave lattice) mast. Various hazardous substances will be temporarily stored on-site during construction.

During construction, there should not be more than 80 people present on site at any one time, of which some will be housed on site in temporary accommodation. The construction of a sub-station is a specialised undertaking requiring skilled people and, by implication, job opportunities for local people will be limited to unskilled jobs, on site and in construction camps. Apart from direct employment, local people and businesses will benefit through the supply of goods and services to the appointed contractors. No people will be housed on site on a permanent basis during the operational life of the sub-station. However, there will be ongoing monitoring and control of operations as well as planned and other maintenance work done on an *ad hoc* basis.

A project-specific Environmental Management Plan will be compiled for the project and this document will detail the specific controls, which must be in place for the duration of the construction phase. An Environmental Control Officer who acts as an intermediary between individual landowners, Eskom and the contractors, will monitor compliance with the Environmental Management Plan.

In order to meet the expected electricity demand, the proposed Gamma Sub-station must be operational by 2009. Therefore, construction must commence in the latter half of 2007. This Environmental Impact Assessment is being managed with a target date for the issuing of a Record of Decision by DEAT in mid-July 2007.

For the proposed Gamma Sub-station, there are three alternatives under consideration:

- The proposed site on the farm Uit Vlucht Fontein 265, bordering on the farm Schietkuil 3.
- An alternative site on the farm Uit Vlucht Fontein 265, for which a positive Record of Decision was issued by DEAT (as explained, Eskom has decided to move the location of the sub-station).
- The “no go” or no-development alternative.

It is the professional opinion of the environmental assessment team that the no-development option is unrealistic and, therefore, it is submitted that this alternative should be discarded from further consideration in this EIA. Also, the site that has received a positive Record of Decision is taken as a *fait accompli* and, therefore, only the proposed new site is considered in this Environmental Impact Assessment.

## **PURPOSE AND NEED FOR THE PROJECT**

Eskom is planning to substantially bolster the main power supply to the southern provinces with additional 765 kV transmission lines that will be constructed alongside the existing 400 kV lines. On long EHV transmission lines, sub-stations are needed every 400 to 450 km to house equipment. Eskom wants to place the proposed Gamma Sub-station next to three existing 400 kV transmission lines so that reactive voltage correction apparatus for the 400 kV and 765 kV lines can then be housed within one structure. Further, if the proposed Gamma Sub-station is built in proximity to the existing 400 kV lines it can also be used to boost the electrical power feed in the 400 kV lines. Gamma will be built with transformers to step down the voltage from 765 kV to 400 kV and this additional power can then be fed into the 400 kV lines for onward transmission.

The main purpose of building the Gamma Sub-station is to safely house the engineering and technical equipment that is necessary for the operation of long distance EHV power lines. The need for such a facility arises out of the physics of long distance power transmission, where compensation for capacitive voltage generation on power lines has to be provided to avoid uncontrolled voltage rise especially on lightly loaded lines.

### **BROAD LEGAL PERSPECTIVE AND ASSESSMENT FRAMEWORK**

For a development such as the proposed Gamma Sub-station, there are a host of legal requirements (National, Provincial and Local Government spheres) to which the development proponent must adhere.

Listed below is some of the *key* legislation that is applicable to this project:

- Constitution of the Republic of South Africa (Act No. 108 of 1996) as amended by the Constitution of the Republic of South Africa, Amendment Act (Act No. 35 of 1997).
- National Environmental Management Act (Act No. 107 of 1998).
- Environment Conservation Act (Act No. 73 of 1989).
- Electricity Act (Act No 41 of 1987).
- Eskom Conversion Act (Act No 13 of 2001).
- Eskom Act (Act No 40 of 1987) as amended by the Eskom Amendment Act (Act No 51 of 1991).
- White Paper on the Energy Policy of the Republic of South Africa (December 1998).
- National Water Act (Act No. 36 of 1998).
- National Heritage Resources Act (Act No 25 of 1999).
- Conservation of Agricultural Resources Act (Act No 43 of 1983).
- Public Finances Management Act (Act No 1 of 1999) as amended by Act No 29 of 1999.

