DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED CONSTRUCTION OF THE NEW ESKOM RETHABISENG NORTH 132/11 KV SUBSTATION AND ASSOCIATED LOOP-IN AND LOOP-OUT POWERLINES, IN EKANGALA, WITHIN THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY (GAUTENG PROVINCE) OR THE THEMBISILE HANI LOCAL MUNICIPALITY (MPUMALANGA PROVINCE).

DEA Reference No: 14/12/16/3/3/1/1629

FEBRUARY 2017

Prepared For

Prepared by:

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DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR THE PROPOSED CONSTRUCTION OF THE NEW ESKOM RETHABISENG NORTH 132/11 KV SUBSTATION AND ASSOCIATED LOOP-IN AND LOOP-OUT POWERLINES, IN EKANGALA, WITHIN THE CITY OF TSHWANE METROPOLITAN MUNICIPALITY (GAUTENG PROVINCE) OR THE THEMBISILE HANI LOCAL MUNICIPALITY (MPUMALANGA PROVINCE).

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1 INTRODUCTION

Eskom Distribution Gauteng Operating Unit are proposing the construction of a new Distribution Substation and associated loop-in and loop-out lines to be situated in Ekangala, within the City of Tshwane Metropolitan Municipality or the Thembisile Hani Local Municipality, Gauteng and Mpumalanga Provinces (the border of the two Provinces splits the 3 site alternatives). The proposed new Substation will have a footprint of 1.5 Hectares and will be known as the Rethabiseng North 132/11kV 2x20MVA Substation, and will have four fully equipped 11kV feeder bays for feeder splitting. Two powerlines are proposed which will tie in and out of the proposed new Substation. Details of the proposed lines are provided below:

- The Rethabiseng-Rethabiseng North loop-in line which will be approximately 0.2km in length, and will have a servitude width of 28m. This line will be a 132kV Kingbird line which will tie into the existing Rethabiseng-Gemsbok line; and
- The Rethabiseng North -Gemsbok loop-out line which will be approximately 0.2km in length and will have a servitude width of 28m. This line will be a 132kV Kingbird line which will tie into the existing Rethabiseng-Gemsbok line.

2 PROJECT LOCATION

Three Site Alternatives were investigated for this project. The alternative currently preferred by Eskom (Site Alternative 1), and Site Alternative 2 are situated on Portion 5 of the Farm Rietfontein 470 JR (T0JR00000000047000005), situated within the Thembisile Hani Local Municipality, within the Mpumalanga Province. Site Alternatives 3 is situated on Remaining Extent of the Farm Ekangala 610 JR (T0JR00000000610000000), within the City of Tshwane Local Municipality with the Gauteng Province.

Centre coordinates of the three alternative substation sites are provided below:

Substation Site Alternative (Centre Coordinates)		
Eskom's preferred Site (Site Alternative 1)	25°39'13.00"S	28°43'5.98"E
Site Alternative 2	25°39'26.14"S	28°43'0.71"E
Site Alternative 3	25°39'33.62"S	28°43'10.10"E

A Locality Map is given in Figure 1.

3 PROJECT NEED AND DESIRABILITY

The 11kV network fed from the existing Rethabiseng 132/11kV 2x20MVA Substation will experience under voltages and thermal overloading due to load growth from the residential load as well as expected electrification in the area. The network has limited backfeeding and the Ekangala A 11kV feeder exceeds the recommended number of customers for a

reticulation feeder. In order to create capacity for expected load growth, create backfeeding capacity, alleviate thermal loading violations, and alleviate voltage violations as well as violations of the reliability guideline; Rethabiseng North Substation is proposed. This proposed new Substation will be situated west of the Ekangala F township. Rethabiseng North Substation will split the Ekangala A and Ekangala B feeders and will accommodate the electrification at Ekangala F, thereby deloading the existing Rethabiseng Substation, creating capacity and allowing for improved backfeeding.

4 Proposed Powerline Structures:

The lines will be supported by steel guyed monopole structures. These monopoles vary in height between 18.2-24.2m and can span between 350-455m, depending on the gradient of the site, and the number of turning points required. However, for the purposes of this project, the Eskom Engineer confirmed that spans of 250m may be used.

4.1 Study Corridors / Buffer Areas:

Each of the proposed alternative loop-in and loop-out line servitudes have a 100m wide study corridor, and all were investigated during the Basic Assessment Process. In addition, a 4ha study area was investigated for each proposed substation site. The study areas are shown in Figure 2.

4.2 Additional Proposed Infrastructure:

Access to all three alternative sites is obtained off the R460, via existing dirt roads on site. Eskom confirmed that these dirt roads will remain dirt roads, and that no upgrading of these roads are envisaged.

4.3 Construction Camp and Materials Storage Area:

The construction camp and materials storage areas will be situated on the site earmarked for development. All construction activities, as well as the construction camp and materials storage area, will be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report (Attached to Appendix D of the Final Basic Assessment Report). Therefore, no construction vehicles, workers or material stockpiling will be allowed in any of the areas adjacent to the study area which were classified as having medium to high ecological sensitivity.

4.4 Contractors Camp:

A contractor's site office will be established at the construction camp. A contractor's camp will not be established on site, and all contractors will travel to site on a daily basis.

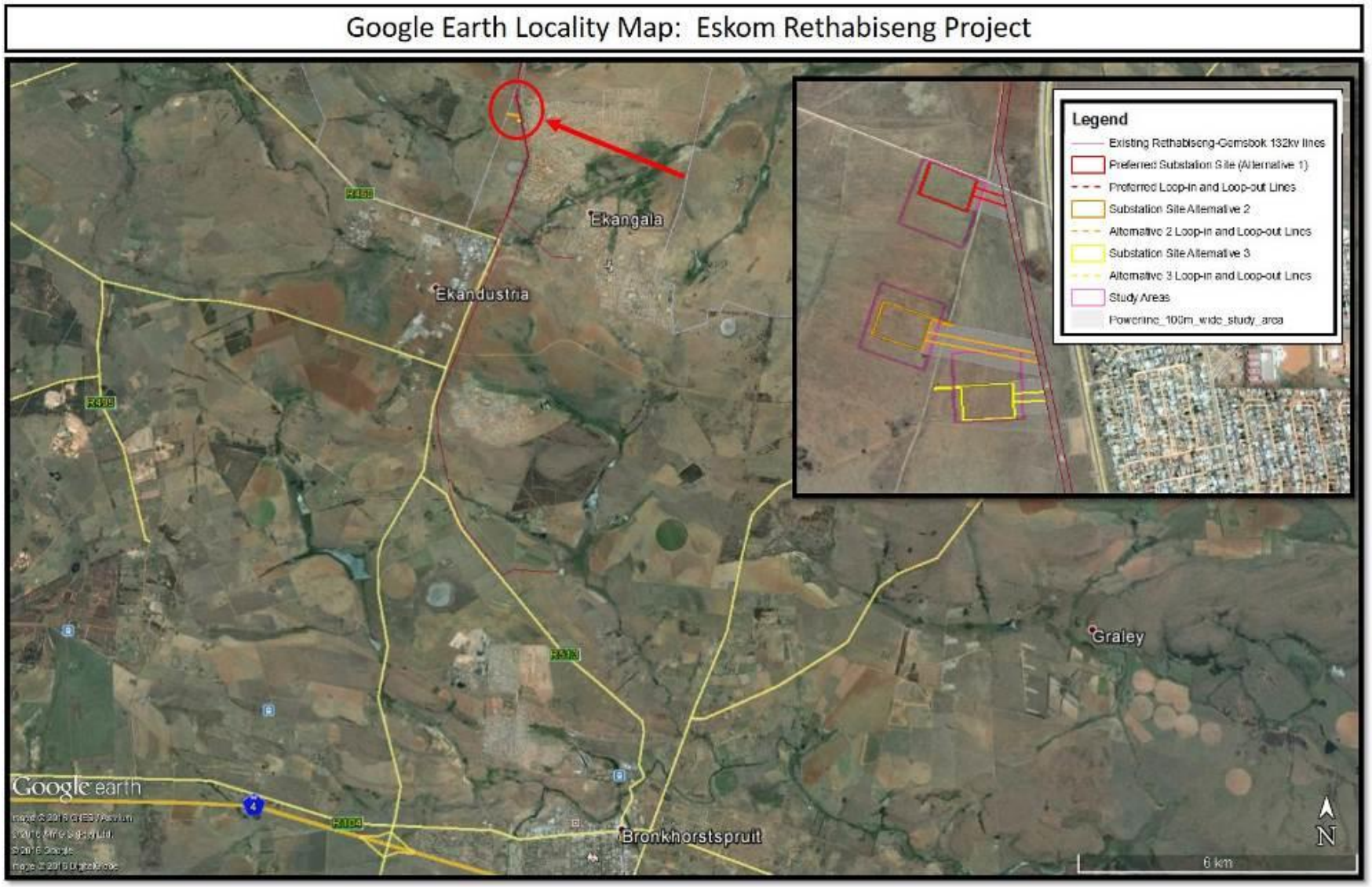
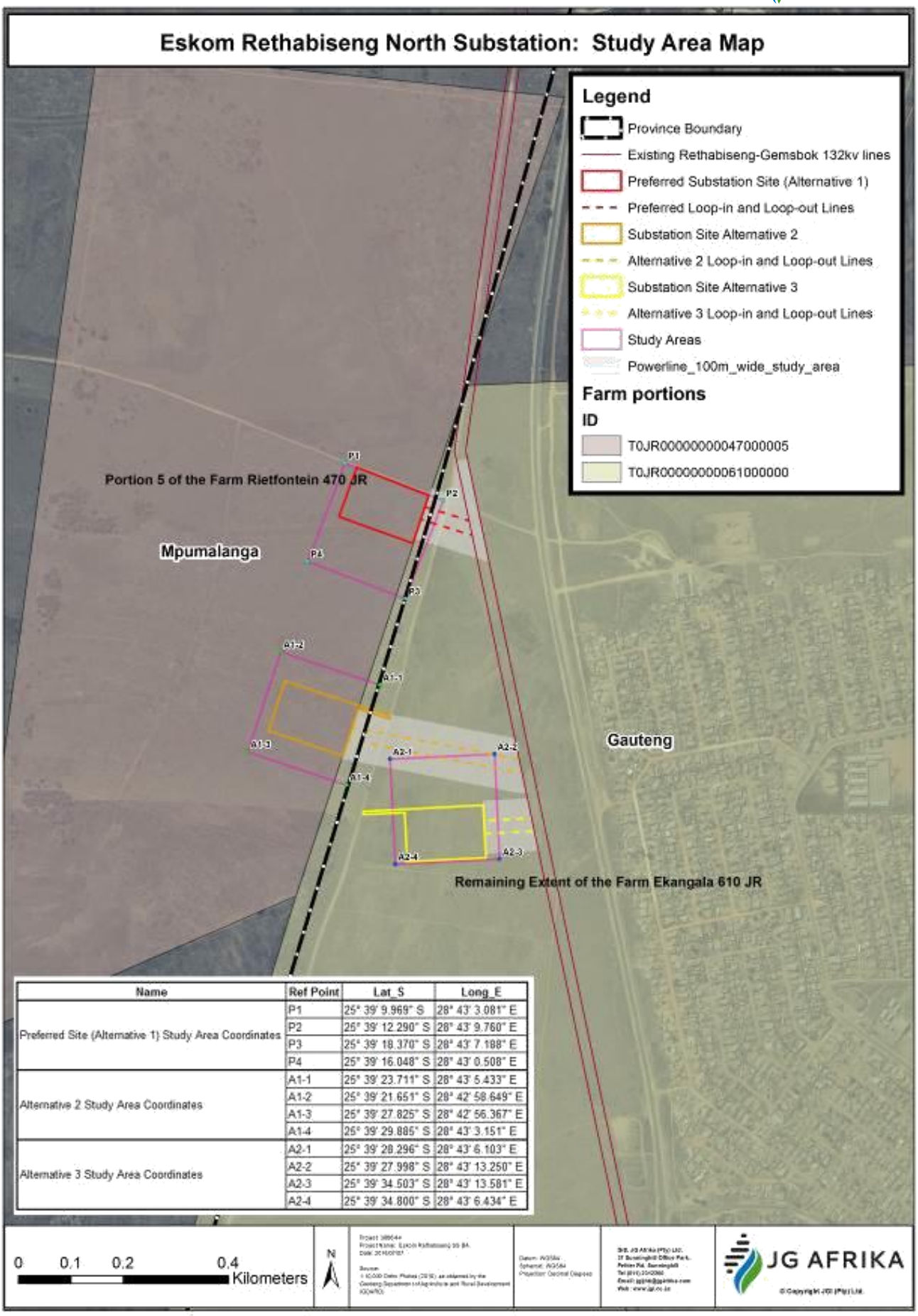


Figure 1: Locality Map



Name	Ref Point	Lat_S	Long_E
Preferred Site (Alternative 1) Study Area Coordinates	P1	25° 39' 9.969" S	28° 43' 3.081" E
	P2	25° 39' 12.290" S	28° 43' 9.760" E
	P3	25° 39' 18.370" S	28° 43' 7.188" E
	P4	25° 39' 16.048" S	28° 43' 0.508" E
Alternative 2 Study Area Coordinates	A1-1	25° 39' 23.711" S	28° 43' 5.433" E
	A1-2	25° 39' 21.651" S	28° 42' 58.649" E
	A1-3	25° 39' 27.825" S	28° 42' 56.367" E
	A1-4	25° 39' 29.885" S	28° 43' 3.151" E
Alternative 3 Study Area Coordinates	A2-1	25° 39' 28.296" S	28° 43' 6.103" E
	A2-2	25° 39' 27.998" S	28° 43' 13.250" E
	A2-3	25° 39' 34.503" S	28° 43' 13.581" E
	A2-4	25° 39' 34.800" S	28° 43' 6.434" E

Figure 2: Cadastral and Study Area Map

5 PROJECT ENVIRONMENTAL ASSESSMENT PRACTITIONER

JG Afrika (Pty) Ltd, formerly known as Jeffares and Green (Pty) Ltd Engineering and Environmental Consultants was been appointed by Eskom Distribution Gauteng Operating Unit, as the independent Environmental Assessment Practitioner to undertake the Environmental Basic Assessment process for this project. Jeffares and Green (Pty) Ltd has rebranded to JG Afrika (Pty) Ltd in April 2016.

The details of the relevant Environmental Assessment Practitioners responsible for the compilation of the EMP are provided below:

Company Name:	JG Afrika (Pty) Ltd
Authors:	Mrs S van der Merwe (Senior Environmental Scientist)
Reviewed by:	Mrs C Canahai (Technical Director)
Authorised by:	Mrs C Canahai (Technical Director)
Address:	PO Box 1109
	Sunning hill
Tel:	011 231 2200
Fax:	011 807 1607
E-mail:	vandermerwes@gji.co.za

Relevant Expertise of the Independent Environmental Assessment Practitioners is provided in Table 1 below.