The concept of sustainability underpinning this assessment considers three inter-related dimensions of the environment, viz. the social, economic and biophysical dimensions. For an option or project to be sustainable, it needs to demonstrate economic growth, social acceptability and soundness, and ecological integrity within a framework of good governance. In the case of the proposed Gamma Sub-station, the economic and social dimensions of the environment are the primary drivers. Therefore, within the assessment, particular focus and care will need to be placed on the biophysical dimension.

### **DESCRIPTION OF THE RECEIVING ENVIRONMENT**

The area affected by the project is divided into a number of District and Local Municipalities:

- The affected district municipality in the Northern Cape is the Pixley KaSeme District Municipality (DC 07). The affected local municipal area is the Ubuntu Local Municipality (NC 071).
- The affected district municipality in the Western Cape is the Central Karoo District Municipality (DC 05). The affected local municipal area is the WCDMA 05.

The general area is sparsely populated and much of the area is semi-desert with vast expanses of open land and concentrated small settlements. Approximately half of the population lives in the Beaufort West area, i.e. most of the population is urbanised. The Central Karoo District Municipality has been declared as a Presidential Node by President Mbeki during 2001 due to the high levels of poverty. Settlements in the study area are generally linked by an adequate road network. The R61 and N1 are the main roads in the study area, which are supported by a network of minor roads, some black-topped but mostly gravel.

Interior climatic conditions in the Karoo vary considerably with a diverse, natural and physical environment. The climate in the region is warm all year round, with hot summers and winters that frequently have frost. The site is located in a generally flat area adjacent to a range of low hills and koppies. The site slopes gently to the south-west and storm water drains towards a watercourse about 1 km away. Key topographical features in the study area include the Murraysburg Mountains (Ondersneeuberg Mountains) and the Kamdeboo Mountains. The underlying geology of the site is sandstones and shales derived from the Beaufort Group of the Karoo Supergroup. These rocks give rise to weak and structureless clayey and sandy soils (red duplex soils, shallow soils with some lime and rocky areas).

Typical Karoo landscapes comprise grasslands and densely vegetated rivers and valleys. The vegetation is sparse, dry and, once damaged, does not regenerate easily. The presence of fragile soils means that there is much erosion and slippage. The vegetation in the area supports a high diversity of bird species, many of which are endemic to South Africa, although not to the particular region. There are some fauna species on the site including several small mammals such as mice, reptiles such as lizards and snakes, as well as many insect species.

Much of the study area is considered to be managed for purposes of conservation. Similarly, many private landowners/farmers are entering into the eco-tourism sector on a regional scale. The wilderness landscapes of much of the study area are sensitive and critical to preserve for the conservation of the whole region.

The proposed development site occurs in an area where few or no professional cultural heritage surveys of archaeological sites or research projects have been undertaken. Only a few sites are known in the wider vicinity of the proposed site.

## **SCOPING AND PUBLIC PARTICIPATION**

The Environmental Impact Assessment is currently in the Scoping Phase where issues for further investigation are identified so that they can be considered for inclusion in the Specialist Studies that will be done during the next phase, viz. the Impact Assessment Phase.

The technical process comprised the following activities:

- Information gathering.
- Assessment and collation of information.
- Evaluation and prioritisation of issues and impacts.

The public participation process has been designed to satisfy the requirements laid down in legislation and the NEMA Regulations. The key objective of public participation during Scoping is to assist to define the scope of the technical studies to be undertaken during the Impact Assessment through the following key activities:

- Notification of the application.
- Registration of Interested & Affected Parties.
- Project announcement.
- Obtaining and dealing with comments from Interested & Affected Parties.
- Focus Group and/or Public Meetings.
- Issues and Response Report, with acknowledgements.
- Draft Scoping Report.

All registered Interested & Affected Parties will be advised of the availability of the Draft Scoping Report and will be provided with an opportunity to review and comment on this report. The Final Scoping Report will be updated with any additional issues raised by Interested & Affected Parties, and will contain any new information that may have been generated as a result of the public review process. It will be submitted to the Authorities, with a request that the assessment process can proceed to the next phase, viz. the Impact Assessment.