Table 1: Experience of Project Team

Name	Position in Firm	Qualification	Years' Experience	Experience
Mrs Cecilia Canahai	Technical Director / Engineering Geologist	Pr Sci Nat, MSC (Eng Geology), BSc (Eng Geology	26 Year	Cecilia is a Technical Director with over 23 years of experience of which 13 as an Environmental Assessment Practitioner. Cecilia is a member of the International Association for Impact Assessment (IAIA) and the South African Institute for Environmental and Engineering Geologists. She has experience in project management, environmental impact assessments, public participation, environmental management plans and programmes, environmental control auditing, waste management, integrated development plans and engineering geology. Cecilia is a registered Professional Natural Scientist **(Registration No 400011/00)**
Mrs Sonja van der Merwe	Senior Environmental Scientist	BA (Hons) Geography and Environmental Management	10 Years	Sonja is a senior Environmental Scientist with 10 years of experience in the Environmental Consultancy Field. She has experience in project management, environmental impact assessments, basic assessments, public participation, environmental management plans and programmes, environmental control auditing, and mine closure planning and Geographic Information Systems. Sonja is a member of the International Association for Impact Assessments (IAIA).

6 PURPOSE OF THE EMPr

The purpose of the Environmental Management Programme (EMPr) is to ensure that the social and environmental impacts identified during the Basic Assessment process are effectively managed during the construction, operation and closure phases of the proposed powerlines. The EMP will formulate mitigatory and management measures that should be made binding to Eskom and the Contractor, during the construction period and the defects liability period of the contract. The EMP will also show how mitigation and management measures will be scheduled.

The key objectives of the EMPr will be to:

- Outline functions and responsibilities of responsible personnel.
- State standards and guidelines, which are required to be achieved in terms of environmental legislation.
- Outline mitigation measures and environmental specifications which are required to be implemented for all phases of the project in order to minimize the extent of negative environmental impacts,
- Maximize the effect of positive environmental impacts and manage these environmental impacts appropriately.

The EMPr covers information and/ or mitigation measures that will be taken into consideration to address impacts, where relevant, in respect of:

- Planning and Design
- Pre-Construction and Construction activities
- Operation; and
- Closure

The EMP is a living document which will be periodically reviewed and updated as necessary. Any amendments made must be submitted to both the Environmental Officer and the Project Manager for approval, prior to implementation.

7 ABBREVIATIONS

E-PM	Eskom Project Manager
CNC	Customer Network Centre
DBU	Distribution Business Unit
SP	Security Personal
ECO	Environmental Control Officer
RE	Resident Engineer
C	Contractor
EMPr	Environmental Management Programme
PCO	Pest Control Officer
C&OEMPr	Construction and Operation Environmental Management Programme
SM	Substation Manager
LM	Line and Servitude Manager for the grid

8 ROLES AND RESPONSIBILITIES

8.1 Role of the Environmental Control Officer (ECO)

The Environmental Control Officer must monitor the implementation of relevant environmental legislation, conditions of the Environmental Authorisation (EA), and the Construction and Operational Environmental Management Programme(C&OEMPr) for the project. It is recommended that monthly audits be undertaken during the construction phase. The Final Construction and Operational Environmental Management Programme should provide details of the ECO.

- The ECO must be on site prior to any site establishment and must endeavour to form an integral part of the project team;
- The ECO must be proactive and have access to specialist expertise as and when required, these include botanists, ecologists etc.;
- The ECO must conduct audits on compliance to relevant environmental legislation, conditions of the EA and the EMP for the project;
- The size and sensitivity of the development, based on the EA, will determine the frequency at which the ECO will be required to conduct audits. (A minimum of a monthly site inspection should be undertaken);
- The ECO must be the liaison between the relevant authorities and the project team;
- The ECO must communicate and inform the engineers of any changes to environmental conditions as required by relevant authoritative bodies;

- The ECO must ensure that the registration and updating of all relevant EMP documentation is carried out;
- The ECO must be suitably experienced with the relevant environmental management qualifications and preferably competent in construction related methods and practices;
- The ECO must handle information received from whistle blowers as confidential and must address and report these incidences to the relevant Authority as soon as possible;
- The ECO must convey the contents of this EMP to the Contractor site team (should the Contractor not have its own environmental officer) and discuss the contents in detail with the Contractor as well as undertake to conduct an induction and an environmental awareness training session prior to site handover to all contractors and their workforce.

8.2 Role of the Engineer

The role of the Engineer is to design and specify the project engineering aspects. Generally, the engineer runs the works contract. The Engineer may also fulfil the role of Project Manager on the proponent's behalf.

8.3 Role of the Contractor

The Principle contractor, hereafter known as the 'Contractor', is responsible for implementation and compliance with the requirements of the EMP and conditions of the EA's, contract and relevant environmental legislation. The Contractor must ensure that all sub-contractors have a copy of and are fully aware of the content and requirements of this EMP. The Contractor is required, where specified, to provide Method Statements setting out in detail how the management actions contained in the EMP will be implemented.

8.4 Roles of Eskom

Eskom will be responsible for the implementation of the EMP as follows:

- Ensure that the EMP is effectively implemented;
- Liaise on a strategic level with authorities regarding any environmental issues as required;
- Provide the resources (human and financial) necessary to complete the required tasks in accordance with this EMP;
- Review the EMP; at least, annually (or when required) to assess its effectiveness and practicality and assess whether new environmental procedures are required;
- Ensure that the corrective actions and non-conformance issues are addressed with regards to the EMP;
- Liaise with public and community regarding any environmental complaints/issues (as required);

- Ensure that the site is operated in accordance with relevant permits/licenses, regulations and all appropriate policies; and,
- Maintain proper control of the site and determine what, if any, problems exist, or may be anticipated such as operational issues, regulatory requirements, and stakeholder issues, management of unacceptable waste streams, pollution and emergencies.

8.5 Roles of the CNC Supervisor during the Operational Phase

The CNC Supervisor shall:

- Be familiar with the contents of the EMP;
- Ensure that a copy of the EMP is kept at an accessible location at the site;
- Be fully conversant with the conditions of permits/licenses and authorisations relevant to the site;
- Provide environmental awareness training to the maintenance team as required;
- Inspect the site regularly for environmental issues;
- Ensure that all site staff are fully conversant with the EMP;
- Ensure that that all safety checks and procedures have been followed and applied, as well as ensure adherence to the Occupational Health and Safety Act;
- Ensure that the site access is managed and controlled; and
- Ensure good housekeeping and proper sign postage.

8.6 Roles of Line and Servitude Manager during the Operational Phase

The Servitude Manager shall:

- Be familiar with the contents of the EMP;
- Ensure that a copy of the EMP is always accessible to ensure compliance;
- Be fully conversant with the conditions of permits/licenses and authorisations relevant to the site;
- Provide environmental awareness training to the maintenance team as required; and
- Undertake annual inspections with the maintenance team.

9 STANDARD ESKOM DOCUMENTS TO BE COMPLIED WITH

In addition to the approved Environmental Management Programme, the Environmental Authorisation and other permits and licences, the operational activities of the powerlines should also comply with the following standard Eskom documents:

- Fire Risk Management (DST 34-132);

- Eskom Procedure for Vegetation Clearance and Maintenance within overhead Powerline Servitude and on Eskom owned Land (EPC 32-247).
- Eskom Environmental Waste Management Procedure (EPC 32 – 245)
- Eskom Environmental Liaison Committee (ELC) Performance Indicator Reporting Procedure (EPC 32 -249)
- Eskom Emergency Preparedness Procedure (DST 34 – 315)
- Guideline on Operating and Maintenance of Oil Containment Structures, Oil Traps and Oil Dams (TGL41-393);
- Oil spill clean-up and rehabilitation (ESKAGAAD7);
- Access to Farms (includes strategy on dealing with game farms) DGL 34-190.

10 RELEVANT LEGISLATION TO BE COMPLIED WITH

- National Environmental Management Act (Act 107 of 1998)
- Environmental Impact Assessment Regulations, 2010 & 2014
- Environment Conservation Act (Act 73 of 1989)
- National Environmental Management: Biodiversity Act (Act 10 of 2004)
- National Environmental Management: Protected Areas Act (Act 57 of 2003)
- The National Veld and Forest Act (Act 101 of 1998)
- National Forest Act (Act 84 of 1998)
- National Heritage Resources Act (Act 25 of 1999)
- National Water Act (Act 36 of 1998)
- Conservation of Agricultural Resources Act (Act 43 of 1983)
- National Environmental Management: Air Quality Act (Act No 39 of 2004)
- National Road Traffic Act (Act 83 of 1996)
- The National Environmental Management: Waste Act (Act 59 of 2008)
- Relevant Energy Sector Strategic Documents

11 SPECIALIST STUDIES

The following Specialist studies were undertaken:

- A Heritage Impact Assessment was undertaken by Dr Johnny van Schalkwyk;
- A Visual Assessment was undertaken by Terratest;
- A Faunal, Floral and Avifaunal Ecological and Impact Survey were undertaken by GIBB; and

- A Preliminary Geotechnical Investigation was undertaken by JG Afrika Pty (Ltd).

These reports (as listed above) also contain additional recommendations and mitigation measures that should be considered during the construction and operational phases. The reports are titled, and are attached to Appendix D of the Final Basic Assessment Report.

12 COMMENTS OF THE DRAFT BASIC ASSESSMENT REPORT

All comments obtained from all Commentary Authorities are discussed below in Sections 12.1 to 12.4. All conditions made by these Departments must be adhered to. All comments provided by DEA during the Draft Basic Assessment Report review period must be included in the Final Environmental Management programme (EMPr). Should DEA decide to grant authorisation for the proposed project, this Environmental Management Programme (EMPr) must be amended to a Final EMPr that must include all the conditions provided in the Environmental Authorisation. The Final EMPr must be submitted to DEA for approval prior to the commencement of construction activities.

12.1 Comment made by Commentary Authorities on the Draft Basic Assessment Report

Comment By	Comment Made	Response Provided
Mr T Mphephu City of Tshwane Metropolitan Municipality Environmental Planning & Open Space Management Section Tel: 012 358 8667 Fax: 012 358 8934 Email: TshinyadzoM@tshwane.gov.za	The following comments were provided by the City of Tshwane of the initial Draft Basic Assessment Report. • According to the Tshwane Open Space Framework the proposed development is not affected by any open space typologies. • According to the Bioregional Plan for the Gauteng Metropolitan Municipalities the proposed site is situated within the Other Natural Area: Natural areas not included in the Protected, Critical Biodiversity and Ecological Support Areas categories. • According to the Provincial Environmental Management Framework (GPEMF) November 2014, the proposed activity is situated within the Zone 4: Normal control zone. This zone is dominated by agricultural uses, outside the urban development zone, as defined in the Gauteng Spatial Development Framework. No	All comments and recommendations provided by the City of Tshwane have been included in the Final Basic Assessment Report. • The final preferred option has been chosen based on the findings of the Specialist Assessments. This has been discussed under Section 2: Environmental Impact Statement of the Final Basic Assessment Report. • The recommendation regarding the position of the monopole structures has been acknowledged by Eskom. Eskom has indicated that soils tests are undertaken by Eskom prior to the structures being erected and the slope stability will be assessed by an Eskom engineer.

Comment By	Comment Made	Response Provided
	listed activities may be excluded from the Environmental Assessment requirements in this zone. Land uses that are compatible with the intention of this zone include the electricity network. • The report indicates that each of the proposed alternative loop-in and loop-out line servitudes has a 100m wide study corridor which were investigated during the Basic Assessment Process. • The report indicates that all construction activities as well as the construction camp and materials storage area should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report. • The Ecological Assessment Report indicates that according to the Gauteng Conservation Plan, Alternative 2 is not located within a Critical Biodiversity Area (CBA) or an Ecological Support Area (ESA), although there is a CBA located approximately 800m south of Alternative 2. • The Ecological Assessment Report indicates that the area associated with the three Substation alternatives including the loop-in/loop-out lines were considered to be of low conservation importance and ecological sensitivity. However, the areas surrounding the Substation alternatives (and associated lines), were	• All other recommendations provided by the City of Tshwane have been included in the EMPr.

Comment By	Comment Made	Response Provided
	considered to be of medium to high conservation importance and ecological sensitivity due to the presence of floral species of conservation concern and/or provincially protected species; • The Ecological Assessment Report indicates that based on the findings of this ecological assessment, none of the Substation alternatives (and associated lines) are likely to have a significant impact on the ecology, although mitigation measures are recommended to prevent impacts on the surrounding areas. • The Preliminary Geotechnical Investigation Report indicates that the alternative sites are suitable for the construction of the proposed new Rethabiseng North Substation. • The Preliminary Geotechnical Investigation Report indicates that Site Alternative 1, Site Alternative 2 and Site Alternative 3 are expected to have similar geotechnical constraints due to the similar geology and topography encountered at the sites. • The Preliminary Geotechnical Investigation Report indicates that from a purely geotechnical perspective, Site Alternative 3 is identified to be the preferred site for the new proposed Rethabiseng North Substation. • The Cultural Heritage Impact Assessment Report indicates that as no site, features or objects of cultural significance are known to exist in the	

Comment By	Comment Made	Response Provided
	study area, there would be no impact as a result of the proposed development. • The Social Impact Assessment Report indicates that from a social perspective there is no clear preference for any of the alternatives, and the impacts will remain similar irrespective of the alternative chosen. • The Social Impact Assessment Report indicates that the project will not cause severe social impacts, and the impacts that will be created can be mitigated and managed. The biggest risk from a social perspective is the potential for community conflict resulting in a delay in the construction of the project if the affected community is not consulted and used. • The Social Impact Assessment Report indicates that Eskom should start to engage with the local community as soon as possible, to ensure that solid relationships are built and issues and expectations are dealt with in good time. • The Social Impact Assessment Report indicates that an operational Substation would be a positive social impact for the community at large, and it is recommended that this project continue, given the mitigation measures are adhered to. • The Visual Impact Assessment Report indicates that the overall visual impact of the proposed	

Comment By	Comment Made	Response Provided
	Substation and associated infrastructure is perceived to be medium. • The Visual Impact Assessment Report indicates that while the visual intrusion on adjacent sensitive receptors is evident, the visual impact is not expected to infringe on the constitutional rights of these receptors. Furthermore, the visual impacts identified are not a fatal flaw to the proposed project and recommended mitigation measures can be implemented to offset to some extent the visual impacts identified. <u>Recommendations:</u> • The final preferred option must be chosen based on consideration of the recommendation from the Preliminary Geotechnical Investigation, Visual Impact Assessment and Ecological Assessment Report attached in the report. The applicant should indicate such information in the final report. • The position of the monopole structures should: ○ Avoid high erosion hazard sites, particularly in areas where mass erosion is a problem; ○ Avoid mid-slope location on long, steep, unstable slopes, special where bedrock is highly weathered or high clay content soils;	

Comment By	Comment Made	Response Provided
	○ Avoid undercutting unstable, moisture loaded slopes when locating tracks nearby valley bottoms and ○ Vary gradients where possible to reduce erosion on the track surfaces • All the recommendations and mitigation measures outlined by the report and specialist studies in the attached appendices must therefore be strictly adhered to and implemented as part of the design, planning, construction and operational phase of the development. • All areas affected by the proposed activity must be rehabilitated immediately after completion of the proposed activity. The following should be included within the rehabilitation methods within the EMPr: ○ All areas of disturbed and compacted soils to be re-profiled and compaction alleviated and; ○ On-going removal of alien vegetation from the area must take place at least 3 months after completion of the structures to prevent the uncontrollable recruitment of species. • Where new gravel access roads need to be constructed, adequate drainage and soil erosion controls must be installed and maintained. As far as possible, access roads must follow the contour	

Comment By	Comment Made	Response Provided
	on steep slopes, rather than being aligned directly down steep slopes. • Adequate Stormwater Management should be implemented as part of the proposed activity to prevent erosion, and sheet runoff from access roads should be curtailed, and runoff from exposed surface should be slowed down by strategic placement of berms. • All activities on the site must comply with the Tshwane Municipality's By-Laws, should the site be in Tshwane. • The proposed activity must be constructed according to the finalised and approved EMPr. The EMPr should include all the above recommendations. The approved finalised EMPr is a legally binding document. An Environmental Control Officer (ECO) should be appointed for the proposed construction phase of the development to enforce the approved EMPr. The appointed ECO details should be included within the EMPr. <u>Conclusion</u> The Department will provide final comments upon receipt and review of the final Basic Assessment Report with the inclusion of the above-mentioned recommendations.	
Mr Tebogo Molokomme	The following comments were provided by the Provincial Heritage Resources Authority-Gauteng (PHRA-G):	The Heritage Impact Assessment undertaken for the proposed project was sent to the PHRA-G. JG

Comment By	Comment Made	Response Provided

Provincial Heritage Resources Gauteng
35 Rissik Street, Surrey House
Johannesburg
	• The application was discussed by the PHRA-G Heritage Impact Assessment (HIA) Committee on Thursday, 29th September 2016.
	• After reviewing the report, the following recommendations were made:
	  ○ A Heritage Impact Assessment (HIA) must be conducted which amongst other things:
	  ▪ Clearly identify and map the Heritage resources on the earmarked property/area.
	  ▪ Give the historical Background of the area.
	  ▪ Show hoe the proposed work might have an impact on the Heritage Resources.
	  ▪ Outline mitigation measures.
	  ▪ Give a report on the Public Participation Process
	• The committee kindly requested only the information as explained above, and no other reports that need the other authorities' approval.
	• The requested information will assist the committee in making an informed decision.
		Afrika indicated that the Public Participation Process undertaken for the proposed project can be found on Page 51, Section C on the Draft Basic Assessment Report that was submitted to the Department of Provincial Heritage Resources Gauteng on the 29th of August 2016. JG Afrika followed up with PHRA-G on the 26th of January 2017 regarding their comments on the proposed project. PHRA-G requested a hard copy of the HIA, which was submitted to PHRA-G on the 27th of January 2017. The proof of delivery and cover letter are provided in Appendix E4 of the Final Basic Assessment Report.

12.2 Comments made by Commentary Authorities on the Revised Draft Basic assessment Report

Comment By	Comment Made	Response Provided
Ms Nokukhanya Khumalo South African Heritage Resource Agency Tel: 021 462 4502 Email: nkhumalo@sahra.org.za	• SAHRA Archaeology, Palaeontology and meteorites (APM) Unit cannot comment on this report (Heritage Impact Assessment) as it does not have a detailed project description with finalised layout plans for the substation and powerlines. The following additional information is required in order for a final comment to be issued: ○ All the Environmental Assessment documents and appendices compiled for this development; ○ A Palaeontological desktop assessment or a letter of recommendation from the Palaeontological Assessment is required because the project area may contain fossils in the recent gravels overlying the bedrock. The assessment must be conducted by a suitably qualified palaeontologist. ○ SAHRA will comment further on this case once the above mentioned reports and amended Heritage Impact Assessment (HIA) is submitted to the case.	• The Draft Basic Assessment Report and all appendices have been uploaded on the SAHRIS under additional information. • Eskom has acknowledged the request for a Palaeontological Assessment and a Palaeontologist, Ms Heidi Fourie, has been appointed to undertake an assessment of the proposed study area. • The Draft Basic Assessment Report includes a project description and the layout plans for the proposed project, hence SAHRA has indicated that the HIA should not be amended. Proof of correspondence to SAHRA is attached to Appendix E4 of the Final Basic Assessment Report. • As per the comments provided by SAHRA, there could be a possibility that the project study area may contain fossils in the recent gravels overlying bedrock. The findings of the Palaeontological Assessment will confirm the existence of such fossils. The comments provided by SAHRA will be captured in the Draft EMPr, and construction of the proposed development may not commence until the Palaeontological Assessment has

Comment By	Comment Made	Response Provided
		been submitted to SAHRA, and SAHRA has provided their final comments on the proposed project. Mitigation measures and recommendations by the Palaeontologist will be addressed in the Final EMPr and submitted to the DEA for approval before any construction activities can commence.

12.3 Comment made by DEA on the Draft Basic Assessment Report

Comment By	Comment Made	Response Provided
Ms Makhosi Yeni Integrated Environmental Authorisations Department of Environmental Affairs Tel: 012 399 9400 Email: MYeni@environment.gov.za	The DEA Integrated Authorisations Directorate provided comment on the initial Draft Basic Assessment Report in a formal letter of comment dated 5th October 2016. A copy of the letter is attached to Appendix E4 of the Final Basic Assessment Report. DEA provided the following comments: **Application Form** • On page 9 of the application form, it is indicated that Department of Water Affairs, SAHRA and DAFF have jurisdiction in respect of any aspects of the activity, however; it is noted that Mpumalanga Department of Economic Development Environment & Tourism (MDEDET) has not been included. Therefore, the	**Public Participation Process** • All issues and comments received during the circulation of the Draft Basic Assessment Report have been addressed in the Final Assessment Report. All comments received during the circulation of the revised Draft Basic Assessment Report are provided in the Final Basic Assessment Report. • The comment regarding the Public Participation requirements has been noted. **Specialist Reports** • A copy of the Revised Draft Basic Assessment Report will be submitted to the Biodiversity Section of the DEA.

Comment By	Comment Made	Response Provided
	Department draws you to the attention that the MDEDET has a jurisdiction and their comments must be included on the final BAR. If no comments have been received, please attach proof of consultation with MDEDET. • It is further noted that you referred Department of Water and Sanitation as Department of Water Affairs, please ensure that the correct name is used. • Furthermore; on page 7 of the application form you referred City of Tshwane Metropolitan Municipality as Local Municipality, please refrain from using incorrect names of the municipality and Departments. • One page 5 of the application form, you only provided the contact details of Gauteng Department of Agriculture and Rural Development (GDARD) and incorrect telephone number, however; it is noted that alternatives 1 and 2 of the proposed development falls within Mpumalanga Province, therefore; MDEDET has the jurisdiction to the activity. Please amend your application to ensure that the information is incorporated. **Basic Assessment Report** **Project Description and Location alternative** • Please note that the project description provided on both the application form and BAR contradicts	• A copy of the Heritage Impact Assessment will be submitted to the South African Heritage Resources Agency and the Mpumalanga Provincial Heritage Resources Agency for their comments and recommendations. The comments and recommendations provided will be incorporated into the Final Basic Assessment Report and/ EMPr.

Comment By	Comment Made	Response Provided
	with the project name; as the project is titled: "the proposed construction of new Eskom Rethabiseng North 132/11 kV Substation and associated loop-in and loop-out power line in the Ekangala area, Gauteng Province", hence; the description talks to alternative 1 and 2 situated on portion 5 of the farm Rietfontein 470JR within Thembisile Hani Local Municipality, Mpumalanga Province. The Department advises that you rephrase you project name to incorporate both Provinces proposed location alternatives. • If the project name is correct, therefore; clarity is required in terms of whether the project transverse two Provinces or not. **Activity Applied For** • The Department has noted that only one activity is applied for, therefore, you are advised to verify if other activities are not triggered by the proposed development and ensure are applied for. You are informed that once an Environmental authorisation is granted, the applicant will be required to apply for those activities which are not applied for. **Project Associated Infrastructure** • Please ensure that all the project associated infrastructures are included in the final BAR. **Public Participation Process** • Please ensure that all issues raised and comments received during the circulation of the	

Comment By	Comment Made	Response Provided
	draft BAR from registered I&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the Final BAR. • Proof of correspondence with the various stakeholders must be included in the final BAR. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The Public Participation Process must be conducted in terms of Regulation 39, 40 41, 42 , 43 & 44 of the EIA Regulations 2014. **Specialist Reports** • An Ecological Assessment (Flora and Fauna including Avifauna) Report must be submitted to the Biodiversity Section (within DEA) for comments and their recommendations incorporated in the Final BAR. • The Cultural Heritage Assessment Report that is part of the DBAR must be submitted to the South African Heritage Resources Agency and the Mpumalanga Provincial Heritage Resources Agency for comments and their recommendations must be incorporated in the Final BAR. • Recommendations from the Preliminary Geotechnical Investigation, Social Impact Assessment and Visual Impact Assessment must	

Comment By	Comment Made	Response Provided
	be addressed and incorporated in the Final BAR and/ or EMPr. **General Comments** • You are further reminded that the final BAR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of basic assessment reports in accordance with Appendix 1 and Regulation 19 (1) of the EIA Regulations, 2014. • Further note that in terms of Regulation 45 of the EIA Regulations 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless an extension has been granted in terms of Regulation 3(7). • You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.	

12.4 Comment made by DEA on the Revised Draft Basic Assessment Report

Comment By	Comment Made	Response Provided
Ms Makhosi Yeni Integrated Environmental Authorisations	The DEA provided the following comments on the application. Project Associated Infrastructure	Project Associated Infrastructure • All project associated infrastructure has been included in this Final Basic Assessment Report.

Comment By	Comment Made	Response Provided
Department of Environmental Affairs Tel: 012 399 9400 Email: MYeni@environment.gov.za	• Please ensure that all the project associated infrastructures are included in the Final Basic Assessment Report; <u>Public Participation Process</u> • Please ensure that all issues raised and comments received during the circulation of the draft BAR from registered l&APs and organs of state which have jurisdiction in respect of the proposed activity are adequately addressed in the Final Basic Assessment Report; • Mpumalanga Department of Economic Development, Environment and Tourism had been omitted on the list of organs of state which have jurisdiction in respect of the proposed activity, therefore, you are required to submit proof of consultation in the Final Basic Assessment Report • Proof of correspondence with the various stakeholders must be included in the Final Basic Assessment Report. Should you be unable to obtain comments, proof should be submitted to the Department of the attempts that were made to obtain comments. The Public Participation Process must be conducted in terms of Regulations 39, 40 41, 42, 43 & 44 of the EIA Regulations 2014. <u>Specialist Reports</u>	<u>Public Participation Process</u> • All issues raised and comments received from I&APs and organs of state have been addressed in this Final Basic Assessment Report; • Mrs Charity Mthimunye from the Mpumalanga Department of Economic Development, Environment and Tourism was provided with a copy of the Revised Draft Basic Assessment Report. The proof of delivery is attached to Appendix E4 of the Final Basic Assessment Report. On the 6th of December 2016 JG Afrika notified Ms Mthimunye of the proposed project and that a copy of the Revised Draft Basic Assessment Report will be sent to her on the 8th of December 2016. Ms Mthimunye responded on the 7th of December 2016 thanking JG Afrika for informing the Department of the proposed project and indicated that they are awaiting the receipt of the report and will provide their comment. No comment was received from the Department, even after JG Afrika followed up with them on the 27th of January 2017 regarding their comments as commentary authority. All correspondence between JG Afrika and

Comment By	Comment Made	Response Provided
	• An Ecological Assessment (Flora and Fauna including Avifauna) Report must be submitted to the Biodiversity Section (within DEA) for comments and their recommendations incorporated in the Final BAR. • The Cultural Heritage Assessment Report that is part of the DBAR must be submitted to the South African Heritage Resource Agency and the Mpumalanga Provincial Heritage Resources Agency for comments and their recommendations must be incorporated in the Final BAR. <u>Environmental Management Programme (EMPr)</u> • It has been noted that the content of Appendix G: EMPr refers to Environmental Management Plan (EMP), you are hereby advised to ensure consistency and include EMPr in your abbreviations instead of EMP. <u>General Comments</u> • You are further reminded that the final BAR to be submitted to this Department must comply with all the requirements in terms of the scope of assessment and content of basic assessment reports in accordance with Appendix 1 and Regulation 19 (1) of the EIA Regulations, 2014. • Further note that in terms of Regulation 45 of the EIA Regulations 2014, this application will lapse if the applicant fails to meet any of the timeframes prescribed in terms of these Regulations, unless	the Mpumalanga Department of Economic Development, Environment and Tourism are attached to Appendix E4 of the Final Basic Assessment Report. • All proof of correspondence to the various stakeholders are provided in Appendix E of the Final Basic Assessment Report. <u>Specialist Reports</u> • A copy of the Revised Draft Basic Assessment Report was submitted to the DEA's Biodiversity Section on the 6th of December 2016. No comment was received from the Biodiversity Section. On the 1st of February 2017 JG Afrika informed Ms Makhosi Yeni from the Integrated Environmental Authorisations Unit that the Revised Draft Basic Assessment Report was submitted to the Biodiversity Section and no comments were received. Ms Yeni requested that JG Afrika provide her with a proof of delivery that the report was submitted to the Biodiversity Section. JG Afrika provided Ms Yeni with the proof of delivery on the 1st of February 2017. Ms Yeni responded on the 1st of February 2017 thanking JG Afrika for the sending the proof of

Comment By	Comment Made	Response Provided
	an extension has been granted in terms of Regulation 3(7). • You are hereby reminded of Section 24F of the National Environmental Management Act, Act No 107 of 1998, as amended, that no activity may commence prior to an environmental authorisation being granted by the Department.	delivery and indicated that the email has been noted. • The Revised Draft Basic Assessment report was submitted to SAHRA via the SAHRIS on the 12th of December 2016. The comments provided by SAHRA have been addressed in Table 8 above. The Revised Draft Basic Assessment Report was submitted to the Provincial Heritage Resources Agency. No comment was received by the Department, although JG Afrika followed up again on the 27th of January 2017. All correspondence is attached to appendix E4 of the Final Basic Assessment Report. **Environmental Management Programme (EMPr)** • EMP has been changed to EMPr.