### **ENVIRONMENTAL ISSUES, IMPACTS AND SPECIALIST STUDIES**

Issues raised during Scoping reflect the concerns and values of a range of different people, groups and organisations, including the public at large, special interest groups, private individuals, various authorities, Eskom and the EIA Team. Through the integration of discipline-specific perspectives (positive and negative aspects), the key issues identified during Scoping have been formulated as five main questions:

- What are the potential impacts during the construction of the proposed Gamma Sub-station? This includes aspects such as water (storm water management, water supply and sanitation), geology (soils and geotechnical), air pollution, the influx of construction workers and security concerns, and cultural heritage resources.
- What are the potential impacts during the operation of the proposed Gamma Sub-station? This includes aspects such as the presence of high intensity electro-magnetic fields from EHV equipment, aesthetics, land-use and economic activities, and emergency situations.
- What are the potential impacts of the proposed Gamma Sub-station on flora and fauna (including avi-fauna)?
- What positive or negative economic effects can be expected to the social and socio-economic environments?
- What cumulative effects will the sub-station contribute, seen in association with impacts arising from other activities in the region?

For purposes of Scoping, issues and associated potential impacts are described but with no assessment of significance (this will be done during the Impact Assessment, once discipline-specific specialist studies have been completed).

### **PLAN OF STUDY FOR IMPACT ASSESSMENT**

The Plan of Study for the Impact Assessment has been compiled and conforms to the requirements of the National Environmental Management Act (No 107 of 1998) (as amended) and the EIA Regulations. The main activities during this phase will be to:

- Undertake focused scientific studies to assess the issues of concern.
- Maintain ongoing communication and participation with stakeholders.
- Integrate the findings into a defensible Environmental Impact Report, inclusive of mitigation measures to ameliorate the effects of negative impacts and optimise positive ones.
- Prepare an Environmental Management Plan.

Through an integrated approach, a number of Specialist Studies will be undertaken to consider direct, secondary and cumulative impacts wherever possible. The proposed Specialist Studies include:

- Faunal and Avi-Faunal Assessments.
- Wetlands assessment.
- Vegetation assessment.
- Geotechnical assessment.

- Land use assessment.
- Visual and aesthetics assessment.
- Social and socio-economic assessment.
- Heritage impact assessment.

The outcomes of Specialist Studies commissioned as part of the proposed Gamma-Grassridge 765 kV Transmission Lines (x 2) EIA (notably the EMF and Compensation Studies) will also be used to inform the issues arising for the proposed Gamma Sub-Station EIA.

The results will be used by the EIA Team when doing the integrated assessment of the proposed sub-station development. The outcomes of integration and assessment will be documented in an Environmental Impact Report, which will be released in the public domain for comment at the appropriate time. Furthermore, based on the findings of the Impact Assessment, a comprehensive Environmental Management Plan will be prepared.

The following activities will be undertaken for the public participation process of the Impact Assessment Phase:

- Interested & Affected Parties will receive two personalised letters advising them of progress and the opportunity to comment on reports (Environmental Impact Report, Environmental Management Plan and Specialist Reports).
- Interested & Affected Parties will be advised of the availability of the various reports (for public review).
- Compilation of an Issues and Response Report.
- Focus Group Meeting.
- Interested & Affected Parties will be advised of the issue of the Record of Decision by DEAT.

### **CONCLUDING REMARKS**

The EIA Team is of the opinion that Eskom Transmission has followed due environmental process during the undertaking of this Scoping process and associated public participation programme. The analysis of key issues during Scoping has shown that there are no negative impacts that can be classified as fatal flaws. However, a number of issues that may lead to the identification of some significant environmental impacts, have been highlighted for further investigation in order to assess their significance and to determine the kinds of mitigation measures required for their management and minimisation.

The EIA Team is of the opinion that the Impact Assessment Phase, as described, should be undertaken in order to better understand the key issues and associated potential impacts.