13 PRE-CONSTRUCTION PHASE

Mitigation Measures	Stage / Duration	Frequency	Responsibility
13.1 Final Site Layout and Design Planning			

• **For Site Alternative 1 (Eskom's Preferred Site)**
  ○ It is recommended that the poor quality hillwash soils are removed, across the platform footprint, to a minimum depth of 1.50 m below the base of the deepest proposed foundations (or until sandstone bedrock is encountered). It is recommended that the base of the excavation is then wetted and heavily compacted. The spoiled material must then be replaced with G6 or better quality material, compacted in layers, to a minimum of 93% of Mod. AASHTO maximum dry density.
• **Site Alternatives 2 & 3:**
  ○ It is recommended that the poor quality hillwash soils and residual tillite are removed, across the platform footprint, to a minimum depth of 1.50 m below the base of the deepest proposed foundations. It is recommended that the base of the excavation is then wetted and heavily compacted. The spoiled material must then be replaced with G6 or better quality material, compacted in 150 mm layers, to a minimum of 93% of Mod. AASHTO maximum dry density.
The above should be implemented based on the site approval by the Department of Environmental Affairs
• Ground improvement should be implemented as described in Section 8.1.8 - 8.1.3 of the Preliminary Geotechnical Report;
• It is recommended that surface drainage measures be implemented at all the Site Alternatives due to their sloping nature to ensure that soil erosion around the substation infrastructure does not occur; and
	Pre-Construction phase	Once off	E-PM

Mitigation Measures	Stage / Duration	Frequency	Responsibility

• A storm-water management plan should be compiled during the detailed engineering design phase to ensure that adequate storm-water management measures are incorporated into the overall design.
• **Design Phase Visual Impact Mitigation Measures:**
  ○ The project is currently at the planning phase, and therefore the opportunity exists for integration of visual mitigation techniques before construction commences. It is recommended that screening measures are incorporated into the substation design. Such measures include:
  ○ Limiting the removal of vegetation surrounding the construction site;
  ○ Planting trees as a method of screening the lower structures, and subsequently detracting from the vertical height of the infrastructure;
  ○ Using neutral, mat-finish paint colours for any ancillary structures or buildings in order to improve visual absorption in the landscape; and
  ○ Highly reflective materials should be avoided, and if this is not possible, a mat-finish paint should be applied to conceal glare and reflection.			

13.2 Pre-Site Establishment Requirements			
• The Environmental Management Programme (EMPr) compiled during the Environmental Authorisation phase should be updated to include all conditions as contained in the Environmental Authorisation. This updated EMP may have to be submitted to DEA for approval, prior to commencement of the construction activities. The Environmental Authorisation will indicate whether the submission of the Final EMP to DEA would be required.	Pre-Construction phase	Once off	E-PM
• A Contractor (C) and Environmental Control Officer (ECO) should be appointed.	Pre-Construction phase	Once off	E-PM
• The C and Resident Engineer (RE) should be provided with copies of the EMP and the EA, and both the C and RE should familiarise themselves with the content of these documents. It is recommended	Pre-Construction phase	Once off	E-PM

Mitigation Measures	Stage / Duration	Frequency	Responsibility
that an inception meeting be held with the C, RE, Eskom Project Manager (E-PM) and the ECO prior to commencing any pre-construction activities on site.			
• The Final Site Layout plan should be compiled by the RE and C and should take all conditions and "no-go" areas as identified in the EMP into account.	Pre-Construction phase	Once off	RE & C
• The appointed ECO should compile an Audit Report template based on the contents of the EMP and should submit the Report to Eskom for review and approval.	Pre-Construction phase	Once off	ECO

• The ECO should provide Environmental Awareness training to the C, RE and all construction personnel prior to commencement of construction activities. Topics to be covered should include:
  • What is meant by "environment";
  • Why the environment needs to be protected and conserved;
  • How construction activities can impact on the environment;
  • What can be done to mitigate against such impacts;
  • Awareness of emergency and spills response provisions;
  • Social responsibility during construction, e.g. being considerate to local residents.
• Translators are to be used where necessary. The use of pictures and real-life examples is encouraged as these tend to be more easily remembered. Use should be made of environmental awareness posters on site. Construction workers should be made aware that they are not to make excessive noise (e.g. shouting / hooting) as the site is near to residential areas. The need for a "clean site" policy also needs to be explained to the construction workers.
• The RE & C should explain more difficult / technical issues regarding construction activities and answer questions.
	Pre-Construction phase	Once off	ECO

Mitigation Measures	Stage / Duration	Frequency	Responsibility
13.3 Demarcation and Establishment of Temporary Infrastructure			
A: Construction Camp ○ The RE and C should demarcate an area on site for the establishment of the construction camp as per the final site layout plan. The demarcated area should be fenced off. The following should apply: ○ It should be situated on the property earmarked for the siting of the substation. No unauthorised properties may be used for such purposes; ○ Location of adjacent properties should be taken into account; ○ "No-go" or sensitive areas should be taken into account; ○ Bins for the disposal of domestic wastes should be provided and placed at various locations; ○ Cut and fill must be avoided where possible during the set up; ○ Footprint to be kept to a minimum; ○ Adequate parking must be provided for staff and visitors; ○ Temporary storm water control measures as approved by the engineer and indicated on the final site layout plan should be implemented.	During layout and establishment	Once off	RE & C
○ The construction camp could comprise the following: ▪ Temporary site office/s; ▪ Ablution facilities which should include the installation of a chemical toilets ▪ Designated first aid area; ▪ Eating areas; ▪ Storage areas; ▪ A batching plant (if necessary). Water from the batching plant should drain to conservancy tank for removal from the site to a licensed disposal facility. ▪ A refuelling area (if necessary). Fuel storage tanks shall be situated in a bunded area the volume of which shall be at least 110% of the volume of the largest tank. The floor of the bund shall be smooth and impermeable constructed of concrete or plastic sheeting with	During layout and establishment	Once off	RE & C

Mitigation Measures	Stage / Duration	Frequency	Responsibility
impermeable joints with a layer of sand over to prevent perishing. The bund walls shall be formed of well-packed earth with the impermeable lining extending to the crest. The floor of the bund shall be sloped towards an oil trap or sump to enable any spilled fuel and/or fuel-soaked water to be removed. Refuelling should be undertaken on an impervious surface to protect groundwater quality. Fuel tanks must meet relevant specifications and be elevated so that leaks may be easily detected. Storage areas containing hazardous substances / materials must be clearly signed. ▪ A maintenance area (if necessary).			
B: Contractors Camp • If temporary accommodation for construction workers will be required, the RE & C should demarcate an area as per the site layout plan where temporary accommodation could be established. This area should be fenced off and the following should apply: ○ The contractor's camp should be established at an approved site. All contractors will travel to site on a daily basis. ○ Location of adjacent properties should be taken into account. ○ "No-go" or sensitive areas should be taken into account. ○ Cut and fill must be avoided where possible during the set up. ○ Footprint should be kept to a minimum. ○ Adequate parking must be provided for temporary residents. ○ Temporary stormwater control measures as approved by the engineer and indicated on the final site layout plan should be implemented. ○ The camp should include the following: ▪ Temporary accommodation units, ▪ Ablutions facilities which should include the installation of a temporary septic tank with sufficient capacity to accommodate sewage and waste water. The construction of "long drop" toilet is forbidden.	During layout and establishment	Once off	RE & C

Mitigation Measures	Stage / Duration	Frequency	Responsibility
▪ Toilets and washing facilities. Toilet facilities supplied by the Contractor for the workers shall occur at a maximum ratio of 1 toilet per 30 workers (preferred 1:15). Sanitation facilities shall be located within 100 m from any point of work, but not closer than 50 m to any water body {distances can be modified depending on the nature of the project}. Toilets shall be within the Contractor's Camp and at work areas more than 50m from the Contractor's Camp. All temporary/ portable toilets shall be secured to the ground to the satisfaction of the Engineer/ECO/EO to prevent them from toppling due to wind or any other cause. These facilities shall be maintained in a hygienic state and serviced regularly. Toilet paper shall be provided. Discharge of waste from toilets into the environment and burial of waste is strictly prohibited. ▪ Facilities for the washing of dishes and clothing: Waste water from these areas should drain to a temporary septic tank with sufficient capacity to accommodate the waste water; ▪ Bins for the disposal of domestic wastes should be provided and placed at various locations			
C: Material Storage Area: • The RE & C should demarcate an area as per the final site layout plan where a temporary materials storage area can be established, this area should be fenced off. This area must be situated within the boundaries of the construction camp. The following should apply: ○ Choice of location must take into consideration prevailing winds, distance to water bodies and general on site topography; ○ Necessary containment measures (sumps or oil traps) and/or bunded or the storage of hazardous materials and dangerous goods should be provided. Temporary stormwater infrastructure should be implemented to divert all stormwater away from the areas where such materials will be stored; ○ Contractors shall submit a method statement and plans for the storage of hazardous materials and emergency procedures to the Engineer.	During layout and establishment	Once off	RE & C
D: Storm water Infrastructure: • During site establishment, proper temporary storm water control measures, as approved by the RE should be implemented;	During layout and establishment	During site set up.	RE/C

Mitigation Measures	Stage / Duration	Frequency	Responsibility
• Temporary cut off drains and berms may be required to capture storm water and promote infiltration.	During layout and establishment	During site set up.	RE/C
13.4 Access and Haulage Routes			
Location and demarcation of access and haulage routes should include the following: • Should consider all limitations and recommendations as provided in the EMP; • Contractor should demarcate access and haulage routes and manage and maintain these routes; • Demarcated routes should include construction vehicle turning areas. All vehicle traffic should be restricted to demarcated access and haulage routes, and no turning may take place outside of demarcated areas; • Route location should have minimum disturbance to residents and sensitive environmental areas; • No other roads than the ones confirmed by the contractor shall be allowed; • All construction materials should be delivered to site via these demarcated routes; • Safety of the other road users should be considered at all times when using public and demarcated access and haulage routes;	During layout and establishment	Prior to moving onto site.	RE/ECO
13.5 Routing of Services			
The location of all underground services and servitudes must be identified and confirmed if applicable.	During layout and establishment	Prior to moving onto site.	RE

Mitigation Measures	Stage / Duration	Frequency	Responsibility
13.6 Vegetation Clearance, Animal and Habitat Disturbance			
• All construction activities should be confined to areas which have been classified to be of medium to low ecological sensitivity in the Ecological Assessment Report. Therefore, no construction vehicles, workers or material should be allowed in any of the areas adjacent to the study area; • An independent Environmental Control Officer (ECO) should be appointed to oversee all construction activities; • Access roads should be formalized and should be confined to areas of medium to low sensitivity; • A rubble clean-up plan must be implemented throughout the duration of the construction phase; • Construction should be conducted during winter months when adult *Pyxicephalus adspersus* (Giant Bullfrogs) are aestivating since the adults will be more vulnerable to disturbance during the active period (October to February) when they congregate in the seasonal pan south of the study area; • As far as possible, construction should be limited to the daylight hours in order to minimise the need for lights; • An education programme should be compiled for all contractors, subcontractors and workers to ensure compliance to all aspects of the Environmental Management Programme (EMPr) as well as educating personnel in the safe and proper conduct within areas of natural habitat; • No wild animal may under any circumstance be handled, removed or be interfered with by construction workers; • If structures such as jumpers at transformers, T-offs and strain structures are to be constructed, these should be insulated; • Only pole structures that are approved as “bird friendly” by Eskom’s ENVIROTECH Forum should be used; • Power lines should be routed alongside existing infrastructure such as existing power lines, roads and buildings.	During layout and establishment	Prior to moving onto site.	E-PM & RE

Mitigation Measures	Stage / Duration	Frequency	Responsibility
Do not store building materials and excess stockpiled soils within riparian zones or within areas where natural vegetation will remain following completion of the construction phase of the development (i.e. retain impacts to areas where infrastructure is to be permanently established)	During layout and establishment	Prior to moving onto site.	E-PM & RE
Avoid indiscriminate destruction of habitat.	During layout and establishment	Prior to moving onto site.	E-PM & RE
No trees / shrubs / groundcover may be removed, or vegetation stripped, without the prior permission of the Engineer / ECO.	During layout and establishment	On-going.	RE/ECO
Removal of vegetation will be avoided until such time as soil stripping is required.	All Phases	On going	RE/C
Except to the extent necessary for the carrying out of the works, flora shall not be removed, damaged or disturbed, nor shall any vegetation be planted.	During layout and establishment	During site set up, and ongoing.	RE/ECO
Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas.	During layout and establishment	Ongoing in camp site, haulage areas.	ECO
Disturbance to birds, animals and reptiles and their habitats should be minimised wherever possible.	During layout and establishment	During surveys and preliminary investigations and ongoing.	RE/ECO

Mitigation Measures	Stage / Duration	Frequency	Responsibility
Trapping, poisoning and/ or shooting of animals is strictly forbidden. No domestic pets or livestock are permitted on site.	During layout and establishment	During site set up, and ongoing.	RE/ECO
Where the use of herbicides, pesticides and other poisonous substances has been specified, the Contractor shall submit a Method Statement.	During layout and establishment	During site set up, and ongoing.	RE/ECO
Gathering of firewood, fruit, muthi plants or any other natural material on site or in adjacent areas is prohibited.	During layout and establishment	Monitoring throughout the duration of the project.	ECO
Immediate re-vegetation of stripped areas and removal of aliens by weeding must take place. This significantly reduces the amount of time and money that must be spent on alien plant management during rehabilitation.	During layout and establishment	Monitoring throughout the duration of the project.	ECO
Areas identified as being sensitive by Specialists, the Engineer or the ECO and adjacent to any construction work are to be suitably demarcated to prevent damage by plant and labour. Temporary barricading should be used and should be moved in phases as the construction progresses from one area to the next.	During layout and establishment	During surveys and preliminary investigations and ongoing.	RE/ECO
13.7 Waste Management			
For waste management principles to be implemented during all phases of the project, refer to Section 13.7 of the EMP.	During layout and establishment	Monitoring throughout the duration of the project.	ECO

Mitigation Measures	Stage / Duration	Frequency	Responsibility
13.8 Landowner Consultation			
Prior to commencement of site establishment activities, Eskom and the Contractor should put agreements in place with the affected landowners with regards to compensation for damage to property caused as a result of construction activities (where applicable).	During layout and establishment	Prior to moving onto site.	RE/C
Any damage caused to adjacent properties or infrastructure, as a result of construction activities, should be fixed by the Contractor to the satisfaction of the landowner.	During layout and establishment	Prior to moving onto site.	RE/C
The ECO should encourage open communication with affected landowners, to ensure that landowner issues and concerns are dealt with according to agreements made between Eskom, the contractor and the landowner.	During layout and establishment	Four monthly meetings	ECO
The contractor must ensure that he informs the affected landowners before he enters his/her property for construction	During layout and establishment	Prior to moving onto site.	E/C
13.9 Visual Impacts			
• Advertising and lighting will be in accordance with the South African National Roads Agency requirements and will not constitute an eyesore / hazard to users of the road. • Lighting will be sufficient to ensure security but will not constitute 'light pollution' to the surrounding areas. • The site will be shielded from the adjacent landowners to minimise the visual impact where this is feasibly possible; and • Site structures, albeit temporary, must be fitted with appropriate cladding and colouring to ensure reduced reflection and visual pollution.	During layout and establishment	During surveys and preliminary investigations and site set up.	E/ECO

Mitigation Measures	Stage / Duration	Frequency	Responsibility
• Several mitigation measures were provided in the Visual Impact Assessment Report which should be incorporated during the design and construction phases, to offset the visual impacts. ○ The construction area and site camp should be kept tidy and litter-free throughout construction as visible litter is visually unpleasant for adjacent sensitive receptors, i.e. residents, and passing vehicular traffic. All construction materials should be stored on site. Construction sites should be screened in the form of shade cloths at fence level. This will obstruct views of construction elements on site. All substances such as cement which may be toxic to flora and fauna should be strictly controlled to avoid degradation of the surrounding environment. No foreign material generated/deposited during construction shall remain on site. ○ The colour of building materials should blend into the natural environment. It is suggested that colours similar to the surrounding vegetation be used, such as browns, beiges and greens, in order to blend into the landscape at a distance and be visually neutral. Should construction activities take place at night, it is recommended that construction lighting be directed downward and inward (towards the construction centre). This will limit construction spill light at night time, which can be visually intrusive.			
Should construction activities take place at night, it is recommended that construction lighting be directed downward and inward (towards the construction centre). This will limit construction spill light at night time, which can be visually intrusive.	During layout and establishment	Monitoring throughout the duration of the project.	E/C
13.10 Heritage Impacts			
As per the recommendations by SAHRA, a Palaeontological Assessment is required as the project area may contain fossils in the recent gravels overlying the bedrock. Eskom has acknowledged the request for a Palaeontological Assessment and Palaeontologist Ms Heidi Fourie has been appointed to undertake an assessment of the proposed study area. The findings and mitigation measures as	Prior to the commencement of construction	Monitoring throughout the duration of the project.	E-PM

Mitigation Measures	Stage / Duration	Frequency	Responsibility
provided by the specialist in her report, should be included in the final EMPr. Construction should not commence until the final EMPr has been approved by the DEA.			
The contractor needs to clearly stake or peg-out (survey) the areas affected by the construction and dig representative trenches and if possible supply geological borehole data.	During layout and establishment	During site set up and ongoing.	E/C/ECO
When clearing topsoil, subsoil or overburden and hard rock (outcrop) is found, the contractor needs to stop all work.	During layout and establishment	During site set up and ongoing.	E/C/ECO
A Palaeontologist must then inspect the affected areas and trenches for fossiliferous outcrops / layers. The contractor may be asked to move structures, and put the development on hold.	During layout and establishment	During site set up and ongoing.	E/C/ECO
If the Palaeontologist is satisfied that no fossils will be destroyed or have removed fossils, development and removing of the topsoil can continue.	During layout and establishment	During site set up and ongoing.	E/C/ECO
After this process the same Palaeontologist will have to inspect and offer advice through the Phase 2 Mitigation Process. Bedrock excavations for footings may expose, damage or destroy previously buried fossil material and must be inspected	During layout and establishment	During site set up and ongoing.	E/C/ECO
When permission for the development is granted, the next layer can be removed, if this is part of the Vryheid Formation, then with the removal of each layer of sediment, the Palaeontologist must do an investigation (a minimum of once every week).	During layout and establishment	During site set up and ongoing.	E/C/ECO
The contractors and workers should be notified that archaeological sites might be exposed during the construction work	During layout and establishment	During site set up and ongoing.	E/C/ECO

Mitigation Measures	Stage / Duration	Frequency	Responsibility
Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible	During layout and establishment	During site set up and ongoing.	E/C/ECO
All discoveries shall be reported immediately to a museum, preferably one at which an archaeologist is available, so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken	During layout and establishment	During site set up and ongoing.	E/C/ECO
Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site	During layout and establishment	During site set up and ongoing.	E/C/ECO
Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1).	During layout and establishment	During site set up and ongoing.	E/C/ECO
A person or entity, e.g. the Environmental Control Officer, should be tasked to take responsibility for the heritage sites and should be held accountable for any damage	During layout and establishment	During site set up and ongoing.	E/C/ECO
Known sites should be located and isolated, e.g. by fencing them off. All residents and their visitors should be informed that these are no-go areas, unless accompanied by the individual or persons representing the Environmental Control Officer as identified above.	During layout and establishment	During site set up and ongoing.	E/C/ECO
In areas where the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, but only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.	During layout and establishment	During site set up and ongoing.	E/C/ECO

Mitigation Measures	Stage / Duration	Frequency	Responsibility
13.11 Safety and Security			
The site should be secured with fencing, in order to reduce the opportunity for criminal activity in the locality of the construction site.	During layout and establishment	Monitoring throughout the duration of the project.	RE/C
Flammable materials should be stored as far as possible from adjacent residents / businesses. Firefighting equipment should be present on site at all times as per OHSA.	During layout and establishment	Monitoring throughout the duration of the project.	RE/C

14 CONSTRUCTION PHASE

Mitigation Measures	Stage / Duration	Frequency	Responsibility
14.1 Stormwater Management			
A: Construction Camp ○ The C and RE must monitor and attend to the drainage of the construction camp site to avoid standing water and / or sheet erosion during the construction phase. ○ Run-off from the camp site must not discharge into neighbours' properties.	Construction Phase	Continuous	RE & C
B: Contractors Camp ○ The C and RE must monitor and attend to the drainage of the contractors camp site to avoid standing water and / or sheet erosion during the construction phase. ○ Run-off from the camp site must not discharge into neighbours' properties.	Construction Phase	Continuous	RE & C
14.2 Surface and Groundwater Pollution Prevention			
Spills in bunded areas must be cleaned up, removed and disposed of safely from the bunded area as soon after detection as possible to minimise pollution risk and reduced bunding capacity.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
Water from the cement mixing area should be channelled to a conservancy tank for removal from the site to a licensed disposal facility.	Construction Phase	During site set up, to be monitored weekly	C/RE

14.3 Vegetation Clearance, Animal and Habitat Disturbance			
Also refer to Section 13.6 under the Pre-Construction Phase			
• No open fires should be allowed in areas containing natural vegetation, especially during the dry season.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• A rubble clean-up plan must be implemented throughout the duration of the construction phase.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• During construction, the construction area and immediate surroundings should be monitored regularly for emergent invasive vegetation.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• Surrounding natural vegetation should not be disturbed, to minimize chances of invasion by alien vegetation.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• All construction vehicles and equipment, as well as construction material should be free of plant material. Therefore, all equipment and vehicles should be thoroughly cleaned prior to access on to the construction site. This should be verified by the RE/ECO.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• As far as possible, construction should be limited to the daylight hours in order to minimise the need for lights to avoid unnecessary faunal disturbance.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO

• No wild animal may under any circumstance be handled, removed or be interfered with by construction workers.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• No wild animal may be fed on site.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• No wild animal may under any circumstance be hunted, snared, captured, injured or killed. This includes animals perceived to be vermin. Checks of the surrounding natural vegetation must be regularly undertaken to ensure no traps have been set. Any snares or traps found on or adjacent to the site must be removed and disposed of.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
• All food should be securely stored away to prevent attraction of faunal species and all rubbish should be disposed of away from the site. Bins located around the infrastructure should have tightly fitting lids to prevent faunal species raiding the bins and thereby becoming habituated to humans.	Construction Phase	Monitoring throughout the duration of the project.	RE/ECO
14.4 Material Laydown Area			
All lay down areas outside of the construction camp shall be subject to the Engineer/ECO/EO's approval. Specifications for location, demarcation, permitted heights, stabilisation, weed-, dust and erosion control of stockpiles should be implemented.	Construction Phase	Continuous	RE
14.5 Use of Chemical Toilets			
• Chemical toilets are to be maintained in a clean state and should be moved to ensure that they adequately service the work areas.	Construction Phase	Weekly inspection	RE/C

• A registered chemical waste company is to be used to remove waste from chemical toilets on site.	Construction Phase	Weekly Clean-up, or more regularly if required	RE/C
14.6 Worker Conduct			
• Under no circumstances may open areas or the surrounding bush or any adjacent areas be used as a toilet facility.	Construction Phase	Continuous Observations	RE/C
A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules: • No alcohol / drugs to be present on site. • No firearms allowed on site or in vehicles transporting staff to / from site, (unless used by security personnel). • Prevent excessive noise. • Prevent unsocial behaviour. • Bringing pets onto the site is forbidden. • No harvesting of firewood from the site or from the areas adjacent to it. • Construction staff is to make use of the facilities provided for them, as opposed to ad-hoc alternatives. (e.g.: fires for cooking; the use of surrounding bush as a toilet facility is forbidden). • Trespassing on private / commercial / traditional properties adjoining the site is forbidden. • Driving under the influence of alcohol is prohibited. • Other than pre-approved security staff, no workers shall be permitted to live on site.	Construction Phase	Monitoring throughout the duration of the project.	C/ECO/RE
14.7 Waste Management, Hygiene and Cleanliness			
• Bins should have liner bags for efficient control and safe disposal of waste.	All Phases	Continuous	RE & C

• The site shall be kept neat and clean at all times. Littering is prohibited.	All Phases	Continuous	RE & C
• No on-site burying or dumping of any waste materials, vegetation, litter or refuse shall occur. The Contractor shall provide scavenger and weatherproof bins with lids of sufficient number and capacity to store the solid waste produced on a daily basis. The lids shall be kept firmly on the bins at all times. Bins shall not be allowed to become overfull and shall be emptied regularly. Waste from bins may be temporarily stored on site in a central waste area that is weatherproof and scavenger-proof, and which the RE/ECO has approved.	All Phases	Continuous	RE & C
• All solid waste shall be disposed of off-site at an approved landfill site. The Contractor shall supply the RE/ECO with a certificate of disposal.	All Phases	Continuous	C
• The Contractor shall ensure that all litter is collected from the work and camp areas daily.	All Phases	Continuous	C
• The Contractor shall ensure that his camp and working areas are kept clean and tidy at all times.	All Phases	Weekly monitoring.	C
• Bins and / or skips should be emptied regularly and waste should be disposed of at a registered landfill site. The nearest Municipal landfill site is the Bronkhorstpruit Municipal Landfill Site. Waybills for all such disposal are to be kept by the Contractor for review by the Engineer / ECO.	All Phases	Monitoring throughout the duration of the project.	C/RE/ECO
• Eating areas should be regularly serviced and cleaned to ensure the highest possible standards of hygiene and cleanliness.	All Phases	Monitoring throughout the duration of the project.	C/RE/ECO
• The excavation and use of rubbish pits is forbidden.	All Phases	Monitoring throughout the duration of the project.	C/RE/ECO

• Burning of waste is forbidden.	All Phases	Monitoring throughout the duration of the project.	C/RE/ECO
• A fenced area must be allocated for waste sorting and temporary storage.	All Phases	During site set up.	C/RE/ECO
• Individual skips for different types of waste (e.g. 'household' type refuse, building rubble, etc.) should be provided.	All Phases	During site set up.	C/RE/ECO
14.8 Materials Delivery and Transportation			
• The Contractor shall ensure that any delivery drivers are informed of all procedures and restrictions (including "no go" areas) required to comply with the Materials Specifications. The Contractor shall ensure that these delivery drivers are supervised during off loading, by someone with an adequate understanding of the requirements of the Materials Specifications.	Construction Phase	During Delivery	C
• Materials shall be appropriately secured to ensure safe passage between destinations. Loads including, but not limited to sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit. The Contractor shall be responsible for any clean-up resulting from the failure by his employees or suppliers to properly secure transported materials.	Construction Phase	Continuous	C
14.9 Management of Materials Storage Area – Including Hazardous and Dangerous Substances			

Definition of hazardous substances / materials are those that are potentially: poisonous, flammable, carcinogenic or toxic. Some examples of hazardous substances / materials: • *diesel, petroleum, oil, bituminous products* • *cement* • *solvent based paints* • *lubricants* • *explosives* • *drilling fluid* • *pesticides, herbicides* • *LPG (Liquid Petroleum Gas)*			
Storage areas containing hazardous substance / materials must be clearly sign posted.	All phases	During site set up.	RE/C
Storage areas that contain hazardous substances must be bunded with an approved impermeable liner.	All phases	During site set up.	RE/C
The use and storage of all materials shall be controlled. Care shall be taken to ensure that fuels and chemicals do not leach into the ground. Adequate spillage containment measures shall be implemented, such as cut off drains, berms etc. Fuel and chemical storage containers shall be set on a concrete plinth and within a containment bund. The necessary firefighting equipment shall be maintained on site where construction is taking place to deal with any fire incidents.	Construction Phase	Continuous	C
Storage areas should be secure so as to minimise the risk of crime. They should be safe from access by children and animals etc.	Construction Phase	Continuous	C
All potential hazardous or polluting materials shall be stored within the fenced off materials area, as far away from oncoming traffic and from drainage inlets as possible.	Construction Phase	Continuous	C
All manufactured and/ or imported material shall be stored within the materials storage area, and, if so required by the Project Specification, out of the rain.	Construction Phase	Continuous	C

Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances to be used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.	Construction Phase	Continuous	C
Where applicable, contractors shall prepare a source statement indicating the sources of all materials (including topsoil, sands, natural gravels, crushed stone, asphalt, clay liners etc.) and submit these to the Engineer for approval prior to commencement of any work.	Construction Phase	On award of contract.	C/E/ECO
Where possible, a signed document from the supplier of natural materials should be obtained confirming that they have been obtained it in a sustainable manner and in compliance with the relevant legislation.	Construction Phase	On receipt of the natural materials.	C
Where materials are borrowed (mined), proof must be provided of authorisation to utilise these materials from the landowner / mineral rights owner and the Department of Mineral Resources.	Construction Phase	On receipt of the borrowed materials.	C
14.10 Refuelling of Plant			
Where reasonably practical, plant shall be refuelled at a designated re-fuelling area or at the construction camp. If it is not reasonably practical than the surface under the temporary refuelling area shall be protected against pollution to the satisfaction of the RE/C/ECO prior to any refuelling activities. The Contractor shall ensure that there is always a supply of absorbent material (not saw dust) readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage. The quantity of such materials shall be able to handle a minimum of 200l of hydrocarbon liquid spill. This material must be approved by the RE/C/ECO prior to any refuelling or maintenance activities.	Construction Phase	During refuelling	RE/C/ECO
14.11 Using Materials – Non Hazardous, Hazardous and Dangerous Goods			

Heating of bitumen products shall only be undertaken using the LPG or similar zero emissions fuels.	Construction Phase	Monitoring throughout the duration of the project.	C/ECO
Staff dealing with these materials / substances must be aware of their potential impacts and follow appropriate safety measures.	Construction Phase	During staff induction and ongoing as necessary.	C/ECO
Should cement be mixed on site, it should be mixed on an impervious surface, and water from the cement mixing area should be channeled to a conservancy tank for removal from the site to a licensed disposal facility.	Construction Phase	Prior to establishment of storage area.	C
14.12 Air Quality Management / Soil Management			
Camp construction / haulage road construction – areas that have been stripped of vegetation must be dampened periodically to avoid excessive dust.	Construction Phase	Ongoing – more frequently during dry and windy conditions.	C/ECO
Vehicles travelling along the access roads must adhere to the speed limits to avoid creating excessive dust. Limit vehicle speeds on dirt road deviations to 40km/h. However, vehicle speeds is dependent on the type of vehicle and condition of the road. Generally according to Eskom's procedure the maximum speeds that are allowed on gravel roads is maximum of 60km/h.	Construction Phase	Monitoring throughout the duration of the project.	C/ECO
The Contractor must make alternative arrangements (other than fires) for cooking and / or heating requirements. LPG gas cookers may be used provided that all safety regulations are followed.	Construction Phase	Monitoring throughout the duration of the project. Ongoing.	E/C/ECO

Heavy vehicles and machinery should be serviced regularly to minimise exhaust fume pollution;	Construction Phase	Monitoring throughout the duration of the project. Ongoing.	E/C/ECO
Soil stockpiles will be located in sheltered areas to limit the erosive effects of the wind;	Construction Phase	Monitoring throughout the duration of the project. Ongoing.	E/C/ECO
Removal of vegetation will be avoided until such time as soil stripping is required.	Construction Phase	Monitoring throughout the duration of the project. Ongoing.	E/C/ECO
Environmental friendly soil stabilisers may be used as additional measures to control dust on gravel road and construction area, and all roads used for traffic accommodation will be surfaced.	Construction Phase	Monitoring throughout the duration of the project. Ongoing.	E/C/ECO
Existing vegetation will assist in screening the site, control dust and help prevent soil erosion. All existing vegetation on and adjacent to the development shall be retained unless otherwise instructed by the Engineer.	Construction Phase	Monitoring throughout the duration of the project.	ECO
No unnecessary stripping of vegetation shall be undertaken. The time that stripped areas are left open to exposure should be minimised wherever possible. Care should be taken to ensure that lead times are not excessive.	Construction Phase	Throughout the duration of the project.	E/ECO
Wind screening and storm water control should be undertaken to prevent soil loss from the site.	Construction Phase	During site set up.	E/ECO
Procedures that are in place to conserve topsoil during the construction phase of the project are to be applied to the set up phase, i.e. topsoil is to be conserved while providing access to the site and setting up the camp.	Construction Phase	Daily monitoring during site set up.	E/ECO

Topsoiling and re-vegetation shall commence immediately after the completion of an activity and at an agreed distance behind any particular work front.	Construction Phase	Daily monitoring during site set up.	E/ECO
14.13 Stormwater Management			
During construction un-channelled flow must be controlled to avoid soil erosion. Methods could include the use of rows of straw / hay bales that could be dug into the soil in contours to slow surface wash and capture eroded soil. The spacing between rows will be dependent on slope.	During Construction	Monitoring throughout the duration of the project.	E
Earth, stone and rubble is to be properly disposed of so as not to obstruct natural pathways over the site; i.e. these materials must not be placed in stormwater channels, drainage lines or rivers.	During Construction	Monitoring throughout the duration of the project.	E
14.14 Adjacent Watercourses / Wetland Areas / Floodline			

There are no wetlands or watercourses on any of the three alternative sites. There is a seasonal pan situated approximately 1.5km south of the preferred Alternative site (Alternative 1). Site Alternative 3 is situated approximately 800m north of this seasonal pan. In terms of the Ecological Assessment undertaken by GIBB, this pan is likely to provide suitable habitat for faunal species of conservation concern including Tyto capensis (African Grass Owl; currently listed nationally as Vulnerable) and Pyxicephalus adspersus (Giant Bullfrog; currently listed as Vulnerable in Mpumalanga and protected at a national level according to NEM:BA). This pan is furthermore classified as a Critical Biodiversity Area (CBA) according to the latest Gauteng Conservation Plan (C-Plan) data. GIBB demarcated vegetation within this area as Moist Grassland. Site Alternative 3 is situated approximately 800m north of the seasonal pan. The Malanspruit and two small dams are situated to the west of the study area. The Ecological Assessment undertaken by GIBB classified vegetation in this area as Moist Grasslands, that are disturbed and dominated by alien plant species such as Acacia mearnsii and Populus x canescens, with the graminoid and herbaceous layers largely dormant. No plant species of conservation concern or provincially protected plant species were recorded in this area. A 500m buffer area was placed around these above areas identified by GIBB as Moist Grassland (Refer to Figure 3 above). Site Alternatives 1 and 3 are situated outside of this 500m buffer area. Site Alternative 2 is located within the 500m buffer zone for "Moist Grasslands". Site Alternative 1 is situated furthest from the Moist Grassland area, approximately 750m north east of this sensitive area. Construction should be conducted during winter months when adult *Pyxicephalus adspersus* (Giant Bullfrogs) are aestivating since the adults will be more vulnerable to disturbance during the active period (October to February) when they congregate in large numbers in the seasonal pan south of the study area.	During Construction	Monitoring throughout the duration of the project	C

All construction activities, vehicle movement and waste storage, etc. should be undertaken outside of the demarcated wetland and riparian area buffer areas.	During Construction	Monitoring throughout the duration of the project	C/E/ECO
14.15 Noise Impacts			
Should there be complaints from the public regarding excessive noise necessary mitigation measures should be put in place, for examples, construction vehicles could be fitted with standard silencers.	During all phases	Prior to moving onto site.	E/C
Equipment that is fitted with noise reduction facilities will be used as per operating instructions and maintained properly during site operations.	During all phases	Monitoring throughout the duration of the project.	E/C
No amplified music shall be allowed on site. The use of radios, tape recorders, compact disc players, television sets etc. shall not be permitted unless the volume is kept sufficiently low as to avoid any intrusion on members of the public within range. The Contractor shall not use sound amplification equipment on site unless in emergency situations.	During all phases	Monitoring throughout the duration of the project.	E/C
Construction activities generating output levels of 85 dB (A) or more, in residential areas, shall be confined to the hours 08h00 to 17h00 Mondays to Fridays. Should the Contractor need to work outside normal working hours, the surrounding communities shall be informed prior to the work taking place.	During all phases	Monitoring throughout the duration of the project.	E/C
14.16 Heritage Impacts			
• **Refer to Section 12.10 Above**	During all phases	Monitoring throughout the duration of the project.	E/C

14.17 Occupation Health and Safety			
Potentially hazardous areas such as trenches are to be demarcated and clearly marked.	During all phases	Monitoring throughout the duration of the project.	E/C
Obstruction to drivers' line of sight due to stockpiles and stacked materials must be avoided, especially at intersections and sharp corners.	During all phases	Monitoring throughout the duration of the project.	E/C
Material stockpiles or stacks, such as pipes must be stable and well secured to avoid collapse and possible injury to site workers / local residents.	During all phases	Monitoring throughout the duration of the project.	E/C

15 SUBSTATION AND POWERLINE OPERATIONS

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.1 Site Hand Over				
15.1.1 Take over works	During site take / hand over, the site must be accepted from the relevant Distribution Business Unit and handed over. All relevant legal and other documentation must be handed over to the relevant Business Unit on project completion and site handover.	At commencement of operational phase	Once off	SM/DBU
15.2 Access Control, Access Roads, Access Gates, Fences and Security				
15.2.1 Gate Control	Gates must be fitted with Eskom locks throughout the life of the substation.	Permanent	Throughout	SM/SP
	Such gates shall be clearly marked by complying with legal and other internal Eskom requirements.	Once off	Annually	C/ECO
15.2.2 Access Control and Security	The substation site will be fenced off with electric fencing in compliance with legal and internal Eskom requirements and access control will be very strict with 24 hour security present at the substation or as per substation individual risk assessment and legal requirements.	Permanent	Throughout	SM/SP
	Access to the new substation must be restricted. The access point should ideally be fenced off and gated along the main access road.	Permanent	Throughout	SP
	No quad-bikes, motorcycles or off road vehicles and illegal hunting should be permitted in the adjacent properties.	Permanent	Throughout	SM/SP
	No firearms (shotguns, air rifles or pellet guns) or catapults should be permitted on the property.	Permanent	Throughout	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.2.3 Access Roads	Access road to substation to be maintained.	Permanent	Throughout	SM
15.2.4 Fences	Fencing should be maintained at all times to prevent unlawful access to the substation site.	Permanent	Throughout	SM
As per Eskom's standard procedure for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247				
15.2.5 Access Control, Gates and Fencing, and Restriction of Activities on Private Land	In terms of Eskom's servitude agreement, Eskom (or its appointed contractor) has the right to enter and be upon the property at any time whether it to be to perform work on the property itself, or to gain access to any adjacent property. This however does not mean that the landowner should not be consulted or made aware during these times, and therefore, Eskom will notify the owner of any intention to enter the property to cut trees and vegetation, or to perform any other Eskom related tasks, and will take reasonable measures to inform the landowner of Eskom's intent to cut vegetation on the property or perform any other Eskom related tasks. Proof of the consultation must be kept.	During each inspection or maintenance event	During each inspection or maintenance event	LM
	In order to assist with access, Eskom may erect gates in consultation with the property owner. Under no circumstances shall access be gained by cutting or "dropping" fences. All gates shall be left closed, unless otherwise instructed by the landowner, and the Eskom servitude gates shall be securely locked at all times.	Once off or when required	Once off or when required	LM
As per Eskom's Standard Procedure with regards to Access to Farms (32-1173), of June 2011				
	No person may climb or crawl over or through fences without the owners' permission. No person may damage or remove a fence without the owners' permission. Gates should be left as land owners require.	Permanent	Throughout	LM
	All instances where access has been unduly restricted should be taken up with the Customer Services Area Manager to ensure a normalisation of the	Permanent	Throughout	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.2.6 Access Control, Gates and Fencing, and Restriction of Activities on Private Land	situation. The 2 lock system should also be enforced where it has been violated. The Customer Services Area Manager could bring the following to the attention of the landowner in terms of our way leave/servitude agreement: 1) That access is being restricted. 2) That the removal of Eskom locks and gates without prior notice and agreement is illegal. 3) That security is required for accompaniment where the introduction of problem animals restricts access. 4) That there is a need to use motorised equipment for bush clearing where trees pose a risk to the safe operation of the line.			
	An effort should be made through the regional task team to convince game farm owners and other influential stakeholders (Government & Game farming and Agricultural Union bodies) to buy into the following; 1) The numbering of gates. 2) The labelling of gates stating the following: a. That it is a game farm b. List of dangerous animals within enclosure c. Contact details d. That all entry and exit points comply with the Certificate of Adequate Enclosure Fencing Specifications. e. Entrance areas are to be cleared to improve visibility.	During each inspection or maintenance event	During each inspection or maintenance event	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.3 Notification of Intent to Visit Land **As per Eskom's Standard Procedure with regards to Access to Farms (32-1173), of June 2011**				
15.3.1 Notification of Intent to Visit Land	**Activity**: Each outage is planned individually. Project leaders play a critical role in ensuring that thorough planning takes place prior to the execution of the outage. Planning the outage entails a series of discussions with stakeholders. Key to the success of an outage is the use of project management principles. **Action:** Eskom will notify customers at least 10 days in advance through the appropriate media – either in writing, electronically or telephonically. Should its best attempts to communicate fail, the work will proceed regardless.	During each inspection or maintenance event	During each inspection or maintenance event	LM
	Activity: Visits and activities that do not coincide with supply interruptions, such as vegetation control, live line work and line inspections. **Action:** Eskom will notify customers at least 48 hours in advance through the appropriate media – either in writing, electronically or telephonically. Should its attempts to communicate fail, the work will proceed regardless.	During each inspection or maintenance event	During each inspection or maintenance event	LM
	Activity: Extended negotiations and interaction with the customer and adjoining property owners include supply proposals, quotations, guarantees, line route planning, and construction project planning and execution. **Action:** All stakeholders must cooperate to enable Eskom to provide the customer with a project schedule reflecting the period during which the construction and commissioning activities will take place. In addition, customers may request a work order number to be verified with the contact centre.	During each inspection or maintenance event	During each inspection or maintenance event	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	Activity: All visits to individual customers, i.e. sales or service-related activities, investigations (technical, non-technical), claims, etc. **Action:** Must take place by appointment.	During each inspection or maintenance event	During each inspection or maintenance event	LM
	Activity: Access to the farm at fixed intervals for activities such as meter reading. **Action:** Eskom will give notice on the monthly bill of a four-day period in the following month during which either an estimate or a visit for an actual meter reading is scheduled.	During each inspection or maintenance event	During each inspection or maintenance event	LM
	Activity: Routine line patrols by maintenance staff. **Action:** Field Services staff must report all new game fences or game farming activities encountered on routine line patrol or fault repair activities to the Land Development section for mapping and to Customer Services Area Manager to engage the landowner for corrective action if Eskom was not informed or did not agree to such a change. This is seen as an *ad hoc* way of obtaining information of newly created game farms from normal business activities.	During each inspection or maintenance event	During each inspection or maintenance event	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.3.2 Unplanned/unscheduled visits	**Power interruption caused by external factors** **Activity:** Rapid power restoration without any delay is in the interest of both Eskom and the customer. This is dependent on free movement. **Action:** All Eskom staff as well as representatives of Eskom contractors will carry identity cards containing their photographs to indicate whether they are Eskom employees or Eskom contractors. In addition, customers may request a work order number to be verified with the contact centre. Vehicles must be clearly marked.	During each inspection or maintenance event	During each inspection or maintenance event	LM
	Ad hoc line inspections in response to poor performance **Activity:** These line inspections include the process of technical investigation to ensure standard action and response in maintaining quality of supply, and are instituted on short notice, not affording time for extended planning, to eliminate the possibility of substandard plant conditions. **Action:** All Eskom staff as well as representatives of Eskom contractors will carry identity cards containing their photographs, indicating whether they are Eskom employees or Eskom contractors. In addition, customers may request a work order number to be verified with the contact centre. Vehicles must be clearly marked	During each inspection or maintenance event	During each inspection or maintenance event	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.4 Identification of Visitors and Vehicles **As per Eskom's Standard Procedure with regards to Access to Farms 32-1173, of June 2011**				
15.4.1 Identification of Visitors	All Eskom staff will carry identity cards containing their photographs, indicating that they are Eskom employees.	During each inspection or maintenance event	During each inspection or maintenance event	LM
15.4.2 Identification of Vehicles	Eskom vehicles will be clearly marked on the door. Where necessary to undertake any inspections or attend to any maintenance issues after dark, vehicles will be fitted with amber rotating lights. Vehicles of Eskom contractors must have a magnetic strip on the side containing the words "Eskom contractor", as well as an amber rotating light, should these vehicles operate after dark.	During each inspection or maintenance event	During each inspection or maintenance event	LM
15.4.3 Eskom Contractor Identification	The Eskom contractor must be able to identify himself as an Eskom contractor. Eskom contractors will carry identity cards containing their photographs, indicating that they are contractors. In the case of unplanned activities, the contractor must be in possession of a work order number. In the case of planned and routine activities, the customer will be notified. Vehicles must be clearly marked.	During each inspection or maintenance event	During each inspection or maintenance event	LM
15.5 Compensation Due to Damage to Property				
	Any damage to property, including but not limited to, crops, stock, fencing and gates, which occurred during maintenance activities shall be compensated, repaired or replaced at Eskom's expense, to the satisfaction	Whenever required	Whenever required	Lm

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	of the landowner. All damages should be reported to the Line and Servitude Manager.			
	Access to any type of nature reserve requires specific permission, which should be arranged with the appropriate authority or landowners. Because these reserves have both dangerous as well as very expensive game, a designated guide should always accompany visitors. This will ensure the safety of the visitor as well as prevent any claims against Eskom Holdings in the case of loss/death of expensive game.	Whenever required	Whenever required	LM
15.6 General Maintenance				
15.6.1 Maintenance	All applicable standards, legislation, policies and procedures must be adhered to during operation.	Permanent	Throughout	SM
	Regular inspection of the substation and loop-in lines must take place to monitor their status.	Permanent	Throughout	SM
15.7 Operational Phase Vehicle Traffic and Machinery				
15.7.1 Heavy Machinery	Fuel and oil spillages as well as spillages of any other dangerous or hazardous substances should be avoided.	Per delivery	Per delivery	SM
	The Substation Manager and / or contractor responsible for maintenance activities shall ensure that there is always a supply of absorbent material (not saw dust) readily available to absorb/ breakdown and where possible is designed to encapsulate minor hydrocarbon spillage.	Permanent	Throughout	SM
	All areas where heavy machinery has access must be rehabilitated in terms of soil pollution.	Permanent	Throughout	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	All vehicle traffic must remain on designated access roads No vehicles will be allowed onto vegetated areas. However, access routes do not always exist next to powerlines, and vehicles may need to travel on vegetated areas were no access road exists. Should any damage to vegetation occur the disturbed area will be rehabilitated.	Permanent	Throughout	SM
15.8 Insulator Oil Spillage and Storage **As per Eskom's Standard Oil Spill Clean-Up and Rehabilitation Plan (ESKASABT0), November 2003**				
15.8.1 Insulator Oil Spillage and Storage	The Oil Spill Clean-up and Rehabilitation Standard (Reference – ESKASABT0) needs to be implemented.	Permanent	Throughout	SM
	Outdoor Storage of Oil filled Drums: • An outdoor oil storage area must be located in the open and at ground level, at least 15m from important buildings/equipment. • Where the above distance cannot be achieved, a fire wall at least 1m higher than the oil drums must be provided between the drums and important buildings/equipment. • In addition, outdoor storage areas should: ○ Be located or provisions made so that spilled oil, irrespective of quantity, cannot be spread to buildings, equipment or other storage yards; ○ Be kept clear of weeds, paper, waste and other combustible material to a distance of 8m from the storage area; ○ Be provided with at least 1 x 9kg chemical powder fire extinguisher mounted in a weather proof housing near the storage area; ○ Only be used for storage of oil or other combustible liquids;	Permanent	Throughout	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	○ Be located where there is a minimum chance of accidental damage from vehicles.			
	Indoor storage of Oil: • Oil may be stored in a building provided that: ○ The building is constructed of non-combustible material; ○ It is a stand-alone building solely used for storage of oil or other combustible liquids; ○ Where the building used for storing oil is less than 15m from an important building or equipment, the wall of the oil store facing the building or equipment shall be a solid brick or concrete wall with no openings; ○ Provision is made to contain oil spillages to within the building; ○ At least 1 x 9kg chemical powder fire extinguisher is mounted in weather proof housing outside the building; and ○ Flammable liquids such as petrol shall not be kept in the building.	Permanent	Throughout	SM
	Immediate corrective action to limit any spillages should be implemented to minimize the environmental damage and reduce remediation costs. This can involve actions such as: • closing a valve; • repairing the leak with rags, plugs or other appropriate material; • repositioning the container so that the leaking area is at the highest level or lifting a fallen drum/container; • placing a leaking container or equipment into a collecting tray or bund area; and • Collecting the spilt oil in a container located underneath the leak or channelling the leak into a container.	Permanent	Incidental	SM
	The containment of a spillage will involve an action that will either prevent or stop a spill from spreading. It is vital to prevent any oil spill from entering	Permanent	Incidental	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	waterbodies such as drains, stormwater systems, dams or rivers. Containment of the oil near the source will minimize pollution and will enable easy clean-up and/or remediation. This shall be done using one or more of the following: • Soil barriers; • Sand bags; • Bund walls; and • Absorbent materials.			
	The free oil (puddles) shall be captured and put into a suitable container such as a drum or tanker for proper disposal as soon as possible. This oil shall not re-enter the Eskom insulating oil pool for regeneration and re-use in electrical equipment.	Permanent	Incidental	SM
	After removal of excess oil, saw dust, suitable absorbents or solvents shall be used to complete the clean-up of the spill. This might include the removal of leaking equipment, cleaning of pavements, removing contaminated soil and vegetation, as well as disposing of clean-up equipment. The absorbing material shall be bagged and disposed of at a class HH registered site. PCB material shall be incinerated, encapsulated or de-chlorinated following consultation with NIOSC who will advise on the most viable option.	Permanent	Incidental	SM
	To allow for a rapid response and clean-up to an oil spill, it is mandatory for all Eskom sites and vehicles handling oil to have access to a recommended basic spill kit. The vehicle kit shall be a smaller version of the site spill clean-up kit that meets the basic requirements for the volume of oil transported. This shall be used in the event of a spill that is less than 12 points as assessed using the table in Annex A of document ESKASABT0. Adequate and relevant training shall be given to all staff, maintenance teams and contractors	Permanent	Incidental	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	working with oil on an Eskom site. This shall involve the actions to be taken following an oil spill as well as the use of the recommended oil spill kit. The recommended oil spill kit shall contain the following: • 2 pairs of latex or neoprene gloves; • 20 heavy duty disposable bags (rubbish bags); • 1 shovel; • 1 hard bristle broom; • 5 absorbent pads; • 3 bags of absorbent material (cellulosic or other efficient material); and • 1 pair of plastic goggles. If a station or site is close to surface water, oil absorbing material for removal and containment of oil on water shall form part of the standard kit.			
	To limit any potential oil spill, it is recommended that all sites where insulating oil is stored are accredited in terms of Eskom's NIOSC manual. For all other oils, the relevant Eskom standards shall be adhered to. UTO removed from equipment shall be promptly salvaged and returned to the closest, authorized regeneration facility after its removal from the equipment.	Permanent	Incidental	SM
	To report the oil spill incident within 24 hours of occurrence to the relevant SHE departments for recording, investigation, and monitoring until corrective actions have been implemented and closed out.	Permanent	Incidental	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.9 Operations and Maintenance of Oil Containment Structures, Oil Traps and Oil Dams				
15.9.1 Oil Containment structures	Bunded areas around transformers to be inspected on a as per schedule by Eskom responsible people by the responsible person to ensure it is free from any debris, vegetation and that the drain cover lids are in place and that there are no items lying around that could cause blockage should a spill occur.	Permanent	As per Eskom Schedule	SM/DBU
	The integrity of all bund walls should be checked to ensure no cracks or openings have developed through wear and tear.	Permanent	Throughout	SM/DBU
	Closed oil traps / dams to be inspected on a regular basis by the appointed responsible person and the following shall be checked and verified correct / in working order in accordance with specifications: • Water level; • Valve system; • Any blockage inflow and outflow; • Any signs of oil spills; • All drain covers to be opened when inspection is carried out; • Ensure inspection drain covers are replaced securely after inspection; • If there are any signs of oil it should be reported; • Inspections to be recorded on the monthly inspection schedule; and • Tool to the open drain covers to be available on site at all times.	Permanent	As per set time frame by Eskom responsible person as monthly might not be practical	SM/DBU.
	Oil dams to be inspected regularly by the responsible person appointed at the site or work area. Inspections shall be carried out using the design at the criteria. The following to be checked and verified: • Free from debris / obstacles; • Cover over trap preventing birds' negative interactions; • Staircase out of dams;	Permanent	Monthly	SM/DBU.

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	• Inlet and outlet pipe; • Check cracks on joints; • Perimeter fence and gate; • Area around dam cleared from any vegetation for up to ±1 meter from perimeter fence; • No vegetation growth or sand inside dam; • Oil separation equipment in working order if available; and • Ensure inspection is recorded onto the inspection schedule.			
	If oil is detected inside a trap or dam the root cause shall be identified and the oil managed on the following methods: 1. Report to FSOU Environmental Practitioner and any action thereafter to be in agreement with HV Plant Manager / Supervisor, and Environmental Advisor; 2. Treat inside of dam / trap with bio-remediants; 3. Obtain qualified external contractor services to remove oil and clean the trap / dam	Permanent	Throughout	SM/DBU.
		Permanent	Throughout	SM/DBU.
	Oil holding facilities shall be designed to prevent pollution of the environment by oil if the total oil content of the largest unit of equipment on site is released (Standard for passive fire protection in Distribution substation yards DISASAAA0)	N/A	N/A	N/A

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.10 Soil Erosion Prevention **As per Eskom's standard procedure for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247**				
Measures to prevent soil erosion shall be implemented at all times. Road construction may only be undertaken following agreement from authorities.		If an when required	During annual maintenance inspections	LM
15.11 Waste Management				
15.11.1 Daily on-site waste management activities and waste management during maintenance activities.	All waste management activities shall be done in accordance to all legal requirement and internal Eskom Procedure: Eskom Environmental Waste Management Procedure (EPC 32 – 245) and the applicable procedures.	Permanent	Throughout	SM
	• At all Eskom sites steps shall be taken to ensure: a) that sufficient containers or places are provided to contain litter; and b) that the litter is disposed of before it becomes a nuisance or causes a negative impact on the environment. • Only permitted/licensed waste disposal facilities to be used. • All Eskom waste disposal sites must be licensed in line with the applicable national legislation.	Permanent	Throughout	SM/DBU

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	• Personnel involved in waste management must be appropriately trained in aspects of waste management, including the requirements of the Occupational Health and Safety Act, No 85 of 1993. • Waste contractors transporting hazardous waste will be required to provide Eskom with a waste manifest procedure detailing the transportation, type of waste disposed of, quantities disposed of, and how and where the waste was disposed of, and providing a certificate of safe disposal. The transport of waste must be in accordance with national legislation. • Records must be maintained in accordance with applicable legislation. • Waste reporting must be in accordance with Annex K of the Eskom Environmental Waste Management Procedure (EPC 32 – 245) on a monthly basis • In order to determine the correct disposal method for industrial waste, all potentially hazardous industrial waste must be classified and rated in accordance with the Department of Water Affairs and Forestry's Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition 1998. [Section 20(9), Environment Conservation Act of 1998, read with the Department of Water Affairs and Forestry's [DWAF] Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste, Second Edition 1998 • In order to facilitate the tracking of waste, waste manifests will be provided by the Contractor and will contain the following information: Onus lies on the waste generator to ensure that the following is correctly filled out on the waste manifest. a) Hazard class (SANS 10234) b) Hazard rating (of Class 6 wastes);			

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	c) Disposal method (in line with DWAF's Minimum Requirements); d) Confirmation that the class, rating and method are in accordance with the aforesaid Minimum Requirements documents; e) Acknowledgement of receipt by the operator of the receiving facility. • Waste will be transported in accordance with the obligations imposed on the "operator" and "driver" by GN R 225 to the National Road Traffic Act of 1996, including the associated SANS Codes of Practice." During the operational phase, there are no full time personnel on site, and therefore very little to no domestic waste is produced. Personnel only visit the substation during maintenance, outages, etc. Waste bins should be available on site. Waste control registers should be kept at the CNC. Copies of safe disposal certificates from a permitted landfill site to be obtained to ensure that the site is permitted before taking the waste out of site. Waste reporting must be in accordance with Annex K of the Eskom Environmental Waste Management Procedure (EPC 32 – 245) on a monthly basis, or less frequent, should waste production on site be less.			
	An adequate number of waste bins should be provided on site for the disposal of general food wastes generated by the substation site personnel. Bins should be emptied on a weekly basis and wastes should be disposed of at a licensed landfill facility. Wastes will be transported to the landfill by a licensed waste service provider.	Permanent	Throughout	SM/SP
	Littering is strictly prohibited	Permanent	Throughout	SM/SP
	Under no circumstances may any wastes be burned on site	Permanent	Throughout	SM/SP

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	Container s or receptacles for the temporary storage of any broken insulators shall be provided on site at all times. Any broken insulators shall be stored in these receptacles. All shards from broken insulators shall be picked up and placed in these receptacles. Such wastes will be removed from site by a licensed waste service provider if and when required.	Permanent	Throughout	SM/SP
	Wherever possible, materials will be recycled via a "Greens waste site". To this end, containers for glass, paper, metals, plastics, organic waste and hazardous wastes (e.g. oil rags, paint containers, thinners) will be provided in sufficient quantity on the site.	Permanent	Throughout	SM/SP
	All waste generated during operational phase must be removed and disposed of at a licensed waste disposal facility.	Permanent	Throughout	SM/SP
	Littering is strictly prohibited	Permanent	Throughout	SM/SP
	All potentially hazardous and non-degradable waste shall be collected and removed to a registered waste site.	Permanent	Throughout	SM/SP
	Littering by the employees of the Contractor shall not be allowed.	Permanent	Throughout	SM/SP
	Broken, damaged and unused nuts, bolts and washers shall be gathered and removed from site.	Permanent	Throughout	SM/SP
	No material shall be left on site that may harm man or animals.	Permanent	Throughout	SM/SP
	Any broken insulators shall be removed and all shards picked up.	Permanent	Throughout	SM/SP
	Surplus concrete may not be dumped indiscriminately on site. Such wastes will be removed from site and will be disposed of at a licensed waste facility that accepts such wastes.	Permanent	Throughout	SM/SP
	The washing of concrete trucks on site is prohibited. Any spilled concrete shall be cleaned up immediately.	Permanent	Throughout	SM/SP

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.12 Management of Vegetation within the Eskom Servitude **As per Eskom's standard procedure for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247**				
15.12.1 **Vegetation Management**	Trees growing to a height in excess of the horizontal distance of that tree from the nearest Conductor which are identified as a risk to safe operation of the powerline shall be treated and prevented from growing in such a manner as not to endanger the line should they fall.	If and when required	During annual maintenance inspections	LM
	All vegetation posing a risk to the line or preventing access for maintenance purposes shall be managed.	If and when required	During annual maintenance inspections	LM
	In terms of the Occupational Health and Safety Act, 1993 (Act 85 of 1993), "The supplier, or user of powerlines shall control vegetation in order to prevent it from encroaching on the minimum safety clearances of the power lines and the owner of the vegetation shall permit such control".	If and when required	During annual maintenance inspections	LM
	It is recommended that a minimum rolling three (3) year vegetation management programme be promoted per power line or feeder as part of the Management Programme. This will allow effective identification, management and follow up of problematic vegetation.	If and when required	During annual maintenance inspections	LM
	Trees, shrubs, grass, natural features and topsoil, which are not removed during the vegetation control operations, shall be protected from damage	If and when required	During annual	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	during operation of the powerline. Disturbance of the surface of the earth shall only be allowed for access purposes.		maintenance inspections	
	Various species of indigenous vegetation are protected by law in terms of which it is necessary to obtain a permit from the relevant authority, in order to cut them. The responsibility for obtaining the permit shall remain with Eskom, unless allocated to the Contractor in terms of a formal contract. Eskom however remains accountable. The latest list of National protected trees is available off SHE Web, but it must be realised that provincial legislation has specific requirements in terms of protected species. These can be accessed off the Legal Register,	If and when required	During annual maintenance inspections	LM
	Where there is any doubt as to whether a tree species is protected or not, the Department of Forestry and Fisheries or the local Eskom environmental practitioner in the area shall be consulted.	If and when required	During annual maintenance inspections	LM
	Indigenous trees and bushes that do not grow high enough to cause interference with the powerline or cause a fire hazard, shall not be cut down or trimmed.	If and when required	During annual maintenance inspections	LM
	Vegetation should be trimmed where it is likely that it intrudes on the minimum vegetation clearance distance, (MVCD) or will intrude on this distance before the next scheduled clearance. (Usually three (3) years). The MVCD is determined from GNR 1593 of 12 August 1988, Electrical machinery regulations. The distance "To buildings, poles and structures not forming part of powerlines" is used as the guide. As a rule of thumb indigenous trees and shrubs will grow at approximately one (1) metre per	Permanent	Throughout	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	year under good conditions. The MVC can be reduced in sensitive systems or where aesthetic considerations need to be addressed. Compliance to Eskom Procedure: Procedure for Vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247			
	For self-supporting structures. Clear all vegetation within proposed / existing tower and stay positions and within a maximum (depending on the tower type and voltage) radius of 5 m around the position, including de-stumping / cutting stumps to ground level, treating with a herbicide and re-compaction of soil. Compliance to Eskom Procedure: Procedure for Vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247	If and when required	During annual maintenance inspections	LM
	Trees growing to a height in excess of the horizontal distance of that tree from the nearest conductor which are identified as a risk to safe operation of the powerline shall be treated and prevented from growing in such a manner as to endanger the line should they fall. Compliance to Eskom Procedure: Procedure for Vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247	If and when required	During annual maintenance inspections	LM
	Alien vegetation in servitudes shall be managed in terms of the Regulation GNR.1048 of 25 May 1984 (as amended) issued in terms of the Conservation of Agricultural Resources Act, Act 43 of 1983. In Terms of these regulations, Eskom shall “control” i.e. to combat category 1, 2 and 3 plants to the extent necessary to prevent or to contain the occurrence, establishment, growth, multiplication, propagation, regeneration and spreading such plants within servitude areas or land owned by Eskom.	If and when required	During annual maintenance inspections	LM
	Control programmes should be included as part of the Environmental Management Programme, and will need to be area and species specific. Due to the nature of alien vegetation, this programme implementation may	If and when required	During annual	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	need to be more frequent than the three year interval recommended for indigenous vegetation. Alien vegetation can grow at rates significantly faster than 1 (one) metre per year.		maintenance inspections	
	Care must be taken to ensure alien vegetation is not spread as a result of vegetation management processes through the transport of seeds or other vegetative material from one site to another.	If and when required	During annual maintenance inspections	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.13 Bush Clearing Requirements for the Maintenance of Existing Powerline Servitudes **Environmental Procedure:** **Procedure for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247**				
15.13.1 Centre line for proposed powerline	**Standard Procedures:** Specification for width of vegetation clearance on new lines (above 33kV) shall be determined based on the EIA and EMP. New power line 33kV and below an 8 metre (or as Determined per site) wide strip of identified vegetation along the centre line should be cleared. If required, a 5 metre wide strip shall be cut close to the ground (50 mm) for access purposes. **Follow-Up:** Re-growth shall be cut within 50 mm of the ground and/or treated with herbicide as necessary.	If and when required	During annual maintenance inspections	LM
15.13.2 Tower Position and support/stay-wire position	**Standard Procedures:** Clear all vegetation within proposed tower position and within a maximum (depending on the tower type and voltage) radius of 5m around the position, including de-stumping / cutting stumps to ground level, treating with a herbicide and re-compaction of soil. **Follow-Up:** Re-growth to be cut at ground level and treated with herbicide as necessary.	If and when required	During annual maintenance inspections	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.13.3 Indigenous vegetation within servitude area (outside of the maximum 8m strip)	**<u>Standard Procedures</u>:** Selective trimming or cutting down of those identified plants interfering or posing a threat to the integrity of the powerline. **<u>Follow-Up</u>:** Selective trimming.	If and when required	During annual maintenance inspections	LM
15.13.4 **Alien Species (Declared weeds ito CARA Reg 229 within servitude area (outside of the maximum 8m strip)**	**<u>Standard Procedures</u>:** Control programme to be implemented as per above procedure. Trimming need not be selective. **<u>Follow-Up</u>:** Cut and treat with appropriate herbicide.	If and when required	During annual maintenance inspections	LM
15.14 Herbicide Use **Procedure for vegetation clearance and maintenance within overhead powerline servitudes and on Eskom owned land EPC 32-247**				

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.14.1 Use of Herbicide	The use of herbicides shall be in compliance with the terms of The Fertilisers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act 36 of 1947).	If and when required	During annual maintenance inspections	LM
	In terms of the above Act, only a registered pest control operator may apply herbicides on a commercial basis. All application of herbicides shall be carried out under the supervision of a registered pest control operator.	If and when required	During annual maintenance inspections	LM
	When Eskom applies herbicides on Eskom owned property, (or substations under the control of Eskom) then Eskom employees may do this provided they have been appropriately trained and that responsibility is taken for this work. Therefore no need for the person to be registered as a PCO, or working under the supervision of a PCO.	If and when required	During annual maintenance inspections	LM
	When Eskom applies herbicides on its own powerline servitudes, or land not owned by Eskom, then its own employees may not undertake this unless they are registered as a PCO. When contractors are appointed to undertake this, this work must be undertaken by a PCO, or under the direct supervision (meaning the PCO must be on-site) of a PCO.	If and when required	During annual maintenance inspections	LM
	In cases when Eskom's Vegetation Management, who are Eskom staff, are "contracted" by an Eskom Division to apply herbicides on servitudes, then they must undertake this under the "management" of a registered PCO. There is no need for a PCO to be on-site at all times in this particular case.	If and when required	During annual maintenance inspections	LM
	A daily register shall be kept of all relevant details of herbicide usage as stipulated in Act 36 of 1947.	If and when required	During annual	LM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
			maintenance inspections	
15.15 Biodiversity (Fauna and Flora) and Vegetation Monitoring				
15.15.1 Avifauna Monitoring	Monthly monitoring of the power line should be conducted and all species electrocuted should be recorded and the data should be submitted to Birdlife SA and EWT.	Permanent	Throughout	SM
15.15.2 Vegetation Monitoring	An alien invasive eradication and monitoring plan must be compiled to ensure that the re-emergence of invasive species is monitored continuously during the operational phase.	Permanent	Throughout	SM
	All alien seedlings and saplings must be removed as they become evident for the duration of the operational phase.	Permanent	Throughout	SM
	Eskom shall control vegetation in order to prevent it from encroaching on the minimum safety clearances of the substation and the owner of the vegetation shall permit such control	Permanent	Throughout	SM
	Any recruitment of exotic vegetation to be managed on an ongoing basis until indigenous pioneering vegetation has dominated the disturbed areas. These species should be limited to naturally-occurring species representative of the vegetation type for the locality. Ongoing monitoring of exotic vegetation recruitment should be undertaken and any recruitment controlled	Permanent	Throughout	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.15.3 Biodiversity	Indigenous vegetation must be maintained on the servitude on an annual basis and all exotics removed as they appear and disposed of appropriately.	Permanent	During Annual Maintenance	SM
	No faunal species must be harmed by operational staff during any routine checks of the substation and loop-in lines.	Permanent	Throughout	SM
	No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site.	Permanent	Throughout	SM
	No firearms (shotguns, air rifles or pellet guns) or catapults should be permitted on the property;	Permanent	Throughout	SM
	All maintenance activities should be carried out according to generally accepted environmental best practices. In particular, care should be taken in the vicinity of the seasonal pans, wetlands and grassland areas.	Permanent	Throughout	SM
	In the event of a bird electrocution, within the substation yard, during the operational lifespan of the substation, site specific recommendations will be provided to the utility by the EWT.	Permanent	Throughout	SM
	Vehicles and machinery can impact on natural vegetation causing irrevocable damage to the natural habitat available to resident avifauna. When undertaking maintenance activities, particular care should be taken in the vicinity of the seasonal pans, wetlands and grassland areas. Do not drive machinery or vehicles through wetlands, pans, seep areas, streams or drainage lines. Make use of existing roads;	Permanent	Throughout	SM
	Maintenance crews to monitor for bird collisions and to mitigate for this impact within areas identified as hotspot collision areas not previously identified during the pre-construction and construction phase.	Permanent	Throughout	SM

Activity	Mitigation Measures	Duration	Frequency	Responsibility
15.16 Heritage				
15.16.1 Heritage	ECO/RE to inform substation manager of any artefacts uncovered during the construction phase. Care should be taken when maintenance activities are undertaken in areas where artefacts were uncovered. Should any artefacts be uncovered, work is to cease immediately and such discoveries should be reported to the local Environmental Practitioner who will ensure an archaeologist is contacted.	At commencement of operational phase	Throughout	LM
15.17 Fire prevention				
15.17.1 Fire prevention	Firefighting equipment shall be available at all times and shall be inspected regularly.	Permanent	Throughout	SM
	A fire evacuation plan needs to be drafted to be as practical as possible in terms of the site layout. The plan shall be approved by the responsible Fire Chief in the area.	Once Off	Throughout	SM
	Appropriate emergency contact numbers (e.g. Fire Department) must be clearly displayed on site.	Permanent	Throughout	SM
	Regular fire drills must be implemented and relevant training shall be given as required. All fire-fighting equipment must be clearly signposted and access ensured at all times.	On a regular basis	Throughout	SM
	As per Eskom's Distribution Fire Risk Management (34-132) January 2007			
	All new distribution substations shall comply with the Eskom standard, "*Distribution Fire Risk Management*", Ref: DST 34-132	At commencement	Throughout	SM/DBU

Activity	Mitigation Measures	Duration	Frequency	Responsibility
		of operational phase		
	Substations shall comply with DISASAAA0: Passive Fire Protection in Distribution Substation Yards	Permanent	Annually	SM/DBU
	Substation where oil holding dams have been provided shall make provision in their maintenance schedules to clean out the dams on an annual basis.	Permanent	Annually	SM/DBU
	At least 1 X 9 kg chemical powder or 1 X 6,8 kg (minimum mass rating) CO^2 fire extinguisher shall be available only whilst work is being carried out at the substation. These fire extinguishers shall be brought on site by those working at the substation or be permanently fixed at the relay room in the substation.	At commencement of operational phase	Throughout	SM/DBU
	Where any strategic substation does not fall under the protection of a fire brigade, the nearest fire brigade to that substation shall be identified.	At commencement of operational phase	Throughout	SM/DBU
	Any fire brigade that will be required to respond to a strategic substation, whether it is as a result of the substation falling within its jurisdiction or because of a service level agreement, fire fighters from that fire brigade, shall be invited to visit the substation.	Permanent	Biannually	SM/DBU
	A written pre-fire plan to facilitate firefighting and reduce the possibility of injury to firemen shall be drawn up in conjunction with the relevant fire brigade and the responsible Supervisor or engineering Assistant for the substation. The pre-fire plan shall, as a minimum, address the following: • Name and location of substation (preferably include a map); • Name of supervisor, Engineering Assistant and telephone numbers; • Other relevant Eskom emergency telephone numbers;	At commencement of operational phase	Throughout	SM/DBU

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	• Access control, details of what the fire brigade should do when they arrive on site, particularly when the substation is unattended; • When will it be safe to commence firefighting; • Who will give authorisation to start the fire fighting; • Precautions the fire brigade should take during a fire in the high voltage yard; • Nearest water supply that can be used for firefighting (if any); • Oil content of transformers; • Any other aspect that the fire brigade should be aware of that will facilitate firefighting or reduce the possibility of injury to firemen.			
	A copy of the pre-fire plan shall be kept by the fire brigade as well as at the substation. The emergency telephone list shall be checked and updated every three months.	At commencement of operational phase	Throughout	SM/DBU
	Zero Control shall be made aware of which fire brigades will respond to what substations. The emergency telephone numbers at Zero Control shall also be checked and updated every three months.	At commencement of operational phase	Throughout	SM/DBU
	Outdoor Storage of Oil filled Drums: • An outdoor oil storage area must be located in the open and at ground level, at least 15m from important buildings/equipment. • Where the above distance cannot be achieved, a fire wall at least 1m higher than the oil drums must be provided between the drums and important buildings/equipment. • In addition, outdoor storage areas should:	At commencement of operational phase	Throughout	SM/DBU

Activity	Mitigation Measures	Duration	Frequency	Responsibility
	○ Be located or provisions made so that spilled oil, irrespective of quantity, cannot be spread to buildings, equipment or other storage yards; ○ Be kept clear of weeds, paper, waste and other combustible material to a distance of 8m from the storage area; ○ Be provided with at least 1 x 9kg chemical powder fire extinguisher mounted in a weather proof housing near the storage area; ○ Only be used for storage of oil or other combustible liquids; ○ Be located where there is a minimum chance of accidental damage from vehicles.			
	Indoor storage of Oil: • Oil may be stored in a building provided that: ○ The building is constructed of non-combustible material; ○ It is a stand-alone building solely used for storage of oil or other combustible liquids; ○ Where the building used for storing oil is less than 15m from an important building or equipment, the wall of the oil store facing the building or equipment shall be a solid brick or concrete wall with no openings; ○ Provision is made to contain oil spillages to within the building; ○ At least 1 x 9kg chemical powder fire extinguisher is mounted in weather proof housing outside the building; and ○ Flammable liquids such as petrol shall not be kept in the building.	At commencement of operational phase	Throughout	SM/DBU